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Beneath the Seamark:
6,000 years of an Island's History

Archaeological Investigations at 'Thanet Earth', Kent 2007–2012

Jon Rady and James Holman

Canterbury Archaeological Trust Technical Report 2

Volume 2: Specialist Reports

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Beneath the Seamark: 6,000 years of an Island's History. Archaeological Investigations at 'Thanet Earth', Kent 2007–2012

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Table 200 Plateau 6, inner ring ditch of late Neolithic/early Bronze Age Barrow 1 (G6005) – mollusc remains from residues. Key: Figures are counts of minimum numbers of individuals recorded (for P. elegans the first figure shown is the number of shells and the second the number of opercula); for remains recorded semi-quantitatively the scale employed was: '+' – few/rare, up to 3 individuals/items; '++' – some/present; 4 to 20, '+++' – many/common; 21 to 50, '++++' – very many/abundant; 51 to 200; and '+++++' – super-abundant, over 200 individuals/items.

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Table 202 Plateau 6, outer ring ditch of late Neolithic/early Bronze Age Barrow 1 (G6006) – mollusc remains from residues. Key: Figures are counts of minimum numbers of individuals recorded (for P. elegans the first figure shown is the number of shells and the second the number of opercula); for remains recorded semi-quantitatively the scale employed was: '+' – few/rare, up to 3 individuals/items; '++' – some/present; 4 to 20, '+++' – many/common; 21 to 50, '++++' – very many/abundant; 51 to 200; and '+++++' – super-abundant, over 200 individuals/items.

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Table 204 Plateau 6, ring ditch of late Neolithic/early Bronze Age Barrow 4 (G6008) – mollusc remains from residues. Key: Figures are counts of minimum numbers of individuals recorded; for remains recorded semi-quantitatively the scale employed was: '+' –

few/rare, up to 3 individuals/items; '++' – some/present; 4 to 20, '+++' – many/common; 21 to 50, '++++' – very many/abundant; 51 to 200; and '+++++' – super-abundant, over 200 individuals/items.

Table 205 Plateau 6, ring ditch of late Neolithic/early Bronze Age Barrow 4 (G6008) – mollusc remains from washovers. Key: Figures are counts of minimum numbers of individuals recorded (for P. elegans the figure shown is the number of shells); for remains recorded semi-quantitatively the scale employed was: '+' – few/rare, up to 3 individuals/items; '++' – some/present; 4 to 20, '+++' – many/common; 21 to 50, '++++' – very many/abundant; 51 to 200; and '+++++' – super-abundant, over 200 individuals/items.

Table 206 Plateau 6, ring ditch of late Neolithic/early Bronze Age Barrow 4 (G6008) – mollusc remains from residues. Key: Figures are counts of minimum numbers of individuals recorded; for remains recorded semi-quantitatively the scale employed was: '+' – few/rare, up to 3 individuals/items; '++' – some/present; 4 to 20, '+++' – many/common; 21 to 50, '++++' – very many/abundant; 51 to 200; and '+++++' – super-abundant, over 200 individuals/items.

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Table 208 Plateau 7, ring ditch of late Neolithic/early Bronze Age Barrow 2 (G7002) – mollusc remains from residues. Key: Figures are counts of minimum numbers of individuals recorded (for P. elegans the first figure shown is the number of shells and the second the number of opercula); for remains recorded semi-quantitatively the scale employed was: '+' – few/rare, up to 3 individuals/items; '++' – some/present; 4 to 20, '+++' – many/common; 21 to 50, '++++' – very many/abundant; 51 to 200; and '+++++' – super-abundant, over 200 individuals/items.

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remains recorded semi-quantitatively the scale employed was: '+' – few/rare, up to 3 individuals/items; '++' – some/present; 4 to 20, '+++' – many/common; 21 to 50, '++++' – very many/abundant; 51 to 200; and '+++++' – super-abundant, over 200 individuals/items.

Table 210 Plateau 7, ring ditch of late Neolithic/early Bronze Age Barrow 3 (G7008), all bar final fill (see Table 17) – mollusc remains from residues. Key: Figures are counts of minimum numbers of individuals recorded (for P. elegans the first figure shown is the number of shells and the second the number of opercula); for remains recorded semi-quantitatively the scale employed was: '+' – few/rare, up to 3 individuals/items; '++' – some/present; 4 to 20, '+++' – many/common; 21 to 50, '++++' – very many/abundant; 51 to 200; and '+++++' – super-abundant, over 200 individuals/items.

Table 211 Plateau 7, ring ditch of late Neolithic/early Bronze Age Barrow 3 (G7008), final fill only – mollusc remains from washovers. Key: Figures are counts of minimum numbers of individuals recorded (for P. elegans the first figure shown is the number of shells and the second the number of opercula); for remains recorded semi-quantitatively the scale employed was: '+' – few/rare, up to 3 individuals/items; '++' – some/present; 4 to 20, '+++' – many/common; 21 to 50, '++++' – very many/abundant; 51 to 200; and '+++++' – super-abundant, over 200 individuals/items.

Table 212 Plateau 7, ring ditch of late Neolithic/early Bronze Age Barrow 3 (G7008), final fill only – mollusc remains from residues. Key: Figures are counts of minimum numbers of individuals recorded (for P. elegans the first figure shown is the number of shells and the second the number of opercula); for remains recorded semi-quantitatively the scale employed was: '+' – few/rare, up to 3 individuals/items; '++' – some/present; 4 to 20, '+++' – many/common; 21 to 50, '++++' – very many/abundant; 51 to 200; and '+++++' – super-abundant, over 200 individuals/items.

Table 213 Plateau 8, ring ditch of late Neolithic/early Bronze Age Barrow 6 (G8005) – mollusc remains from washovers. Key: Figures are counts of minimum numbers of individuals recorded (for P. elegans the first figure shown is the number of shells and the second the number of opercula); for remains recorded semi-quantitatively the scale employed was: '+' – few/rare, up to 3 individuals/items; '++' – some/present; 4 to 20, '+++' – many/common; 21 to 50, '++++' – very many/abundant; 51 to 200; and '+++++' – super-abundant, over 200 individuals/items.

Table 214 Plateau 8, ring ditch of late Neolithic/early Bronze Age Barrow 6 (G8005) – mollusc remains from residues. Key: Figures are counts

Chapter 9: Coins

Ian Anderson

A total of 80 coins and tokens were recovered from the site, 13 during excavation, and 67 during an examination of the topsoil by metal detectorists; they can be summarized as follows:

The earliest coins are potins, cast bronze with a high tin –content, and were the first coins minted by the Cantii tribe prior to the production of die-struck coins. Four of the six are early types, depicting solid designs of the head of Apollo on the obverse and a charging bull on the reverse. Later, these images were inscribed into the moulds by use of a stylus, resulting in a basic outline of the head and a 'matchstick' figure of the bull. The other two potins are of this later type; this low number, compared to the earlier types, and the absence of any die-struck Iron Age coins, suggest a lack of activity on site that lasted into the Roman period.

Of the four potins recovered during excavation, three were from plateau 8, where there was considerable Iron Age activity, and the fourth was from plateau 2, where no occupation of that date was evident, One of the finds was recovered *c.* 65m west of the Iron Age occupation on plateau 8, and the other from within a Medieval enclosure on plateau 5.

The Roman coins present represent most of the Roman period, with a few gaps. The earliest is an as of Gaius (AD 37–41, followed by single coin each of Antoninus Pius (AD 138–61), and Marcus Aurelius (AD 161–80), and Commodus (AD 180–92). Seven coins were present that are similar in date, but were too worn to be identified more closely. Their condition suggests they were lost some considerable time after they were minted, perhaps the late 2nd–early 3rd century AD. The absence of coins struck between Gaius and Antoninus Pius, normally present on sites of that date, suggests that activity began probably in the 2nd century AD, and that the coin of Gaius is a later loss.

The remaining seven Roman coins are dated to the late 3rd and the mid-4th century, but are insufficient in number to indicate a reasonable degree of activity. Normally on sites of those dates, coins occur in large quantities and make up a large percentage of a site's corpus, so these coins are probably the result of casual loss by travellers.

Of the 13 Roman coins found by metal detectorists, six came from ground sloping down northward from plateau 4 towards plateau 3, and all dated 1st to 3rd century. A seventh, a coin of Carausius (AD 286–93), was recovered just north of plateau 3; four of these coins were on the east side of an area divide up in Roman times by field boundaries, and the remaining two were from an area bounded to the north and east by Roman ditches. Of the remaining six Roman coins from the topsoil, two were from plateau 1, north of a

Roman trackway running through cremation cemetery ; one from near plateau 2, on what is probably the north edge of the same cemetery; one from plateau 5, where no Roman occupation was present; and within plateau 7, about 45m west of a Roman quarry. The findspot of the final Roman coin from the topsoil was not recorded.

The only Anglo-Saxon coin recovered, a silver sceatta, came from plateau 8.

The four Medieval coins were all recovered by metal detectorists from the topsoil; three from the south-west edge of plateau 4, an area occupied by Medieval enclosures and a trackway; the fourth was located 45m north-east of the same complex. These consisted of three short cross pennies (including a fragment and a cut halfpenny), and a long-cross cut halfpenny, with a date range of *c.* AD 1204–1205 to AD 1251–c. 1265. The absence of further long-cross pennies and sterling issues of Edward I is significant as these are normally plentiful as site finds, and suggests that activity on site ceased in the second half of the 13th century AD.

After this, there is a dearth of numismatic material until the late 16th–early 17th century, represented by a Nuremberg jetton. From hereafter, there is an unbroken sequence almost up to the present day.

Although the metal detector finds were scattered over the entire area under investigation, there was a particularly dense concentration on plateaus 3 and 4, in an area roughly 400m by 450m, which yielded Roman to Post-Medieval coins.

Coin list

Plateau 1.

1. Victoria. Halfpenny. 1891.

Plateau 2.
1. Iron Age. Cantii. Cast 'potin.' *c.* 100–90 BC.
Obv. Head of Apollo left.
Rev. Bull right.
Cf. VA 108.

1. Antoninus Pius. AD 138–61. Denarius, rev. illegible.

Plateau 3.

1. Allectus. AD 293–96. Quinarius. VIRTVS AVG. RIC 55.

Plateau 5.

1. As, 2nd-3rd century AD. Corroded and illegible.

1. George V. Farthing. 1919.

Plateau 6.

1. James I. Farthing token. Lennox type 3d. AD 1614–25. P.m. dagger. P100.

1. Jetton. Nuremberg, Hans Krauwinckel II, AD 1586–1635.
Obv. Reichapfel. HANNS KRAVWINCKEL IN NV.
Rev. Lis and crowns around rose. GOTES REICH BLEIBT EWICK.
Cf. M1549.

Plateau 8.

1. Iron Age. Cantii. Cast 'potin.' *c.* 100-90 BC.
Obv. Head of Apollo left. No helmet.
Rev. Bull charging right. Above, MA.
VA 1402-1.

1. Iron Age. Cantii. Cast 'potin.' *c.* 100–90 BC.
Obv. Head of Apollo left.
Rev. Bull charging right.
VA 1410-1.

1. Iron Age. Cantii. Cast 'potin.' *c.* 100–90 BC.
Obv. Head of Apollo left.
Rev. Bull charging right.
VA 105-1.

1. Constans. Ae 3. AD 345–348. Rev. VICTORIAEDDAVGGQNN. Trier, 1st officinal. RIC VIII, Trier 185.

1. Anglo-Saxon sceatta. Series N, type 41a/41b.
Obv. Two standing figures vis-à-vis, holding a long cross between them. No base line visible, and no dots either side of figures.
Rev. Creature left, head turned right, biting tail.
On both sides, linear border enclosed by pellet border. 1.14 g.

Metal Detector Finds

Iron Age

2. Cantii. Cast 'potin.' *c.* 100–90 BC.
Obv. Head of Apollo left.
Rev. Bull charging left.
VA 1410-1.

Roman

1. Gauis. (AD 37–41). As, issued in name of Agrippa. RIC 58.

1. Marcus Aurelius. Sestertius. AD 164–66. Rev. Providentia. As RIC 906.

1. Commodus. (AD 180–192). Sestertius, rev. illegible.

1. Carausius. (AD 286–293). Antoninianus. Rev. PAX AVG. Mint illegible. As RIC 120.

2. Barbarous radiate. (*c.* AD 270–290). Rev. Alter. Rev. illegible.

2. House of Constantine.
Ae 3. AD 345–348. Rev. VICTORIAEDDAVGGQNN. M.m. illegible. RIC VIII, as Trier 180.
Half centenionalis. AD 348–350. Rev. FELTEMPPREPARATIO; phoenix .M.m. illegible. RIC VIII, as Trier 231.

5. As/dupondius. 1st-3rd century. Worn and illegible.

Medieval

1. John. Cut halfpenny from short cross penny, class Va2. *c.* AD 1204–1205. Mint, Durham. Moneyer, Pires. Rev….ES.ON.D… 0.53 gm North 969.

1. Henry III. Penny. Short cross. Class VIIa3. AD 1220–1222. Mint, Canterbury. Moneyer, Henry. Rev. hENRIONCANT. 1.38 gm. North 978.

1. Henry III. Fragment of short cross penny. Class 7. AD 1217–1242. Mint and moneyers names not present. Rev.+…N…

1. Henry III. Cut halfpenny from long cross penny. Class Vb2. *c.* AD 1251–*c.* AD 1265. Mint, Canterbury or London. Moneyer, Ion. Rev. IONON… 0.65 gm. North 992/3-93.

Post-Medieval

2. Charles I. Farthing tokens.

Maltravers, type 3b. AD 1634–1636. P.m. lis. P241.
Rose. AD 1636–1644. Details illegible.

2. Charles II. Farthings. AD 1672–1679.

2. William and Mary. Halfpennies. AD 1694.

1. William III. Halfpenny, second issue. AD 1699.

2. George I. Halfpenny. AD 1720. Ireland, halfpenny. AD 1722–1724.

5. George II. Farthing. AD 1754. Halfpennies. AD 1730. AD 1732. AD 1730–1739. AD 1740–1754.

7. George III. Farthing, contemporary forgery. AD 1771–1775. Halfpennies. AD 1770–1775. AD 1799. AD 1807(2). Penny. AD 1797. Ireland. AD 1766 or 1769.

7. Victoria. Halfpennies. AD 1860. AD 1862. AD 1891. AD 1860–1894. Penny. AD 1860–1894. 4d. 1838–55. 1844.

1. Edward VII. Halfpenny. AD 1910.

2. George VI. Halfpenny. AD 1940. Penny. AD 1938.

3. Elizabeth II. Halfpenny. AD 1960. AD 1971. Halfcrown. AD 1957.

2. Farthings. AD 1672–1775. Worn and illegible.

5. Halfpennies. AD 1672–1775. Worn and illegible.

1. Ae coin/jetton. 17th–18th century AD. Corroded and illegible.

1. Ae coin. Corroded and illegible.

Trade Token

1. Dover. Will Wellard at the Cock. Farthing *c.* AD 1650–1670.W239.

Foreign

2. France.
Louis XIV. 1 liard. 1656–58. Meung-sur-Loire mint. Duplessy AD 1588.
Louis XV. 1 liard. 1771. Paris mint. Duplessy AD 1701.

2. Lowlands.
Liege. Bishop Ferdinand of Bavaria. AD 1612–1650. 1 liard.
Zeeland. 1 duit. AD 1790–1792.

1. East India Company. 5 cash. AD 1803.

Chapter 10: Registered Finds

Lynne Bevan, with contributions by Rob Ixer and Iain Ferris

Introduction

A large, highly-important, and interesting assemblage of 801 registered small finds was recovered from the Thanet Earth sites, including objects made of copper alloy, iron, lead, glass, fired clay, bone and antler, amber, and stone. The earliest small finds are prehistoric items from Plateaus 2, 6, and 8, with there being a sizeable assemblage of small finds of the Iron Age, Romano-British, Anglo-Saxon, and medieval periods, along with Post-medieval objects.

All small finds from the site were examined individually, and, in most cases, identified and dated as closely as possible, and then catalogued by material group. Contextual and stratigraphic research was conducted on some of the more complete and datable items in the assemblage, particularly among the copper alloy, iron, ceramic/baked clay, amber, and stone items. This research principally included comparison with published comparanda of prehistoric, Romano-British, Anglo-Saxon, medieval and Post-medieval small finds.

This report is ordered according to material (e.g. 'copper alloy objects' or 'iron objects') and within those material groups by functional category where possible. A statement on the conservation of items in each material group is also included.

Quantification of the Finds Assemblage

A quantification of the total small finds assemblage is presented in Table 7, broken down into material categories and individual plateaux or sites. The assemblage of 801 registered small finds from the Thanet Earth sites included objects made of copper alloy (76 registered items), iron (474 registered items), lead (4 registered items), glass (26 registered items), ceramic/fired clay (83 registered items), bone and antler (7 registered items), amber (23 registered items), and stone (108 registered items). In some cases there was more than one object recorded under a single registered small finds number, mainly in the case of iron nails, giving a total number of actual small finds, as opposed to registered small finds, of *c.* 1512. Multiple collections of clay pipe stems and Post-medieval vessel glass fragments from single contexts are not included in these totals. A further 207 registered small finds of stone were discounted from this study following their examination and identification as unworked or natural.

Copper and Copper Alloy Objects

Quantification and Introduction

The assemblage of 83 copper alloy items from the Thanet Earth sites was generally well preserved and in a stable condition and included numerous identifiable and chronologically-diagnostic artefacts. The most interesting and earliest single items were of prehistoric date. These comprised a Bronze Age dagger from **Plateau 6** (FN 6.33 Context 6024 Burial 33; Cat. No. 1, Fig. 244), found in association with a stone wristguard or bracer in the same burial (FN 6.34, Cat. No. 138, Fig. 259). A Bronze Age palstave axe came from **Plateau 2** (FN 2.133 Context 2837; Cat. No. 2, Fig. 244).

Dress and Personal Objects were the largest functional category (40 items). Items in this category included jewellery, consisting of four bracelets (**Plateau 3** FN 3.148 Context 11072; **Plateau 8** FN 8.51 Context 8745, FN 8.211 Context 12534, FN 8.372 Context 12822), seven pins (**Plateau 1** FN 1.1021 Context 1667; **Plateau 6** FN 6.399 Context 16084, FN 6.405 Context 16086, FN 6.475 Context 16211, FN 6.484 Context 16071, FN 6.492 Context 16375; **Plateau 8** FN 8.116 Context 12003), six brooches (**Plateau 1** FN 1.112 Context 10687, FN 1.113 Context 10687, FN 1.114 Context 10687: **Plateau 8** FN 8.46 Context 14927, FN 8.155 Context 12310) and four brooch pins (**Plateau 1** FN 1.159 Context 10687 (x2), FN 1.160 Context 10687; **Plateau 3** FN 3.38 Context 3265).

Other Dress items included six buckles (**Plateau 1** FN 1.9 Context 1458, FN 1.38 U/S; **Plateau 5** FN 5.11 Context 5691, FN 5.110 Context 15185; **Plateau 6** FN 6.434 Context 16071; **Plateau 7** FN 7.39 U/S), three buckle pins (**Plateau 1** FN 1.9032 Context 10113; **Plateau 4** FN 4.46 Context 4061; **Plateau 8** FN 8.108 Context 8682), a strap end (**Plateau 5** FN 5.12 Context 5691), five belt or strap mounts/fittings (**Plateau 1** FN 1.54 Context 10074; **Plateau 4** FN 4.458 Context 4776; **Plateau 7** FN 7.21 Context 7326, FN 7.24 Context 7327; **Plateau 8** FN 8.109 U/S), three lace chapes or aiglets (**Plateau 6** FN 6.432 Context 16071, FN 6.476 Context 16211, FN 6.491 Context 16375), two decorated studs (**Plateau 6** FN 6.427 Context 16127; **Plateau 7** FN 7.38 U/S), and three buttons (**Plateau 1** FN 1.91 Context 983; **Plateau 5** FN 5.29 Context 15165, FN 5.68 U/S).

Items associated with Craft and Industry included a thimble (**Plateau 5** FN 5.64 U/S).

Items associated with Leisure and Pastimes included a personal seal matrix (**Plateau 6** FN 6.5 Context 6117), a book clasp (**Plateau 5** FN 5.63 U/S), a possible panel from a seal box (**Plateau 5** FN 5.67 U/S), and part of a bell (**Plateau 5** FN 5.65 U/S), possibly from horse harness. Fixtures and Fittings included five ring fittings (**Plateau 4** FN 4.47 Context 4567; **Plateau 5** FN 5.4 Context 5775; **Plateau 8**, FN 8.235, FN 8.236, FN 8.242 Context 12748, FN 8.9058a Context 12792), a stud (**Plateau 4** FN 4.35 Context 4818), and a tubular fitting or ferrule (**Plateau 5** FN 5.7 Context 5691).

In addition there were ten sheet and strip fragments (listed below) and six lumps and fragments (listed below). No further analysis was undertaken of this characterless and undiagnostic waste material.

Discussion

The copper alloy small finds assemblage of 76 registered objects (actually 83 individual finds in total) represents an exceptional and highly-important group of regional and national significance. The earliest items in the assemblage are prehistoric and Romano-British in date.

Two highly-significant copper alloy finds date to the prehistoric period. The earliest was a dagger from a Beaker burial (**Plateau 6** FN 6.33 Context 6024 Burial 33; Cat. No. 1, Fig. 244) which also contained a stone archer's wristguard or bracer (FN 6.34; Cat. No. 138, Fig. 259). The other object was a Bronze Age palstave axe (**Plateau 2** FN 2.133 Context 2837; Cat. No. 2, Fig. 244) recovered from a flint layer at the base of a pond which may, therefore, represent a votive item deposited in a 'watery place'. The axe, which was complete, was a high flanged palstave of Middle Bronze Age date (e.g. Megaw and Simpson 1979, 248, fig. 6.3). Several similar palstaves were found at Ripple in Kent, at least three of which 'had been inserted into the upper fill of a ditch of uncertain function and extent, but of Early to Middle Bronze Age date' (Barber 2003, plate 7, 44). The axe and the dagger (as well as the wristguard from the Beaker burial) testify to the ritual nature of the landscape at various times during the prehistoric period.

Five copper alloy brooches were recovered. Two small, poorly-preserved bow brooches from **Plateau 8** (FN 8.46 Context 14927, FN 8.155 Context 12310; Cat. Nos. 3–4, Fig. 245), one of which came from an inhumation burial (FN 8.155 Context 12310; Cat. No. 3, Fig. 245), dated to the late Iron Age. The smaller, more complete and elegant, brooch from the burial conforms to Mackreth's late La Tène Stead 1.b1 type brooch, particularly to a larger example from Harrietsham, Glebeland, Kent (Mackreth 2011, plate 1: 2959, 8–10). Mackreth suggests that this type of brooch dates to 'the earlier part of the 1st century BC and not the later' (*ibid*, 10). The closest parallels for the other brooch (Cat. No. 4, Fig. 245), which was fragmentary, and made from copper alloy wire curved into a U-shape, with a spring with four coils, appear to be among late La Tène *Drahtfibel* brooches discussed by Mackreth (2011, plate 11, 21–22).

Three brooches came from a cremation: a pair of highly-elaborate rosette brooches (**Plateau 1** FN 1.112 and FN 1.113, Context 10687; Cat. Nos. 5–6, Fig. 245), dating to around the mid- 1st century AD, and a plainer, probably contemporary, brooch (FN 1.114 Context 10687; Cat. No. 7, Fig. 245), together with two of their brooch pins (**Plateau 1** FN 1.159 and FN 1.160 Context 10687; Cat. Nos. 8–9, not illustrated) and a circular lead object which was also collected from the same cremation (FN 1.158 Context 10687; Cat. No. 96, Fig. 254). The pair of rosette brooches conform to Mackreth's Type ROS 4b of his typology of Late Iron Age and Roman brooches (Mackreth 2011, 4b, 29, fig. 17: 5876, 5879, 20). Type ROS 4b is characterised by having an integral lozenge-shaped plate, as opposed to the more common circular plate, which, in both cases, has repoussé sheet

decoration (*ibid*, 4b, 29). The two closest parallels for this brooch, and Cat. No. 6 below, came from Cirencester where Mackreth attests that they almost certainly arrived with the army in *c.* 45 AD (*ibid*, 29, fig. 17:5876, 5879, 20). This type of 'purely continental' brooch (*ibid*, 8) was previously unknown in Kent or central Southern England (*ibid* 2011, 29), therefore the discovery of these brooches at the Thanet site is highly interesting and significant. The third brooch (Cat. No. 7, Fig. 245) is a Langton Down brooch with a plain bow, a 'purely continental' brooch (Mackreth 2011, 9) which conforms to Mackreth's Type LD8 in his typology, the closest design parallel coming from Silchester (*ibid*, 8, 36, fig. 21: 6556, 24). In common with dating for rosette brooches (*ibid*, 8), dating for this type of brooch appears to cluster around the mid- 1st century AD (*ibid*, 36), making it contemporary with the pair of rosette brooches from the same cremation.

A number of copper alloy rings, all from **Plateau 8** (**Plateau 8** FN 8.235, FN 236, FN 8.242 Context 12748, FN 8.9058a Context 12792; Cat. Nos. 11–14, Fig. 245) were probably fittings from boxes or caskets.

A number of Roman bracelets are also of significance in the assemblage. The most complete bracelet came from **Plateau 8** (FN 8.372 Context 12822; Cat. No. 15, Fig. 246), a simple, child-sized bracelet made from a single strand of copper alloy wire, the ends of which have been twisted around the wire to create a sliding expandable clasp. Simple bracelets like this were found in the sizeable bracelet assemblage from Butt Road cemetery in Colchester where they were dated to the late 3rd and 4th centuries (Crummy 1983, fig. 41: 1590, 1601, 37–39). Another bracelet fragment from **Plateau 8** (FN 8.211 Context 12534; Cat. No. 16, Fig. 246), with a looped terminal and continuous notched decoration on the outer face, also appears to date to the later Roman period (for discussion of 3rd- to 4th- century copper alloy bracelets see Crummy 1983, 37–44). Interestingly, this fragment may have come from a broken snake bracelet, examples of which are known to have been cut down and re-used (Crummy 1983, fig. 44, 1693, 41–42). If this was from a snake bracelet, it conforms to Type Ai in Johns' typology of snake rings and bracelets, a type defined by having a head and tail, rather than being double-headed (Johns 1996, fig. 3.3, 45).

Also from **Plateau 8** came a fragment from a bracelet with registers of intricate decoration in the form of triple vertical banding interspersed with irregularly-spaced chevron motifs (FN 8.51 Context 8745; Cat. No. 17, Fig. 246). Copper alloy bracelets with multiple motifs were common during the Roman period (Crummy 1983, fig. 47, 45–46), though no close parallels were found for this unusual design. Two further probable bracelet fragments came from **Plateau 3**. One was a hooked clasp attached to a broken length of double-stranded coiled wire (FN 3.240 Context 11079; Cat. No. 18, Fig. 246), probably from a cable bracelet made of lengths of coiled wire, a common form during the Roman period, many of which had clasps formed by a pair of linked hooks similar to the Thanet Earth example (Crummy 1983, fig. 41: 1628, 38–39). The other possible

bracelet fragment was in the form of a small fragment of copper alloy strip, broken at both ends (**Plateau 3** FN 3.148 Context 11072; Cat. No. 119, not illustrated).

The most significant medieval copper alloy item was a personal seal matrix (**Plateau 6** FN 6.5 Context 6117; Cat. No. 21, Fig. 247) in the form of an oval amulet with an image of a large bird with the head of a man on it, the whole surrounded by an inscription. The bird was possibly a swan, duck or goose. This was originally thought to be a rebus on the owner's name. Although the motif is typical of this period the teardrop shape and amuletic form are unusual. The seal is also unusual in being complete since it was often common practice to 'cancel' personal seal matrices by cutting them in half (Cherry 1992, 23–24). Writing on the seal appears to refer to the owner's name, which was Richard, written as 'S RICARDI', the 'S' referring to 'sigill' or sigillum' meaning 'seal'. The rest of the inscription appears to say 'DE: E ST ONA' or 'DE:E STONA' which may refer to the parish of Stonar in the Thanet district on the River Stour, approximately a mile from Sandwich. Stonar was destroyed by the French in 1385. The inscription therefore may refer to Richard de Stona, although no reference was found to anyone of that name, nor to any connection with the parish.

Other potentially medieval finds included a large bent pin with a spherical, wound wire head from **Plateau 6** (FN 6.484 Context 16071; Cat. No. 37, Fig. 248) conforming to Margeson's Type 1 pin (Margeson 1993, fig. 5: 31–35, 11–13). Pins of this type date from the medieval period, occurring, for example, in 14th-century deposits in London (Pritchard 1991a, fig. 200, 301), and continue into the Post-medieval period. Examples of this form of pin from Norwich generally date to the 16th century (*ibid*, 13).

The number and range of buckles and strap ends represented was interesting and several of the items were identified and dated to both the medieval and Post-medieval periods. Medieval items included a composite strap end with a forked spacer and a collared knop (**Plateau 5** FN 5.12 Context 5691; Cat. No. 22, Fig. 247) of probable 14th century in date based on similar examples from London. (Pritchard 1991b, fig. 94: 676, 677, 680, 143–144). Also from **Plateau 5** was a small trapezoidal strap loop with internal projections and a small raised knop on the outer frame (FN 5.110 Context 15185; Cat. No. 23, Fig. 247). This distinctive strap loop was probably earlier 13th century in date in keeping with some similarly-shaped strap loops from London (Egan 1991a, fig. 149: 1256, 1257, 1259, 233–234). A bar mount from **Plateau 4** (FN 4.458 Context 4776; Cat. No. 24, Fig. 247), with two integral rivets, fleur-de-lys terminals and decorative banding at the centre and at each end, probably dates to the late medieval period and may have been used for 'a casket or other rigid object, rather than for a strap', as has been suggested for a similarly-riveted mount from London (Egan 1991a, fig. 133: 1143, 212–213). A sexfoil mount from **Plateau 7** (FN 7.38 U/S; Cat. No. 25, Fig. 247), stamped with two concentric rings of raised bosses set within Tudor rose type petals, and having a large central perforation, probably dates to *c.* AD 1350–*c.* AD 1400 based on two mounts of very similar design from London (Egan 1991a, fig. 1013, 1014, 190–191).

From **Plateau 8** came a small double-looped fitting (FN 8.109 U/S; Cat. No. 26, Fig. 247), possibly from a purse or horse harness, with a small *in situ* rivet at the centre which is roughly rectangular in shape. The entire surface has been elaborately decorated with a series of linear cuts combined with intermittent, off-centred, dotted banding. This item is possibly Late medieval in date. A broken fragment from an oval buckle frame which would originally have had composite plates from **Plateau 5** (FN 5.11 Context 5691; Cat. No. 27, not illustrated) probably dates from *c.* AD 1350–1450 based on the closest published parallels (Egan 1991b, fig. 49: 325, 326, 330, 80–81). A buckle plate with a single rivet hole from **Plateau 6** (FN 6.434 Context 16071; Cat. No. 28, not illustrated) is similar in shape to one from London dated to *c.* AD 1350–c. AD 1400 (Egan 1991b, fig. 73: 519, 113). Finally, a small, broken and distorted bar mount with terminal lobes (**Plateau 7** FN 7.24 Context 7327; Cat. No. 30, not illustrated) was probably 13th century in date based on similar mounts from London (Egan 1991a, fig. 134: 1147, 1149, 1151, 213–214).

Three lace tags (also known as lace chapes or aiglets) made from folded copper alloy were recovered from **Plateau 6**. These small fittings were used to prevent the ends of laces from fraying and to ease threading for various clothing functions from the 15th century onwards (Margeson 1993, 22), although some examples have been dated to the mid-14th century, with the potentially earliest known tags dating to the mid-13th century (Egan 1991c, 281). Despite their simplicity they can be typologically characterised and, to some extent, dated (Oakley 1979). Two of the Thanet lace tags **Plateau 6** FN 6.476 Context 16211; FN 6.432 Context 16071; Cat. Nos 40–41, Fig. 248; not illustrated) are of Margeson Type 1 (Margeson 1993, Type 1, fig. 12, 113–116, 22–23). The other, slightly larger, lace tag (**Plateau 6** FN 6.491 Context 16375; Cat. No. 42, Fig. 248) conformed to Margeson's Type 2 (Margeson 1993, Type 2, fig. 12, 117–119, 22–23), a type which mainly dates to the 16th and 17th centuries (Oakley 1979, 262–263).

Catalogue

Prehistoric Finds — Beaker Period to Middle Bronze Age (Cat. Nos. 1–2, Fig. 244).

1. Small tanged dagger, complete, of Beaker period, Late Neolithic-Early Bronze Age date (e.g. Megaw and Simpson 1979, 180–181, fig. 5.3). Length: 101 mm, width: 38 mm, thickness: 1–2 mm. **Plateau 6** FN 6.33 Context 6024 Burial 33. Phase 2. Fig. 244.
2. High flanged palstave axe, complete, of Middle Bronze Age date (e.g. Megaw and Simpson 1979, 248, fig. 6.3). This palstave is very similar in style to several palstaves found at Ripple in Kent, at least three of which 'had been inserted into the upper fill of a ditch of uncertain function and extent, but of Early to Middle Bronze Age date' (Barber 2003, plate 7, 44). Length: 152 mm, width of blade: 62 mm, thickness: 26 mm. **Plateau 2** FN 2.133 Context 2837. Phase 3+. Fig. 244.

Iron Age to Early Roman Finds (Cat. Nos. 3–14, Fig. 245)

3. Bow brooch, complete, with a four-coiled spring and a decorative moulding just above the catchplate which is perforated. This small, elegant brooch conforms to Mackreth's late La Tène Stead 1.b1 type brooch, particularly to a larger example from Harrietsham, Glebeland, Kent (Mackreth 2011, plate 1: 2959, 8–10). Mackreth suggests that this type of brooch dates to 'the earlier part of the 1st century BC and not the later' (*ibid*, 10). Length: 46 mm, width at spring: 8 mm, maximum thickness of bow: 5 mm. **Plateau 8** FN 8.155 Context 12310. Phase 8. Fig. 245.
4. Bow brooch made of copper alloy wire curved into a U-shape, with a spring with four coils. The pin and catchplate are both fragmentary. The closest parallels for this type of brooch appear to be among late La Tène *Drahtfibel* brooches discussed by Mackreth (2011, plate 11, 21–22). Length: 43 mm, width at spring: 14 mm, thickness of bow: 3 mm. **Plateau 8** FN 8.463 Context 14927. Phase 10. Fig. 245.
5. Rosette brooch, one of a pair with Cat. No. 6 below, with a lozenge plate which is unusual in retaining all of its original 'repoussé sheet which is both curved in section and cut with holes designed to look like vesicas' (Mackreth 2011, 29). The brooch has the characteristic reeded decoration on the shoulder and foot and, in addition, a series of decorative triangular motifs across the bow, each enclosing small circular motifs, which were probably originally enamelled. The brooch, which is complete apart from the missing pin, is also unusual in retaining the copper alloy 'bolt' which was inserted behind the bow, a decorative feature that seldom survives in this form of brooch (Mackreth 2011, 29). This type of brooch, along with Cat. No. 6 below, conforms to Mackreth's Type ROS 4b of his typology of Late Iron Age and Roman brooches (Mackreth 2011, 4b, 29, fig. 17: 5876, 5879, 20). Type ROS 4b is characterised by having an integral lozenge-shaped plate, as opposed to the more common circular plate, which, in both cases, has repoussé sheet decoration (*ibid*, 4b, 29). The two closest parallels for this brooch, and Cat. No. 6 below, came from Cirencester where Mackreth attests that they almost certainly arrived with the army in *c.* 45 AD (*ibid*, 29, fig. 17:5876, 5879, 20). This type of 'purely continental' brooch (*ibid*, 8) was previously unknown in Kent or central Southern England (*ibid*, 29), therefore the discovery of these brooches at the Thanet site is highly interesting and significant. Late Iron Age/Early Roman in date. Length: 75 mm, width: 55 mm, average thickness: 0.5 mm. **Plateau 1** FN 1.112 Context 10687. Phase 10. Fig. 245.
6. Rosette brooch with a lozenge plate, the companion to Cat. No. 5, above, identical in size and form but less well-preserved since only a corner of the original repoussé sheet (Mackreth 2011, 29, fig. 17: 5876, 5879, 20) which is present on Cat. No. 5, has survived. Again, this brooch has the characteristic reeded decoration on the bow and foot and probably also similar decoration to that of Cat. No. 5 on the shoulder although in this case the surface of the metal is less well-preserved. Again, this example is unusual in retaining the copper alloy 'bolt' which was inserted behind the bow, a decorative feature that seldom survives in this form of brooch (Mackreth

2011, 29). Late Iron Age/Early Roman in date. Length: 77 mm, width: 56 mm, average thickness: 0.5 mm. **Plateau 1** FN 1.113 Context 10687. Phase 10. Fig. 245.

7. Langton Down brooch with a plain bow, intact apart from the missing pin, though not as well-preserved as Cat. Nos. 5–6 above. This type of 'purely continental' brooch (Mackreth 2011, 9) conforms to Mackreth's Type LD8 in his typology of Late Iron Age and Roman brooches, the closest design parallel coming from Silchester (*ibid* 2011, 8, 36, fig. 21: 6556, 24). In common with dating for rosette brooches (*ibid*, 8), dating for this type of brooch appears to cluster around the mid- 1st century AD (*ibid*, 36), making it contemporary with the pair of rosette brooches from the same cremation, Cat. Nos. 5–6, above. Late Iron Age/Early Roman in date. Length: 52 mm, width at shoulder: 22 mm, thickness: 1–2 mm. **Plateau 1** FN 1.114 Context 10687. Phase 10. Fig. 245.
8. Two joining fragments from a brooch pin, one of which is curled into a loop at one end. Late Iron Age/Early Roman in date. Length of longer fragment: *c.* 20 mm, length of shorter fragment: 10 mm. **Plateau 1** FN 1.159 Context 10687. Phase 10. Not illustrated.
9. Long brooch pin tapering to a point at one end. Late Iron Age/Early Roman in date. Length: 60 mm, diameter at widest end: 2 mm. **Plateau 1** FN 1.160 Context 10687. Phase 10. Not illustrated.
10. Pin-like object comprising a curved strip of copper alloy, broken at one end. Length: 37 mm, width at centre: 3 mm, thickness: 1 mm. **Plateau 8** FN 8.108 Context 8682. Phase 8. Not illustrated.
11. Small ring fitting with a 'D'-shaped section, possibly from a box or casket. Diameter: 27 mm, width: 3 mm, height: 3 mm. **Plateau 8** FN 8.235 Context 12748. Phase 10. Fig. 245.
12. Small ring fitting with a 'D'-shaped section, possibly from a box or casket. Diameter: 27 mm, width: 3 mm, height: 3 mm. **Plateau 8** FN 8.236 Context 12748. Phase 10. Fig. 245.
13. Small ring with a 'D'-shaped section fused to a corroded iron attachment loop, possibly from a box or casket. Diameter: 27 mm, width: 3 mm, height: 3 mm. **Plateau 8** FN 8.242 Context 12748. Phase 10. Fig. 245.
14. Small ring with a 'D'-shaped section attached to a small chain-link which has become fused to a corroded iron attachment loop. This ring is almost identical to the three rings catalogued above which came from a cremation (Cat. Nos. 11–13, Fig. 245) and it might originally have originated from a similar item, possibly a box or casket. Diameter: 28 mm, width: 3 mm, height: 3 mm. **Plateau 8** FN 8.9058a Context 12792. Phase 10. Not illustrated.

Roman to Anglo-Saxon Finds (Cat. Nos. 15–20, Fig. 246)

15. Complete bracelet made from a single strand of copper alloy wire, the ends of which have been twisted around the wire to create a sliding expandable clasp. Simple bracelets like this were found in the sizeable bracelet assemblage from the Butt Road

cemetery in Colchester where they were dated to the late 3rd and 4th centuries (Crummy 1983, fig. 41: 1590, 1601, 37–39). The small size of this bracelet indicates that it was designed for a child. Diameter: *c.* 40 mm, thickness of wire: 2 mm. **Plateau 8** FN 8.372 Context 12822. Phase 12. Fig. 246.

16. Bracelet fragment, the original pointed end of which has been twisted over the other, broken end of the bracelet to form a loop. The bracelet, which has continuous notched decoration on the outer face, appears to date to the later Roman period (for discussion of 3rd- to 4th- century copper alloy bracelets see Crummy 1983, 37-44). This fragment may have come from a broken snake bracelet, examples of are known to have been cut down and re-used (Crummy 1983, fig. 44:1693, 41–42), although without the head this identification remains uncertain. If this was from a snake bracelet, it conforms to Type Ai in Johns' typology of snake rings and bracelets, a type defined by having a head and tail, rather than being double-headed (Johns 1996, fig. 3.3, 45). In classical mythology, snake symbolism was associated with 'healing, the underworld, regeneration and rebirth' (*ibid*, 37). That this object was found in association with an amber bead, the bead found lying in the centre of the ring formed by the bracelet, indicates the deliberate placing of both objects, each potentially with strong symbolic associations (see discussion of amber beads below). Length: 90 mm, width: 2 mm, thickness: 2 mm. **Plateau 8** FN 8.211 Context 12534. Phase 12. Fig. 246.
17. Fragment from a bracelet, with a 'D'-shaped section and registers of intricate decoration in the form of triple vertical banding interspersed with irregularly-spaced chevron motifs. Length: 37 mm, height: 5 mm, thickness: 4 mm. Copper alloy bracelets with multiple motifs were common during the Roman period (Crummy 1983, figs. 47, 45–46). While this bracelet is of Roman date no close parallels were found for the unusual design. **Plateau 8** FN 8.51 Context 8745. Phase 8. Fig. 246.
18. Hooked clasp attached to a broken length of double-stranded coiled wire, probably from a bracelet. Cable bracelets made of lengths of coiled wire were common during the Roman period, and many of them had clasps formed by a pair of linked hooks similar to this single example (Crummy 1983, fig. 41: 1628, 38–39). Length: 21 mm, thickness: 3 mm. **Plateau 3** FN 3.240 Context 11079. Phase 12. Fig. 246.
19. Small fragment of copper alloy strip, possibly from a Roman bracelet, broken at both ends. Length: 21 mm, width: 4 mm, thickness: 0.5 mm. **Plateau 3** FN 3.148 Context 11072. Phase 12. Not illustrated.
20. Square-shaped sheet fragment with a central circular indentation which may have held enamel, possibly a panel from a Roman seal box, though this identification is by no means certain. Size: 15 mm x 13 mm. Thickness: 0.5 mm. Diameter of indentation: 3 mm. **Plateau 5** FN 5.67 U/S. Not illustrated.

Medieval Finds (Cat. Nos. 21–36, Fig. 247)

21. Personal seal matrix, oval in shape with a loop handle at the top and a plain flat back, complete. The seal has an image of a large bird with the head of a man on it,

the whole surrounded by a legend in Lombardic script. The bird was possibly a swan, duck or goose, based on the shape of its large body which has broad, webbed feet. This was originally thought to be a rebus on the owner's name. Although the motif is typical of this period the teardrop shape and amuletic form are unusual, as is the excellent condition of the piece and the fact that the writing comes from two different directions. The legend on the seal appears to refer to the owner's name, which was Richard, written as 'S RICARDI', the 'S' referring to 'sigill' or sigillum' meaning 'seal'. The rest of the inscription appears to say 'DE: E ST ONA' or 'DE:E STONA', which may refer to the parish of Stonar in the Thanet district on the River Stour approximately a mile from Sandwich. Stonar was destroyed by the French in 1385. Therefore the inscription may refer to Richard de Stona although no reference was found to anyone of that name, nor to any connection with the parish. An alternative reading is 'Richard de Estonia' or, should the inscription be meant to be read backwards, it may say 'DE ANOTSE' or DE:EST ANO'. Length: 46 mm, width: 25 mm, thickness: 2 mm. **Plateau 6** FN 6.5 Context 6117. Unphased. Fig. 247.

22. Composite strap end with a forked spacer and a collared knop of probable 14th century date based on similar examples from London. (Pritchard 1991b, fig. 94: 676, 677, 680, 143–144). Length: 35 mm, width: 11 mm, thickness: 3 mm. **Plateau 5** FN 5.12 Context 5691. Phase 17. Fig. 247.
23. Small trapezoidal strap loop with internal projections and a small raised knop on the outer frame. Probably earlier 13th- century in date in keeping with some similarly-shaped strap loops from London (Egan 1991a, fig. 149: 1256, 1257, 1259, 233–234). Length: 15 mm, width: 12 mm, thickness: 2 mm. **Plateau 5** FN 5.110 Context 15185. Phase 16. Fig. 247.
24. Bar mount, with two integral rivets, fleur-de-lys terminals and decorative banding at the centre and at each end, possibly for 'a casket or other rigid object, rather than for a strap', as has been suggested for a similarly-riveted mount from London (Egan 1991a, fig. 133: 1143, 212–213). Probably late medieval in date. Length: 37 mm, width at centre of bar: 3 mm, width at terminals: 6 mm, thickness: 2 mm. **Plateau 4** FN 4.458 Context 4776. Phase 16. Fig. 247.
25. Sexfoil mount, stamped with two concentric rings of raised bosses set within Tudor rose type petals, and having a large central perforation. This mount is very similar in design to two mounts from London dated to *c.* 1350–1400 (Egan 1991a, fig. 1013, 1014, 190–191). Diameter: 30 mm, thickness: 1 mm. **Plateau 7** FN 7.38 U/S. Fig. 247.
26. Small double-looped fitting, possibly from a purse or horse harness, with a small *in situ* rivet at the centre which is roughly rectangular in shape. The entire surface has been elaborately decorated with a series of linear cuts combined with intermittent, off-centred, dotted banding. The surface still retains traces of its original brass colour. Possibly Late medieval in date. Length: 46 mm, height of loops: 18 mm, thickness of plate: 1 mm. **Plateau 8** FN 8.109 U/S. Fig. 247.
27. Broken fragment from an oval buckle frame which would originally have had composite plates, the closest published parallels for which date from *c.* 1350–1450

(Egan 1991b, fig. 49: 325, 326, 330, 80–81). Length: 45 mm, width: 14 mm, thickness: 2–4 mm. **Plateau 5** FN 5.11 Context 5691. Phase 17. Not illustrated.

28. Buckle plate with a single rivet hole, broken across the pin slot. The general shape of the plate is similar to one from London dated to *c.* 1350–*c.* 1400 (Egan 1991b, fig. 73: 519, 113). Length: 28 mm, width: 23 mm, thickness: 0.5 mm. medieval in date. **Plateau 6** FN 6.434 Context 16071. Phase 17. Not illustrated.
29. Pointed end fragment from a buckle pin. Length: 30 mm, diameter: 5 mm. **Plateau 4** FN 4.46 Context 4061. Phase 16. Not illustrated.
30. Small bar mount with terminal lobes, very broken and distorted. Probably 13th-century in date based in similar mounts from London (Egan 1991a, fig. 134: 1147, 1149, 1151, 213–214). Length: 15 mm, width: 4 mm, thickness: 0.5 mm. **Plateau 7** FN 7.24 Context 7327. Phase 16. Not illustrated.
31. Small stud with a domed copper alloy head, now very degraded, and a corroded iron shank. Diameter of head: 11 mm, height of head: 6 mm, length of shank: *c.* 13 mm. **Plateau 4** FN 4.35 Context 4818. Phase 15. Not illustrated.
32. Button or stud with a flat, degraded upper surface, roughly-square in shape with some edge damage. Diameter: *c.* 18 mm, length of shank: 4 mm. Probably Post-medieval in date. **Plateau 1** FN 1.91 Context 983. Phase 16. Not illustrated.
33. Small ring fitting with a 'D'-shaped section fused to a corroded iron attachment loop. Diameter: 20 mm, width: 2 mm, height: 3 mm. **Plateau 5** FN 5.4 Context 5775. Phase 14. Not illustrated.
34. Double loop of fine twisted wire, possibly some kind of fastener. Length: *c.* 80 mm, thickness: 0.5 mm. **Plateau 5** FN 5.35 Context 15231. Phase 16. Not illustrated.
35. Small perforated fragment of sheet, roughly square in shape, possibly a mount or fitting. Length: 8 mm, width: 7 mm, thickness: 0.5 mm, diameter of perforation: 3 mm. **Plateau 7** FN 7.21 Context 7326. Phase 16. Not illustrated.
36. Small perforated circular fitting or washer. Diameter: 10 mm, thickness: 2 mm, diameter of perforation: 3 mm. **Plateau 4** FN 4.47 Context 4567. Phase 16. Not illustrated.

Post-medieval Finds (Cat. No. 37–55, Fig. 248)

37. Large bent pin with a spherical wound wire head, conforming to Margeson's Type 1 pin (Margeson 1993, fig. 5: 31–35, 11–13). Pins of this type date from the medieval period, occurring, for example, in fourteenth-century deposits in London (Pritchard 1991a, fig. 200, 301), and continue into the Post-medieval period. Examples of this form of pin from Norwich generally date to the 16th century (*ibid*, 13). Diameter of head: 3 mm, length: 59 mm. **Plateau 6** FN 6.484 Context 16071. Phase 17. Fig. 248.
38. Cast oval double loop buckle of a type with a wide date range of *c.* 1350–1650 (Whitehead 1996, No. 294, 53). This example may date to the Tudor or Stuart periods when this plain type of buckle was particularly common (*ibid*, 52). Width: 32 mm, height: 23 mm. **Plateau 7** FN 7.39 U/S. Fig. 248.

39. Part of the outer frame of a cast double loop oval buckle with a moulded roundel on the outer loop, of a type which dates to *c.* 1550–1650 (Whitehead 1996, Nos. 376–377, 63). Height: 28 mm, width of frame: 3 mm, 7 mm at roundel. **Plateau 1** FN 1.9 Context 1458. Phase 16. Not illustrated.
40. Lace tag or chape, conforming to Margeson's Type 1 (Margeson 1993: Type 1, fig. 12, 113–116, 22–23), which mainly date to the 15th century, with some of 16th to 17th century date (Oakley 1979, 262–263). Length: 24 mm, width at top: 1.5 mm. **Plateau 6** FN 6.476 Context 16211. Phase 17. Fig. 248.
41. Large lace tag or chape, conforming to Margeson's Type 1 (Margeson 1993: Type 1, fig. 12, 113–116, 22–23), which mainly date to the 15th century, with some of 16th to 17th century date (Oakley 1979, 262–263). Length: 28 mm, width at top: 3 mm. **Plateau 6** FN 6.432 Context 16071. Phase 17. Not illustrated.
42. Large lace tag or chape, conforming to Margeson's Type 2 (Margeson 1993: Type 2, fig. 12, 117–119, 22–23), which mainly date to the 16th and 17th centuries (Oakley 1979, 262–3). Length: 27 mm, width at top: 3 mm. **Plateau 6** FN 6.491 Context 16375. Phase 17. Fig. 248.
43. Pin with a small solid spherical head, similar to a pin from Norwich dated to 1600–1700 (Margeson 1993, fig. 4: 30, 10–11). This type of pin is perhaps an early version of the machine-produced solid headed pin perfected in the 19th century, the largest type of pin identified among the many 'sewing pins' from Winchester (Biddle and Barclay 1990, fig. 154: 1708, 565, 569–570). Diameter of head: 2 mm, length: 35 mm. **Plateau 6** FN 6.475 Context 16211. Phase 17. Fig. 248.
44. Small round-headed pin. Probably Post-medieval in date. Diameter of head: 1.5 mm, length: 26 mm. **Plateau 6** FN 6.405 Context 16086. Phase 17. Fig. 248.
45. Small round-headed pin. Probably Post-medieval in date. Diameter of head: 1.5 mm, length: 26 mm. **Plateau 6** FN 6.399 Context 16084. Phase 17. Not illustrated.
46. Bent pin, with an irregular-shaped, roughly-rounded head, the form of which is uncertain due to damage. Probably Post-medieval in date. Length: 47 mm, diameter of head: 2 mm. **Plateau 1** FN 1.1021 Context 1667. Unphased. Not illustrated.
47. Small round-headed pin, broken into three pieces. The pointed end is missing. Diameter of head: 1.5 mm, total length: 18 mm. **Plateau 8** FN 8.116 Context 12003. Phase 8. Not illustrated.
48. Pin shaft, the head of which is missing. Probably Post-medieval in date. Length: 25 mm. **Plateau 6** FN 6.492 Context 16375. Phase 17. Not illustrated.
49. Large tall thimble with small machine-made indentations and a high domed top, possibly of English manufacture, and therefore dating to *c.* AD 1690–1730 (Holmes 1988, fig. 7a: b, 4). There is some damage to the base on one side. Height: 25 mm, diameter at base: *c.* 16 mm, thickness: 0.5 mm. **Plateau 5** FN 5.64 U/S. Not illustrated.
50. Small strap fitting or book clasp comprising a rectangular-shaped piece of strip with a curved tongue at one end and a single rivet hole at the other, wider end which curves out into a fan-shape. There is considerable surface loss and damage to the piece. Length: 37 mm, width at widest end: 12 mm, average width: 8 mm, thickness:

1 mm. Possibly medieval or Post-medieval in date. **Plateau 5** FN 5.63 U/S. Not illustrated.

51. Rectangular-shaped suspension loop from the top of a bell, the rest of which is missing. The form of the loop is very similar to that of an 18th- century cast pellet bell from Norwich (Margeson 1993, fig.1760, 213–214). This type of bell was widely used for different animals and for horse harness 'from the early Post- medieval period through into the 18th and 19th centuries' (*ibid*, 213). Height: 10 mm, width: 16 mm, thickness: 7 mm. **Plateau 5** FN 5.65 U/S. Not illustrated.
52. Small fragment from a buckle frame with broken decorative projections at each end. Probably Post-medieval in date. Length: 26 mm, width: 9 mm, thickness: 1–2 mm. **Plateau 1** FN 1.38 U/S. Not illustrated.
53. Circular button with a rectangular-sectioned integral shank. Diameter: *c.* 18 mm, length of shank: 4 mm. Post-medieval in date. **Plateau 5** FN 5.68 U/S. Not illustrated.
54. Fragment from a button or other small fitting, originally circular in shape but now very damaged. Original diameter: *c.* 15 mm, thickness: 0.5 mm. **Plateau 5** FN 5.29 Context 15165. Unphased. Not illustrated.
55. Small tubular fitting or ferrule, comprising a length of fused copper alloy tubing with a band around the middle. One end has become slightly crushed. Length: 33 mm, diameter: 6 mm, thickness of plate: 1 mm. **Plateau 5** FN 5.7 Context 5691. Phase 17. Not illustrated.

Unidentified Finds (Cat. Nos. 56–58, not illustrated).

56. Short length of copper alloy with an expanded square-sectioned centre, tapering at each end. Length: 58 mm, width at centre: 4 mm. **Plateau 1** FN 1.54 Context 10074. Phase 2? Not illustrated.
57. Pointed end fragment. Length: 17 mm, diameter: 2 mm. **Plateau 1** FN 1.9032 Context 10113. Phase 2? Not illustrated.
58. Small pin-like object, comprising a small length of copper alloy with a rectangular section at the centre, which tapers to points at both ends. Length: 30 mm, width at centre: 3–4 mm. **Plateau 3** FN 3.38 Context 3265. Phase 2. Not illustrated.

Miscellaneous Sheet/Strip Fragments (Cat. Nos. 59–65, not illustrated).

59. Fragment of strip, roughly-rectangular in shape and broken at one end, with a small perforation in one corner. Length: 21 mm, width: 13 mm, thickness: 0.5 mm, diameter of hole: 1.5 mm. **Plateau 3** FN 3.156 Context 11079. Phase 12. Not illustrated.
60. Two small fragments of sheet, the larger of which is roughly square-shaped. Length (larger fragment): 12 mm, width: 10 mm, thickness: 0.5 mm. **Plateau 3** FN 3.1389 Context 11083. Phase 12. Not illustrated.
61. Small fragment of sheet, roughly-rectangular in shape. Length: 12 mm, width: 7 mm, thickness: 0.5 mm. **Plateau 7** FN 7.25 Context 7327. Phase 16. Not illustrated.

62. Large folded fragment of sheet, roughly-rectangular in shape. Length: 47 mm, width: 38 mm, thickness: 1 mm. **Plateau 7** FN 7.40 U/S. Not illustrated.
63. Roughly-triangular-shaped sheet fragment. Length: 23 mm, width at each end: 5 mm, 15 mm, thickness: 0.5 mm. **Plateau 4** FN 4.20a Context 4369. Phase 16. Not illustrated.
64. Large fragment of leaded copper alloy sheet, roughly-square in shape, broken at one corner. Length: 28 mm, width: 25 mm, thickness: 1 mm. **Plateau 4** FN 4.36 Context 4237. Phase 15. Not illustrated.
65. Long folded triangular shaped fragment of sheet with a small rivet hole at the widest end. Length: *c.* 91 mm, width at widest end: 21 mm, thickness: 0.5 mm. **Plateau 5** FN 5.9013 Context 5595. Phase 15. Not illustrated.

Small sheet and strip fragments (**Plateau 1** FN 1.92 Context 983 x 2, FN 1.101 Context 10156 x 2).

Lumps and fragments (**Plateau 1** FN 1.1 Context 1192 x 2, FN 1.49 Context 350 x 3, FN 1.96 Context 10246 x 2; **Plateau 2** FN 2.9007 Context 9112 x 1; **Plateau 4** FN 4.48 Context 4717 x 1; **Plateau 4** FN 4.20b Context 4369 x 1; **Plateau 5** FN 5.72 U/S x 1; **Plateau 8** FN 8.388 Context 14417 x 1)

Iron Objects (Cat. Nos. 66–95)

Quantification and Introduction

The assemblage of 1129 iron items (Table 8) included many identifiable and chronologically-diagnostic artefacts, as well as a significant proportion of heavily-corroded unidentifiable fragments and lumps. While most of the ferrous artefacts were in a stable condition, most of these objects were corroded, in some cases flaking or cracking. Many items were unidentifiable to period. An assemblage of *c.* 678 iron structural nails and 316 iron hobnails formed part of this assemblage. No further analysis was undertaken of characterless and undiagnostic waste material such as iron sheet, plate, rod, tube etc. or of the majority of the nails, though these are listed below.

In the largest functional category, Craft and Industry (50 items), were represented 14 knives (**Plateau 1** FN 1.10 Context 1465, FN 1.20 Context 7296, FN 1.42 Context 349, FN 1.108 Context 10348, FN 1.105 Context 10509; **Plateau 2** FN 2.149 Context 9082, FN 2.169 Context 9716; **Plateau 3** FN 3.134 Context 11072; **Plateau 4** FN 4.21 Context 4369, FN 4.9000 U/S; **Plateau 5** FN 5.99 Context 15087; **Plateau 6** FN 6.29 Context 6157; P**lateau 7** FN 7.9000 U/S; **Plateau 8** FN 8.448 Context 14650), 19 possible knife or tool blades (**Plateau 1** FN 1.30 Context 7296, FN 1.60 Context 10055, FN 1.106 Context 10231, FN 1.163 Context 13086, FN 1.9029 No Context; **Plateau 3** FN 3.1392 Context 11079; **Plateau 5** FN 5.2 Context 5768, FN 5.24 Context 5834, FN 5.73 U/S, FN 5.9024b Context 5537, FN 5.9018 U/S; **Plateau 6** FN 6.28 Context 6148, FN 6.443 Context 16118, FN 6.500 Context

16335, FN 6.501 Context 6335; **Plateau 8** FN 8.114 Context 8562, FN 8.451 Context 14751, FN 8.455 Context 14797), possibly 14 spiked tools or awls (**Plateau 1** FN 1.72 Context 10109, FN 1.164 Context 10034, FN 1.1019 Context 1443; **Plateau 2** FN 2.161 Context 9349; **Plateau 3** FN 3.49 Context 11071, FN 3.136 Context 11072, FN 3.157 Context 11106, FN 3.238 Context 11072; **Plateau 4** FN 4.28 Context 4746; **Plateau 8** FN 8.142 Context 12264, FN 8.373 Context 12822, FN 8.1 Context 8202), a chisel or punch **(Plateau 1** FN 1.100 Context 10156), two wedges or punches (**Plateau 6** FN 6.470 Context 16211, FN 6.9006 Context 16162), and a small ingot or pig of iron (**Plateau 8** FN 8.462 Context 14306). A quantification by plateau/site of knives and knife or tool blades is presented in Table 9.

In the other significant category, Fixtures and Fittings, were represented a wide variety of finds that included structural ironwork such as cleats and nails, as well as possible door furniture. Under this category were also included many fragments of bar and strip etc. There were 14 miscellaneous fittings (**Plateau 1**, FN 1.108 Context 10318, FN 1.109 Context 10318, FN 1.142 Context 10561; **Plateau 2** FN 2.107 Context 2284, FN 2.109 Context 2290, FN 2.9011 Context 9517; **Plateau 4** FN 4.7 Context 4309, FN 4.14 Context 4374; **Plateau 6** FN 6.393 Context 16071, FN 6.490 Context 16375, FN 6.496 Context 16375; **Plateau 8** FN 8.6 Context 8460), a ring fitting (**Plateau 1** FN 1.90 Context 984), four cleats (**Plateau 1** FN 1.57 Context 10022; **Plateau 5** FN 5.15 Context 5691; **Plateau 8** FN 8.121 Context 3942), and two hooks (**Plateau 5** FN 5.61 Context 6545, FN 5.9024a Context 5537). In addition there were 678 iron nails and fragmentary nails (listed below). Most of these were either Roman types conforming to Manning's Type 1 nail, the commonest form of Roman nail (Manning 1985, 133–135, fig. 32), or were medieval and later equivalent utilitarian types. A number of particularly large and unusual nails were also noted (**Plateau 2** FN 2.116 Context 2321; **Plateau 5** FN 5.31 Context 6522, FN 5.9016 Context 5191, No FN U/S; **Plateau 6** FN 6.396 Context 16084). In addition, there were two keys or possible keys (**Plateau 1** FN 1.115 Context 10227; **Plateau 6** FN 6.464 Context 16222) and two latch lifters/latch fittings (**Plateau 6** FN 6.499 Context 16328).

Other significant items included two brooches (**Plateau 8** FN 8.249 Context 12971, FN 8.9022 Context 12369), a ring-headed pin (**Plateau 8** FN 8.106 Context 3853), a buckle (**Plateau 1** FN 1.1112 Context 1111), an arrowhead (**Plateau 5** FN 5.75 U/S), a bunched chain (**Plateau 3** FN 3.9003 Context 11083), and 203 hobnails (**Plateau 1** FN 1.110 Context 10535; **Plateau 2** FN 2.101 Context 2199 (x70), FN 2.99058 Context 2199 (x 113); **Plateau 3** FN 3.247 Context 3147/3153 (x2); **Plateau 4** FN 4.17 Context 4565; **Plateau 5** FN 5.21 Context 5822 (x12), FN 5.22 Context 5822 (x14); **Plateau 8** FN 8.266–8.315 Context 12833, FN 8.316 Context 12833, FN 8.336–8.370 Context 12833, a total of x103). Most of the hobnails came from two shoes or boots in **Plateau 8** Context 12833. Another personal item was a possible stylus eraser end **(Plateau 1** FN 1.98 Context 10227).

There were also six horseshoes and/or ox shoes (**Plateau 1** FN 1.108 Context 10348; **Plateau 2** FN 2.9010 Context 9717; **Plateau 5** FN 5.56 U/S, FN 9014 Context 5594; **Plateau 6** FN 6.37 Context 6171, FN 57 U/S).

Discussion

The iron small finds assemblage of 1129 objects represents an exceptional and highly-important group of regional and national significance. The earliest items in the assemblage are Late Iron Age to early Roman in date, although the exact number of items of these dates could not fully be calculated, due to the undiagnostic nature of some types of iron items with a relatively simple design and attested chronological longevity. The potentially earliest of the identifiable finds was a ring-headed pin from **Plateau 8** (FN 8.106 Context 3853; Cat. No. 66, not illustrated), now bent and broken into three pieces. This type of pin, with its distinctive curved neck, was 'in fashion during earlier Iron Age' (Megaw and Simpson 1979, fig. 7.23: 2, 389). Also of Iron Age date was a small rectangular ingot or pig of iron (**Plateau 8** FN 8.462 Context 14306; Cat. No. 67, Fig. 249). Several possible fragments from knives and tools came from Iron Age contexts but none of them was sufficiently complete for further study or cataloguing here.

Fragments from two broken bow brooches from **Plateau 8** (FN 8.9022 Context 12369; Cat. No. 68, not illustrated) dated to the late Iron Age-Roman period. The fragments, which comprised parts from two bows and parts of a broken pin and a catchplate, were all very corroded. However, the form of the bows appears to be simple, the closest parallels appearing to be among late La Tène *Drahtfibel* brooches discussed by Mackreth (2011, plate 11, 22–23), although the extent of damage and corrosion render closer identification impossible.

The eraser end of a Roman stylus was recovered from a medieval context on **Plateau 1** (FN 1.98 Context 10227; Cat. No. 69, Fig. 250), and may have belonged to a Type 1a stylus in Manning's typology (Manning 1985, fig. 24:1a, 85, plate 36). Other Roman finds included various quantities of hobnails from Roman footwear (over 200 in total) from five of the plateaux, most notably **Plateau 2**, from which 183 hobnails were recovered from one context (Phase 11, FN 2.101 and FN 2.99058 Context 2199). The majority of these came from cremations of early Roman and later Roman date. Again, several possible fragments from knives and tools came from Roman contexts but none of them was sufficiently complete for further study or cataloguing here.

Identifiably Anglo-Saxon finds included several interlinked circular iron chain links from **Plateau 3** (FN 3.9003 Context 11083; Cat. No. 70, Fig. 251). Several other iron finds were also of Anglo-Saxon date, including knife and tool fragments, as well as various fragmentary fittings.

Identifiably medieval items included a small D-shaped buckle from **Plateau 1** (FN 1.1112 Context 1111; Cat. No. 71, Fig. 252). Also of medieval date was a socketed arrowhead with a lozenge shaped blade from **Plateau 5** (FN 5.75 U/S; Cat. No. 72, Fig. 252). The arrowhead was broadly similar in size to a common form of arrowhead which was found in quantity at Ludgershall Castle, Wiltshire (Goodall 2000, fig. 6.34: 249, 253, 256, 260, 155–156). It could have been used for hunting or warfare. A complete key with a large looped handle and a simple bit from **Plateau 1** (FN 1.115 Context 10227; Cat. No. 73, Fig. 252) was of similar design to keys dated to the 11th or 12th century (Monk 1999, 10).

Several of the more complete knives were of medieval date, though in most cases this was a very broad dating. These have all been catalogued below and include several examples of whittle tang knives (Cat. Nos. 74–76, Fig. 252, and Cat. Nos. 78–79, not illustrated) of various types that were common throughout the medieval period (Margeson 1993, 124, fig. 93, 126). These included two small whittle tang knives with back and cutting edge both tapering to the tip (Margeson 1993, 124, fig. 93: 804, 805, 813, 127) from **Plateau 1** (FN 1.10 Context 1465; Cat. No. 74, Fig. 252) and **Plateau 5** (FN 5.99 Context 15087; Cat. No. 75, Fig. 252). A slightly different whittle tang knife with horizontal back angling down to the tip (Margeson 1993, 124, fig. 93: 788, 126) came from **Plateau 4** (FN 4.21 Context 4369, Cat. No. 76, Fig. 252). Though very corroded and fragmentary, the other two catalogued whittle tang knives **Plateau 1** FN 1.104a Context 10348; Cat. No. 78, not illustrated; **Plateau 7** FN 7.9000 U/S; Cat. No. 79, not illustrated) were believed to be of similar style and date to the illustrated examples.

The other knife form represented was a broken and corroded scale tang knife with a plain bolster from **Plateau 2** (FN 2.169 Context 9716; Cat. No. 75, Fig. 252). This knife probably dates to the 17th century (Margeson 1993, 130, fig. 96, 131).

Only two of the ten corroded and mainly fragmentary horseshoes from the Thanet sites have been catalogued – a complete horseshoe and a horseshoe arm fragment from **Plateau 5** (FN 5.56 U/S; Cat. No. 80, not illustrated). Both had nails *in situ* and probably conformed to Clark's Type 4 'late medieval' horseshoe (Clark, J 1995, 88–91, 96–97, figs. 86–89, 119–123). Type 4 horseshoes are 'frequently reported from 14th and 15th century contexts' (*ibid*, 96). Several of the other horseshoes and horseshoe fragments came from medieval contexts but these were not identifiable to type.

A number of tools and fittings also came from medieval contexts though these were all very corroded and, in some cases, fragmentary. These included a chisel or punch from **Plateau 1** (FN 1.100 Context 10156; Cat. No. 81, not illustrated), a clench bolt from **Plateau 4** (FN 4.14 Context 4374; Cat. No. 82, not illustrated), a hooked fitting, possibly part of a latch lifter from **Plateau 4** (FN 4.7 Context 4309; Cat. No. 83, not illustrated), and a hinge from a door or chest from **Plateau 2** (FN 2.9011 Context 9517; Cat. No. 84, not illustrated). Other potentially medieval finds included a small hook attached to a

ring fitting from **Plateau 5** (FN 5.9024a Context 5537, Cat. No. 85, not illustrated), a large U-shaped hook, possibly the end of a wall hook from **Plateau 5** (FN 5.61 Context 6545; Cat. No. 86, not illustrated) and a collar fitting from **Plateau 1** (FN 1.90 Context 984; Cat. No. 87, not illustrated).

Of most interest among the Post-medieval finds, which tended to be more utilitarian in nature, was a hooked clasp, probably a clothes fastener, from **Plateau 6** (FN 6.472 Context 16211; Cat. No. 88, Fig. 253) which may have been used to attach the clasp to a cloak or other garment. A small fragment from a broken and corroded key bit from **Plateau 6** (FN 6.464 Context 16222; Cat. No. 89, not illustrated) was probably Post-medieval in date, although it may have been earlier. In common with the medieval finds listed above, several tools and fittings were attributed to the Post-medieval period. These included the broken ends of two tools, which may have been short chisels, punches, or wedges, from **Plateau 6** (FN 6.470 Context 16211; Cat. No. 90, not illustrated and FN 6.9006 Context 16162; Cat. No. 91, not illustrated). Other finds from Post-medieval contexts in **Plateau 6** included a possible latch lifter or latch fitting (FN 6.499 Context 16328; Cat. No. 92, not illustrated), a hinge from a door or chest (FN 6.496 Context 16375; Cat. No. 93, not illustrated), a small rectangular-shaped piece of plate with a rivet hole at one end, possibly door furniture or from a casket or chest (FN 6.393 Context 16071; Cat. No. 94, not illustrated), and an oval ring fitting with a reinforced cuff around the shaft (FN 6.511 Context 16373; Cat. No. 95, not illustrated).

Catalogue (Cat. Nos. 66–95)

Iron Age Finds (Cat. Nos. 66–67, Fig. 249)

66. A ring-headed pin, bent and now broken into three pieces. This type of pin, with its distinctive curved neck, was 'in fashion during earlier Iron Age' (Megaw and Simpson 1979, fig. 7.23: 2, 389). Though derived from the earlier swan's neck pin the ring-headed pin was a 'purely insular' form (*ibid*, fig. 7.23: 2, 389). Early Iron Age in date. Length: 66 mm, diameter of head: 12 mm, thickness of head: 3 mm. **Plateau 8** FN 8.106 Context 3853. Phase 8. Not illustrated.
67. Small ingot or pig of iron, rectangular-shaped and tapering to a point at one end, very corroded with some loss of surface. Length: 33 mm, width: 17 mm, maximum thickness: 8 mm. **Plateau 8** FN 8.462 Context 14306. Phase 8. Fig. 249.

Late Iron Age-Roman Finds (Cat. No. 68, not illustrated).

68. Fragments from two broken bow brooches, comprising parts from two bows and fragments of a broken pin and a plain catchplate, all now very corroded. The form of the bows, based on the larger of the two bow fragments, appears to be simple, with a narrow bow, comprising a thick, circular-sectioned wire, and broken spring which may originally have had four coils. The closest parallels appear to be among late La

Tène *Drahtfibel* brooches discussed by Mackreth (2011, plate 11, 22–23), although the extent of damage and corrosion render closer identification impossible. Length: 46 mm, width at spring: 11 mm, diameter of bow: *c.* 5 mm. Length of shorter bow: 35 mm. **Plateau 8** FN 8.9022 Context 12369. Phase 10. Not illustrated.

Roman Finds (Cat. No. 69, Fig. 250).

69. Roman stylus, comprising the eraser end only, broken across the shaft and very corroded. The eraser is clearly defined, and may have belonged to a Type 1a stylus in Manning's typology (Manning 1985, fig. 24:1a, 85, plate 36), though this identification remains tentative in view the extent of damage and corrosion. Length: 37 mm, width of eraser end: 8 mm, diameter of shaft: 3 mm. Roman. **Plateau 1** FN 1.98 Context 10227. Phase 16. Fig. 250.

Anglo-Saxon Finds (Cat. No. 70, Fig. 251)

70. Several interlinked circular iron chain links, now very corroded. Size: 30 mm x 27 mm, diameter of links: 12 mm, thickness of links: 2 mm. Anglo-Saxon in date. **Plateau 3** FN 3.9003 Context 11083. Phase 12. Fig. 251.

Medieval Finds (Cat. Nos. 71–87, Fig. 252)

71. Small corroded D-shaped buckle of probable medieval date. The earliest medieval buckles are D-shaped (Margeson 1993, 24) and there are many published parallels for this common type of buckle which occurs in medieval contexts nationally (Goodall 1980, 171, fig. 21; Margeson 1993, 32, fig. 18:182–192, 33). **Plateau 1** FN 1.1112 Context 1111. Unphased. Fig. 252.
72. Socketed arrowhead of medieval date, with a lozenge-shaped blade. The tip is broken and the arrowhead is now very corroded. This type of arrowhead, which could have been used for hunting or warfare, is broadly similar in size to a common form of arrowhead which was found in quantity at Ludgershall Castle, Wiltshire (Goodall 2000, fig. 6.34: 249, 253, 256, 260, 155–156). Length: 54 mm, diameter at base: 10 mm. **Plateau 5** FN 5.75 U/S. Fig. 252.
73. Complete key with a large looped handle and a simple bit, the surface of which is very corroded. Keys of similar design have been dated to the 11th or 12th century (Monk 1999, 10). Length: 112 mm, width of handle: 34 mm, thickness: 4–6 mm. **Plateau 1** FN 115 Context 1.10227. Phase 16. Fig. 252.
74. Small whittle tang knife with back and cutting edge both tapering to the tip, of a type which was common throughout the medieval period (Margeson 1993, 124, fig. 93: 804, 805, 813, 127). Length: 97 mm, width of blade: 10 mm, thickness: 4 mm. **Plateau 1** FN 1.10 Context 1465. Phase 16. Fig. 252.
75. Whittle tang knife with back and cutting edge both tapering to the tip, of a type which was common throughout the medieval period (Margeson 1993, 124, fig. 93:

804, 805, 127). Length: 150 mm, width of blade: 22 mm, thickness: 2–7 mm. **Plateau 5** FN 5.99 Context 15087. Phase 15. Fig. 252.

76. Whittle tang knife with horizontal back angling down to the tip, of a type which was common throughout the medieval period (Margeson 1993, 124, fig. 93: 788, 126). Length: 88 mm, width of blade: 13 mm, thickness: 2–4 mm. **Plateau 4** FN 4.21 Context 4369. Phase 16. Fig. 252.
77. Scale tang knife with a plain bolster, broken across the blade, the end of which is now missing, very corroded. This knife probably dates to the 17th century when knives with bolsters (an integral thickening of the iron between the blade and the tang), a feature introduced around the middle of the 16th century (Hayward 1957, 4), were in widespread use (Margeson 1993, 130, fig. 96, 131). Total length: 189 mm, width of blade: 27 mm, thickness of blade: 3–4 mm. **Plateau 2** FN 2.169 Context 9716. Phase 16. Fig. 252.
78. Whittle tang knife with back and cutting edge both tapering to the tip, very corroded. Despite the loss of part of the tang and extensive surface corrosion, this knife is similar in style to the other knives catalogued above (Cat. Nos. 74–77), being of a type which was common throughout the medieval period (Margeson 1993, 124, fig. 93: 804, 805, 127). Length: 104 mm, width of blade: 15 mm, thickness: 2–7 mm. **Plateau 1** FN 1.104a Context 10348. Phase 16. Not illustrated.
79. Whittle tang knife fragment comprising the tang and part of the blade only, very corroded. Probably medieval in date but the fragment is too small for closer identification. Length of tang: 26 mm, length of blade: 64 mm, width of blade: 13 mm, thickness of blade: 3–4 mm. **Plateau 7** FN 7.9000 U/S. Not illustrated.
80. Complete horseshoe and a horseshoe arm fragment, both with nails *in situ* and both very corroded. These probably conform to Clark's Type 4 'late medieval' horseshoe based on examples from the Museum of London collections (Clark, J 1995, 88–91, 96–97, figs. 86–89, 119–123). Type 4 horseshoes are 'frequently reported from 14th and 15th century contexts' (*ibid*, 96). Length: 130 mm, width: 110 mm, thickness: 10 mm (complete horseshoe), Length: 105 mm, width of arm: 30 mm, thickness: 5 mm. **Plateau 5** FN 5.56 U/S. Not illustrated.
81. Chisel or punch, small and rectangular in shape, very corroded. Length: 60 mm, width at top: 13 mm, thickness: 8 mm. **Plateau 1** FN 1.100 Context 10156. Phase 16. Not illustrated.
82. Clench bolt with a diamond-shaped head, very corroded. Length: 35 mm, dimensions of head: 32 mm x 22 mm. **Plateau 4** FN 4.14 Context 4374. Phase 16. Not illustrated.
83. Hooked fitting, possibly part of a latch lifter, with a square-shaped section, broken at the end and very corroded. Length: 65 mm, diameter of shaft: 6 mm, width at head: 10 mm. **Plateau 4** FN 4.7 Context 4309. Phase 16. Not illustrated.
84. Hinge from a door or chest, bent at one end with two *in situ* nails, corroded. Length: 127 mm, width: 25 mm, thickness: 2 mm. **Plateau 2** FN 2.9011 Context 9517. Phase 16. Not illustrated.

85. Small hook attached to a ring fitting, very corroded. Length: 44 mm, width at hooked end: 16 mm, thickness: 6 mm. **Plateau 5** FN 5.9024a Context 5537. Phase 15. Not illustrated.
86. Large U-shaped hook, possibly the end of a wall hook, very corroded. Length: 65 mm, width: 45 mm, diameter: 8 mm. **Plateau 5** FN 5.61 Context 6545. Phase 15. Not illustrated.
87. Collar fitting, consisting of a strip of iron plate welded into a circle which is now distorted, corroded and partially covered in a white substance, possibly mortar. Original diameter: *c.* 50 mm, height: 15 mm, thickness: 5 mm. **Plateau 1** FN 1.90 Context 984. Phase 16. Not illustrated.

Post-medieval Finds (Cat. Nos. 88–95, Fig. 253)

88. Hooked clasp, probably a clothes fastener, comprising a piece of double iron wire with two looped terminals which may have been used to attach the clasp to a cloak or other garment. Post-medieval in date. Length: 43 mm, width at looped head: 22 mm, thickness of wire: 2 mm. **Plateau 6** FN 6.472 Context 16211. Phase 17. Fig. 253.
89. Small fragment from a broken key bit, now very corroded. Although the fragment is too small for close identification or dating, the simple form of the bit is suggestive of a medieval or Post-medieval date. Size: 29 mm x 14 mm x 5 mm. **Plateau 6** FN 6.464 Context 16222. Phase 17. Not illustrated.
90. Broken end of a short chisel, punch or wedge, with a short tapering shank and a rectangular shaped head with traces of hammering. Length: 50 mm, dimensions of head 17 mm x 14 mm, thickness of head: 12 mm, thickness of tapering shank: 4 mm. **Plateau 6** FN 6.470 Context 16211. Phase 17. Not illustrated.
91. Broken end of a short chisel, punch or wedge, with a rectangular shaped head, very corroded. Length: 30 mm, dimensions of head 12 mm x 7 mm, thickness of head: 6 mm, thickness of tapering shank: 2–4 mm. **Plateau 6** FN 6.9006 Context 16162. Phase 20. Not illustrated.
92. Curved object, with a small hook at one end and a circular fitting at the other, possibly a latch lifter or latch fitting. Length: 95 mm, thickness at centre: 12 mm. **Plateau 6** FN 6.499 Context 16328. Phase 17. Not illustrated.
93. Hinge from a door or chest, bent at one end, very corroded. Length: 190 mm, width: 25 mm, thickness: 7 mm. **Plateau 6** FN 6.496 Context 16375. Phase 17. Not illustrated.
94. Small rectangular-shaped piece of plate with a rivet hole at one end, deliberately bent at one end, possibly door furniture or from a casket or chest. Length: 55 mm, width: 30 mm, thickness: 2 mm. **Plateau 6** FN 6.393 Context 16071. Phase 17. Not illustrated.
95. Oval ring fitting, broken at one side, with a reinforced cuff around the shaft. Width: 40 mm, depth: 27 mm, thickness: 7 mm. Post-medieval to modern in date. **Plateau 6** FN 6.511 Context 16373. Phase 17. Not illustrated.

Knife blades (fragmentary, corroded): Plateau 1 FN 1.20 Context 7296, FN 1.30; Context 7296; FN 1.42 Context 349; FN 1.60 Context 10055; FN 1.105 Context 10509; FN 1.106 Context 10231; FN 1.163 Context 13086; FN 1.9029 No Context **Plateau 2** FN 2.149 Context 9082, **Plateau 3** FN 3.134 Context 11072; FN 3.1392 Context 11079; **Plateau 4** FN 4.9000 U/S **Plateau 5** FN 5.24 Context 5834; FN 5.2 Context 5768; FN 5.73 U/S; FN 5.9024b Context 5537; **Plateau 6** FN 6.28 Context 6148; FN 6.29 Context 6157; **Plateau 6** FN 6.59 Context 6188; FN 6.443 Context 16118; FN 6.500 Context 16335; FN 6.501 Context 6335; **Plateau 8** FN 8.114 Context 8562, FN 8.448 Context 14650, FN 8.455 Context 14797, FN 8.451 Context 14751.

Unidentified tools/tool fragments: Plateau 4 FN 4.28 Context 4746; **Plateau 5** FN **5.**9018 U/S; **Plateau 8** FN 8.260 Context 12833.

Awls/punches/spiked tools: Plateau 1 FN 1.72 Context 10109, FN 164 Context 10034, FN 1.1019 Context 1443; **Plateau 2** FN 2.161 Context 9349; **Plateau 3** FN 3.136 Context 11072, FN 3.149 Context 11071, FN 3.157 Context 11106, FN 3.238 Context 11072; **Plateau 8** FN 8.142 Context 12264, FN 8.373 Context 12822, FN 8.1 Context 8202.

Horseshoe/oxshoe fragments: Plateau 1 FN 1.104b Context 10348; **Plateau 2** FN 2.9010 Context 9517 (very large horseshoe, modern); **Plateau 5** FN 5.9014 Context 5594 x 1; **Plateau 6** FN 6.37 Context 6171, FN 6.57 U/S); **Plateau 6** FN 6.471 Context 16211; FN 6.480a Context 16191.

Cleats: (**Plateau 1** FN 1.57 Context 10022; **Plateau 5** FN 5.15 Context 5691 (broken); **Plateau 8** FN 8.121 Context 3942).

Hobnails: Plateau 1 FN 1.110 Context 10535; **Plateau 2** FN 2.101 Context 2199 (x70), FN 2.99058 Context 2199 (x 113); **Plateau 3** FN 3.247 Context 3147/3153 (x2); **Plateau 4** FN 4.17 Context 4565; **Plateau 5** FN 5.21 Context 5822 (x12), FN 5.22 Context 5822 (x14); **Plateau 8** FN 8.266–8.315 Context 12833, FN 8.316 Context 12833, FN 8.336–8.370 Context 12833.

Fittings: Plateau 1 FN 1.29 Context 7296, FN 1.108 Context 10318, FN 1.109 Context 10318, FN 1.142 Context 10561; **Plateau 2** FN 2.107 Context 2284, FN 2.109 Context 2290, FN 2.165 Context 9537; **Plateau 6** FN 6.483 Context 16071, FN 6.490 Context 16375, **Plateau 8** FN 8.6 Context 8460, FN 8.374 Context 14212.

Rod or shaft: Plateau 1 FN 1.46 Context 357, FN 1.107 Context 10318, FN 1.116 Context 10635; **Plateau 3** FN 3.140 Context 11072, FN 3.152 Context 11072.

Plate/sheet/strip fragments: Plateau 1 FN 1.29 Context 7296, FN 1.52 U/S, FN 1.94 Context 10310, FN 1.141 Context 10561, FN 1.162 Context 10357; **Plateau 3** FN 3.153 Context 11072, FN 3.154 Context 11072; **Plateau 4** FN 4.15 Context 4370, FN 4.25 Context

4782, FN 4.50 Context 4246; **Plateau 5** FN 5.62 Context 6545, FN 5.103 Context 15117, FN 5.9020 Context 6553; **Plateau 6** FN 6.397 Context 16084 x 7, FN 6.464 Context 16222 x 3, **Plateau 6** FN 6.511 Context 16373 x 4; **Plateau 7** FN 7.23 Context 7326, FN 7.26 Context 7327, FN 7.50 Context 7649; **Plateau 8** FN 8.226 Context 12748, FN 8.449 Context 14650, FN 8.450 Context 14650.

Amorphous lumps/frags: Plateau 1 FN 1.138 Context 10561; **Plateau 2** FN 2.9004 Context 2261; **Plateau 3** FN 3.9007 Context 11079; **Plateau 4** FN 4.6 Context 4298, FN 4.24 Context 4782; **Plateau 5** FN 5.9026 U/S; **Plateau 8** FN 8.2 Context 8196, Context 3592, FN 8.8890 Context 8893; **Plateau 8** FN 8.225 Context 12748.

Iron nails: Plateau 1 FN 1.5 Context 1373, FN 1.8 Context 1458 (x2), FN 1.28 Context 1764, FN 1.29 Context 1764, FN 1.30 Context 1764, FN 1.36 Context 1704, FN 1.43 Context 349, FN 1.47 Context 351, FN 1.51 Context 362, FN 1.58 Context 10036, FN 1.71 Context 10104, FN 1.73 Context 513, FN 1.84 Context 487, FN 1.97 Context 10227, FN 1.111 Context 10195, FN 1.137 Context 10595, FN 1.139 Context 10561, FN 1.140 Context 10561, FN 1.165 Context 981, FN 1.177 Context 13259, FN 1.9026 Context 1062; **Plateau 2** FN 2.1 Context 2024, FN 2.8 Context 2123, FN 2.9 Context 2123, FN 2.10 Context 2123, FN 2.11 Context 2123, FN 2.12 Context 2148, FN 2.100 Context 2197 (x4), FN 2.102 Context 2171, FN 2.105 Context 2228, FN 2.108 Context 2292, FN 2.110 Context 2366, FN 2.114 Context 2405, FN 2.116 Context 2321, FN 2.119 Context 2567, FN 2.121 Context 2582, FN 2.122 Context 2606, FN 2.124 Context 2625, FN 2.128 Context 2739, FN 2.130 Context 2812, FN 2.134 Context 2813, FN 2.135 Context 2864, FN 2.138 Context 2999, FN 2.139 Context 2999, FN 2.140 Context 2999, FN 2.141 Context 9002, FN 2.147 Context 9039, FN 2.148 Context 9039, FN 2.152 Context 9238, FN 2.153 Context 9239, FN 2.154 Context 9246, FN 2.156 Context 9254, FN 2.157 Context 9252, FN 2.158 Context 9274, FN 2.160 Context 9246, FN 2.162 Context 9447, FN 2.164 Context 9443 (x6), FN 2.166 Context 9424 (x6), FN 2.167 Context 9555, FN 2.9003 Context 2108, FN 2.9005 Context 9439, FN 2.9096 Context 2542; **Plateau 3** FN 3.11 Context 3097, FN 3.12 Context 3097, FN 3.13 Context 3097, FN 3.14 Context 3097, FN 3.15 Context 3097, FN 3.151 Context 11072, FN 3.245 Context 11030, FN 3.244 Context 3088, FN 3.246 Context 11026, FN 3.1390 Context 11079 (x2), FN 3.9004 Context 11083; **Plateau 4** FN 4.5 Context 4301, FN 4.13 Context 4304, FN 4.23 Context 4776, FN 4.38 Context 4814, FN 4.39 Context 4814, FN 4.40 Context 4814 (x2), FN4. 41 Context 4814, FN 4.42 Context 4821, FN 4.43 Context 4814, FN 4.44 Context 4813, FN 4.45 Context 4516; **Plateau 5** FN 5.1 Context 5761, FN 5.3 Context 5772, FN 5.8 Context 5691, FN 5.9 Context 5691, FN 5.10 Context 5691, FN 5.13 Context 5691, FN 5.14 Context 5691, FN 5.17 Context 5691, FN 5.18 Context 5691, FN 5.19 Context 5691, FN 5.23 Context 5833, FN 5.31 Context 6522, FN 5.32 Context 6522, FN 5.33 Context 6525, FN 5.34 Context 6525, FN 5.39 Context 6525, FN 5.52 Context 6533, FN 5.53 Context 6533, FN 5.54 Context 6533, FN 5.55 Context 6533, FN 5.66 U/S, FN 5.70 U/S, FN 5.71 U/S, FN 5.76 U/S, FN 5.78 Context 15002, FN 5.83 Context 15087, FN 5.84 Context 15082, FN 5.85 Context 15082, FN 5.86 Context 15082, FN 5.87 Context 15082, FN 5.88 Context 5084, FN 5.95 Context 15087, FN 5.96 Context 15087, FN 5.97 Context

15087, FN 5.98 Context 15087, FN 5.100 Context 15100, FN 5.101 Context 15087, FN 5.104 Context 15117, FN 5.105 Context 15161, FN 5.107 Context 15190 (x7), FN 5.109 Context 15200 (x6), FN 5.111 Context 15187, FN 5.113 Context 15210, FN 5.115 Context 15246, FN 5.116 Context 15199, FN 5.117 Context 15272, FN 5.118 Context 15272, FN 5.119 Context 15273, FN 5.120 Context 15274, FN 5.122 Context 15280, FN 5.123 Context 15280, FN 5.124 Context 15264, FN 5.125 Context 15294, FN 5.127 Context 15533, FN 5.9006 Context 5468, FN 5.9007 Context 5697, FN 5.9009 Context 5804, FN 5.9012 Context 5577, FN 5.9015 Context 5575, FN 5.9016 Context 5191, FN 5.9017 Context 5191, FN 5.9019 Context 5575, FN 5.9021 Context 5821 (x5), FN 5.9022 Context 5550, FN 5.9023 Context 5157 (x2), FN 5.9025 Context 5550 (x2), FN 5.9027 U/S, FN 5.9029 Context 5465, No FN U/S; **Plateau 6** FN 6.25 Context 6064, FN 6.30 Context 5967, FN 6.35 Context 6167, FN 6.36 Context 6167, FN 6.77 Context 6216, FN 6.391 Context 6312, FN 6.392 Context 16071 (x105), FN 6.394 Context 16093 (x6), FN 6.396 Context 16084 (x64), FN 6.403 Context 16086 (x14), FN 6.407 Context 16127 (x15), FN 6.437 Context 16135 (x10), FN 6.441 Context 16142 (x3), FN 6.442 Context 16118 (x10), FN 6.444 Context 16171 (x2), FN 6.445 Context 16122 (x4), FN 6.463 Context 16191 (x14), FN 6.480b 16191 (x1), FN 6.465 Context 16222 (x10), FN 6.467 Context 16223, FN 6.469 Context 16209, FN 6.470 Context 16211 (x30), FN 6.478 Context 16231, FN 6.489 Context 16158, FN 6.490 Context 16375 (x25), FN 6.498 Context 16327 (x9), FN 6.502 Context 16343 (x4), FN 6.505 Context 16333, FN 6.512 Context 16373 (x27), FN 6.513 Context 16411, FN 6.514 Context 16399, FN 6.515 Context 16435, FN 6.517 Context 16303 (x3), FN 6.519 Context 16304 (x3), FN 6.521 Context 16314 (x3), FN 6.524 Context 16489, FN 6.525 Context 16483, FN 6.526 Context 16486 (x2), FN 6.9005 Context 16224; **Plateau 7** FN 7.1Context 7144, FN 7.2 Context 7152, FN 7.3 Context 7152, FN 7.4 Context 7158, FN 7.5 Context 7158, FN 7.6 Context 7158, FN 7.9 Context 7183, FN 7.12 Context 7296, FN 7.13 Context 7296, FN 7.14 Context 7926, FN 7.15 Context 7296, FN 7.16 Context 7296, FN 7.17 Context 7296, FN 7.18 Context 7296, FN 7.19 Context 7296, FN 7.23 Context 7326 (x31), FN 7.26 Context 7327 (x51), FN 7.28 Context 7296 (x13), FN 7.50 Context 7649 (x2), No FN Context 7328; **Plateau 8** FN 8.55 Context 8835, FN 8.97 Context 3741 (x2), FN 8.197 Context 123487, FN 8.203 Context 12520, FN 8.221 Context 12748, FN 8.222 Context 12748, FN 8.223 Context 12748, FN 8.224 Context 12748, FN 8.228 Context 12748, FN 8.229 Context 12748, FN 8.230 Context 12748, FN 8.231 Context 12748 (x2), FN 8.232 Context 12748, FN 8.233 Context 12748, FN 8.234 Context 12748, FN 8.235 Context 12748, FN 8.236 Context 12748 [— all associated with cremation vessel 12792], FN 8.244 Context 13069 (x2), FN 8.246 Context 12826 (x2), FN 8.251 Context 14017 (x2), FN 8.375 Context 12872, FN 8.425 Context 14556 (x2), FN 8.9058b Context 12792 (x2).

Lead Objects (Cat. Nos. 96–97)

Quantification and Introduction

The assemblage of four lead items from the Thanet Earth sites, all of which were in a stable condition, represents a group of local significance only. Only two of the items

were identifiable to any extent. These were a circular perforated object, possibly a weight (**Plateau 1** FN 1.158 Context 10687; Cat. No. 96, Fig. 254) , from an early Roman cremation which also contained three copper alloy brooches (see above) and a possible tool with one fluted end, the shape of which was reminiscent of the eraser end of a stylus (**Plateau 3** FN 3.135 Context 11072; Cat. No. 97, Fig. 254). Two pieces of lead waste were also recovered.

Catalogue (Cat. Nos. 96–97, Fig. 254)

96. Possible weight, roughly circular in shape with a central perforation. Diameter: 34–35 mm, thickness: 11–15 mm. Weight: 90 grams. **Plateau 1** FN 1.158 Context 10687. Phase 10. Fig. 254.
97. Lead object with one fluted end reminiscent of the eraser end of a stylus. The centre of the object is round-sectioned and the other end is roughly rectangular at the point of breakage. Length: 66 mm, width at fluted end: 6 mm, width at narrow end: 3 mm. **Plateau 3** FN 3.135 Context 11072. Phase 12. Fig. 254.

Lead waste: Plateau 5 FN 5.16 Context 5691 x 1 (15g); Plateau 8 FN 201 Context 12604 x 1 (115g).

Ceramic/Fired Clay Objects (Cat. Nos. 98–110)

Quantification and Introduction

The assemblage of 83 ceramic/fired clay registered items included a large number of identifiable and chronologically-diagnostic artefacts. Many though were broken and represented by fragments only.

The vast majority of the finds were of Iron Age date and related to weaving. These comprised five ceramic spindle whorls (**Plateau 6** FN 6.9002 Context 6343; **Plateau 8** FN 8.7 Context 8287, FN 8.26 Context 8640, FN 8.37 Context 8708, FN 8.47 Context 8800) and 32 triangular ceramic loomweights, several of which were complete or near-complete. The remainder were represented by fragments, many retaining characteristic loomweight features (**Plateau 8** FN 8.25 Context 8637, FN 8.28 Context 8659, FN 8.27 Context 8628, FN 8.40 Context 8683, FN 8.42 Context 8759, FN 8.50 Context 8795, FN 8.61 Context 8620, FN 8.79 Context 3535, FN 8.80 Context 3643/3644, FN/.99 Context 3691, FN 8.115 Context 3887, FN 8.120 Context 8561, FN 8.122 Context 8637, FN 8.130 Context 12108, FN 8.184 Context 12365, FN 8.185 Context 12365, FN 8.187 Context 12365, FN 8.189 Context 12365, FN 8.382 Context 3721, FN 8.459 Context 14693, FN 8.460 Context 14693, FN 8.9027 Context 8293/8292, FN 8.9030 Context 14483, FN 8.9032 Context 8688, FN 8.9035 Context 8275, FN 8.9037 Context 8618, FN 8.9038 Context 8299, FN 8.9041 Context 8899, FN 8.9046 Context 12100, FN 8.9047 Context 8620, FN 8.9048 Context 8621), with Context 12365 producing the most loomweight fragments with

features. In addition there were 30 bags of featureless fragments from loomweights from 29 different contexts (listed below).

The only diagnostically-later items among the fired clay were two small fragments from bun-shaped loomweights (**Plateau 3** FN 3.9042 and 3.9043 Context 11083) of mid- to late Anglo-Saxon date (for discussion see Walton Rogers 1997, 1753, fig. 813, 1752). These came from a context containing other Anglo-Saxon material with which they appear to be contemporary. A fragment from another possible loomweight of similar form and date came from **Plateau 5** (FN 5.9042 15147) but this was too small for close identification.

In addition, 90 pieces of clay pipe were recovered from 19 contexts on Plateau 6 (listed below). No further analysis was undertaken of this artefact class.

Discussion

The ceramic/baked clay small finds assemblage of 83 registered objects represents a group of both regional and national significance. Five ceramic spindle-whorls were recovered, one of which came from **Plateau 6** (FN 6.9002 Context 6343; Cat. No. 101, Fig. 255). The other four came from **Plateau 8** (FN 8.7 Context 8287, FN 8.26 Context 8640, FN 8.37 Context 8708, FN 8.47 Context 8800; Cat. Nos. 98–100, 102, Fig. 255) where some, if not all of them, were related to textile-related activities contemporary with the Iron Age loomweights.

One of the potentially earliest of the spindle whorls came from a Phase 6 context on **Plateau 8** (FN 8.7 Context 8287, Cat. No. 98, Fig. 255). A featureless loomweight fragment (FN 8.8) was recovered from the same context. A complete biconical spindle whorl came from a Phase 8 context on **Plateau 8** (FN 8.37 Context 8708; Cat. No. 99, Fig. 255). A fragment from a conical spindle whorl again came from a Phase 8 context on **Plateau 8** (FN 8.26 Context 8640, Cat. No. 100, Fig. 255). There were two concentric rings on the base and two on the lower outer face of the whorl and it is very similar in form, material, and style of incised linear decoration to a conical spindle whorl fragment from **Plateau 6** (FN 6.9002 Context 6343, Cat. No. 102, Not illustrated). The Plateau 6 whorl comprises roughly one quarter of the original object and has a concentric ring around its base. The provisional Phase 2 dating for its context appears to be at odds with its probable Iron Age date.

A broken, conical-shaped, spindle whorl from a Phase 7 context on **Plateau 8** FN 8.47 Context 8800, Cat. No. 103, not illustrated), which survives as several large and a number of very small pieces, is of an unusual form and had a concave base. No close parallels were found for this unusual whorl, for which an Iron Age date is most likely based on the nature of the clay and the dating of the context. A further Iron Age spindle

whorl – made of chalk – is discussed among the Worked Stone below (Plateau 8, FN 8.9055 Context 8133, Cat. No. 181, Fig. 260).

Aside from the spindle whorls, the most common finds among the fired clay were 32 complete, or near-complete, triangular loomweights or fragments with characteristic loomweight features, the majority of which came from **Plateau 8.** In addition, a large number of smaller featureless fired clay fragments probably from similar loomweights, was also recovered, again mainly from **Plateau 8**, with a few coming from **Plateaux 1 and 2**. Triangular loomweights date to the Iron Age, as do possibly most, if not all, of the other loomweight fragments. Two of the **Plateau 8** contexts containing loomweights date to 600–300 BC and it is likely that all of the loomweights are contemporary items. Iron Age fired clay weights of this type are generally believed to have been used in connection with weaving, being suspended from a loom (e.g. Adkins and Adkins 1998, 80), although Poole describes their function as 'speculative' and that the 'generally applied designation of loomweight seems inappropriate' (Poole 1984, 380). While such fired clay and stone weights may have been used for other purposes, for instance as thatch weights, they are common finds on Iron Age sites. The high concentration of loomweights on **Plateau 8** suggests that this was a focus of Iron Age activity, possibly centred around textile production. Due to their high standard of preservation and, in many cases, relative completeness, there was considerable scope for further analysis of the loomweights, all of which were examined, weighed, and listed, with the more complete examples being catalogued and illustrated (Cat. Nos. 103–107, Not illustrated). All of the loomweights retaining characteristic features conformed to the most common type of Iron Age weight, Type 1 (triangular in shape with perforations generally across all three corners) based upon Poole's typology of Iron Age weights from Danebury (Poole 1984, 401, Nos. 7.51–7.61, figs. 7.47, 7, 48). It is possible that other Iron Age loomweight styles were present among the featureless fragments in the assemblage but none of these was identified. The clay fabrics used for the loomweights were fairly similar too, in the main comprising hard fired red, buff and orange-brown clays, some with a reduced core. The morphological similarity between the more complete loomweights and the broadly similar clay fabrics employed in their manufacture attests to their contemporaneity. Moreover, the large size of the loomweight assemblage is of very great interest indeed since it indicates an unusually intense focus of textile-related activity during the Iron Age period, and therefore possibly a focus of female craft activity.

Two, or possibly three, fragments from bun-shaped loomweights of mid-to-late Anglo-Saxon date were identified among the fired clay (for discussion see Walton Rogers 1997, 1753, fig. 813, 1752). Two fragments came from a Phase 12 context together with other Anglo-Saxon material from **Plateau 3** (FN 3.9042 Context 11083, Cat. Nos. 9043 and 9042, Cat. Nos. 108–109, Not illustrated). The first was of a sandy dark brown clay with organic voids and the second of hard-fired light brown clay. A fragment of hard-fired, light grey-brown clay with a rounded edge from a Phase 16 context on **Plateau 5** (FN

5.9042 Context 15147, Cat. No. 110, not illustrated) may have come from a similar loomweight. However, the fragment was too small for close identification.

Catalogue (Cat. Nos. 98–110, Fig. 255)

98. Two joining fragments from a broken spindle whorl made from a very friable, orange-coloured fired clay. The fragments comprise most of one face of the whorl, broken across the irregular-shaped central perforation. The form of this weight is uncertain but the type of clay used and the dating of the context, which also contained a loomweight fragment, indicates that it dates to the early Iron Age. Diameter: *c.* 36 mm, original height: *c.* 21 mm. Diameter of perforation: 10 mm on surviving side, narrowing to *c.* 6 mm on broken side. Weight: 18 grams. **Plateau 8** FN 8.7 Context 8287. Phase 6. Fig. 255.
99. Spindle whorl made of fired clay, biconical in shape with a slightly off-centre perforation which is smaller on the flat side of the whorl and widens to a much larger hole on the upper, concave side. The clay is buff in colour, smooth and hard–fired. Iron Age. Diameter: *c.* 35–37 mm, height: 17 mm. Diameters of perforation: 8 mm and 13 mm. Weight: 24 grams. **Plateau 8** FN 8.37 Context 8708. Phase 8. Fig. 255.
100. Fragment from a conical spindle whorl of a hard-fired deep red-orange clay, comprising roughly one third of the original object. There are two concentric rings on the base and two on the lower outer face of the whorl. It is very similar in form and the style of incised linear decoration to Cat. No. 101, Fig. 255, above. Iron Age in date. Height: 23 mm, original diameter: *c.* 30 mm. Weight: 8 grams. Original weight of whorl: *c.* 30 grams. **Plateau 8**, FN 8.26 Context 8640. Phase 8. Fig. 255.
101. Fragment from a rounded, conical spindle whorl of a hard-fired deep red-orange clay, comprising roughly one quarter of the original object. There is a concentric ring around the base of the whorl. This whorl is very similar in material, size and style to a spindle whorl fragment from Plateau 8 (Cat. No. 100**,** Fig. 255). Probably Iron Age in date. Height: 24 mm, original diameter: *c.* 30 mm. Weight: 7 grams. Original weight of whorl: *c.* 28 grams. **Plateau 6** FN 6.9002 Context 6343. Fig. 255.
102. A broken, conical-shaped, spindle whorl made from a very friable, orange-brown coloured fired clay with gritty white flint inclusions. Approximately half of the whorl, which has a concave base, is intact, but the remainder of the whorl has broken into many small fragments. No close parallels were found for this unusual whorl, for which an Iron Age date is most likely based on the nature of the clay and the dating of the context. Original diameter: *c.* 30 mm, original height: *c.* 24 mm. Diameter of perforation: 7 mm on surviving side, narrowing to *c.* 6 mm on broken side. Total weight: *c.* 30 grams. **Plateau 8** FN 8.47 Context 8800. Phase 7. Not illustrated.
103. Large triangular loomweight, broken at one corner. There are two suspension holes through each of the surviving corners. This loomweight conforms to the most common type of Iron Age weight, Type 1 (triangular in shape with perforations generally across all three corners), based upon Poole's typology of Iron Age weights from Danebury (Poole 1984, 401, Nos. 7.51–7.61, figs. 7.47, 7, 48). Dark red, hard fired

clay. Surviving length: 90 mm, width: 158 mm, thickness: 55 mm. Weight: 1021 grams. **Plateau 8** FN 8.27 Context 8628. Phase 8. Not illustrated.

104. Large triangular loomweight, broken at one corner. There are two suspension holes through each of the surviving corners. This loomweight conforms to the most common type of Iron Age weight, Type 1 (triangular in shape with perforations generally across all three corners), based upon Poole's typology of Iron Age weights from Danebury (Poole 1984, 401, Nos. 7.51–7.61, figs. 7.47, 7.48). Buff-pink, hard fired clay with a dark-grey reduced core. Length: 145 mm, surviving width: 120 mm, thickness: 65 mm. Weight: 1112 grams. **Plateau 8** FN 8.122 Context 8637. Phase 8. Not illustrated.

105. Large triangular loomweight, broken at two corners and across one face. The remains of one suspension hole can be seen at one corner. This loomweight conforms to the most common type of Iron Age weight, Type 1 (triangular in shape with perforations generally across all three corners), based upon Poole's typology of Iron Age weights from Danebury (Poole 1984, 401, Nos. 7.51–7.61, figs. 7.47, 7.48). Reddish-brown, hard fired clay. Surviving length: 130 mm, width: 130 mm, thickness: 55 mm. Size of surviving oval perforations: *c.* 10mm x 15mm. Weight: 704 grams. **Plateau 8** FN 8.380 Context 3720. Phase 8. Not illustrated.

106. Large triangular loomweight, broken at all three corners, all of which were perforated. This loomweight conforms to the most common type of Iron Age weight, Type 1 (triangular in shape with perforations generally across all three corners), based upon Poole's typology of Iron Age weights from Danebury (Poole 1984, 401, Nos. 7.51–7.61, figs. 7.47, 7, 48). Orange-brown, hard fired clay. Surviving length: 104 mm, width: 130 mm, thickness: 55 mm. Size of surviving oval perforations: *c.* 5mm x 10mm. Weight: 652 grams. **Plateau 8** FN 8.80 Context 3643/3644. Phase 8. Not illustrated.

107. Substantial remains of a large triangular loomweight, broken into three fragments and at all three corners, all of which were originally perforated. This loomweight conforms to the most common type of Iron Age weight, Type 1 (triangular in shape with perforations generally across all three corners), based upon Poole's typology of Iron Age weights from Danebury (Poole 1984, 401, Nos. 7.51–7.61, figs. 7.47, 7.48). Orange-brown, hard fired clay with a dark reduced core. Surviving length: 140 mm, width: 90 mm, thickness: 50 mm. Size of surviving oval perforation: *c.* 10mm x 15mm. Weight: 680 grams. **Plateau 8** FN 8.28 Context 8659. Unphased. Not illustrated.

108. Fragment from a bun-shaped loomweight of mid-to-late Anglo-Saxon date (for discussion see Walton Rogers 1997, 1753, fig. 813, 1752). Sandy dark brown clay with organic voids. Anglo-Saxon in date. Length: 73 mm, width: 43 mm, thickness: 35 mm. Weight: 87 grams. **Plateau 3** FN 3.9042 Context 11083. Phase 12. Not illustrated.

109. Fragment from a bun-shaped loomweight of mid-to-late Anglo-Saxon date (for discussion see Walton Rogers 1997, 1753, fig. 813, 1752). Hard-fired light brown clay. Anglo-Saxon in date. Length: 55 mm, width: 35 mm, thickness: 26 mm. Weight: 34 grams. **Plateau 3** FN 3.9043 Context 11083. Phase 12. Not illustrated.

110. Fragment of fired clay with a rounded outer edge, probably part of an Anglo-Saxon loomweight similar to Cat. Nos. 108–109 above. Hard-fired light grey-brown clay. Length: 37 mm, width: 32 mm, thickness: 16 mm. Weight: 14 grams. **Plateau 5** FN 5.9042 Context 15147. Phase 16. Not illustrated.

Ceramic loomweights, complete, near complete or with features: Plateau 8 FN 8.22 Context 8643 x 1 (494g, flat, roughly triangular side), FN 8.25 Context 8637 x 1 (295g, one flat side with square edge), FN 8.29 Context 8628 x 15 (307g, two corner fragments), FN 8.40 Context 8683 x 1 (149g, corner with hole), FN 8.42 Context 8759 x 1 (138g, corner fragment), FN 8.50 Context 8795 x 2 (540g, large flat, semi-triangular fragment,) FN 8.61 Context 8620 x 12 (525g, including two large fragments with triangular edges, perforations), FN 8.79 Context 3535 x 2 (200g, perforated corner), FN 8.99 Context 3691 x 1 (63g, corner fragment), FN 8.115 Context 3887 x 25 (260 including corner fragment), FN 8.118 Context 8562 x 1 (306g, large corner fragment), FN 8.120 Context 8561 x 3 (114g, corner), FN 8.132 Context 3585 x 1 (220g, corner fragment), FN 8.184 Context 12365 x 14 (790g, corner fragment), FN 8.187 Context 12365 x 6 (670g, some flat edges), FN 8.189 Context 12365 x c 30 (large fragments with flat edges, possibly from two or more large loomweights), FN 8.382 Context 3721 (371 g, corner fragment with perforation, FN 8.459 Context 14693 x 1 (339g, flat edge), FN 8.460 Context 14693 x 1 (35g, corner), FN 8.9027 Context 8293/8292 x 14 (445g, some flat edges), FN 8.9030 Context 14483 x 5 (515g, corners), FN 8.9032 Context 8688 x 1 (39g, corner), FN 8.9035 Context 8275 x 1 (268g, corner with holes), FN 8.9037 Context 8618 x 5 (415g, some flat edges), FN 8.9038 Context 8299 x 6 (204g, some flat edges), FN 8.9041 Context 8899 x 1 (274g, corner fragment with hole), FN 8.9046 Context 12100 x 1 (53g, corner fragment with hole), FN 8.9047 Context 8620 x 1 (397g, flat edge), FN 8.9048 Context 8621 x *c.* 50 small fragments (475g, some with edges).

Ceramic loomweights, featureless fragments: Plateau 1 FN 1.9036 Context 10354 x 2 (20g), FN 1.9037 Context 10022 x 3 (86g); **Plateau 2** FN 2.9009 Context 2534 x 1 (92g); **Plateau 8** FN 8.8 Context 8287/8293 x 1 (155g), FN 8.23 Context 8643 x 9 (140g), FN 8.62 Context 8933/8934 x 20 (125g), FN 8.98 Context 3697 x 1 (43g), FN 8.101 Context 3697 x 10 (73g), FN 8.100 3698 x 1 (38g), FN 8.127 Context 12108 x 30 (515g), FN 8.129 Context 12090 x 1 (285g), FN 8.130 Context 12108 x 20 (196g), FN 8.133 Context 8638 x 1 (151g), FN 8.185 Context 12365 x 2 (280g), FN 8.186 Context 12365 x 11 (470g), FN 8.188 Context 12365 x 40 (500g), FN 8.219 Context 12701 x 1 (273g), FN 8.241 Context 12365 x 26 (377g), FN 8.9031 Context 8862 x 1 (57g), FN 8.9028 Context 8292 x 9 (108g), FN 8.9029 Context 8292 x 12 (63g), FN 8.9033 Context 12365 x 1 (13g), FN 8.9034 Context 8170 x 1 (68g), FN 8.9039 Context 12207 x 1 (149g), FN 8.9040 Context 6343 x 1 (156g), FN 8.9042 Context 12365 x 19 (245g), FN 8.9043 Context 8442 x 5 (246g), FN 8.9044 Context 8832 x 3 (265g, from burial SK8832), FN 8.9045 Context 8864 x 8 (196g), FN 8.9062 Context 8752.

Clay pipes (plain stems only unless specified): Plateau 6 FN 6.395 Context 16093 (x2), FN 6.398 Context 16084 (x7), FN 6.404 Context 16086 (x4), FN 6.408 Context 16127 (x2

plus bowl x1), FN 6.431 Context 16071 (x26 plus bowl x3, one stamped), FN 6.438 Context 16135, FN 6.446 Context 16122 (x4), FN 6.466 Context 16222 (x2), FN 6.468 Context 16223 (x2), FN 6.473 Context 16211 (x6 plus bowls x2), FN 6.477 Context 16231/16234, FN 6.486 Context 16071 (x10), FN 6.494 Context 16375 (x5 plus bowls x2), FN 6.504 Context 16333 (plus bowl), FN 6.510 Context 16373 (x2), FN 6.518 Context 16303 (x3 plus bowl), FN 6.520 Context 16304 (x3), FN 6.522 Context 16314.

Glass Objects (Cat. Nos. 111–126, Fig. 256)

Quantification and Introduction

The assemblage of 26 registered glass items from the Thanet Earth sites were in a stable condition and included a number of identifiable and chronologically-diagnostic artefacts. The most interesting single items are nine glass beads (**Plateau 3** FN 9010 Context 11083, FN 9011 Context 11083, FN 9012 Context 11083, FN 9014 Context 11079, FN 9015 Context 11083 (x2), FN 9016 Context 11083, FN 9029 Context 11084; **Plateau 8** FN 210 U/S). A small quantity of Roman vessel glass was also recovered (**Plateau 3** FN 147 Context 11072, FN 9017 Context 11072; **Plateau 4** FN 9003 Context 4062; **Plateau 5** FN 9030 Context 6553; **Plateau 6** FN 435 Context 16135 (x2); **Plateau 8** FN 9083 Context 12831 x 2, FN 9086 Context 12833 x 27, FN 9084 Context 12835 x 17 (from cremation)), along with some Post-medieval vessel glass, almost exclusively from bottles (listed below).

Discussion

The glass small finds assemblage of 26 registered objects, a total of 85 individual items, represents a group of local and regional significance. The most interesting single items are nine glass beads (**Plateau 3** FN 3.9010 Context 11083, FN 3.9011 Context 11083, FN 3.9012 Context 11083, FN 3.9014 Context 11079, FN 3.9015 Context 11083 (x2), FN 3.9016 Context 11083, FN 3.9029 Context 11084; **Plateau 8** FN 8.210 U/S; Cat. Nos. 111–118, Fig. 256). With the exception of a large bright blue bead of uncertain, though probably modern, date from Plateau 8 (FN 8.210 U/S; Cat. No. 118) all of the other, small beads came from two early Anglo-Saxon contexts on **Plateau 3**. All are very small and most of them could not be related with any certainty to known Anglo-Saxon bead forms, with the exception of two small dark-coloured glass beads with horizontal lines around their outer faces (FN 3.9012 and FN 3.9013 Context 11083; Cat. Nos. 111–112, Fig. 256). These are possibly broken segmented coiled beads (Guido 1999, fig. 1, 13) but the fragments are too small for closer identification.

Unusual in the collection is half of a small glass bead with vertical lines around the outer face **(Plateau 3** FN 3.9010 Context 11083; Cat. No. 113, Fig. 256). This opaque white glass bead has a metallic sheen suggestive of the foil lining of a gold in glass bead of probable

5th- to 6th- century date (Guido 1999, 80, plate 8:13). A very small opaque turquoise glass bead may have been Roman (FN 3.9029 Context 11084; Cat. No. 117, not illustrated).

All of the vessel glass identified appears to be Roman in date (**Plateau 3** FN 3.147 Context 11072, FN 3.9017 Context 11072; **Plateau 4** FN 4.9003 Context 4062; **Plateau 5** FN 5.9030 Context 6553; **Plateau 6** FN 46.35 Context 16135 (x2); Cat. Nos. 119–126). This included a fragment of blue-green bottle glass (**Plateau 3** FN 3.147 Context 11072: Cat. No. 119, not illustrated) from the base of a square or hexagonal bottle of probable 1st- to 2nd- century date (Price and Cottam 1998, 194–200). Other identifiable glass fragments included a small fragment of colourless vessel glass, probably from a small cup or beaker (**Plateau 3** FN 3.9017 Context 11072; Cat. No. 123, not illustrated). Colourless glass 'began to be produced in quantity in the third quarter of the 1st century AD but it continued in use throughout the Roman period, especially during the 2nd and 3rd centuries when it was 'used extensively for good quality tablewares' (Price and Cottam 1998, 15–16).

Small fragments of pale blue vessel glass from three Phase 10 contexts on **Plateau 8,** including a cremation, were of Roman date but too small to be identified to vessel type (FN 8.9083 Context 12831, Cat. No. 120 x 2, not illustrated; FN 8.9082 Context 12833; Cat. No. 121 x 27, not illustrated and FN 8.9084 Context 12835 (from cremation); Cat. No. 122 x 17, not illustrated).

Other glass vessel fragments were green in colour, a late Roman colour introduced in the 4th century (Price and Cottam 1998, 16). They all appear to be body shards from near the base of jugs or other vessels (**Plateau 4** FN 4.9003 Context 4062; Cat. No. 111, not illustrated; **Plateau 5** FN 5.9030 Context 6553; Cat. No. 112, not illustrated; **Plateau 6** FN 6.435 Context 16135; Cat. No. 113, not illustrated).

No further analysis was undertaken of the Post-medieval vessel glass listed below.

Catalogue (Cat. Nos. 111–126)

111. Small glass bead, with horizontal lines around the outer face and an off-centre perforation, possibly a broken segmented coiled bead (Guido 1999, fig. 1, 13) but the fragment is too small for closer identification. Opaque dark brown coloured glass. Diameter: 5 mm, height: 4 mm, diameter of perforation: 1 mm. Anglo-Saxon in date. **Plateau 3** FN 3.9012 Context 11083. Phase 12. Fig. 256.
112. Small glass bead, with horizontal lines around the outer face and an off-centre perforation, similar to Cat. No. 111 above. Opaque dark brown or black glass. Diameter: 3 mm, height: 4 mm, diameter of perforation: 1 mm. Anglo-Saxon in date. **Plateau 3** FN 3.9011 Context 11083. Phase 12. Fig. 256.
113. Half of a small glass bead, with vertical lines around the outer face. Opaque white glass with a metallic sheen, possibly a gold in glass bead of probable 5th to 6th

century date (Guido 1999, 80, plate 8:13). Original diameter: 3 mm, height: 3 mm, diameter of perforation: 2 mm. Anglo-Saxon in date. **Plateau 3** FN 3.9010 Context 11083. Phase 12. Fig. 256.

114. Two small broken glass beads, both opaque and degraded, one of which is round and survives as a large fragment (a) and the other of which is cylindrical, damaged at the edges and very small (b). Original diameter: 5 mm, height: 3 mm, diameter of perforation: 2 mm (a); Original diameter: 3 mm, height: 2 mm, diameter of perforation: 1 mm (b). Anglo-Saxon in date. **Plateau 3** FN 3.9015 Context 11083. Phase 12. Not illustrated.

115. Small opaque, oval, dark-coloured glass bead. Diameter: 2 mm, height: 2 mm. Anglo-Saxon in date. **Plateau 3** FN 3.9014 Context 11083. Phase 12. Not illustrated.

116. Thirteen small opaque white glass fragments, probably from a broken Anglo-Saxon bead, the largest of which measures *c.* 6 mm in length and 3 mm in width and the smallest of which measures *c.* 2 mm by 2 mm. Average thickness of fragments: *c.* 2 mm. **Plateau 3** FN 3.9016 Context 11083. Phase 12. Not illustrated.

117. Small opaque turquoise glass bead, uncertain date, possibly Roman. Diameter: 2 mm, height: 2mm, diameter of perforation: 1 mm. **Plateau 3** FN 3.9029 Context 11084. Phase 12. Not illustrated.

118. Opaque blue glass bead, probably modern in date. Diameter: 7 mm, height: 7 mm. **Plateau 8** FN 8.210 U/S. Not illustrated.

119. Fragment of blue-green bottle glass from the base of a square or hexagonal bottle of probable 1st- to 2nd- century date (Price and Cottam 1998, 194–200). Length: 30 mm, width: 26 mm, thickness: 2–4 mm. **Plateau 3** FN 3.147 Context 11072. Phase 12. Not illustrated.

120. Two small fragments of pale blue vessel glass. Dimensions (largest): 14 mm x 7 mm x 2 mm. **Plateau 8** FN 8.9083 Context 12831. Phase 10. Not illustrated.

121. Twenty seven small fragments of pale blue vessel glass. Dimensions (of largest): 20 mm x 14 mm x 1 mm. **Plateau 8** FN 8.9082 Context 12833. Phase 10. Not illustrated.

122. Seventeen small fragments of pale blue vessel glass. Dimensions (of largest): 14 mm x 7 mm x 2 mm. **Plateau 8** FN 8.9084 Context 12835 (from cremation). Phase 10. Not illustrated.

123. Small shattered fragment of colourless vessel glass, probably from a small cup or beaker. Colourless glass 'began to be produced in quantity in the third quarter of the 1st century AD but it continued in use throughout the Roman period, especially during 2nd and 3rd centuries when it was 'used extensively for good quality tablewares' (Price and Cottam 1998, 15–16). Dimensions: 10 mm x 5 mm x 1.5 mm. **Plateau 3** FN 3.9017 Context 11072. Phase 12. Not illustrated.

124. Small flat fragment of mid-green glass, possibly from the base of a jug or other vessel. Since green glass was a later Roman colour, coming into use during the 4th century AD (Price and Cottam 1998, 16), this fragment is probably from a late Roman vessel. Dimensions: 25 mm x 28 mm x 3–4 mm. **Plateau 4** FN 4.9003 Context 4062. Phase 16. Not illustrated.

125. Small abraded fragment of pale green glass, the curvature of which indicates that it came from near the base of a vessel, possibly a bowl or jug. Since pale green glass came into use during the 4th century AD (Price and Cottam 1998, 16), this fragment is probably from a late Roman vessel. Dimensions: 16 mm x 18 mm x 5 mm. **Plateau 5** FN 5.9030 Context 6553. Phase 17. Not illustrated.
126. Two small fragments glass from a small vessel, possibly a jug or bowl, the pale green colour of which is suggestive of a 4th- century date (Price and Cottam 1998, 16). Dimensions: 23 mm x 30 mm x 1 mm, 20 mm x 14 mm x 1 mm. **Plateau 6** FN 6.435 Context 16135. Phase 17. Not illustrated.

Post-medieval vessel glass: Plateau 2 FN 2.146 Context 9020; **Plateau 5** FN 5.9028 Context 5465 (x2); **Plateau 6** FN 6.401 Context 16084 (x2), FN 6.402 Context 16086 (x23), FN 6.430 Context 16071 (x15), FN 6.435 Context 16135, FN 6.482 Context 16071 (x2), FN 6.497 Context 16375 (x2), FN 6.9003 Context 6423: **Plateau 8** FN 8.220 Context 12780.

Worked Bone and Antler Objects (Cat. Nos. 127–133, Fig. 257)

Quantification and Introduction

The seven bone and antler items from the Thanet Earth sites were in a stable condition and included three identifiable and chronologically-diagnostic artefacts. The most interesting single items are a complete pin (**Plateau 3** FN 3.143 Context 11071), two fragments from another pin and a pin or needle (**Plateau 8** FN 8.9052 Context 14306; FN 8.9080 Context 8654) and a spindle whorl (**Plateau 1** FN 1.55 Context 10015). Two worked antler fragments (**Plateau 8** FN 8.384 Context 3728, FN 8.9054 Context 8643) and one worked bone fragment (**Plateau 1** FN 1.68 Context 10063) were also recovered.

Discussion

The bone and antler small finds assemblage of seven registered objects represents a small group of local significance only. The earliest items in the assemblage are two pointed end fragments from a bone pin and a pin or needle of Iron Age date from **Plateau 8** (FN 8.9052 Context 14306; Cat. No. 127, Fig. 257; FN 8.9080 Context 8654, Cat. No. 128, Fig. 257). Two fragments of worked antler also came from Plateau 8. The largest (FN 8.384 Context 3728; Cat. No. 131, Not illustrated) was broadly contemporary in date with the bone pin fragments. This was a sawn crown fragment from which three erupting tines had been removed by sawing, most probably to utilise the tine fragments. The second fragment was a burnt, roughly-rectangular fragment of sawn antler tine (FN 8.9054 Context 8643; Cat. No. 132, not illustrated) from a Phase 7 context which may date to the middle Iron Age and thus pre-date the other Iron Age bone and antler items.

A large dress pin with a fluted head from **Plateau 3** (FN 3.143 Context 11071; Cat. No. 129, Fig. 257) was possibly made from a pig fibula. Such pins were popular during the

Anglo-Saxon period, and this particular example conforms to Group 1, the simplest of the pins, in the typology developed at Coppergate, York (MacGregor *et al* 1999, fig. 908: 6832, 1950).

A large hemispherical spindle whorl from a medieval context on **Plateau 1** (FN 1.55 Context 10015; Cat. No. 130, Fig. 257) was made from a fragment of bone, drilled through the centre and subsequently broken at the base. Bone spindlewhorls of this type, made from femoral heads of cattle, with minimal working, are known from 11th- to 12th- century contexts at Thetford (Rogerson and Dallas 1984, fig. 194: Nos. 70–77), Castle Acre Castle (Margeson 1982, fig. 46: No. 4), and from 13th- to 15th- century contexts at Norwich (Margeson 1993, fig. 136: 1436–1440, 184–185). Also of medieval date from **Plateau 1** was a small undiagnostic fragment of worked bone with a small perforation at the point of breakage (FN 1.68 Context 10063; Cat. No. 33, not illustrated).

Catalogue

127. Pointed pin fragment, broken across the shaft, with an oval section. Iron Age in date. Surviving length: 58 mm, width of shaft: 4 mm, thickness: 3 mm. **Plateau 8** FN 8.9052 Context 14306. Phase 8. Fig. 257.
128. Pointed fragment from the end of a bone needle or pin with an oval section. Iron Age in date. Surviving length: 46 mm, width of shaft: 3 mm at point of breakage, thickness: 2 mm. **Plateau 8** FN 8.9080 Context 8654. Phase 8. Fig. 257.
129. Large pin, possibly made from a pig fibula, the head of which has simple a fluted shape and the end of which has been carved into a point. Such pins were popular during the Anglo-Saxon period, and this particular example conforms to Group 1, the simplest of the pins, in the typology developed at Coppergate, York (MacGregor *et al* 1999, fig. 908: 6832, 1950). Length: 93 mm, width of head: 7 mm, thickness of head: 2.5 mm. **Plateau 3** FN 3.143 Context 11071. Phase 12. Fig. 257.
130. Large hemispherical spindle whorl made from a fragment of bone, drilled through the centre and subsequently broken at the base. Bone spindlewhorls of this type, made from femoral heads of cattle, with minimal working, are known from 11th- to 12th- century contexts at Thetford (Rogerson and Dallas 1984, fig. 194: Nos. 70–77), Castle Acre Castle (Margeson 1982, fig. 46: No. 4), and from 13th- to 15th- century contexts at Norwich (Margeson 1993, fig. 136: 1436–1440, 184–185). Medieval in date. Height: 32 mm, diameter at base: 45 mm, diameter of hole: 12 mm. Weight: 22 grams. **Plateau 1** FN 1.55 Context 10015. Phase 16. Fig. 257.
131. Fragment of worked antler comprising a large sawn crown fragment with three tines erupting from it, all of which have been removed by sawing, most probably to utilise the tine fragments. Length: 75 mm, width: 80 mm, thickness at base: 30 mm. **Plateau 8** FN 8.384 Context 3728. Phase 8. Not illustrated.
132. Small fragment of sawn antler tine, the surface of which is burnt. Length: 52 mm, width: 15 mm, thickness: 4 mm. **Plateau 8** FN 8.9054 Context 8643. Phase 7. Not illustrated.

133. Small flat fragment of worked bone, roughly rectangular in shape and slightly curved on one side, with a small perforation at the point of breakage. Length: 16 mm, width: 9 mm, thickness: 1 mm. Diameter of hole: 4 mm. **Plateau 1** FN 1.68 Context 10063. Phase 16. Not illustrated.

Amber Objects (Cat. Nos. 134–137, Fig. 258)

Quantification and Introduction

The assemblage of 23 amber items — all of which were beads — from the Thanet Earth sites were in a generally stable condition, with only a few showing signs of surface flaking, though many were fragmentary. The majority of the beads, 20 in total, came from **Plateau 1** Context 10687 (FN 1.143–1.158, FN 1.169 (fragments), FN 1.170 (fragments), FN 1.171 (fragments), FN 1.172 (fragments), FN 211), two from **Plateau 3** (FN 3.9002 Context 11079, FN 3.9030 Context 11072) and one from **Plateau 8** (FN 8.211 Context 12534).

The amber small finds assemblage of 23 beads, many of which were complete or represented by sizeable fragments, represents a group of regional/national significance. The beads from Plateau 1 come from an early-mid 1st-century AD cremation, while the two single amber beads from Plateaux 3 and 8 both come from Anglo-Saxon contexts.

Discussion

A necklace of amber beads comprising 13 complete beads and fragments from seven other beads was recovered from a Phase 10 cremation on **Plateau 1** (FN 1.143–FN 1.157; Context 10687, Cat. No. 134, Fig. 258) along with three brooches and a possible weight/spindlewhorl.

The complete beads were all of a cylinder disc form, flat in shape, with fairly precise central perforations. Of these, five were quite large in size, having diameters ranging from 14–20 mm and heights (thicknesses) of 7–11 mm. A slightly smaller bead, which could be described as medium sized, measured 13 mm in diameter, with a height of 6 mm (FN 1.143, Cat. No. 134 (a.)), and the remaining seven complete beads were all small in size, ranging from 6–8 mm in diameter, with heights ranging from 3–4 mm. The beads were presumably intended to be worn as a necklace, perhaps in an arrangement of alternating larger and smaller beads, with the largest bead (FN 1.147, Cat. No. 134 (e.)) at the centre, assuming that other necklace elements have not been lost. Roman amber jewellery in Britain was not common (Johns 1996, 70), though it was used for necklaces, an example of which is known from London which comprised 70 beads of Baltic amber strung on a flax string (*ibid*, 100; Chapman 1974, 273–277). Similar amber beads to the ones from Thanet have been found in Romano-British burials, for example at Colchester, although these dated to the later Roman period, *c.* AD 320–*c.* AD 450 (Crummy 1983, fig.

34: 559, 634, 32–33), rather than the earlier Roman Period as seen in the Thanet cremation.

The other amber beads came from Anglo-Saxon contexts. The most interesting of these was a complete, roughly oval-shaped bead from **Plateau 8** (FN 8.211 Context 12534; Cat. No. 135, Fig. 258). The bead was semi-natural in shape, with one cut flat side and one curved side which seems to be the natural shape of the piece of amber, neatly pierced at the centre. The bead was found in association with what appears to be a later Romano-British snake bracelet. That the bead was found lying in the centre of the ring formed by the bracelet indicates the deliberate placing of both objects, each potentially with strong symbolic associations. While the bracelet may have been old at the time of its deposition it is possible that the bead too may have been of later Roman origin, although similar beads are known from Anglo-Saxon graves and other contexts. Two other beads both came from Anglo-Saxon contexts on **Plateau 3**. The first was a small, sub-circular amber bead (FN 3.9002 Context 11079; Cat. No. 136, Fig. 258) and the second was broken, comprising ten small fragments from a similar bead of dark red amber (FN 3.9030 Context 11072; Cat. No. 137, not illustrated).

Catalogue

134. Amber beads, complete and fragmentary. **Plateau 1** (FN 1.143–1.157, FN 1.169–1.172, Context 10687, Phase 10. Fig. 258.

(a.) Amber bead, complete, cylinder disc-shaped, broken at one side. Diameter: 13 mm, height: 6 mm, diameter of hole: 3 mm. FN 1.143.
(b.) Large amber bead, complete, cylinder disc-shaped. Diameter: 14 mm, height: 7 mm, diameter of hole: 4 mm. FN 1.144.
(c.) Large amber bead, complete, cylinder disc-shaped. Diameter: 18 mm, height: 8 mm, diameter of hole: 2 mm. FN 1.145.
(d). Large amber bead, complete, cylinder disc-shaped. Diameter: 16 mm, height: 7 mm, diameter of hole: 3 mm. FN 1.146.
(e.) Large amber bead, complete, cylinder disc-shaped. Diameter: 20 mm, height: 11 mm, diameter of hole: 3 mm. FN 1.147.
(f.) Small amber bead, complete, cylinder disc-shaped. Diameter: 6 mm, height: 4 mm, diameter of hole: 1 mm. FN 1.148.
(g.) Small amber bead, complete, cylinder disc-shaped. Diameter: 7 mm, height: 4 mm, diameter of hole: 2 mm. FN 1.149.
(h.) Small amber bead, cylinder disc-shaped, in two joining fragments. Diameter: 7 mm, height: 4 mm, diameter of hole: 1 mm. FN 1.150.
(i.) Small amber bead, complete, cylinder disc-shaped, the exterior of which is very degraded. Diameter: 8 mm, height: 3 mm, diameter of hole: 1 mm. FN 1.151.
(j.) Small amber bead, complete, cylinder disc-shaped, the exterior of which is very degraded. Diameter: 6 mm, height: 3 mm, diameter of hole: 1 mm. FN 1.152.

(k.) Small broken fragment from an amber bead, original form unknown. Length: 7 mm, width: 5 mm, thickness: 3 mm. FN 1.153.
(l.) Several small broken fragments from an amber bead, original form unknown. Length of largest fragment: 3 mm. FN 1.154.
(m.) Large amber bead, complete, cylinder disc-shaped. Diameter: 15 mm, height: 7 mm, diameter of hole: 3 mm. FN 1.155.
(n.) Small amber bead, cylinder disc-shaped. Diameter: 8 mm, height: 3 mm, diameter of hole: 2mm. FN 1.156.
(o.) Small amber bead, cylinder disc-shaped. Diameter: 8 mm, height: 3 mm, diameter of hole: 2mm. FN 1.157.
(p.) Several small broken fragments from an amber bead, original form unknown. Length of largest fragment: 10 mm. FN 1.169.
(q.) Several small broken fragments from an amber bead, original form unknown. Length of largest fragment: 7 mm. FN 1.170.
(r.) Two broken fragments from an amber bead, original form unknown. Length of largest fragment: 10 mm. FN 1.171.
(s.) Several small broken fragments from an amber bead, original form unknown. Length of largest fragment: 10 mm. FN 1.172.

135. Amber bead, complete, roughly oval in shape with one flat side and one curved side which seems to be the natural shape of the piece of amber, neatly pierced at the centre. The bead retains its original deep rust colour despite some surface discolouration. Found with a possible snake bracelet. Later Roman or Anglo-Saxon in date. Length: 17 mm, width: 13 mm, average thickness: 6 mm. **Plateau 8** FN 8.211 Context 12534. Phase 12. Fig. 258.
136. Small amber bead, irregular, sub-circular in shape, the surface of which is degraded and opaque. Diameter: 7 mm, height: 6 mm, diameter of hole: 1mm. Anglo-Saxon in date. **Plateau 3** FN 3.9002 Context 11079. Phase 12. Fig. 258.
137. Ten small fragments from a small amber bead, deep red-orange in colour at the centre, with a dulled exterior. Original diameter: *c.* 5 mm. The largest fragment measures 5 mm x 3 mm x 2 mm. Anglo-Saxon in date. **Plateau 3** FN 3.9030 Context 11072. Phase 12. Not illustrated.

Stone Objects by Lynne Bevan and Rob Ixer (Cat. Nos. 138–188, Fig. 259)
With comments on the bracer by John Hunter.

Quantification and Overview, with Geological Identification by Rob Ixer

The assemblage of 108 stone items included many identifiable and chronologically-diagnostic artefacts. It also included a large number of unworked/natural pieces of stone which were discounted by close examination during the assessment, with a list of the 207 discounted items being made for the archive. Stone finds can be grouped functionally, with the largest category, Craft and Industry, being represented by 51

quern fragments, three whetstones or hones, two rubbing stones and three spindle whorls.

The most important and extraordinary finds were all prehistoric in date and comprised an archer's bracer or wristguard formed by an amphibole-bearing rock (**Plateau 6** FN 6.34 Context 6024 Burial 33), found in association with a Bronze Age dagger (see above), two chalk cups (**Plateau 1** FN 1.131 Context 10575; **Plateau 5** FN 5.20 Context 5803), and an incised chalk slab (**Plateau 8** FN 8.58 Context 8892). Also probably prehistoric were several river pebbles possibly used as potboilers (**Plateau 1** FN 1.9082 Context 10040 (x3); **Plateau 8** FN 8.2407 Context 12707), though these are not considered further here.

Four river pebbles may have been used as potboilers in the prehistoric period (**Plateau 1** FN 1.9082 Context 10040 (x3) Phase 16; **Plateau 8** FN 8.2407 Context 12707. Phase 8.)

The quern fragments were mainly very small indeed, an exception being three-quarters of a bun-shaped quern made of Greensand (**Plateau 8**, FN 8.83 Context 3585/3586). About half the quern assemblage of 51 examples (listed below) were of Niedermendig Lava. The non-Niedermendig lava querns, 29 examples of which were represented and which are listed below, are mainly made from fine-grained sandstone. Most quern fragments were probably from rotary querns, with the exception of several possible saddle quern fragments and a fragment from a beehive quern made of Hertfordshire Puddingstone (**Plateau 1**, FN 1.34 Context 1923).

The three whetstones or hones (**Plateau 1** FN 1.2 Context 1277; **Plateau 5** FN 5.41 Context 6525; **Plateau 8** FN 8.9067 Context 8640) constitute an interesting but small group, probably of local origin with the exception of one which is a Scandinavian import (**Plateau 5** FN 5.41 Context 6525). Also of great interest were two stone mortars (**Plateau 6** FN 6.27 Context 6146, FN 6.9007 Context 16544), both of a medieval date, and three spindle whorls (**Plateau 2** FN 2.112 Context 2322; **Plateau 6** FN 6.26 Context 6146; **Plateau 8** FN 8.9055 Context 8133).

Building materials recovered included a number of faced building stones and, more significantly an architectural fragment (**Plateau 6** No FN Context 16173/16174), possibly from a column drum, a number of pieces of meticulously-worked and tooled building blocks (**Plateau 6** No FN Context 16173/16174 (x6)), quite unlike any other stones from the Thanet Earth sites, part of a stone roof or floor tile (**Plateau 6** FN 6.478 Context 6545), and a slate (**Plateau 6** FN 6.266 Context 16173/16174). Other stone finds included two possible pieces of red pigment (**Plateau 8** FN 8.2409 Context 12872, FN 8.2412 Context 8940).

There were also several sandstone/sarsen or flint balls of varying sizes, most of which were, in fact, natural rather than being artefacts. One or two of the smaller balls are

likely though to have been marbles (**Plateau 1** FN 1.406 Context 16071; **Plateau 5** FN 5.9032 Context 1505).

Discussion

The assemblage of 108 registered stone small finds represents an interesting group of both regional and national significance. The earliest items in the assemblage are prehistoric and of exceptional academic interest. Of most importance is the archer's bracer or wristguard (**Plateau 6** FN 6.34 Context 6024 Burial 33; Cat. No. 138, Fig. 259) from the Beaker burial which also contained a copper dagger (see above). Bracers or wristguards occur in late Neolithic and Early Bronze Age contexts and are likely to have been more ornamental than practical in function (see Woodward and Hunter 2011 for further discussion of this artefact type). Like many bracers, this example (*ibid*, 174, ID 154), has several perforations — three at one end and two at the other — for fastening on to the forearm. It shows slight wear. Petrographically, bracers appear to fall into three groups, two of which have specific geological origins, the third from miscellaneous sources. The Thanet bracer belongs to one of the two specific groups and is characterised as an amphibolite type. The precise source has not been identified, but it seems likely to have geological origins possibly on the continent (Woodward and Hunter 2011, 116–130). Several of these distinctive artefacts have been recovered from various sites in Kent (Smythe 2006, 16), including two from Thanet, the other example which is longer and slimmer in form with only single perforations at each end having been recovered from excavations at St Peter's refuse tip in 1969/70 (Woodward and Hunter 2011, 172, ID 149).

Other potentially prehistoric finds include two chalk cups (**Plateau 1** FN 1.131 Context 10575; Cat. No. 139; **Plateau 5** FN 5.20 Context 5803; Cat. No. 140 (not illustrated)), both of which have patterns of incised marks on their interiors. Very similar cups, which may have been used as lamps, have been recovered from contexts dating to the Late Neolithic and Bronze Age at Grimes Graves in Norfolk and also are associated with flint mining activity in Sussex (Varndell 1991, 103, figs. 50–60, 122–132). Another chalk item of special interest and probable prehistoric origin is an incised chalk slab (**Plateau 8** FN 8.58 Context 8892; Cat. No. 141, not illustrated). Some of the querns and rubbing stones also date to the prehistoric period, including a Greensand rubbing stone from the same context as the incised chalk slab (**Plateau 8** FN 8.57 Context 8892; Cat. No. 147, not illustrated). Four uncatalogued natural river pebbles may have been used as potboilers in the prehistoric period (**Plateau 1** FN 1.9082 Context 10040 (x3) Phase 16; **Plateau 8** FN 8.2407 Context 12707. Phase 8; not catalogued).

Three hones or whetstones were recovered (**Plateau 1** FN 1.2 Context 1277; **Plateau 5** FN 5.41 Context 6525; **Plateau 8** FN 8.9067 Context 8640; Cat. Nos. 178–180, not illustrated), one of which is an import. Two of these hones come from medieval contexts and the third from an Iron Age context on Plateau 8.

Fifty one registered finds of quern fragments were recovered. Given the high degree of fragmentation noted among the querns few quernstone dimensions were recoverable from measuring these pieces, an exception being three-quarters of a bun-shaped quern made of Greensand, probably from the Folkestone area (**Plateau 8**, FN 8.83 Context 3585/3586; Cat. No. 155). The Niedermendig Lava querns were particularly damaged and fragmentary and, in most cases, their diagnostic attributes had been lost. Their presence and number of fragments were noted, as were their original thicknesses when these were recoverable.

Niedermendig Lava querns are relatively common finds on Romano-British, particularly Roman military, sites (Peacock 1980) and the same material was also used for manufacturing querns in the medieval period. As has been noted by Peacock (Peacock 1998, 47), querns in this material dominated the medieval quern assemblage from Winchester, being particularly important in the 11th century (Biddle and Smith 1990). Given the appearance of imported lava querns in both the earlier Roman and medieval periods the generally small fragments from the Thanet Earth sites may not be formally identifiable to either period apart from by their stratigraphic context, though even then residuality may make such an exercise problematic.

The two stone mortars (**Plateau 6** FN 6.27 Context 6146, FN 9007 Context 16544; Cat. Nos. 176–177, not illustrated) are of medieval date. Other stone finds include an architectural fragment (**Plateau 6** No FN Context 16173/16174; Cat. No. 184), a worked sandstone fragment (**Plateau 7** FN 7.34 Context 7296; Cat. No. 185), a number of pieces of meticulously-worked and tooled building blocks (**Plateau 6** No FN Context 16173/16174 (x6); Cat. No. 186), part of a stone roof or floor tile (**Plateau 6** FN 6.478 Context 6545; not catalogued), a slate (**Plateau 6** FN 6.266 Context 16173/16174; not catalogued), two marbles (**Plateau 1** FN 1.406 Context 16071; **Plateau 5** FN 5.9032 Context 1505; not catalogued) and two possible pieces of red pigment (**Plateau 8** FN 8.2409 Context 12872, FN 8.2412 Context 8940; Cat. Nos. 187–188).

A separate lithological report on a selected number of stone items, with detailed petrographical descriptions appears below (Ixer, this volume).

Catalogue (Cat. Nos. 138–188, Fig. 259–260)

Prehistoric Bracer and Chalk Objects (Cat. Nos. 138–141, Fig. 259)

138. Bracer/wristguard with three perforations at one end and two at the other. There is slight damage to one corner. The bracer from Thanet (Woodward and Hunter 2011, 174, ID 154) belongs to a category of artefact which occurs in late Neolithic and Early Bronze Age contexts and which is likely to have been more ornamental than practical in function. Length: 92 mm, width: 41 mm at widest end, thickness: 1 mm.

Diameter of perforations: 3 mm. **Plateau 6** FN 6.34 Context 6024 Burial 33. Phase 2. Fig. 259.

139. Part of a broken chalk object which has been deliberately hollowed out to create a hole, which is roughly round at the top and tapers to a point at the base. The interior of the hole has a series of lines on it, some of which intersect in V- shapes, which may be a form of decoration. The most likely interpretation is that this hollowed object was intended as a cup of some kind. Chalk 'cups have been found in both Bronze Age and Late Neolithic contexts at Grimes Graves', as well as 'in association with flint mining activity in Sussex' (Varndell 1991, 103, figs. 50–60), and their possible function as lamps has been discussed (*ibid*, 103). While this object may be prehistoric in date and its presence in a medieval sunken floored building might be viewed as residual, its close and deliberate association with several querns might indicate that it was actually contemporary with them and therefore a medieval artefact. Diameter: 130 mm, at base: 90 mm, height: 94 mm at one side and 70 mm at the other. **Plateau 1** FN 1.131 Context 10575. Phase 16. Not illustrated.

140. Chalk object with an oval, dished shape, internal grooving and an internal void in the hollowed interior resulting from the past presence of a fossil. While it may have been a chalk cup of the kind 'found in both Bronze Age and Late Neolithic contexts at Grimes Graves' and 'in association with flint mining activity in Sussex' (Varndell 1991, 103, figs. 50–60), its shape is more suggestive of a lamp than the other example from Thanet Earth (Cat. No. 139 above). The possibility that chalk cups may have functioned as lamps has been discussed (*ibid*, 103). Possibly prehistoric in date and redeposited in a later context. Dimensions: 160 mm x 120 mm x 90 mm. **Plateau 5** FN 5.20 Context 5803. Phase 15. Not illustrated.

141. Chalk slab with intricate cut marks of possible anthropogenic origin, many of which are cross-hatched. Chalk plaques and slabs with similar decoration dating to the Neolithic and Bronze Age periods are known from several prehistoric sites including Grimes Graves (Varndell 1991, 106) and Beckhampton Wiltshire, the latter slab accompanying a Beaker burial (Young 1950, Fig. 2). Prehistoric in date. Dimensions: 115 mm x 135 mm x 139 mm. **Plateau 8** FN 8.58 Context 8892. Phase 8. Not illustrated.

Neolithic to Iron Age Querns (Cat. Nos. 142–157, not illustrated)

142. Saddle quern. Fine-grained sandstone. Dimensions: 160 mm x 120 mm x 70 mm at one side and 40 mm at the other. **Plateau 8** FN 8.158 Context 12307. Phase 1. Not illustrated.

143. Small quern fragment with a slightly-dished surface. Very fine sandstone. Dimensions: 70 mm x 70 mm x 40 mm. **Plateau 8** FN 8.159 Context 12307. Phase 1. Not illustrated.

144. Quern fragment. Medium-grained Greensand. Dimensions: 70 mm x 60 mm x 50 mm. **Plateau 8** FN 8.45 Context 8480. Phase 6. Not illustrated.

145. Small quern fragment. Coarse-grained sandstone. Dimensions: 100 mm x 70 mm x 52 mm. **Plateau 8** FN 8.24 Context 8643. Phase 7. Not illustrated.
146. Quern fragment, rectangular in shape, with one worked surface. Fine-grained Greensand. Dimensions: 110 mm x 90 mm x 60 mm. **Plateau 8** FN 8.9057 Context 3846. Phase 7. Not illustrated.
147. Quern/rubbing stone fragment, planar. Medium-grained sandstone, possibly Greensand. Prehistoric in date, in common with the incised chalk slab (Cat. No. 141) from the same context. Dimensions: 210 mm x 120 mm x 80 mm. **Plateau 8** FN 8.57 Context 8892. Phase 8. Not illustrated.
148. Quern fragment with a rubbed upper surface. Very coarse-grained sandstone, possibly burnt. Dimensions: 130 mm x 175 mm x 110 mm. **Plateau 8** FN 8.43 Context 8761. Phase 8. Not illustrated.
149. Small quern fragment. Coarse-grained Greensand. Dimensions: 70 mm x 52 mm x 44 mm. **Plateau 8** FN 8.9071 Context 8697. Phase 8. Not illustrated.
150. Quern fragment, with a dressed lower surface. Coarse-grained sandstone, burnt. Dimensions: 110 mm x 120 mm x 70 mm. **Plateau 8** FN 8.16 Context 8516. Phase 8. Not illustrated.
151. Small quern fragment with wear traces on one surface. Coarse-grained, pale-coloured sandstone, possibly Sarsen. Dimensions: 65 mm x 70 mm x 50 mm. **Plateau 8** FN 8.35 Context 8636. Phase 8. Not illustrated.
152. Quern fragment, roughly rectangular in shape. Coarse-grained white sandstone. Dimensions: 170 mm x 80 mm x 70 mm. **Plateau 8** FN 8.411 Context 14534/14535. Phase 8. Not illustrated.
153. Quern fragment, with one roughly-worked surface. Coarse-grained sandstone, possibly Greensand. Dimensions: 140 mm x 155 mm x 60 mm. **Plateau 8** FN 8.59 Context 8910. Phase 8. Not illustrated.
154. Quern fragment, with a smoothed upper surface but without any original edges. Greensand. Dimensions: 65 mm x 70 mm x 34 mm. **Plateau 8** FN 8.33 Context 8620. Phase 8. Not illustrated.
155. Quern fragment with a tooled upper surface, some smoothing at edges and wear traces. Coarse-grained Greensand. Dimensions: 200 mm x 150 mm x 55 mm. **Plateau 8** FN 8.83 Context 3585/3586. Phase 8. Not illustrated.
156. Quern fragment with a smoothed upper surface. Poorly-sorted, coarse-grained, muddy sandstone. Dimensions: 175 mm x 160 mm x 52 mm. **Plateau 8** FN 8.411 Context 14534/14535. Phase 8. Not illustrated.
157. Nine small quern fragments, all from same quern. Medium-grained sandstone, Greensand. The largest fragment has a dressed and worked surface, with wear traces. Dimensions (of two largest): 110 mm x 130 mm x 45 mm and 230 mm x 120 mm x 62 mm. **Plateau 8** FN 8.421 Context 14509. Phase 8. Not illustrated.

Later Querns (Cat. Nos. 158–175, not illustrated)

158. Two amorphous fragments from a quern. Vesicular Niedermendig Lava. Dimensions: 75 mm x 65 mm and 85 mm x 75 mm. Thickness: 50 mm. **Plateau 3** FN 3.239 Context 11072. Phase 12. Not illustrated.
159. Possible rubbing stone and stone rubber. The potential rubbing stone, which has a dished surface, is made from a fine-grained white sandstone, possibly Greensand. The potential stone rubber is made from an echinoid with a diameter of 60 mm. The appearance of this stone and the possible stone rubber are strongly suggestive of a prehistoric date, although the dating of the context is much later. Dimensions of rubbing stone: 150 mm x 95 mm x 40 mm. **Plateau 4** FN 4.37 Context 4746. Phase 14. Not illustrated.
160. Quern fragment with one smoothed surface. Dark-coloured indurated sandstone. Dimensions: 125 mm x 110 mm x 50 mm. **Plateau 4** FN 4.32 Context 4808. Phase 14. Not illustrated.
161. Quern fragment with wear traces on one surface. Coarse-grained, pale-coloured sandstone, Greensand. Dimensions: 120 mm x 126 mm x 40 mm. **Plateau 4** FN 4.31 Context 4808. Phase 14. Not illustrated.
162. Large quern fragment, with one very roughly-dressed surface. Medium-to coarse-grained white sandstone. Dimensions: 250 mm x 170 mm x 50 mm. **Plateau 5** FN 5.92 Context 15071. Phase 14. Not illustrated.
163. Nine small quern fragments, all from same quern. Coarse-grained white sandstone, Greensand. Dimensions (of two largest): 110 mm x 110 mm x 35 mm and 110 mm x 70 mm x 40 mm. **Plateau 4** FN 4.27 Context 4679. Phase 14. Not illustrated.
164. Quern fragment. Pale-coloured, coarse-grained white sandstone. Greensand. Dimensions: 126 mm x 70 mm x 30 mm. **Plateau 4** FN 4.30 Context 4679. Phase 14. Not illustrated.
165. Large fragment from a rotary quernstone. Coarse-grained sandstone. Medieval in date. Original diameter: *c.* 420 mm, dimensions: 270 mm x 160 mm x 70 mm (outer edge) and 40 mm (inner edge). **Plateau 1** FN 1.9052 Context 10167. Phase 16. Not illustrated.
166. Quern fragment, triangular in shape and burnt. Indurated, pale-coloured medium- grained sandstone. Possibly Kentish Rag. Medieval in date. Dimensions: 95 mm x 90 mm x 45 mm. **Plateau 2** FN 2.9028 Context 9007. Phase 16. Not illustrated.
167. Quern fragment, with an outer lip, tooled upper surface and some wear traces. Coarse-grained sandstone, possibly Greensand. Medieval in date. Dimensions: 210 mm x 170 mm x 60 mm. **Plateau 6** FN 6.505 Context 16098. Phase 16. Not illustrated.
168. Curved fragment from the upper part of a beehive quern. Hertfordshire puddingstone. Medieval in date. Dimensions: 120 mm x 180 mm x 85 mm. **Plateau 1** FN 1.34 Context 1923. Phase 16. Not illustrated.
169. Quern fragment, roughly triangular in shape. Niedermendig Lava. Dimensions: 55 mm x 65 mm x 26 mm. **Plateau 7** FN 7.8 Context 7183. Phase 16. Not illustrated.
170. Quern fragment. Coarse-grained sandstone. Medieval in date. Dimensions: 90 mm x 65 mm x 70 mm. **Plateau 1** FN 1.161 Context 10357. Phase 16. Not illustrated.

171. Slightly dished rubbing stone fragment. Fine-grained micaceous sandstone. Kentish Rag. Medieval in date. Dimensions: 90 mm x 70 mm x 34 mm. **Plateau 2** FN 2.4 Context 2039. Phase 16. Not illustrated.
172. Small quern fragment, roughly triangular in shape. Fine-grained dark sandstone. Dimensions: 120 mm x 80 mm x 60 mm (outer edge) and 30 mm (inner edge). **Plateau 1** FN 1.74 Context 644. Phase 16. Not illustrated.
173. Small quern fragment, roughly triangular in shape. Fine-grained sandstone with striae. Dimensions: 140 mm x 110 mm x 40 mm. **Plateau 1** FN 1.135 Context 10608/10610. Phase 16. Not illustrated.
174. Three small quern fragments, all burnt. Coarse-grained sandstone. Dimensions: 110 mm x 75 mm x 50 mm (a); 90 mm x 60 mm x 40 mm (b), 55 mm x 60 mm x 40 mm (c). **Plateau 8** U/S. Not illustrated.
175. Quern fragment, with a smoothed upper surface. Pale-coloured, medium-grained sandstone. Dimensions: 120 mm x 100 mm x 70 mm. **Plateau 8** FN 8.34 Context 8688. Unphased. Not illustrated.

Mortars (Cat. Nos. 176–177, not illustrated)

176. Wall fragment from a large mortar with a bulbous shape. Fossiliferous limestone, possibly Caen stone. Original diameter: 250 mm, height: 350 mm, width of existing piece: 290 mm, thickness: 90 mm. **Plateau 6** FN 6.9007 Context 16544. Phase 15+. Not illustrated.
177. Two joining fragments from a mortar, including the spout. Mesozoic, micritic limestone. Possibly Quarr Stone from the Isle of Wight or Burr Stone from Purbeck. Diameter: 250 mm, thickness of lipped edge: 40 mm, height at side: 110 mm, average thickness of wall: 18 mm. **Plateau 6** FN 6.27 Context 6146. Phase 14+. Not illustrated.

Hones (Cat. Nos. 178–180, not illustrated)

178. Two possible hone fragments, the larger of which is roughly-rectangular in shape. Coarse-grained sandstone, possibly Sarsen. Iron Age in date. Dimensions: 40 mm x 25 mm x 29 mm, 55 mm x 40 mm x 18 mm. **Plateau 8** FN 8.9067 Context 8640. Phase 8. Not illustrated.
179. Hone, comprising one large, roughly-rectangular fragment and several small fragments. Very weathered Norwegian Ragstone. Dimensions: 75 mm x 27 mm x 26 mm. **Plateau 5** FN 5.41 Context 6525. Phase 15+. Not illustrated.
180. Sharpening or rubbing stone made from a re-used masonry slab. There is a deep groove and a series of lighter scratches on the working surface. Very fine-grained, pale-coloured sandstone. Dimensions: 175 mm x 160 mm x 45 mm. **Plateau 1** FN 1.2 Context 1277. Phase 16. Not illustrated.

Spindle Whorls (Cat. Nos. 181–183, Fig. 260)

181. Fragment from a broad, disc-shaped chalk spindle whorl, with one flat surface and one convex surface, comprising roughly a quarter of the original whorl. Iron Age in date. Original diameter: *c.* 60 mm, thickness: 12–15 mm, thicker at centre, diameter of central hole: *c.* 12 mm. **Plateau 8** FN 8.9055 Context 8133. Phase 8. Weight: 17 grams. Original weight of whorl: *c.* 60 grams. Fig. 260.
182. Large circular spindle whorl, with one flat surface and one slightly convex surface, slightly irregular in shape. Dark reddish orange sandstone. Roman in date and similar in size and general shape to some ceramic spindle whorls from Colchester (Crummy 1983, Fig. 71: 2003, 2005, 67). Diameter: 47mm, thickness: 12 mm, diameter of central hole: 8 mm. Weight: 31 grams. **Plateau 2** FN 2.112 Context 2322. Phase 11. Fig. 260.
183. Stone spindle whorl, roughly globular in shape, with an off-centre perforation, conforming to Form C of Walton Rogers' typology of spindlewhorls (Walton Rogers 1997, fig. 807: 6575). Type C 'globular whorls…are typical of eastern England in the medieval period', some of which were made of limestone, including one from Bedern, York (Ottaway and Rogers 2002, fig. 1344, No. 13440, 2737). A similarly-shaped limestone whorl from Canterbury dated to the early 14th century (Stow 1982, fig. 62: 42, 124–126). Limestone. Diameter: 27 mm, thickness: 28 mm, diameter of off-centre hole: 10 mm. Weight: 24 grams. **Plateau 6** FN 6.26 Context 6146. Phase 14+. Fig. 260.

Architectural/Masonry Fragments (Cat. Nos. 184–186, not illustrated)

184. Architectural fragment with a curved edge and dressed surfaces, probably from the base of a column. There are mortar traces on one side with an opposed keying design. Silty calcareous sandstone or oolitic limestone. Dimensions: 110 mm x 120 mm x 33 mm. **Plateau 6** No FN Context 16173/16174. Phase 17. Not illustrated.
185. Masonry fragment, with one worked surface. Soft, very fine-grained sandstone. Dimensions: 55 mm x 35 mm x 45 mm. **Plateau 7** FN 7.34 Context 7296. Phase 16. Not illustrated.
186. Seven masonry fragments, various sizes, most of which have retained traces of mortar and some of which have keying marks. Oolitic limestone. Dimensions: 140 mm x 67 mm x 29 mm (a), 80 mm x 40 mm x 32 mm (b), 30 mm x 40 mm x 22 mm (c), 120 mm x 100 mm x 45 mm (d), 130 mm x 70 mm x 35 mm (e), 130 mm x 90 mm x 25 mm (f), 165 mm x 85 mm x 35 mm (g). **Plateau 6** No FN Context 16173/16174. Phase 17. Not illustrated.

Possible Pigments (Cat. Nos. 187–188, not illustrated)

187. Fragment of very fine red sandstone with small scratches on the surface, possibly used as a pigment. Dimensions: 40 mm x 25 mm x 20 mm. **Plateau 8** FN 8.2409 Context 12872. Phase 8. Not illustrated.

188. Fragment of very fine red sandstone, possibly used as a pigment. Dimensions: 40 mm x 35 mm x 30 mm. **Plateau 8** FN 8.2412 Context 8940. Phase 7. Not illustrated.

Querns of Niedermendig Lava: Plateau 1 FN 1.6 Context 1400, FN 1.56 Context 10015, FN 1.86 Context 912, FN 1.117 Context 10637, FN 1.128 Context 10575, FN 1.129 Context 10575, FN 1.130 Context 13181, FN 1.133 Context 10561, FN 1.9033 Context 10164, FN 1.9034 Context 1885, FN 1.9049 Context 10156, FN 1.9050 Context 10560, FN 1.9055 Context 10700, FN 1.9058 Context 1313, FN 1.9062 Context 1609, FN 1.9064 Coll DCB, FN 1.9065 Context 487/488, FN 1.9067 Context 10533, FN 1.9071 Context 10318, FN 1.9072 Context 1764/1765, FN 1.9080 Context 1554, FN 1.9084 Context 786, FN 1.9085 Context 1949; **Plateau 2** FN 2.159 Context 9274/9275, FN 2.9013 Context 9438 (reused as pestle?), FN 2.9014 Context 9080, FN 2.9016 Context 9439, FN 2.9017 Context 2319, FN 2.9019 Context 9747, FN 2.9020 Context 9498, FN 2.9026 Context 9449, FN 2.9027 Context 2033, FN 2.9029 Context 2919; **Plateau 3** FN 3.239 Context 11072; **Plateau 4** FN 4.29 Context 4801, FN 4.238 Context 4822; **Plateau 5** FN 5.38 Context 5697, FN 5.40 Context 6525, FN 5.108 Context 15190, FN 5.9033 Context 15077, FN 5.9035 Context 15186; **Plateau 6** FN 6.267 Context 6064, FN 6.482 Context 5577, FN 6.483 Context 5575, FN 6.484 Context 5572, No. FN Context 16015; **Plateau 7** FN 7.8 Context 7183, FN 7.22 Context 7326, FN 7.31 Context 7296; **Plateau 8** FN 8.2235 Context 14797, FN 8.2406 Context 8131.

Querns of Sedimentary Stone: Plateau 1 FN 1.74 Context 644, FN 1.135 Context 10608/10610, FN 1.161 Context 10357, FN 1.9052 Context 10167; **Plateau 2** FN 2.4 Context 2039, FN 2.9028 Context 9007; **Plateau 4** FN 4.27 Context 4679, FN 4.30 Context 4679, FN 4.32 Context 4808, FN 4.237 Context 4746, FN 4.9004 Context 4785; **Plateau 5** FN 5.58 Context 6533, FN 5.92 Context 15071; **Plateau 6** FN 6.505 Context 16098; **Plateau 8** FN 8.16 Context 8516, FN 8.24 Context 8643, FN 8.33 Context 8620, FN 8.34 Context 8688, FN 8.35 Context 8636, FN 8.43 Context 8761, FN 8.45 Context 8480, FN 8.57 Context 8892, FN 8.59 Context 8910, FN 8.83 Context 3585/3586, FN 8.158 Context 12307, FN 8.159 Context 12307, FN 8.411 Context 14534/14535, FN 8.421 Context 14509, FN 8.9057 Context 3846, FN 8.9071 Context 8697, FN 8.9072 Context 12354, No FN U/S.

Summary and Discussion

There is no doubt that the combined small finds assemblage from all the Thanet Earth plateaux or sites constitutes an assemblage of both regional and national importance in terms of size, scope, and quality, as well as a generally high standard of preservation, but also in terms of its potential for reconstructing successive episodes of past human behaviour within the landscape from prehistory to the present day. The diversity and sheer volume of small finds recovered, and the level of completeness and good preservation of many of the finds, allows the assemblage to be meaningfully discussed in both chronological and functional terms. Some of the individual finds, such as the Beaker/Bronze Age copper dagger and stone bracer, the Bronze Age copper alloy palstave axe, the two chalk cups, the incised chalk slab, and the medieval personal seal

matrix, are of enormous significance in their own right, not only because they are of displayable quality, but in terms of how they expand our knowledge of the various periods represented and add to the existing national corpus of excavated finds within their material and period groups. It is not particularly the size of the overall assemblage that is significant, but the make-up of the different elements represented both by chronology and function. In particular, the copper alloy, iron, amber, and stone assemblages are each in their individual ways highly significant from an academic point of view.

The earliest small finds are prehistoric, some of the Bronze Age but mostly otherwise Iron Age in date. There is also a significant Romano-British assemblage and more sizeable assemblages of small finds of the Anglo-Saxon, medieval and Post-medieval periods. Although the small finds assemblages from the various periods are of different sizes and composition, comparative analysis of the assemblages by chronological period has proved highly instructive.

A short comparative analysis of the Thanet Earth small finds assemblages by plateau/site and material/function will be attempted here, principally using the data in Table 7 and the concordances that form the appendix to this report. By quantifying this material by plateau it was hoped that some patterns might emerge against the overall chronological framework for the site. It is certainly possible to see change in site function over time, something that is reflected in the other finds and environmental assemblages from the site and in the recorded structural sequences.

The plateaux with the largest numbers of registered small finds were, in order, Plateau 8, Plateau 1, Plateau 5, and Plateau 6. With much smaller assemblages are Plateaux 2, 3, 4, and 7. If one includes the number of multiple finds collected under one registered find number, principally iron nails, the greatest number of finds come from Plateaux 6, 8, 5, 2, 1 and 7, with lesser numbers from Plateaux 3 and 4.

An examination of each individual plateau small finds assemblage reveals the following trends confirmed by reference to the full stratigraphic phasing database for the Thanet Earth sites. The assemblage from Plateau 1 has high numbers of iron items, including a perhaps significant number of knives and tools, and of stone registered small finds, including a chalk cup and a large number of fragments of Niedermendig quernstone fragments. The small assemblage of copper alloy small finds from here includes a pair of highly-elaborate and unusually well-preserved and complete rosette brooches from a cremation, which also contained amber beads and other brooches. The closest parallels for the rosette brooches, which date to around the mid- 1st century AD, came from Cirencester where they almost certainly arrived with the army in *c.* 45 AD (Mackreth 2011, fig. 17: 5876, 5879, 20). This type of 'purely continental' brooch (*ibid*, 8) was previously unknown in Kent or central Southern England (*ibid*, 29), and therefore the discovery of these brooches at the Thanet site is highly interesting. In addition, the

preservation and completeness of one of these brooches makes it perhaps the best example of its kind hitherto found in Britain.

The small Plateau 2 small finds assemblage is dominated by iron objects, though many of these are nails, and, to a lesser extent, stone objects, principally quernstones, with a stone spindlewhorl also being present, although the Bronze Age palstave axe from here is of the greatest significance, especially in terms of the circumstances of its recovery — from a flint layer at the base of a pond which may, therefore, represent a votive item deposited in a 'watery place'. Therefore, the axe, along with the dagger and wristguard from the Beaker burial discussed below, may testify to the ritual nature of the landscape at various times during the prehistoric period.

The smaller Plateau 3 small finds assemblage is dominated by iron objects, along with finds of glass and amber beads. The Plateau 4 assemblage is again relatively small, with iron small finds in the majority, though once more many of these are finds of iron nails. The much larger Plateau 5 assemblage yet again is dominated by iron finds, many of them iron nails but also including an arrowhead, with smaller numbers of copper alloy objects, including buckles, a strap end, a book clasp, and a bell from horse harness, and stone objects, among which is another, highly-significant chalk cup. The Plateau 6 assemblage, of approximately the same size as that from Plateau 5, has a different make-up, with finds of iron, ceramic/baked clay, stone, copper alloy, and glass, attesting to different activities here. Of the greatest significance are the copper dagger and the greenstone bracer or wristguard forming grave goods with a Beaker burial. The Thanet area appears to have been a focus for Late Neolithic/Early Bronze Age funerary activity and the bracer/wristguard is not only a particularly good example of the type but the second one to be found here, an earlier example being recorded from St Peter's refuse tip in Thanet (Woodward and Hunter 2011, 172, ID 149). The presence here of a medieval copper alloy personal seal matrix is also intriguing, as are an iron key and latch lifters, a number of iron tools and fittings, a stone architectural fragment, and pieces of highly-worked building stone. Many clay pipe fragments and sherds of Post-medieval glass also come from this plateau.

The small Plateau 7 small finds assemblage has little initial discernible character, with the largest group of finds, of iron, consisting principally of nails. The Plateau 8 assemblage, however, is the largest group from all the plateaux, with iron objects and ceramic/baked clay objects being particularly numerous, with stone objects and copper alloy items being present but in smaller numbers, with lesser numbers of lead, glass, and bone objects. Although the majority of the iron items are nails, there is present here an interesting small group of knives and tools. However, it is the presence on this plateau of very large numbers of Iron Age ceramic/baked clay loomweights and five spindle whorls, four ceramic and one stone, that is of very great interest indeed since it indicates an unusually intense focus of textile-related activity during that period, and therefore possibly a focus of female craft activity. The morphological similarity between

the loomweights, as well as the broadly similar clay fabrics employed in their manufacture, attests to their contemporaneity. A large number of stone quern fragments, a hone and some fragments of worked antler also attest to craft activity taking place on this part of the site, the contemporaneity of the various craft activities attested by different groups of small finds as having taken place here can be established as being at a peak in Phases 6–8. An incised chalk slab was also found on this plateau and is potentially of considerable individual interest.

It can therefore be concluded that the further analysis of the Thanet Earth small finds assemblage presented here has made a significant academic study in its own right, but appearing as part of the larger site publication it has contributed significantly towards addressing the overall project research aims, as well as informing the overall discussion of the sites below. In the context of the archaeology of the region, the publication of the Thanet Earth small finds, along with those already published from previous excavations in Thanet and the wider region, contributes greatly to an understanding of the use and importance of material culture in the lives of the inhabitants of the area at different periods.

The writing of the history of material culture through the study of manufacture, trading, and consumption is one of the most academically-important themes within British archaeology today and there is no doubt that analysis and publication of the Thanet Earth small finds has contributed significantly to the understanding of the history of the region and its inhabitants from prehistoric and Roman times to the present day.

Appendix 1: Concordance of Catalogued Finds in Catalogue Number Sequence

Cat. No. 1 **Plateau** 6 FN 6.33 Context 6024 Phase 2
Cat. No. 2 **Plateau** 2 FN 2.133 Context 2837 Phase 3+
Cat. No. 3 **Plateau** 8 FN 8.155 Context 12310 Phase 8
Cat. No. 4 **Plateau** 8 FN 8.463 Context 14927 Phase 10
Cat. No. 5 **Plateau** 1 FN 1.112 Context 10687 Phase 10
Cat. No. 6 **Plateau** 1 FN 1.113 Context 10687 Phase 10
Cat. No. 7 **Plateau** 1 FN 1.114 Context 10687 Phase 10
Cat. No. 8 **Plateau** 1 FN 1.159 Context 10687 Phase 10
Cat. No. 9 **Plateau** 1 FN 1.160 Context 10687 Phase 10
Cat. No. 10 **Plateau** 8 FN 8.108 Context 8682 Phase 8
Cat. No. 11 **Plateau** 8 FN 8.235 Context 12748 Phase 10
Cat. No. 12 **Plateau** 8 FN 8.236 Context 12748 Phase 10
Cat. No. 13 **Plateau** 8 FN 8.242 Context 12748 Phase 10
Cat. No. 14 **Plateau** 8 FN 8.9058a Context 12792 Phase 10
Cat. No. 15 **Plateau** 8 FN 8.372 Context 12822 Phase 12
Cat. No. 16 **Plateau** 8 FN 8.211 Context 12534 Phase 12
Cat. No. 17 **Plateau** 8 FN 8.51 Context 8745 Phase 8
Cat. No. 18 **Plateau** 3 FN 3.240 Context 11079 Phase 12
Cat. No. 19 **Plateau** 3 FN 3.148 Context 11072 Phase 12
Cat. No. 20 **Plateau** 5 FN 5.67 Context U/S
Cat. No. 21 **Plateau** 6 FN 6.5 Context 6117 Unphased
Cat. No. 22 **Plateau** 5 FN 5.12 Context 5691 Phase 17
Cat. No. 23 **Plateau** 5 FN 5.110 Context 15185 Phase 16
Cat. No. 24 **Plateau** 4 FN 4.458 Context 4776 Phase 16
Cat. No. 25 **Plateau** 7 FN 7.38 Context U/S
Cat. No. 26 **Plateau** 8 FN 8.109 Context U/S
Cat. No. 27 **Plateau** 5 FN 5.11 Context 5691 Phase 17
Cat. No. 28 **Plateau** 6 FN 6.434 Context 16071 Phase 17
Cat. No. 29 **Plateau** 4 FN 4.46 Context 4061 Phase 16
Cat. No. 30 **Plateau** 7 FN 7.24 Context 7327 Phase 16
Cat. No. 31 **Plateau** 4 FN 4.35 Context 4818 Phase 15
Cat. No. 32 **Plateau** 1 FN 1.91 Context 983 Phase 16
Cat. No. 33 **Plateau** 5 FN 5.4 Context 5775 Phase 14
Cat. No. 34 **Plateau** 5 FN 5.35 Context 15231 Phase 16
Cat. No. 35 **Plateau** 7 FN 7.21 Context 7326 Phase 16
Cat. No. 36 **Plateau** 4 FN 4.47 Context 4567 Phase 16
Cat. No. 37 **Plateau** 6 FN 6.484 Context 16071 Phase 17
Cat. No. 38 **Plateau** 7 FN 7.39 Context U/S
Cat. No. 39 **Plateau** 1 FN 1.9 Context 1458 Phase 16
Cat. No. 40 **Plateau** 6 FN 6.476 Context 16211 Phase 17
Cat. No. 41 **Plateau** 6 FN 6.432 Context 16071 Phase 17

Cat. No. 42 **Plateau** 6 FN 6.491 Context 16375 Phase 17
Cat. No. 43 **Plateau** 6 FN 6.475 Context 16211 Phase 17
Cat. No. 44 **Plateau** 6 FN 6.405 Context 16086 Phase 17
Cat. No. 45 **Plateau** 6 FN 6.399 Context 16084 Phase 17
Cat. No. 46 **Plateau** 1 FN 1.1021 Context 1667 Unphased
Cat. No. 47 **Plateau** 8 FN 8.116 Context 12003 Phase 8
Cat. No. 48 **Plateau** 6 FN 6.492 Context 16375 Phase 17
Cat. No. 49 **Plateau** 5 FN 5.64 Context U/S
Cat. No. 50 **Plateau** 5 FN 5.63 Context U/S
Cat. No. 51 **Plateau** 5 FN 5.65 Context U/S
Cat. No. 52 **Plateau** 1 FN 1.38 Context U/S
Cat. No. 53 **Plateau** 5 FN 5.68 Context U/S
Cat. No. 54 **Plateau** 5 FN 5.29 Context 15165 Unphased
Cat. No. 55 **Plateau** 5 FN 5.7Context 5691 Phase 17
Cat. No. 56 **Plateau** 1 FN 1.54 Context 10074 Phase 2?
Cat. No. 57 **Plateau** 1 FN 1.9032 Context 10113 Phase 2?
Cat. No. 58 **Plateau** 3 FN 3.38 Context 3265 Phase 2
Cat. No. 59 **Plateau** 3 FN 3.156 Context 11079 Phase 12
Cat. No. 60 **Plateau** 3 FN 3.1389 Context 11083 Phase 12
Cat. No. 61 **Plateau** 7 FN 7.25 Context 7327 Phase 16
Cat. No. 62 **Plateau** 7 FN 7.40 Context U/S
Cat. No. 63 **Plateau** 4 FN 4.20a Context 4369 Phase 16
Cat. No. 64 **Plateau** 4 FN 4.36 Context 4237 Phase 15
Cat. No. 65 **Plateau** 5 FN 5.9013 Context 5595 Phase 15
Cat. No. 66 **Plateau** 8 FN 8.106 Context 3835 Phase 8
Cat. No. 67 **Plateau** 8 FN 8.462 Context 14306 Phase 8
Cat. No. 68 **Plateau** 8 FN 8.9022 Context 12369 Phase 10
Cat. No. 69 **Plateau** 1 FN 1.98 Context 10227 Phase 16
Cat. No. 70 **Plateau** 3 FN 3.9003 Context 11083 Phase 12
Cat. No. 71 **Plateau** 1 FN 1.1112 Context 1111 Unphased
Cat. No. 72 **Plateau** 5 FN 5.75 Context U/S
Cat. No. 73 **Plateau** 1 FN 1.115 Context 10227 Phase 16
Cat. No. 74 **Plateau** 1 FN 1.10 Context 1465 Phase 16
Cat. No. 75 **Plateau** 5 FN 5.99 Context 15087 Phase 15
Cat. No. 76 **Plateau** 4 FN 4.21 Context 4369 Phase 16
Cat. No. 77 **Plateau** 2 FN 2.169 Context 9716 Phase 16
Cat. No. 78 **Plateau** 1 FN 1.104a Context 10348 Phase 16
Cat. No. 79 **Plateau** 7 FN 7.9000 Context U/S
Cat. No. 80 **Plateau** 5 FN 5.56 Context U/S
Cat. No. 81 **Plateau** 1 FN 1.100 Context 10156 Phase 16
Cat. No. 82 **Plateau** 4 FN 4.14 Context 4374 Phase 16
Cat. No. 83 **Plateau** 4 FN 4.7 Context 4309 Phase 16
Cat. No. 84 **Plateau** 2 FN 2.9011 9517 Context Phase 16

Cat. No. 85 **Plateau** 5 FN 5.9024a Context 5537 Phase 15
Cat. No. 86 **Plateau** 5 FN 5.61 Context 6545 Phase 15
Cat. No. 87 **Plateau** 1 FN 1.90 Context 984 Phase 16
Cat. No. 88 **Plateau** 6 FN 6.472 Context 16211 Phase 17
Cat. No. 89 **Plateau** 6 FN 6.464 Context 16222 Phase 17
Cat. No. 90 **Plateau** 6 FN 6.470 Context 16211 Phase 17
Cat. No. 91 **Plateau** 6 FN 6.9006 Context 16162 Phase 20
Cat. No. 92 **Plateau** 6 FN 6.499 Context 16328 Phase 17
Cat. No. 93 **Plateau** 6 FN 6.496 Context 16375 Phase 17
Cat. No. 94 **Plateau** 6 FN 6.393 Context 16071 Phase 17
Cat. No. 95 **Plateau** 6 FN 6.511 Context 16373 Phase 17
Cat. No. 96 **Plateau** 1 FN 1.158 Context 10687 Phase 10
Cat. No. 97 **Plateau** 3 FN 3.135 Context 11072 Phase 12
Cat. No. 98 **Plateau** 8 FN 8.7 Context 8287 Phase 6
Cat. No. 99 **Plateau** 8 FN 8.37 Context 8708 Phase 8
Cat. No. 100 **Plateau** 8 FN 8.26 Context 8640 Phase 8
Cat. No. 101 **Plateau** 6 FN 6.9002 Context 6343 Phase 2?
Cat. No. 102 **Plateau** 8 FN 8.47 Context 8800 Phase 7
Cat. No. 103 **Plateau** 8 FN 8.27 Context 8628 Phase 8
Cat. No. 104 **Plateau** 8 FN 8.122 Context 8637 Phase 8
Cat. No. 105 **Plateau** 8 FN 8.380 Context 3720 Phase 8
Cat. No. 106 **Plateau** 8 FN 8.80 Context 3643/3644 Phase 8
Cat. No. 107 **Plateau** 8 FN 8.28 Context 8659 Unphased
Cat. No. 108 **Plateau** 3 FN 3.9042 Context 11083 Phase 12
Cat. No. 109 **Plateau** 3 FN 3.9043 Context 11083 Phase 12
Cat. No.110 **Plateau** 5 FN 5.9042 Context 15147 Phase 16
Cat. No. 111 **Plateau** 3 FN 3.9012 Context 11083 Phase 12
Cat. No. 112 **Plateau** 3 FN 3.9011 Context 11083 Phase 12
Cat. No. 113 **Plateau** 3 FN 3.9010 Context 11083 Phase 12
Cat. No. 114 **Plateau** 3 FN 3.9015 Context 11083 Phase 12
Cat. No. 115 **Plateau** 3 FN 3.9014 Context 11083 Phase 12
Cat. No. 116 **Plateau** 3 FN 3.9016 Context 11083 Phase 12
Cat. No. 117 **Plateau** 3 FN 3.9029 Context 11084 Phase 12
Cat. No. 118 **Plateau** 8 FN 8.210 Context U/S
Cat. No. 119 **Plateau** 3 FN 3.147 Context 11072 Phase 12
Cat. No. 120 **Plateau** 8 FN 8.9083 Context 12831 Phase 10
Cat. No. 121 **Plateau** 8 FN 8.9082 Context 12833 Phase 10
Cat. No. 122 **Plateau** 8 FN 8.9084 Context 12835 Phase 10
Cat. No. 123 **Plateau** 3 FN 3.9017 Context 11072 Phase 12
Cat. No. 124 **Plateau** 4 FN 4.9003 Context 4062 Phase 16
Cat. No. 125 **Plateau** 5 FN 5.9030 Context 6553 Phase 17
Cat. No. 126 **Plateau** 6 FN 6.435 Context 16135 Phase 17
Cat. No. 127 **Plateau** 8 FN 8.9052 Context 14306 Phase 8

Cat. No. 128 **Plateau** 8 FN 8.9080 Context 8654 Phase 8
Cat. No. 129 **Plateau** 3 FN 3.143 Context 11071 Phase 12
Cat. No. 130 **Plateau** 1 FN 1.55 Context 10015 Phase 16
Cat. No. 131 **Plateau** 8 FN 8.384 Context 3728 Phase 8
Cat. No. 132 **Plateau** 8 FN 8.9054 Context 8643 Phase 7
Cat. No. 133 **Plateau** 1 FN 1.68 Context 10063 Phase 16
Cat. No. 134 **Plateau** 1 FN 1.143–157, 169–172 Context 10687 Phase 10
Cat. No. 135 **Plateau** 8 FN 8.211 Context 12534 Phase 12
Cat. No. 136 **Plateau** 3 FN 3.9002 Context 11079 Phase 12
Cat. No. 137 **Plateau** 3 FN 3.9030 Context 11072 Phase 12
Cat. No. 138 **Plateau** 6 FN 6.34 Context 6024 Phase 2
Cat. No. 139 **Plateau** 1 FN 1.131 Context 10575 Phase 16
Cat. No. 140 **Plateau** 5 FN 5.20 Context 5803 Phase 15
Cat. No. 141 **Plateau** 8 FN 8.58 Context 8892 Phase 8
Cat. No. 142 **Plateau** 8 FN 8.158 Context 12307 Phase 1
Cat. No. 143 **Plateau** 8 FN 8.159 Context 12307 Phase 1
Cat. No. 144 **Plateau** 8 FN 8.45 Context 8480 Phase 6
Cat. No. 145 **Plateau** 8 FN 8.24 Context 8643 Phase 7
Cat. No. 146 **Plateau** 8 FN 8.9057 Context 3846 Phase 7
Cat. No. 147 **Plateau** 8 FN 8.57 Context 8892 Phase 8
Cat. No. 148 **Plateau** 8 FN 8.43 Context 8761 Phase 8
Cat. No. 149 **Plateau** 8 FN 8.9071 Context 8697 Phase 8
Cat. No. 150 **Plateau** 8 FN 8.16 Context 8516 Phase8
Cat. No. 151 **Plateau** 8 FN 8.35 Context 8636 Phase 8
Cat. No. 152 **Plateau** 8 FN 8.411 Context 14534/14535 Phase 8
Cat. No. 153 **Plateau** 8 FN 8.59 Context 8910 Phase 8
Cat. No. 154 **Plateau** 8 FN 8.33 Context 8620 Phase 8
Cat. No. 155 **Plateau** 8 FN 8.83 Context 3585/3586 Phase 8
Cat. No. 156 **Plateau** 8 FN 8.411 Context 14534/14535 Phase 8
Cat. No. 157 **Plateau** 8 FN 8.421 Context 14509 Phase 8
Cat. No. 158 **Plateau** 3 FN 3.239 Context 11072 Phase 12
Cat. No. 159 **Plateau** 4 FN 4.237 Context 4746 Phase 14
Cat. No. 160 **Plateau** 4 FN 4.32 Context 4808 Phase 14
Cat. No. 161 **Plateau** 4 FN 4.31 Context 4804 Phase 14
Cat. No. 162 **Plateau** 5 FN 5.92 Context 15071 Phase 14
Cat. No. 163 **Plateau** 4 FN 4.27 Context 4679 Phase 14
Cat. No. 164 **Plateau** 4 FN 4.30 Context 4679 Phase 14
Cat. No. 165 **Plateau** 1 FN 1.9052 Context 10167 Phase 16
Cat. No. 166 **Plateau** 2 FN 2.9028 Context 9007 Phase 16
Cat. No. 167 **Plateau** 6 FN 6.505 Context 16098 Phase 16
Cat. No. 168 **Plateau** 1 FN 1.34 Context 1923 Phase 16
Cat. No. 169 **Plateau** 7 FN 7.8 Context 7183 Phase 16
Cat. No. 170 **Plateau** 1 FN 1.161 Context 10357 Phase 16

Cat. No. 171 **Plateau** 2 FN 2.4 Context 2039 Phase 16
Cat. No. 172 **Plateau** 1 FN 1.74 Context 644 Phase 16
Cat. No. 173 **Plateau** 1 FN 1.135 Context 10608/10610 Phase 16
Cat. No. 174 **Plateau** 8 Context U/S
Cat. No. 175 **Plateau** 8 FN 8.34 Context 8688 Unphased
Cat. No. 176 **Plateau** 6 FN 6.9007 Context 16544 Phase 15+
Cat. No. 177 **Plateau** 6 FN 6.27 Context 6146 Phase 14+
Cat. No. 178 **Plateau** 8 FN 8.9067 Context 8640 Phase 8
Cat. No. 179 **Plateau** 5 FN 5.41 Context 6525 Phase 15+
Cat. No. 180 **Plateau** 1 FN 1.2 Context 1277 Phase 16
Cat. No. 181 **Plateau** 8 FN 8.9055 Context 8133 Phase 8
Cat. No. 182 **Plateau** 2 FN 2.112 Context 2322 Phase 11
Cat. No. 183 **Plateau** 6 FN 6.26 Context 6146 Phase 14+
Cat. No. 184 **Plateau** 6 Context 16173/16174 Phase 17
Cat. No. 185 **Plateau** 7 FN 7.34 Context 7296 Phase 16
Cat. No. 186 **Plateau** 6 Context 16173/16174 Phase 17
Cat. No. 187 **Plateau** 8 FN 8.2409 Context 12872 Phase 8
Cat. No. 188 **Plateau** 8 FN 8.2412 Context 8940 Phase 7

Appendix II: Concordance of Catalogued Finds in Phase Order

Cat. No. 142 **Plateau** 8 FN 8.158 Context 12307 Phase 1
Cat. No. 143 **Plateau** 8 FN 8.159 Context 12307 Phase 1
Cat. No. 1 **Plateau** 6 FN 6.33 Context 6024 Phase 2
Cat. No. 56 **Plateau** 1 FN 1.54 Context 10074 Phase 2?
Cat. No. 57 **Plateau** 1 FN 1.9032 Context 10113 Phase 2?
Cat. No. 58 **Plateau** 3 FN 3.38 Context 3265 Phase 2
Cat. No. 101 **Plateau** 6 FN 6.9002 Context 6343 Phase 2?
Cat. No. 138 **Plateau** 6 FN 6.34 Context 6024 Phase 2
Cat. No. 2 **Plateau** 2 FN 2.133 Context 2837 Phase 3+
Cat. No. 98 **Plateau** 8 FN 8.7 Context 8287 Phase 6
Cat. No. 144 **Plateau** 8 FN 8.45 Context 8480 Phase 6
Cat. No. 102 **Plateau** 8 FN 8.47 Context 8800 Phase 7
Cat. No. 132 **Plateau** 8 FN 8.9054 Context 8643 Phase 7
Cat. No. 145 **Plateau** 8 FN 8.24 Context 8643 Phase 7
Cat. No. 146 **Plateau** 8 FN 8.9057 Context 3846 Phase 7
Cat. No. 188 **Plateau** 8 FN 8.2412 Context 8940 Phase 7
Cat. No. 3 **Plateau** 8 FN 8.155 Context 12310 Phase 8
Cat. No. 10 **Plateau** 8 FN 8.108 Context 8682 Phase 8
Cat. No. 17 **Plateau** 8 FN 8.51 Context 8745 Phase 8
Cat. No. 47 **Plateau** 8 FN 8.116 Context 12003 Phase 8
Cat. No. 66 **Plateau** 8 FN 8.106 Context 3835 Phase 8
Cat. No. 67 **Plateau** 8 FN 8.462 Context 14306 Phase 8
Cat. No. 99 **Plateau** 8 FN 8.37 Context 8708 Phase 8
Cat. No. 100 **Plateau** 8 FN 8.26 Context 8640 Phase 8
Cat. No. 103 **Plateau** 8 FN 8.27 Context 8628 Phase 8
Cat. No. 104 **Plateau** 8 FN 8.122 Context 8637 Phase 8
Cat. No. 105 **Plateau** 8 FN 8.380 Context 3720 Phase 8
Cat. No. 106 **Plateau** 8 FN 8.80 Context 3643/3644 Phase 8
Cat. No. 127 **Plateau** 8 FN 8.9052 Context 14306 Phase 8
Cat. No. 128 **Plateau** 8 FN 8.9080 Context 8654 Phase 8
Cat. No. 131 **Plateau** 8 FN 8.384 Context 3728 Phase 8
Cat. No. 141 **Plateau** 8 FN 8.58 Context 8892 Phase 8
Cat. No. 147 **Plateau** 8 FN 8.57 Context 8892 Phase 8
Cat. No. 148 **Plateau** 8 FN 8.43 Context 8761 Phase 8
Cat. No. 149 **Plateau** 8 FN 8.9071 Context 8697 Phase 8
Cat. No. 150 **Plateau** 8 FN 8.16 Context 8516 Phase8
Cat. No. 151 **Plateau** 8 FN 8.35 Context 8636 Phase 8
Cat. No. 152 **Plateau** 8 FN 8.411 Context 14534/14535 Phase 8
Cat. No. 153 **Plateau** 8 FN 8.59 Context 8910 Phase 8
Cat. No. 154 **Plateau** 8 FN 8.33 Context 8620 Phase 8
Cat. No. 155 **Plateau** 8 FN 8.83 Context 3585/3586 Phase 8

Cat. No. 156 **Plateau** 8 FN 8.411 Context 14534/14535 Phase 8
Cat. No. 157 **Plateau** 8 FN 8.421 Context 14509 Phase 8
Cat. No. 178 **Plateau** 8 FN 8.9067 Context 8640 Phase 8
Cat. No. 181 **Plateau** 8 FN 8.9055 Context 8133 Phase 8
Cat. No. 187 **Plateau** 8 FN 8.2409 Context 12872 Phase 8
Cat. No. 4 **Plateau** 8 FN 8.463 Context 14927 Phase 10
Cat. No. 5 **Plateau** 1 FN 1.112 Context 10687 Phase 10
Cat. No. 6 **Plateau** 1 FN 1.113 Context 10687 Phase 10
Cat. No. 7 **Plateau** 1 FN 1.114 Context 10687 Phase 10
Cat. No. 8 **Plateau** 1 FN 1.159 Context 10687 Phase 10
Cat. No. 9 **Plateau** 1 FN 1.160 Context 10687 Phase 10
Cat. No. 11 **Plateau** 8 FN 8.235 Context 12748 Phase 10
Cat. No. 12 **Plateau** 8 FN 8.236 Context 12748 Phase 10
Cat. No. 13 **Plateau** 8 FN 8.242 Context 12748 Phase 10
Cat. No. 14 **Plateau** 8 FN 8.9058a Context 12792 Phase 10
Cat. No. 68 **Plateau** 8 FN 8.9022 Context 12369 Phase 10
Cat. No. 96 **Plateau** 1 FN 1.158 Context 10687 Phase 10
Cat. No. 120 **Plateau** 8 FN 8.9083 Context 12831 Phase 10
Cat. No. 121 **Plateau** 8 FN 8.9082 Context 12833 Phase 10
Cat. No. 122 **Plateau** 8 FN 8.9084 Context 12835 Phase 10
Cat. No. 134 **Plateau** 1 FN 1.143–157, 169–172 Context 10687 Phase 10
Cat. No. 182 **Plateau** 2 FN 2.112 Context 2322 Phase 11
Cat. No. 15 **Plateau** 8 FN 8.372 Context 12822 Phase 12
Cat. No. 16 **Plateau** 8 FN 8.211 Context 12534 Phase 12
Cat. No. 18 **Plateau** 3 FN 3.240 Context 11079 Phase 12
Cat. No. 19 **Plateau** 3 FN 3.148 Context 11072 Phase 12
Cat. No. 59 **Plateau** 3 FN 3.156 Context 11079 Phase 12
Cat. No. 60 **Plateau** 3 FN 3.1389 Context 11083 Phase 12
Cat. No. 70 **Plateau** 3 FN 3.9003 Context 11083 Phase 12
Cat. No. 97 **Plateau** 3 FN 3.135 Context 11072 Phase 12
Cat. No. 108 **Plateau** 3 FN 3.9042 Context 11083 Phase 12
Cat. No. 109 **Plateau** 3 FN 3.9043 Context 11083 Phase 12
Cat. No. 111 **Plateau** 3 FN 3.9012 Context 11083 Phase 12
Cat. No. 112 **Plateau** 3 FN 3.9011 Context 11083 Phase 12
Cat. No. 113 **Plateau** 3 FN 3.9010 Context 11083 Phase 12
Cat. No. 114 **Plateau** 3 FN 3.9015 Context 11083 Phase 12
Cat. No. 115 **Plateau** 3 FN 3.9014 Context 11083 Phase 12
Cat. No. 116 **Plateau** 3 FN 3.9016 Context 11083 Phase 12
Cat. No. 117 **Plateau** 3 FN 3.9029 Context 11084 Phase 12
Cat. No. 119 **Plateau** 3 FN 3.147 Context 11072 Phase 12
Cat. No. 123 **Plateau** 3 FN 3.9017 Context 11072 Phase 12
Cat. No. 129 **Plateau** 3 FN 3.143 Context 11071 Phase 12
Cat. No. 135 **Plateau** 8 FN 8.211 Context 12534 Phase 12

Cat. No. 136 **Plateau** 3 FN 3.9002 Context 11079 Phase 12
Cat. No. 137 **Plateau** 3 FN 3.9030 Context 11072 Phase 12
Cat. No. 158 **Plateau** 3 FN 3.239 Context 11072 Phase 12
Cat. No. 33 **Plateau** 5 FN 5.4 Context 5775 Phase 14
Cat. No. 159 **Plateau** 4 FN 4.237 Context 4746 Phase 14
Cat. No. 160 **Plateau** 4 FN 4.32 Context 4808 Phase 14
Cat. No. 161 **Plateau** 4 FN 4.31 Context 4804 Phase 14
Cat. No. 162 **Plateau** 5 FN 5.92 Context 15071 Phase 14
Cat. No. 163 **Plateau** 4 FN 4.27 Context 4679 Phase 14
Cat. No. 164 **Plateau** 4 FN 4.30 Context 4679 Phase 14
Cat. No. 177 **Plateau** 6 FN 6.27 Context 6146 Phase 14+
Cat. No. 183 **Plateau** 6 FN 6.26 Context 6146 Phase 14+
Cat. No. 31 **Plateau** 4 FN 4.35 Context 4818 Phase 15
Cat. No. 64 **Plateau** 4 FN 4.36 Context 4237 Phase 15
Cat. No. 65 **Plateau** 5 FN 5.9013 Context 5595 Phase 15
Cat. No. 75 **Plateau** 5 FN 5.99 Context 15087 Phase 15
Cat. No. 85 **Plateau** 5 FN 5.9024a Context 5537 Phase 15
Cat. No. 86 **Plateau** 5 FN 5.61 Context 6545 Phase 15
Cat. No. 140 **Plateau** 5 FN 5.20 Context 5803 Phase 15
Cat. No. 176 **Plateau** 6 FN 6.9007 Context 16544 Phase 15+
Cat. No. 179 **Plateau** 5 FN 5.41 Context 6525 Phase 15+
Cat. No. 23 **Plateau** 5 FN 5.110 Context 15185 Phase 16
Cat. No. 24 **Plateau** 4 FN 4.458 Context 4776 Phase 16
Cat. No. 29 **Plateau** 4 FN 4.46 Context 4061 Phase 16
Cat. No. 30 **Plateau** 7 FN 7.24 Context 7327 Phase 16
Cat. No. 32 **Plateau** 1 FN 1.91 Context 983 Phase 16
Cat. No. 34 **Plateau** 5 FN 5.35 Context 15231 Phase 16
Cat. No. 35 **Plateau** 7 FN 7.21 Context 7326 Phase 16
Cat. No. 36 **Plateau** 4 FN 4.47 Context 4567 Phase 16
Cat. No. 39 **Plateau** 1 FN 1.9 Context 1458 Phase 16
Cat. No. 61 **Plateau** 7 FN 7.25 Context 7327 Phase 16
Cat. No. 63 **Plateau** 4 FN 4.20a Context 4369 Phase 16
Cat. No. 69 **Plateau** 1 FN 1.98 Context 10227 Phase 16
Cat. No. 73 **Plateau** 1 FN 1.115 Context 10227 Phase 16
Cat. No. 74 **Plateau** 1 FN 1.10 Context 1465 Phase 16
Cat. No. 76 **Plateau** 4 FN 4.21 Context 4369 Phase 16
Cat. No. 77 **Plateau** 2 FN 2.169 Context 9716 Phase 16
Cat. No. 78 **Plateau** 1 FN 1.104a Context 10348 Phase 16
Cat. No. 81 **Plateau** 1 FN 1.100 Context 10156 Phase 16
Cat. No. 82 **Plateau** 4 FN 4.14 Context 4374 Phase 16
Cat. No. 83 **Plateau** 4 FN 4.7 Context 4309 Phase 16
Cat. No. 84 **Plateau** 2 FN 2.9011 9517 Context Phase 16
Cat. No. 87 **Plateau** 1 FN 1.90 Context 984 Phase 16

Cat. No.110 **Plateau** 5 FN 5.9042 Context 15147 Phase 16
Cat. No. 124 **Plateau** 4 FN 4.9003 Context 4062 Phase 16
Cat. No. 130 **Plateau** 1 FN 1.55 Context 10015 Phase 16
Cat. No. 133 **Plateau** 1 FN 1.68 Context 10063 Phase 16
Cat. No. 139 **Plateau** 1 FN 1.131 Context 10575 Phase 16
Cat. No. 165 **Plateau** 1 FN 1.9052 Context 10167 Phase 16
Cat. No. 166 **Plateau** 2 FN 2.9028 Context 9007 Phase 16
Cat. No. 167 **Plateau** 6 FN 6.505 Context 16098 Phase 16
Cat. No. 168 **Plateau** 1 FN 1.34 Context 1923 Phase 16
Cat. No. 169 **Plateau** 7 FN 7.8 Context 7183 Phase 16
Cat. No. 170 **Plateau** 1 FN 1.161 Context 10357 Phase 16
Cat. No. 171 **Plateau** 2 FN 2.4 Context 2039 Phase 16
Cat. No. 172 **Plateau** 1 FN 1.74 Context 644 Phase 16
Cat. No. 173 **Plateau** 1 FN 1.135 Context 10608/10610 Phase 16
Cat. No. 180 **Plateau** 1 FN 1.2 Context 1277 Phase 16
Cat. No. 185 **Plateau** 7 FN 7.34 Context 7296 Phase 16
Cat. No. 22 **Plateau** 5 FN 5.12 Context 5691 Phase 17
Cat. No. 27 **Plateau** 5 FN 5.11 Context 5691 Phase 17
Cat. No. 28 **Plateau** 6 FN 6.434 Context 16071 Phase 17
Cat. No. 37 **Plateau** 6 FN 6.484 Context 16071 Phase 17
Cat. No. 40 **Plateau** 6 FN 6. Context Phase 17
Cat. No. 41 **Plateau** 6 FN 6.432 Context 16071 Phase 17
Cat. No. 42 **Plateau** 6 FN 6.491 Context 16375 Phase 17
Cat. No. 43 **Plateau** 6 FN 6.475 Context 16211 Phase 17
Cat. No. 44 **Plateau** 6 FN 6.405 Context 16086 Phase 17
Cat. No. 45 **Plateau** 6 FN 6.399 Context 16084 Phase 17
Cat. No. 48 **Plateau** 6 FN 6.492 Context 16375 Phase 17
Cat. No. 55 **Plateau** 5 FN 5.7 Context 5691 Phase 17
Cat. No. 88 **Plateau** 6 FN 6.472 Context 16211 Phase 17
Cat. No. 89 **Plateau** 6 FN 6.464 Context 16222 Phase 17
Cat. No. 90 **Plateau** 6 FN 6.470 Context 16211 Phase 17
Cat. No. 92 **Plateau** 6 FN 6.499 Context 16328 Phase 17
Cat. No. 93 **Plateau** 6 FN 6.496 Context 16375 Phase 17
Cat. No. 94 **Plateau** 6 FN 6.393 Context 16071 Phase 17
Cat. No. 95 **Plateau** 6 FN 6.511 Context 16373 Phase 17
Cat. No. 125 **Plateau** 5 FN 5.9030 Context 6553 Phase 17
Cat. No. 126 **Plateau** 6 FN 6.435 Context 16135 Phase 17
Cat. No. 184 **Plateau** 6 Context 16173/16174 Phase 17
Cat. No. 185 **Plateau** 7 FN 7.34 Context 7296 Phase 16
Cat. No. 186 **Plateau** 6 Context 16173/16174 Phase 17
Cat. No. 91 **Plateau** 6 FN 6.9006 Context 16162 Phase 20
Cat. No. 20 **Plateau** 5 FN 5.67 Context U/S
Cat. No. 25 **Plateau** 7 FN 7.38 Context U/S

Cat. No. 26 **Plateau** 8 FN 8.109 Context U/S
Cat. No. 38 **Plateau** 7 FN 7.39 Context U/S
Cat. No. 49 **Plateau** 5 FN 5.64 Context U/S
Cat. No. 50 **Plateau** 5 FN 5.63 Context U/S
Cat. No. 51 **Plateau** 5 FN 5.65 Context U/S
Cat. No. 52 **Plateau** 1 FN 1.38 Context U/S
Cat. No. 53 **Plateau** 5 FN 5.68 Context U/S
Cat. No. 62 **Plateau** 7 FN 7.40 Context U/S
Cat. No. 72 **Plateau** 5 FN 5.75 Context U/S
Cat. No. 79 **Plateau** 7 FN 7.9000 Context U/S
Cat. No. 80 **Plateau** 5 FN 5.56 Context U/S
Cat. No. 118 **Plateau** 8 FN 8.210 Context U/S
Cat. No. 174 **Plateau** 8 Context U/S
Cat. No. 21 **Plateau** 6 FN 6.5 Context 6117 Unphased
Cat. No. 46 **Plateau** 1 FN 1.1021 Context 1667 Unphased
Cat. No. 54 **Plateau** 5 FN 5.29 Context 15165 Unphased
Cat. No. 71 **Plateau** 1 FN 1.1112 Context 1111 Unphased
Cat. No. 107 **Plateau** 8 FN 8.28 Context 8659 Unphased
Cat. No. 175 **Plateau** 8 FN 8.34 Context 8688 Unphased

Appendix III: Concordance of Catalogued Finds in Plateau Order

Cat. No. 5 **Plateau** 1 FN 1.112 Context 10687 Phase 10
Cat. No. 6 **Plateau** 1 FN 1.113 Context 10687 Phase 10
Cat. No. 7 **Plateau** 1 FN 1.114 Context 10687 Phase 10
Cat. No. 8 **Plateau** 1 FN 1.159 Context 10687 Phase 10
Cat. No. 9 **Plateau** 1 FN 1.160 Context 10687 Phase 10
Cat. No. 32 **Plateau** 1 FN 1.91 Context 983 Phase 16
Cat. No. 39 **Plateau** 1 FN 1.9 Context 1458 Phase 16
Cat. No. 46 **Plateau** 1 FN 1.1021 Context 1667 Unphased
Cat. No. 52 **Plateau** 1 FN 1.38 Context U/S
Cat. No. 56 **Plateau** 1 FN 1.54 Context 10074 Phase 2?
Cat. No. 57 **Plateau** 1 FN 1.9032 Context 10113 Phase 2?
Cat. No. 69 **Plateau** 1 FN 1.98 Context 10227 Phase 16
Cat. No. 71 **Plateau** 1 FN 1.1112 Context 1111 Unphased
Cat. No. 73 **Plateau** 1 FN 1.115 Context 10227 Phase 16
Cat. No. 74 **Plateau** 1 FN 1.10 Context 1465 Phase 16
Cat. No. 78 **Plateau** 1 FN 1.104a Context 10348 Phase 16
Cat. No. 81 **Plateau** 1 FN 1.100 Context 10156 Phase 16
Cat. No. 87 **Plateau** 1 FN 1.90 Context 984 Phase 16
Cat. No. 96 **Plateau** 1 FN 1.158 Context 10687 Phase 10
Cat. No. 130 **Plateau** 1 FN 1.55 Context 10015 Phase 16
Cat. No. 133 **Plateau** 1 FN 1.68 Context 10063 Phase 16
Cat. No. 134 **Plateau** 1 FN 1.143–157, 169–172 Context 10687 Phase 10
Cat. No. 139 **Plateau** 1 FN 1.131 Context 10575 Phase 16
Cat. No. 165 **Plateau** 1 FN 1.9052 Context 10167 Phase 16
Cat. No. 168 **Plateau** 1 FN 1.34 Context 1923 Phase 16
Cat. No. 170 **Plateau** 1 FN 1.161 Context 10357 Phase 16
Cat. No. 172 **Plateau** 1 FN 1.74 Context 644 Phase 16
Cat. No. 173 **Plateau** 1 FN 1.135 Context 10608/10610 Phase 16
Cat. No. 180 **Plateau** 1 FN 1.2 Context 1277 Phase 16
Cat. No. 2 **Plateau** 2 FN 2.133 Context 2837 Phase 3+
Cat. No. 77 **Plateau** 2 FN 2.169 Context 9716 Phase 16
Cat. No. 84 **Plateau** 2 FN 2.9011 9517 Context Phase 16
Cat. No. 166 **Plateau** 2 FN 2.9028 Context 9007 Phase 16
Cat. No. 171 **Plateau** 2 FN 2.4 Context 2039 Phase 16
Cat. No. 182 **Plateau** 2 FN 2.112 Context 2322 Phase 11
Cat. No. 18 **Plateau** 3 FN 3.240 Context 11079 Phase 12
Cat. No. 19 **Plateau** 3 FN 3.148 Context 11072 Phase 12
Cat. No. 58 **Plateau** 3 FN 3.38 Context 3265 Phase 2
Cat. No. 59 **Plateau** 3 FN 3.156 Context 11079 Phase 12
Cat. No. 60 **Plateau** 3 FN 3.1389 Context 11083 Phase 12
Cat. No. 70 **Plateau** 3 FN 3.9003 Context 11083 Phase 12

Cat. No. 97 **Plateau** 3 FN 3.135 Context 11072 Phase 12
Cat. No. 111 **Plateau** 3 FN 3.9012 Context 11083 Phase 12
Cat. No. 112 **Plateau** 3 FN 3.9011 Context 11083 Phase 12
Cat. No. 113 **Plateau** 3 FN 3.9010 Context 11083 Phase 12
Cat. No. 114 **Plateau** 3 FN 3.9015 Context 11083 Phase 12
Cat. No. 115 **Plateau** 3 FN 3.9014 Context 11083 Phase 12
Cat. No. 116 **Plateau** 3 FN 3.9016 Context 11083 Phase 12
Cat. No. 117 **Plateau** 3 FN 3.9029 Context 11084 Phase 12
Cat. No. 119 **Plateau** 3 FN 3.147 Context 11072 Phase 12
Cat. No. 123 **Plateau** 3 FN 3.9017 Context 11072 Phase 12
Cat. No. 129 **Plateau** 3 FN 3.143 Context 11071 Phase 12
Cat. No. 136 **Plateau** 3 FN 3.9002 Context 11079 Phase 12
Cat. No. 137 **Plateau** 3 FN 3.9030 Context 11072 Phase 12
Cat. No. 158 **Plateau** 3 FN 3.239 Context 11072 Phase 12
Cat. No. 24 **Plateau** 4 FN 4.458 Context 4776 Phase 16
Cat. No. 29 **Plateau** 4 FN 4.46 Context 4061 Phase 16
Cat. No. 31 **Plateau** 4 FN 4.35 Context 4818 Phase 15
Cat. No. 36 **Plateau** 4 FN 4.47 Context 4567 Phase 16
Cat. No. 63 **Plateau** 4 FN 4.20a Context 4369 Phase 16
Cat. No. 64 **Plateau** 4 FN 4.36 Context 4237 Phase 15
Cat. No. 76 **Plateau** 4 FN 4.21 Context 4369 Phase 16
Cat. No. 82 **Plateau** 4 FN 4.14 Context 4374 Phase 16
Cat. No. 83 **Plateau** 4 FN 4.7 Context 4309 Phase 16
Cat. No. 124 **Plateau** 4 FN 4.9003 Context 4062 Phase 16
Cat. No. 159 **Plateau** 4 FN 4.237 Context 4746 Phase 14
Cat. No. 160 **Plateau** 4 FN 4.32 Context 4808 Phase 14
Cat. No. 161 **Plateau** 4 FN 4.31 Context 4804 Phase 14
Cat. No. 163 **Plateau** 4 FN 4.27 Context 4679 Phase 14
Cat. No. 164 **Plateau** 4 FN 4.30 Context 4679 Phase 14
Cat. No. 20 **Plateau** 5 FN 5.67 Context U/S
Cat. No. 22 **Plateau** 5 FN 5.12 Context 5691 Phase 17
Cat. No. 23 **Plateau** 5 FN 5.110 Context 15185 Phase 16
Cat. No. 27 **Plateau** 5 FN 5.11 Context 5691 Phase 17
Cat. No. 33 **Plateau** 5 FN 5.4 Context 5775 Phase 14
Cat. No. 34 **Plateau** 5 FN 5.35 Context 15231 Phase 16
Cat. No. 49 **Plateau** 5 FN 5.64 Context U/S
Cat. No. 50 **Plateau** 5 FN 5.63 Context U/S
Cat. No. 51 **Plateau** 5 FN 5.65 Context U/S
Cat. No. 53 **Plateau** 5 FN 5.68 Context U/S
Cat. No. 54 **Plateau** 5 FN 5.29 Context 15165 Unphased
Cat. No. 55 **Plateau** 5 FN 5.7 Context 5691 Phase 17
Cat. No. 65 **Plateau** 5 FN 5.9013 Context 5595 Phase 15
Cat. No. 72 **Plateau** 5 FN 5.75 Context U/S

Cat. No. 75 **Plateau** 5 FN 5.99 Context 15087 Phase 15
Cat. No. 80 **Plateau** 5 FN 5.56 Context U/S
Cat. No. 85 **Plateau** 5 FN 5.9024a Context 5537 Phase 15
Cat. No. 86 **Plateau** 5 FN 5.61 Context 6545 Phase 15
Cat. No.110 **Plateau** 5 FN 5.9042 Context 15147 Phase 16
Cat. No. 125 **Plateau** 5 FN 5.9030 Context 6553 Phase 17
Cat. No. 140 **Plateau** 5 FN 5.20 Context 5803 Phase 15
Cat. No. 162 **Plateau** 5 FN 5.92 Context 15071 Phase 14
Cat. No. 179 **Plateau** 5 FN 5.41 Context 6525 Phase 15+
Cat. No. 1 **Plateau** 6 FN 6.33 Context 6024 Phase 2
Cat. No. 21 **Plateau** 6 FN 6.5 Context 6117 Unphased
Cat. No. 28 **Plateau** 6 FN 6.434 Context 16071 Phase 17
Cat. No. 37 **Plateau** 6 FN 6.484 Context 16071 Phase 17
Cat. No. 40 **Plateau** 6 FN 6.476 Context Phase 17
Cat. No. 41 **Plateau** 6 FN 6.432 Context 16071 Phase 17
Cat. No. 42 **Plateau** 6 FN 6.491 Context 16375 Phase 17
Cat. No. 43 **Plateau** 6 FN 6.475 Context 16211 Phase 17
Cat. No. 44 **Plateau** 6 FN 6.405 Context 16086 Phase 17
Cat. No. 45 **Plateau** 6 FN 6.399 Context 16084 Phase 17
Cat. No. 48 **Plateau** 6 FN 6.492 Context 16375 Phase 17
Cat. No. 88 **Plateau** 6 FN 6.472 Context 16211 Phase 17
Cat. No. 89 **Plateau** 6 FN 6.464 Context 16222 Phase 17
Cat. No. 90 **Plateau** 6 FN 6.470 Context 16211 Phase 17
Cat. No. 91 **Plateau** 6 FN 6.9006 Context 16162 Phase 20
Cat. No. 92 **Plateau** 6 FN 6.499 Context 16328 Phase 17
Cat. No. 93 **Plateau** 6 FN 6.496 Context 16375 Phase 17
Cat. No. 94 **Plateau** 6 FN 6.393 Context 16071 Phase 17
Cat. No. 95 **Plateau** 6 FN 6.511 Context 16373 Phase 17
Cat. No. 101 **Plateau** 6 FN 6.9002 Context 6343 Phase 2?
Cat. No. 126 **Plateau** 6 FN 6.435 Context 16135 Phase 17
Cat. No. 138 **Plateau** 6 FN 6.34 Context 6024 Phase 2
Cat. No. 167 **Plateau** 6 FN 6.505 Context 16098 Phase 16
Cat. No. 176 **Plateau** 6 FN 6.9007 Context 16544 Phase 15+
Cat. No. 177 **Plateau** 6 FN 6.27 Context 6146 Phase 14+
Cat. No. 183 **Plateau** 6 FN 6.26 Context 6146 Phase 14+
Cat. No. 184 **Plateau** 6 Context 16173/16174 Phase 17
Cat. No. 186 **Plateau** 6 Context 16173/16174 Phase 17
Cat. No. 25 **Plateau** 7 FN 7.38 Context U/S
Cat. No. 30 **Plateau** 7 FN 7.24 Context 7327 Phase 16
Cat. No. 35 **Plateau** 7 FN 7.21 Context 7326 Phase 16
Cat. No. 38 **Plateau** 7 FN 7.39 Context U/S
Cat. No. 61 **Plateau** 7 FN 7.25 Context 7327 Phase 16
Cat. No. 62 **Plateau** 7 FN 7.40 Context U/S

Cat. No. 79 **Plateau** 7 FN 7.9000 Context U/S
Cat. No. 169 **Plateau** 7 FN 7.8 Context 7183 Phase 16
Cat. No. 185 **Plateau** 7 FN 7.34 Context 7296 Phase 16
Cat. No. 3 **Plateau** 8 FN 8.155 Context 12310 Phase 8
Cat. No. 4 **Plateau** 8 FN 8.463 Context 14927 Phase 10
Cat. No. 10 **Plateau** 8 FN 8.108 Context 8682 Phase 8
Cat. No. 11 **Plateau** 8 FN 8.235 Context 12748 Phase 10
Cat. No. 12 **Plateau** 8 FN 8.236 Context 12748 Phase 10
Cat. No. 13 **Plateau** 8 FN 8.242 Context 12748 Phase 10
Cat. No. 14 **Plateau** 8 FN 8.9058a Context 12792 Phase 10
Cat. No. 15 **Plateau** 8 FN 8.372 Context 12822 Phase 12
Cat. No. 16 **Plateau** 8 FN 8.211 Context 12534 Phase 12
Cat. No. 17 **Plateau** 8 FN 8.51 Context 8745 Phase 8
Cat. No. 26 **Plateau** 8 FN 8.109 Context U/S
Cat. No. 47 **Plateau** 8 FN 8.116 Context 12003 Phase 8
Cat. No. 66 **Plateau** 8 FN 8.106 Context 3835 Phase 8
Cat. No. 67 **Plateau** 8 FN 8.462 Context 14306 Phase 8
Cat. No. 98 **Plateau** 8 FN 8.7 Context 8287 Phase 6
Cat. No. 99 **Plateau** 8 FN 8.37 Context 8708 Phase 8
Cat. No. 100 **Plateau** 8 FN 8.26 Context 8640 Phase 8
Cat. No. 68 **Plateau** 8 FN 8.9022 Context 12369 Phase 10
Cat. No. 102 **Plateau** 8 FN 8.47 Context 8800 Phase 7
Cat. No. 103 **Plateau** 8 FN 8.27 Context 8628 Phase 8
Cat. No. 104 **Plateau** 8 FN 8.122 Context 8637 Phase 8
Cat. No. 105 **Plateau** 8 FN 8.380 Context 3720 Phase 8
Cat. No. 106 **Plateau** 8 FN 8.80 Context 3643/3644 Phase 8
Cat. No. 107 **Plateau** 8 FN 8.28 Context 8659 Unphased
Cat. No. 108 **Plateau** 3 FN 3.9042 Context 11083 Phase 12
Cat. No. 109 **Plateau** 3 FN 3.9043 Context 11083 Phase 12
Cat. No. 118 **Plateau** 8 FN 8.210 Context U/S
Cat. No. 120 **Plateau** 8 FN 8.9083 Context 12831 Phase 10
Cat. No. 121 **Plateau** 8 FN 8.9082 Context 12833 Phase 10
Cat. No. 122 **Plateau** 8 FN 8.9084 Context 12835 Phase 10
Cat. No. 127 **Plateau** 8 FN 8.9052 Context 14306 Phase 8
Cat. No. 128 **Plateau** 8 FN 8.9080 Context 8654 Phase 8
Cat. No. 131 **Plateau** 8 FN 8.384 Context 3728 Phase 8
Cat. No. 132 **Plateau** 8 FN 8.9054 Context 8643 Phase 7
Cat. No. 135 **Plateau** 8 FN 8.211 Context 12534 Phase 12
Cat. No. 141 **Plateau** 8 FN 8.58 Context 8892 Phase 8
Cat. No. 142 **Plateau** 8 FN 8.158 Context 12307 Phase 1
Cat. No. 143 **Plateau** 8 FN 8.159 Context 12307 Phase 1
Cat. No. 144 **Plateau** 8 FN 8.45 Context 8480 Phase 6
Cat. No. 145 **Plateau** 8 FN 8.24 Context 8643 Phase 7

Cat. No. 146 **Plateau** 8 FN 8.9057 Context 3846 Phase 7
Cat. No. 147 **Plateau** 8 FN 8.57 Context 8892 Phase 8
Cat. No. 148 **Plateau** 8 FN 8.43 Context 8761 Phase 8
Cat. No. 149 **Plateau** 8 FN 8.9071 Context 8697 Phase 8
Cat. No. 150 **Plateau** 8 FN 8.16 Context 8516 Phase8
Cat. No. 151 **Plateau** 8 FN 8.35 Context 8636 Phase 8
Cat. No. 152 **Plateau** 8 FN 8.411 Context 14534/14535 Phase 8
Cat. No. 153 **Plateau** 8 FN 8.59 Context 8910 Phase 8
Cat. No. 154 **Plateau** 8 FN 8.33 Context 8620 Phase 8
Cat. No. 155 **Plateau** 8 FN 8.83 Context 3585/3586 Phase 8
Cat. No. 156 **Plateau** 8 FN 8.411 Context 14534/14535 Phase 8
Cat. No. 157 **Plateau** 8 FN 8.421 Context 14509 Phase 8
Cat. No. 174 **Plateau** 8 Context U/S
Cat. No. 175 **Plateau** 8 FN 8.34 Context 8688 Unphased
Cat. No. 178 **Plateau** 8 FN 8.9067 Context 8640 Phase 8
Cat. No. 181 **Plateau** 8 FN 8.9055 Context 8133 Phase 8
Cat. No. 187 **Plateau** 8 FN 8.2409 Context 12872 Phase 8
Cat. No. 188 **Plateau** 8 FN 8.2412 Context 8940 Phase 7

Chapter 11: Ironworking and other possible industrial residues

Brian Gilmour

Introduction

The great majority of the material from Thanet Earth submitted for analysis came from just two of the eight plateaus investigated archaeologically. Most came from Plateau 8 — the focus of a quite extensive mid-late Iron Age settlement occupation — with an appreciable amount coming from Plateau 5, although the material from Plateau 5 is completely different in character from nearly all the rest and (it seems) could be medieval in origin. Only small quantities of material came from Plateaus 2, 3, 4 and 6, with none submitted from Plateau 7.

Composition and character of the assemblages from different parts of the site

An initial hand sorting and assessment of this material was carried out together with further analysis aimed at identifying the process that gave rise to this waste debris.

Plateau 1: Taking these groups of waste material in numerical order we can see (in Table 10) that a total of 248g of debris was recovered from Plateau 1, although 96 per cent (335g) of this came from one context (13041) with less than one gram coming from a second context (10398). This material was all much the same and consisted of a very lightweight semi-vitrified slaggy what has been dubbed by the excavators as 'Iron Age Grey' reflecting its generally pale-medium grey colour. It was very porous with many gas bubbles and very much the same in appearance to all the rest of the lightweight 'Iron Age Grey' semi vitrified material recovered from the site (see in particular context (8883) in Plateau 8; Plates 348 to 350).

Most of the remaining 4 per cent (only 12g) came from a two contexts (10543 and 10593) and consisted of about 30 or so small fragments of dark grey-brown semi-vitrified, medium density, moderately porous material which was partly magnetic. This material can best be interpreted as small mixed fragments of iron smithing hearth waste redeposited probably well away and some distance from the iron smithing activity to which it is likely to have once belonged.

Plateau 2: A few very small scraps both of probable iron smithing waste – dense (lightly magnetic) slag, hammer-scale (BF 617 and BF610) and fuel ash slag – were found in this Plateau. Again these traces are much too slight to be of much significance and presumably have been displaced from iron-smithing activity elsewhere in the vicinity.

Plateau 3: Much the same was the case here where a few small dark grey-brown fragment of dense, lightly magnetic iron smithing slag and also a little hammer-scale

were found scattered across a series of features (see Table 10), as were some small fragments of fuel ash slag, all probably displaced from the waste dump(s) of a smithy perhaps not very far away.

Plateau 4: Similarly only a very small amount of hammer-scale plus a few rust flakes – from small pieces of decayed iron – were recovered from this part of the site (see Table 10), again slight traces from more distant iron smithing activity.

Plateau 5: A quite different assemblage of waste material was recovered from this area. Unlike all the other parts of the site it consisted of a fairly typical assemblage of iron smithing waste debris consisting of slag, hammer-scale, associated fuel ash slag, but not much else. A total of approximately 2.68 kg of slag and 10g of hammer-scale was recovered, nearly all this material coming from three separate contexts (5433, 15117, 15134), with a tiny amount (less than 1g) from a fourth context (15056). At the time of writing the identity or date of these contexts is not clear (to the writer) and although a late Iron Age date is suspected, a late medieval date seems possible here. The small overall quantity and the low proportion of hammer-scale (assuming this is a representative sample) would suggest that this material belongs to secondary dumping a little way away from the site of the smithy where it would have originally accumulated, although this is unlikely to be far away.

Most of this material what looked like fairly typical smithing slag, in one instance a recognisable plano-convex lump measuring approximately 10cm across, although this was perhaps unusually tall compared to its width (Plate 346). There were also many other relatively dense irregular lumps or fragments of material of the kind that tends to collect near the base of a smithing hearth during one campaign (?a day) of use (Plates 347 and 348). As would be expected the density of this material varied, as did the magnetic response across the various pieces although much of it was magnetic to a greater or lesser extent. Its colour also varied between dark greyish brown to almost black, and there were also rusty coloured patches. Various other similar, smaller and more shapeless fragments of what would appear to be similar smithing heath waste were also recovered, although it is often not easy to be sure whether or not ironworking waste like this is derives from a smelting site or was associated with the secondary smithing of consolidated bloomery iron (or steel).

Nearly all (2.67kg) of what was taken to be smithing hearth waste debris came from two main fills (contexts 15117 and 15134) within one principal feature, a sunken featured building (SFB) which would thus appear to be best interpreted as a smithy (or closely associated building). To further identify and assess the material a representative selection of the pieces of suspected smithing debris recovered from contexts associated with this building were sectioned and examined using photo-microscopy.

Part of the nearly complete plano-convex (PCB/SHB) lump (Plate 346) was found to have a surprisingly homogeneous make-up for smithing hearth slag, much of it consisting of a dispersion of fine (pale) wüstite (iron oxide) dendrites superimposed on a background (medium grey) iron silicate or fayalite laths in a darker glassy matrix (Plate 347). Relatively homogeneous slag of this kind would seem more likely to have derived from iron smelting than smithing. As already stated its height (top to bottom) was unusually great for a typical plano-convex agglomeration of smithing hearth slag which tends to be rather flatter.

Two further pieces of apparent smithing hearth waste from the same context were next examined, both of these being fairly small, irregular but outwardly similar lumps the matrix of which was very dark greyish-brown to black in colour and contained many small gas holes (Plates 348 and 351). In section these pieces were found to consist of an overall matrix of fairly typical 2- and 3- phase ironworking slag, much of it a 2-phase dispersion of fayalite (iron silicate) in a darker glassy matrix with many gas bubble voids. Superimposed on this in places was a much paler dendritic dispersion of wüstite (iron oxide).

Both these lumps were found also to contain many irregular small varying sized partially corroded particles of iron with a low but uneven carbon content (at most no more than 0.1–0.2 per cent) and also contained a great deal of slag, much the same as that in which they were embedded (Plates 348, 349 and 352). These two lumps do not seem typical of smithing hearth waste — which is generally found to be much more heterogeneous and full of irregular voids — and the only explanation that seems to make sense is that they actually derive from the consolidation, perhaps of fragments of iron bloom. In the context of a smithy this would suggest that raw or partially consolidated blooms were being brought here to be further processed or forged into billets of bloomery iron for the subsequent manufacture of artefacts.

Interestingly amongst the mass of rather similar apparent 'smithing' hearth waste were two pieces of iron artefact (Plates 353 and 354). One of these was a very good example of a distinctive type of holdfast — a device used in woodworking for fastening board together — of much the same shape and size as sometimes is found in Romano-British contexts (see Manning 1985, 134 and plate 62, R74–R81). It consisted of a rather nail-like flattish head (or at least flat end) — measuring just less than 20mm across – attached to a shank approximately half way along which was a very distinctive diamond shaped rove which had become cemented into place in the ground by iron corrosion (Plate 353). The other end had clearly broken off at some stage perhaps much earlier and was seemingly missing.

Elsewhere in this assemblage however a small stud-like piece of iron was also found and this was much the same size and shape as the missing terminal that would originally have formed the missing end of the holdfast shank, the part that would have

held the rove in place (Plate 354). It was clear that the metal survival in this stud-like piece was quite good and it was mounted for metallographic analysis and found to consist of low carbon bloomery iron (carbon content up to about 0.1 per cent) with a variable slag content which was locally high in places (Plate 355). The slag was generally of a 2-phase phase composition showing up as mid grey fayalite (iron silicate) laths in a darker glassy matrix, but in places this was overlain with paler wüstite (iron oxide) dendrites, and was clearly bloomery smelting slag remaining entrapped within the metal after uneven or incomplete consolidation.

The best explanation which would seem to account for all the waste iron working debris examined, as well as its presence in a sunken featured building (SFB) is that this building was indeed a smithy but one in which the partial or perhaps final consolidating of iron blooms was carried out. There is no indication — slag dumps etc. — that this was part of a primary iron smelting site where the preliminary consolidation of raw blooms was carried out. This would have been done near the smelting furnace while the newly formed bloom was still hot so as not to waste residual heat. Thus the further processing or smithing of larger lumps (or smaller fragments) in a smithy would seem to be the best interpretation here, the more (but incompletely) consolidated iron then being utilised in the manufacture of things such as the utilitarian artefacts such as the iron holdfast with its rove that was also found amongst the assemblage recovered from this building.

In addition to the material already discussed from the main assemblage a small quantity hammer-scale and (?associated) gritty material was recovered from a further 10 contexts, a series of features which were found in this same part of the site. These features may be associated in some way with the (prospective) smithy already discussed but the quantities are too small for them to be considered as primary smithing debris and little more can be said, although they seem likely to have originated as a result of this smithing activity.

Plateau 6: Only a very small quantity of gritty material containing some hammer-scale was recovered from a single context — the fill (context 6002) — of a cremation burial in this part of the site. Little significance can be attached to this find which may be material redeposited from elsewhere.

Plateau 7: No suspected metalworking residues were recovered (or at least submitted) from this region of the site.

Plateau 8: By far the most material from this site submitted as possible waste residue(s) from iron (or other metal) working related activities came from probable prehistoric (late Iron Age) activity in this part of the site. In total 42.797kg of was recovered, nearly all of it from 38 contexts, a variety of settlement related features, mostly pits, gullies, ditches plus two burials (Table 10).

However on closer examination and analysis only 455g, 1 per cent of the total from this part of the site, was actually found to have derived from ironworking (or any other metal processing). The majority (270g) of this came four contexts (12520, 8345, 14650 and 8666) — two ditches and two pits — and was mostly quite similar, dense (relatively heavy), varying internally in colour from dark greyish brown to nearly black, it was all partially but unevenly magnetic suggesting the presence of small particles of iron and/or hammer scale.

Of the small remaining 185g of material, 95g came in the form of small fragments of partly magnetic smithing hearth slag-like debris, 80g of mixed, lighter weight debris, mainly probably small fragments of part fused smithing hearth wall or fuel ash slag — all probably associated with smithing — and 10g of mixed hammer-scale and (probably) related grit. Little more can be said of this material except that it is likely to have derived from smithing activity linked to (i.e. fairly nearby) but not actually on the parts of the prehistoric settlement examined archaeologically here.

The remaining 99 per cent (42.33kg) of the waste material recovered from this part of the site almost certainly does not relate to iron working or any metal related technological activity. This material was all quite similar in being very lightweight and generally quite pale to mid grey in colour although much of it occurred in 38 contexts its distribution was far from even with just over 80 per cent (34.37kg) coming from the middle and lower fills (contexts 8883 and 8884) of a single pit, the sheer quantity suggesting that this pit was dug specifically for the burial of this lightweight slag-like material (Plate 356). In addition to being so light weight and generally pale in colour this material was also full of gas bubble holes and clearly partially vitrified although this material was in its 'as excavated' state and much of the outward appearance and internal structure of the fragments was masked by the brown sandy loam still adhering to the outside of the fragments (Plates 356 and 357).

Not only did this brown loamy material adhere to the outer surfaces of the fragments but when it was (dry) cleaned off some of the pieces it became clear that these fragments were very (heat) distorted and had in effect partially melted and become quite convoluted in shape due to their original structure having partially collapsed. This presumably happened under its own weight when it was semi-molten and once it, or the fragments of it, had cooled and solidified and after burial, the brown sandy loam backfilled with it (of on top it) had adhered more effectively because it got down in between the folds of the collapsed fabric of the pieces.

Once this brown sandy loam was cleaned off it became clear this semi-vitrified, slag-like material was even more lightweight and less dense than first appeared to be the case, with the brown sandy loam having made up somewhere around 25–30 per cent of the original weight. It also became clear that the semi vitrified material had been of mixed composition which included a proportion of darker grey fragments which themselves

had become semi-vitrified (Plate 358). The partially vitrified nature of this material showed up in a polished section as a fairly amorphous structure with many small gas bubbles visible together with small, heart-cracked quartz-like gritty grains which had become semi-fused into the background matrix (Plate 359).

Semi-quantitative energy dispersive (EDS) analysis by scanning electron microscopy (SEM) showed this amorphous matrix to be rich in alumina, calcite, silica and potash indicating this to be gritty clayey matrix, high in calcite which has become fused with potash. This suggests that this material started out as some kind of fine gritty lime, rich clayey material which has become fused with potash to form a fuel ash slag which has formed under very hot, highly oxidising conditions hence the lack of charcoal which would have predominantly have turned to ash.

The sheer quantity, large size and comparatively regular shape of these semi-fused fragments suggest that rather than representing wall (or wall lining) fragments from any metalworking (or other industrial) furnace or hearth this large mass of similar pieces must have come from some other kind of predominantly clayey structure. One good possibility would seem to be that might represent a fairly thick daub wall lining which has become fairly heavily vitrified in a very intense — possibly a house fire or even a pyre — after which a proportion of the left over fragments were (possibly sorted then intentionally) buried in the pit in which they were found. More of this material would appear to have become scattered and to have ended up in the fills of various other nearby features.

A few small fragments recovered both from the same pit that contained 80 per cent of this heavily calcined material had, at least in part, a slightly more brownish or reddish appearance (for instance the fragment shown here in Plate 360). This in turn raises the possibility that these might represent smaller fragments of daub which have been exposed to slightly less intense heat and therefore have become slightly less fused. In section one of these (the fragment in Plate 360) would appear to have a somewhat less vitrified structure thus generally supporting this interpretation (Plate 361).

Overall conclusions: Almost all the assemblage of material recovered from the entire site divided into two clear groups. First of all there is the ironworking debris associated with the sunken feature building (SFB) in plateau 5 which would seem to be best interpreted as a smithy in which the further processing of partially consolidated pieces of low carbon iron bloom, these then being used in the manufacture of items such as the woodworking holdfast (and rove) which was found amongst the same debris.

Nearly all the remaining slag-like material was recovered from plateau 8 and came from a series of late Iron Age contexts, the great majority from a single pit. This material was referred somewhere in the site archive as 'Iron Age grey' as this was already considered to be something of a puzzle, possibly but not definitely connected with iron or other

metalworking, but if not then to be something of a mystery. But the mention of at least a few small daub fragments in the site archive (on some bags at least) is a clue which may well lead us to the solution of the mystery. The quantity and character of this material does suggest that there is no industrial link here — to metalworking or otherwise — but rather supports a link with daub and suggests that this mass of similar, pale grey, partially vitrified fragments may well the remnants left over following an intense oxidising fire that has destroyed (perhaps as a pyre) all or part of the gritty daub lined wall(s) of a wood or wood framed building.

The small quantity of other material recovered from plateau 8 is probably best interpreted as smithing related debris associated with the late Iron Age settlement here, but elsewhere than on the part of the settlement that was archaeologically investigated.

Chapter 12: The Flintwork

Chris Butler

Introduction

An assemblage of 7,935 pieces of worked flint weighing 81.183kg was recovered during the excavations at Thanet Earth (Tables 11 to 13). In addition 866 pieces of un-worked fire-fractured flint weighing 30.328kg were also recovered.

The assemblage

The raw material comprised a typical range of local flint; the majority of the flint is a light to dark grey, or mottled grey colour, together with many black pieces. There are also significant numbers of grey-white and blue-grey patinated flint, much of which has traits associated with Mesolithic and earlier Neolithic knapping technologies.

Almost 15 per cent of the assemblage is made up from Bullhead flint. This distinctive flint has an orange band beneath a green coloured cortex, whilst the main body of the flint can vary from grey through to black, even within the same nodule. This type is typical of flint derived from the 'Bullhead Bed' that overlies the chalk at the base of the Tertiary Thanet Beds in this region. This percentage is almost certainly an underestimate of the true proportion of Bullhead flint in the assemblage, as any pieces, especially smaller flakes, fragments and chips, are unlikely to have the distinctive cortex and orange band on them, so have been classified with other grey and black coloured pieces.

A small number of pieces in the assemblage have different patination or staining, for example one piece with a yellow staining and a number of white patinated pieces. There are also a few pieces of beach pebble flint, with a distinctive rough outer surface.

The non-core Debitage

Some 94 per cent of the assemblage is non-core debitage (Table 11), Flakes are the predominant type, although there are also many blades and bladelets. There are numerous fragments which have derived from flakes, blades and bladelets, together with chips and shattered pieces.

The majority of the flakes (58 per cent) are hard hammer-struck, and most of these have no evidence of platform preparation. The remaining flakes appear to be soft hammer-struck, but many of these may have been struck with a soft stone hammer rather than a bone or antler hammer. Many of the soft hammer-struck flakes have prepared platforms, but a very high number do not, again an indication of working with soft stone hammers, rather than the precise knapping process associated with true soft

hammer production. Most of the blades are soft hammer-struck (95 per cent), although again many of these may have been struck with a soft stone hammer, and lack any evidence of platform preparation. Bladelets make up only 4 per cent of the debitage, but are all soft hammer-struck with most having evidence for platform preparation. A small number of pieces have been retouched, and some have been burnt, although there is no evidence for any heat treatment.

There are numerous fragments (24 per cent) in the assemblage, some resulting from knapping and others from later breakage. A high proportion of chips (8.5 per cent) provide direct evidence for knapping taking place in a number of contexts across the site, although higher rates of recovery in some contexts may be a result of the recovery techniques employed during the excavation. Four probable microburins were also found.

Core Debitage

A total of 178 cores and 124 core fragments were recovered during the project, together with a small number of core rejuvenation pieces (Table 12).

The majority of the cores were flake cores, with either single platforms, two platforms or multiple platforms. Most of the cores appeared to have been extensively worked, although there were some with just a small number of removals from one or two platforms. Very few of the cores had any evidence for platform preparation, and there was limited evidence for extensive use of platform rejuvenation. Many of the cores had remaining areas of cortex.

There were only a few blade cores and no bladelet cores in the assemblage, however it is possible that such cores were subsequently used for removing flakes instead. There were few cores that could be directly attributed to earlier periods of prehistory.

A small number of core rejuvenation flakes and two crested blades were found, all of which relate to Mesolithic or Early Neolithic flintworking technologies, however the small number, in relation to the number of cores, suggests that the rejuvenation of cores and associated knapping strategies were rare.

Implements

A total of 194 implements was found during the excavations (Table 13), making up some 2.4 per cent of the assemblage. The range of implements was large with only small quantities of each type being found. Only scrapers and notched pieces were found in any significant numbers.

Scrapers make up 65 per cent of the implements recovered, with the end scraper being the most common type. Numerous different types of end scraper were found including those manufactured on hard and soft hammer-struck flakes, long blades, and small expedient types, and ranging in date from the Mesolithic through to the Bronze Age. Other types of scraper included side scrapers, hollow scrapers, end-and-side scrapers and a single horned scraper.

The next most common tool type is the notched piece; these were mostly on flakes, but a small number (two) were on fragments. There were also four piercers, and a single combination tool. All of these are likely to be later Neolithic or Bronze Age in date, although one or two may be earlier in date.

Other retouched pieces include three denticulated pieces, four microdenticulates and a truncated blade, which are either Mesolithic or Early Neolithic in date. There were also 14 pieces (flakes and blades) that have evidence of utilisation along at least one lateral edge. The evidence for utilisation comprises either retouch or abrasion together with edge polish.

A range of knives were also found, albeit in small numbers. These comprised three knives or knife fragments with invasive retouch on flakes/blades, a single laurel leaf roughout (Early Neolithic), and two roughouts for discoidal knives (Later Neolithic). A fragment, which may have come from a sickle or dagger, was also found.

There was a small number of projectile points covering a broad date range, comprising a single microlith (Mesolithic), three leaf-shaped arrowheads (Early Neolithic) and a single tanged arrowhead (barbed-and-tanged variety — Early Bronze Age).

Small numbers of core tools were found, including three fragments from polished flint Neolithic axes, together with two flakes from polished axes. There was also a fragment which may have come from a flaked axe.

Amongst the debitage there are a small number of axe-thinning flakes, which may have originated from the production of either Mesolithic tranchet adzes or Neolithic axes. Six tranchet adze re-sharpening flakes and two flakes from polished flint axes were also found.

Other implements include a single fabricator, a core re-used as a hammerstone, and four flint hammerstones, together with a possible flint weight.

This assemblage of implements is unusual, in that it makes up a very small proportion of the assemblage; 2.4 per cent, when 4 per cent is more typical (Butler 2005). The date range of implements is very broad, and mirrors the assemblage as a whole, covering the period from the Mesolithic through to the Bronze Age.

There are some anomalies, for example the lack of tranchet adzes, when there are a number of tranchet adze re-sharpening flakes, and the lack of flint hammerstones given the large number of cores, although other stone hammers, including soft stone hammers, may have been used.

Discussion

Although many of the pieces of flintwork recovered are undiagnostic, it has been possible to identify four different groups of material. These can be dated either on diagnostic grounds, or with, where available, other dating evidence. Length/breadth analysis (Saville 1980) was carried out on groups of debitage that either appeared to be in-situ or had other potential, although in many cases the numbers of complete flakes or blades available for analysis was small. The results of this analysis are included in the discussion below, and presented on Table 4.

Mesolithic Period

Although it is possible that one or two pieces could be of Upper Palaeolithic date, as there are some heavily patinated long blades in the assemblage, the earliest activity probably dates to the Mesolithic period, and a proportion of the assemblage can be assigned to this date, although all of these pieces are residual in later contexts.

Mesolithic debitage in the form of flakes, blades and bladelets is present, and although few actual cores were found, the presence of core rejuvenation pieces, which could date to the Mesolithic period, confirm a systematic and careful flintworking strategy was being used. The single microlith and the four microburins, together with the presence of numerous bladelet fragments, some of which appear to be unfinished blanks for microliths, demonstrate that microliths were being manufactured at the site. Microliths, and evidence of microlith production, are rare in east Kent (Butler 2014), however given the scale of the fieldwork it is perhaps not unsurprising that a small number of these items were found.

Other Mesolithic implements include some scrapers and possibly the truncated piece and some of the microdenticulates. The tranchet adze re-sharpening flakes, and some other debitage pieces also suggest that tranchet adzes were being manufactured or used, although no actual tranchet adzes were found.

Although all of these pieces are dispersed across many different contexts, and are almost certainly residual, they do suggest the presence of a Mesolithic base camp or hunting camp nearby, perhaps dating to the Later Mesolithic. The presence of Mesolithic flintwork in many of the Early Neolithic features, may hint at some continuity in both

flintwork production techniques and implement types/usage from the Later Mesolithic into the Early Neolithic.

Early Neolithic

The debitage of the Early Neolithic is broadly similar to the Mesolithic material, and can be difficult to separate, but there are some differences which can be seen in the assemblage. These include the production of larger soft hammer-struck blades and long flakes, less use of platform preparation especially on hard hammer-struck pieces, and a reduction in the use of bladelets. Early Neolithic cores tend to have their platforms at 90° to one another.

There are also a number of distinctive Early Neolithic implements in the assemblage, including the leaf-shaped arrowheads, some of the scrapers, the denticulates, the laurel leaf roughout and the polished axe fragments, together with some evidence for axe production or re-working.

The Early Neolithic flintwork assemblage probably makes up a very large proportion of the total assemblage found during the excavations. However the difficulties of separating out some of the Mesolithic debitage, and some crossover with later Neolithic pieces means that the exact percentage is difficult to calculate, although perhaps as much as 50 per cent of the assemblage may be of this date.

A number of Early Neolithic features were identified during the excavation, and the flintwork from these has been looked at in more detail.

Pit S1371

This contained a small group of 41 pieces of worked flint, all debitage, most of which has a light blue patina, and may have come from the same knapping episode, although none could be refitted. The pieces are almost entirely soft-hammer struck, and about 25 per cent have prepared platforms. The group also included two axe-thinning flakes and a flake from a polished flint axe.

Pit S3205

This pit only produced a small assemblage of 29 pieces of worked flint, of which only 15 were complete flakes or blades. Almost all of these were soft hammer-struck and half had prepared platforms. Length/breadth analysis showed 53 per cent were 'medium' and 40 per cent were 'narrow' (Table 14). One blade had evidence of possible utilisation along one lateral edge, whilst a flake had some retouch/utilisation damage on one edge. A soft hammer-struck flake had a small notch retouched at the distal end (Fig. 261/1), and the pit also produced the butt end of a polished flint axe (Fig. 261/2).

Pit S3454

This pit produced a group of 23 pieces, predominantly Bullhead flint, and mixed hard and soft hammer-struck pieces, with the majority having evidence of platform preparation. A single two-platform flake core in Bullhead flint had no platform preparation. A fragment from a microdenticulate was also found in this pit. Length/breadth analysis showed 40 per cent were 'medium' and 33 per cent were 'narrow'.

Pit S3941

A small group of pieces, some of which (in Context 3796) are likely to be residual Mesolithic debitage. The pieces are largely soft hammer-struck, and a third are Bullhead flint, but few have evidence for platform preparation. A two-platform flake core has no platform preparation.

Pit S5205

A large group of 84 pieces of worked flint, predominantly soft hammer-struck flakes and blades, with a few hard hammer-struck flakes. Only 15 per cent have platform preparation, and Bullhead flint makes up only about 18 per cent of the group. Length/breadth analysis of 38 complete flakes and blades shows 52 per cent 'narrow' and 39 per cent 'medium' and only 9 per cent 'broad' . Even if the obvious residual Mesolithic pieces are removed, the group still has 44 per cent 'narrow' and 44 per cent 'medium' (Table 14), still a typical Early Neolithic type assemblage. The group includes a single two-platform flake core with no platform preparation, a core fragment and two core rejuvenation pieces. The only implement was an end scraper with semi-abrupt retouch at the distal end of a soft hammer-struck blade with platform preparation (Fig. 261/3).

Pit S6364

This feature produced a very large assemblage of 862 pieces of worked flint, although a large proportion were very small sized; including 182 chips (21 per cent) and 193 fragments (22 per cent). Some of the pieces, including some bladelets and a single microburin, are residual Mesolithic pieces. 25 per cent of the group are Bullhead flint. Only 14.5 per cent of the flakes and blades are hard hammer-struck and 35 per cent have platform preparation. Length/breadth analysis of a sample of 100 complete flakes and blades showed that 45 per cent were 'narrow' and 50 per cent 'medium' and only 5 per cent 'broad' (Table 14). There were no cores present, but three undiagnostic core fragments and a crested blade were recovered.

Five end scrapers (Fig. 261/4–8) were found in the pit, one of which was broken in antiquity. Three of the scrapers were on hard hammer-struck flakes, one was on a soft hammer-struck flakes, whilst the remaining scraper had no bulb/platform remaining. Two of the scrapers had abrupt retouch, with the other three scrapers having abrupt retouch. One scraper, which is also the best made scraper from this context, is on bullhead flint.

Pit S8046

This pit produced a small assemblage of 19 pieces of worked flint, most with a similar blue-grey patination and thus probably contemporary, although none could be refitted. Three pieces have platform preparation, one of which has a darker patination, and may therefore be residual. The complete flakes and blades were predominantly (42 per cent) 'medium', with equal numbers of 'narrow' and 'broad' (Table 14). There was minimal cortex on the pieces from this pit, which also included three axe-thinning flakes, suggesting secondary working.

Pit S16014

A total of 182 pieces of worked flint came from this pit. 21 per cent of the flakes and blades were hard hammer-struck, 31 per cent had evidence of platform preparation and 16.5 per cent were Bullhead flint. A small number of pieces are likely to be residual Mesolithic pieces. Length/breadth analysis of a sample of 60 complete flakes and blades showed that 56.6 per cent were 'narrow', 36.6 per cent were 'medium' and 6.8 per cent were 'broad' (Table 14). At least three of the flakes and blades had been burnt. A single flake core on Bullhead flint had two platforms at 90° to one another, typically Early Neolithic, although it did not have any platform preparation.

The pit produced a number of implements. Four end scrapers (Fig. 261/9–12), two of which could be classified as 'horseshoe scrapers', were all manufactured on large flakes, one of which has abrupt retouch and three have semi-abrupt retouch. Three of the scrapers were on soft hammer-struck flakes (one having platform preparation) and one on a hard hammer-struck flake, all having minimal amounts of cortex remaining. A knife was manufactured on a soft hammer-struck flake which had a straight lateral cutting edge with retouch/abrasion, and an opposing convex, using an almost vertical negative scar, backed edge. An unfinished laurel leaf or roughout for a laurel leaf was also found.

In addition to the formal implements, were six blades which had evidence for having been utilised, or in one case having denticulations. The denticulated blade was on a soft hammer-struck blade with a slight hinge fracture, with one lateral edge having regular denticulations cut from the ventral side. The utilised blades were all soft hammer-struck, and had either straight utilised lateral edges with the opposing edge backed with

cortex or a slightly concave utilised edge and a convex backed edge, using an almost vertical negative scar.

Later Neolithic & Early Bronze Age

A proportion of the assemblage falls into the Later Neolithic period or Early Bronze Age, although there are few features with reasonable in-situ assemblages. The debitage in this period was almost entirely hard hammer-struck, and tends to have been removed with less care than in the earlier periods. The overall size of the debitage is larger than the preceding periods. Platform preparation and rejuvenation of cores has ceased, and there is less care taken in the selection of raw material. Some of the implements found, especially the scrapers, are also of this date. The small number of typical implements such as the thumbnail scrapers, the tanged arrowhead and discoidal knife roughouts were not found in in-situ contexts.

Pit S1749

This group of 32 pieces of worked flint comprised predominantly flakes, most of which appear to have been struck with a soft stone hammer; having broad platforms and large bulbs, but with the characteristic lip produced by a soft hammer. Platform preparation is largely absent. Most of the pieces have a similar blue-grey mottled patination, and they appear to have come from two different sources, one Bullhead, the other Chalk Downland flint with a smooth cortex. Two bladelike pieces of the latter flint could be refitted, and it is likely that others in this group have come from the same knapping episode. Length/breadth analysis of a sample of 21 complete flakes and blades showed that 57 per cent were 'medium', 24 per cent were 'broad', and 19 per cent were 'narrow' (Table 14). There were no cores or implements in this group.

Pit S2175

A small assemblage of 39 pieces of worked flint came from this pit, together with 18 pieces of fire-fractured flint. Most appear to be hard hammer-struck, but again with the typical attributes of a soft stone hammer having been used for knapping. The raw material comes from a number of different sources, and none of the pieces could be refitted. Length/breadth analysis of a sample of 17 complete flakes and blades showed that 65 per cent were 'medium', 23 per cent were 'broad', and 12 per cent were 'narrow' (Table 14). A single well worked-out flake core had a single platform and no evidence of any platform preparation.

Four implements were found in this pit, comprising two end scrapers, a fabricator and a microdenticulate. The end scrapers (Fig. 261/13–14) are both on hard hammer-struck flakes with semi-abrupt retouch around the rounded distal ends, and they both have a small amount of cortex remaining on the dorsal side. The fabricator is fairly large, and

has a triangular section (Fig. 261/15). One end appears to be the remnant of the original platform, whilst the other end has a minimal amount of abrasion/use wear. The microdenticulate (denticulate) is on a blade (Fig. 261/16) with a hinged distal end, and the proximal end having been removed (accidentally?) at a later date. The deniticulates are along one lateral edge, and have been 'cut' from the ventral side. There is no evidence of damage or wear to the denticulated edge.

Pit S3452

A small assemblage of 30 pieces of which only 12 were flakes or blades, mostly hard hammer-struck, and five having platform preparation. Five bladelet fragments may be residual Mesolithic pieces. The single blade has evidence for possible utilisation on both lateral edges. Over half of this group are Bullhead flint. Two single platform flake cores were recovered from this pit, both of which were Bullhead flint. One core had some evidence for platform preparation and the other had been rejuvenated. The presence of a high proportion of hinged pieces, fragments and chips here, together with the two cores, suggests that this group may be knapping debris, although none could be refitted. Length/breadth analysis showed 60 per cent of the flakes/blades were 'medium', and 30 per cent were broad (Table 4), suggesting that these pieces fit a Later Neolithic date, however the number available for measurement was very small and the other traits, such as platform preparation, suggest an earlier date may be more appropriate.

Burial G10003

The small assemblage of flintwork found with this Beaker burial appears to be almost entirely residual Early Neolithic material, comprising six flakes, of which five were soft hammer-struck, three soft hammer-struck axe-thinning flakes, and two fragments and a chip. This group is unlikely to have been curated material, but could be a mixture of later Neolithic working/reworking of a flaked axe, with residual Early Neolithic pieces.

The Barrows

The majority of the flintwork in the barrow ditch fills appears to date from the Middle to Late Bronze Age, although there are numerous residual pieces present; therefore most of this flintwork is considered in the following section. However, the primary ditch fills were likely to contain flintwork perhaps contemporary with the construction and immediate use of the barrows, although most of the material from these contexts comprised just a few undiagnostic pieces.

Context 7748, which was a primary ditch fill from Barrow 2, did provide a small group of flintwork that appeared to be in-situ and capable of further analysis. Apart from one or two possible residual pieces, they are all fresh, with no evidence for abrasion or edge damage, and appear to come from two or three different nodules of flint. A number of

pieces could be refitted, and most clearly come from the same knapping episodes, although a number of pieces have obviously been removed, discarded elsewhere or were not retrieved during excavation, meaning that most cannot be refitted. The flakes have all been removed using a hard hammer, and there is little evidence for any platform preparation. Many of the pieces have hinge or step fractures, and the reduction process does not appear to have been very systematic. Length/breadth analysis of a sample of 16 complete flakes showed that 69 per cent were 'medium', 25 per cent were 'broad', and 6 per cent were 'narrow' (Table 14).

The flake core had three platforms, with a few removals (at least three) being made from two of the platforms, and only a single removal from the third platform. It has no evidence for platform preparation, and has a reasonable amount of cortex remaining, and does not appear to have been very large when selected for knapping. A core fragment appears to have come from a single platform flake core with no platform preparation. This group of material has all the appearances of being Early Bronze Age in date, and therefore contemporary with the construction and early use of the barrow.

Middle and Later Bronze Age

It is likely that much of the hard hammer struck debitage, together with the undiagnostic flake cores and perhaps some of the scrapers, piercers and notched implements fall into the Middle to Late Bronze Age period, although much of this flintwork is difficult to separate from the Later Neolithic/Early Bronze Age material. Three groups of flintwork, thought to be of this later prehistoric flintworking period, were looked at in more detail.

Field system ditches (Contexts 878 and 1799)

Very little flintwork was actually recovered from these ditches, which probably form part of the same Middle to Late Bronze Age field system. Some of the flintwork was residual Neolithic material. The interesting aspect of the flintwork from the ditches is the high proportion of cores that were recovered. Five cores were found in Context 1799, and three in Context 878, both of which produced very little other flintwork. The cores are all flake cores, with most having two platforms, mostly at 90° to one, but otherwise irregular, and one core having a single platform. They weigh between 101g and 349g, having an average weight of 240g. There is minimal evidence for any platform preparation, and most cores have some cortex remaining, while a number of the cores have evidence for hinge and step fractures. The cores from Context 1799 all have the same blue-grey mottled patination suggesting deposition at the same time, although one core appears to have re-used an earlier core/hammerstone.

All of these cores are probably later prehistoric in date, although it is possible the cores with evidence for platform preparation may be residual pieces. The presence of so many

cores in one place, without any associated debitage, suggests that they were being used for expedient knapping to produce flakes, perhaps for simple cutting tasks or to produce a specific tool, and the cores were then being deliberately discarded into the ditch, whilst the other unwanted debitage had been allowed to fall to the ground at the place the knapping had occurred. This apparent lack of curation of cores is a typical later prehistoric flintworking trait.

Pond (Contexts 2339, 2340 and 2423)

A total of 176 pieces of worked flint was recovered from these three contexts forming the upper fills of the Pond. The entire assemblage is debitage, comprising flakes, cores, fragments and chips, and there appears to be very little residual flint. There is a high proportion of Bullhead flint in this group of worked flint, but none of the pieces have any patination.

A small proportion of the flakes appear to be soft hammer-struck, but these may have been removed with a soft stone hammer, the remainder being hard hammer-struck. Most of the pieces have cortex remaining on their dorsal side, and there is very little evidence for platform preparation, this being confined to the more obvious residual pieces. Length/breadth analysis of 68 complete flakes showed that 51 per cent were 'medium', and 49 per cent were 'broad', with no narrow pieces (Table 14). Only one flake had any evidence for utilisation; with retouch/utilisation wear along one lateral edge.

There were 15 cores, and 10 core fragments found in these contexts, along with a single hammerstone. The cores were simple single-platform (9 cores) and two-platform (6 cores) flake cores, with no platform preparation. The cores exhibited large overhangs, evidence for numerous step and hinge fractures, and no real systematic approach to knapping. Most had been well worked-out, and were quite small for later prehistoric cores, weighing around 100g on average. One core had been reused as a hammerstone. The core fragments were similar, with evidence for both single and multiple platforms and no platform preparation.

The Barrows

The assemblages recovered from the ditches of the eight barrows were not extensive, and contained significant amounts of residual Mesolithic and Neolithic flintwork, especially in the upper fills. Barrows 5 and 8 produced no flintwork at all, and Barrows 1, 4 and 6 produced minimal assemblages of 12, 55 and 30 pieces of worked flint respectively, all heavily contaminated with residual earlier material. These are not considered any further. The assemblages from Barrow 2 (812 pieces), Barrow 3 (286 pieces) and Barrow 7 (132 pieces) were more substantial, and were subject to further analysis.

Barrow 3

The assemblage from Barrow 3 was almost entirely from the later recut ditch, and then predominantly from the upper fills of that ditch, and as such must represent material that in-filled the disused ditch during more recent times. Thus the large amount of residual material dating to the Mesolithic and Neolithic periods that has been incorporated into the upper fills is mixed with later prehistoric material, making any form of statistical analysis impossible. Where flintwork was found in basal fills it comprised single pieces of undiagnostic debitage from individual contexts and thus cannot assist in the interpretation of these features. The lack of any flintwork from the early ditch fills suggests that there was no significant flintworking activity around the barrow during its use and early history.

Barrow 7

Barrow 7 had a less complex stratigraphy, but still contained a mixture of later prehistoric and a few residual earlier pieces. The assemblage is largely hard hammer-struck flakes, few of which had any evidence for platform preparation, and just under one third had hinge fractures. A total of 29 complete flakes from Contexts 2704 and 2720 were subjected to length/breadth analysis, which showed that 69 per cent were 'broad' and 31 per cent were 'medium'; there were no narrow pieces (Table 14). Approximately 60 per cent of the flakes were broken, and there were a number of fragments, both typical bi-products of later prehistoric flintworking. These two contexts also produced eight cores and two core fragments. The cores comprised five single-platform flake cores, and three two-platform flake cores, none of which exhibited any evidence for platform preparation. Most cores were quite small, and had significant amounts of cortex remaining. Flakes had been removed from one or two platforms very haphazardly, leaving overhangs, and evidence of step and hinge fractures. The only implements to be recovered from the Barrow 7 ditch fills comprised a small hollow scraper on pebble flint, and a hammerstone. The presence of both cores and debitage in the barrow ditch suggests that flint knapping was being carried out in the vicinity of the ditch, although as no flakes or cores could be refitted, the assemblage probably represents accumulation over a period of time, rather than discrete knapping events. Apart from the few residual pieces, the flintwork from the ditch of Barrow 7 can be firmly dated to the Middle to Later Bronze Age.

Barrow 2

Barrow 2 produced the largest assemblage of flintwork from a barrow ditch, with a large quantity of flintwork coming from four of the fills (Contexts 7642, 7641, 7640 and 7639) forming a possible recut of the ditch, and with a smaller assemblage coming from the primary fill of the original ditch (Context 7748). The former groups of material have

been subjected to further analysis, while the small group of struck flint from Context 7748 has been considered in the Early Bronze Age section above.

Context 7642 was the primary fill in the base of the recut ditch, and produced a large group of 195 pieces of struck flint, although many of these were fragments or chips. The flint was a mixture of quite fresh looking pieces, and some with a blue-grey mottled cortex, the latter pieces possibly being residual. Very little Bullhead flint was noted from here. Although the fresh looking flint looked as if it had come from one or more knapping episodes, none could be refitted. A total of 56 complete flakes and blades were measured for length/breadth analysis, which showed that 41 per cent were 'broad' and 53.5 per cent were 'medium' with the remaining 5.5 per cent being narrow pieces (Table 14). 30 per cent of this sub-sample was hinged, and there was a mixture of primary flakes with cortex, and secondary flakes with no remaining cortex. A number appeared to be soft hammer-struck, however it is likely that many of these had been removed using a soft stone hammer. Evidence for platform preparation was mostly found on residual pieces. The seven cores are all single platform flake cores, with no evidence for any platform preparation. All the cores exhibit overhangs, few removals and have cortex remaining. There were no implements from this context. This group of flintwork, excluding the residual pieces, appears to be evidence for in-situ knapping at the barrow site, with the debitage and cores being discarded into the ditch. The product, whatever it was, was being taken elsewhere for use.

Context 7640 produced a smaller assemblage of 137 pieces of struck flint, again with numerous fragments and chips, but only three cores. The flint from this context was mostly patinated, in various degrees, predominantly a blue-grey mottled patina. A sub sample of 28 complete flakes was measured for length/breadth analysis (Table 14), which showed that 47 per cent were 'broad' and 50 per cent were 'medium', with no narrow pieces (apart from residual blades which were not included). 43 per cent of the sub sample was hinged. Although there appeared to be many soft hammer-struck pieces, most are thought to have been removed with a soft stone hammer. The three cores comprise one single-platform, and two two-platform flake cores, with no evidence for platform preparation. The implements from this context comprised three end scrapers, an end and side scraper, and a broken roughout from a discoidal knife or sickle. This group of material appears to be more mixed than the flint from Context 7642, and includes many more residual pieces.

The group of flintwork from Context 7639 comprised 166 pieces, and was very similar in composition to the flintwork from Context 7640, although including a much higher proportion of hard hammer-struck pieces. A sub sample of 54 complete flakes was measured for length/breadth analysis (Table 14), which showed that 52 per cent were 'broad' and 48 per cent were 'medium', with no narrow pieces (apart from some residual blades which were not included). 30 per cent of the sample was hinged. The cores comprise two single-platform, six two-platform and one multiple-platform flake

cores, and with the exception of one residual core, they have no evidence for platform preparation, few removals, numerous overhangs and a large amount of cortex remaining. The only implements were an end scraper and a side scraper. The former, manufactured on a soft hammer-struck flake, could be a residual Mesolithic expedient scraper.

The assemblage from the ditch of Barrow 2 may provide some insight to the activity around the barrow. Initially constructed in the Early Bronze Age, the primary fill of the original ditch produced a group of flintwork that indicated flint knapping was taking place in the vicinity of the ditch immediately after the barrow had been constructed. The lack of any flintwork from the later deposits of this ditch, apart from two undiagnostic pieces of worked flint from the later fills, suggests that there was little activity around the barrow as the ditch silted up. When the ditch was recut, there was a further phase of significant flint knapping taking place at the barrow, perhaps connected with whatever activity was associated with the re-use of the barrow ditch later in the Bronze Age. This was mixed with some residual material, and the later silting up of the recut ditch has a similar mix of material, but with progressively later material in the successive fills. However it is likely that the secondary fills will have accumulated over a long period of time, and the material in them represents redeposited flintwork from the surrounding landscape.

Chapter 13: Lithology

Rob Ixer

Introduction

Each sample was petrographically described using a x20 hand lens. Particular attention was paid to breaks/fractures as they provided 'fresh' surfaces and the true colour of the rock. All lithological features, including mean grain size, presence of clasts, megacrysts, fossils, veining, bedding, laminae and foliation planes were noted and measured. The colour of the freshly broken and of the weathered natural surfaces was recorded and standardised using the Geological Society of America's rock-colour chart. Clast grain size within sediments was standardised using the standard grain size scale. An initial lithological identification for each rock was made based upon these macroscopic characteristics.

A standard thin section was prepared from each of the fifteen rocks and one fired clay sample and these sections were investigated using standard transmitted light petrography. A final lithological identification was made.

The emphasis of the report is on providing detailed petrographical characterisation of the rocks with an emphasis on their possible geographical provenance.

Summary

Lithology and Provenance.

The fifteen rocks comprise two metamorphic, two sedimentary/meta-sedimentary, two igneous, one limestone and eight clastic sedimentary rocks.

Thanet Earth is far too south to have any glacial drift/till, since the glacial drift terminal line is approximately along the line of the present day Thames. However, exotic drop-stones are known as a very minor component of Pleistocene deposits in southern England and have been selectively collected and utilised since earliest prehistoric times.

None of the rocks have a very local, and some do not have regional, outcrop so unless the rocks were taken from the unconsolidated drift or shore-line deposits (this is a possibility for two of the samples (Roman Hone Plateau 2 SF 2.9037 context 2319 and Neolithic rubbing stone Plateau 8 SF 8.159 Context 12307/12309) then the rocks are exotic with regard to their find spot and in the case of the Niedermendig lavas (Plateau 7 SF 7.88 context 7183 and Plateau 1 SF 1.128 context 10575) and Norwegian Rag (Plateau 5 SF 5.41 context 6525) lithologies are very exotic as the nearest outcrops of these rocks are continental (Germany and Norway respectively).

The Hertfordshire puddingstone (Plateau 1 SF 1.34 context 1923) and Mesozoic limestone mortar (Plateau 6 SF 6.27 context 6146) are non-regional coming from north of the Thames and (probably) Hampshire respectively.

The sedimentary quartzite (Neolithic rubbing stone Plateau 8 SF 8.159 Context 12307/12309) if it be a sarsen; a quern and rubbing stone composed of Kentish Rag (Plateau 2 SF 2.9028 context 9007, Plateau 2 SF 2.4 context 2039) and six glauconitic calcite-cemented sandstones or their silicified equivalents (plateau 4 SF 4.27 and 4.30 context 4679; SF 4.31 context 4808; Plateau 8 SF 8.45 context 8480, SF 8.33 context 8620, SF 8.9071 context 8697) are probably from southern or south-eastern England and are therefore regional in origin.

The lithic as artefacts

Hones

Hones include a Roman hone, a fine-grained, micaceous meta-sandstone and a Medieval hone from a fine-grained metamorphic phyllite namely Norwegian Rag.

Roman hone (Plateau 2 SF 2.9037 Context 2319) is a fine-grained, indurated meta-sandstone. In thin section it is clast-supported with abundant phyllosilicates including muscovite, biotite and chlorite. Unlike many Roman hones from Kent including those from Canterbury Whitefriars, it is not manufactured from the local Kentish Rag, a calcareous sandstone, but is probably a secondary hone employing a natural but non-locally derived pebble. Similar secondary Roman hones are widespread in Southern England.

In thin section the medieval Norwegian Rag (also known as Light Grey Schist) (Plateau 5 SF 5.41 Context 6525) is a meta-sedimentary rock that has been metamorphosed to the lower greenschist grade. In detail it is a fine-grained schist comprising quartz-muscovite-opaques (?haematite) with minor amounts of brown-green biotite, chlorite, sodic plagioclase, potassium feldspar and calcite. Original, detrital heavy minerals include zircon and tourmaline.

These mica schists have been traced to the Eidsborg district of the Telemark in central southern Norway (Mitchell *et al* 1984).

Norwegian Ragstone hones are important in northern and eastern England sites in the 10th and 11th centuries as York and Thetford testify but uncommon in southern England (Ellis and Moore 1990). At Whitefriars Norwegian Ragstones are present in early 13th century to mid-14th century and late 15th/early 16th century to late 16th century. A similar distribution is found at Winchester where there is also a concentration of Norwegian

Ragstone hones from the early 13th to mid-16th centuries with a few later ones (Ellis and Moore 1990).

Eight mica schist hones have been recorded from Marlowe Car Park in Canterbury from Anglo-Saxon and later contexts (Garrard 1995b). A medieval age for the Thanet Earth Norwegian Ragstone hone is therefore probable.

Rubbing Stones

Two dished rubbing stones Plateau 8 SF 8.159 Context 12307/12309 an orthoquartzite found in a Neolithic context and a calcareous sandstone, very probably Kentish Rag Plateau 2 SF 2.4 context 2039 and from a medieval context.

The Neolithic very indurated medium-grained sandstone (orthoquartzite) rubbing stone/?quern is dished through wear. If it is a metamorphosed sandstone then it is non-local but if it is an indurated sarsen then it may be of a regional origin namely southern England.

The slightly dished rubbing stone found in a medieval context is a fine-grained, slightly fossiliferous, calcite-cemented sandstone and has many of the characteristics of the Roman to Late Anglo-Saxon Kentish Rag hones from Canterbury Whitefriars, although the Thanet artefact has a much lower fossil content. It is probably of a local to regional origin. Within the Whitefriars assemblage Kentish Rag hones were rare after the Norman Conquest.

Correct lithology for hone

Limestone Mortar

Mortar Plateau 6 SF 6.27 context 6146 a medieval context manufactured from a vuggy fossiliferous Mesozoic limestone that is not Caen, Bath or Purbeck. It may be Quarr Stone from the Isle of Wight or Burr Stone from Purbeck but is clearly an import.

Querns

Quern fragments were the most common artefacts to be petrographically studied.

Niedermendig Lava

Two Niedermendig lava fragments from medieval contexts, Plateau 1 SF 1.128 context 10575 and Plateau 7 SF 7.8 context 7183 are different but both are characteristic of the querns from the Eifel area of Germany in that they carry zoned clinopyroxene, altered biotite/amphibole and hauyne phenocrysts in a fine-grained matrix of pyroxene-

feldspar-?feldspathoid. The former lava fragment is a quartz-bearing tephrite from the Niedermendig quarry that historically produced most querns and the latter although an obvious quern fragment, is from a tephrite that can only be provenanced to the Niedermendig area. As has been noted by Peacock (Peacock 1998, 47), querns in this material dominated the medieval quern assemblage from Winchester, being particularly important in the eleventh century (Biddle and Smith 1990).

It is of note that the thickness of the lava fragments from Plateau 1 SF 1.128 context 10575 was unusually thin and was associated with lime-mortar suggesting their secondary use.

Greensand

Six Greensand quern fragments were sectioned, three from Iron Age contexts (Plateau 8 SF 8.45 context 8480 Early Iron Age; Plateau 8 SF 8.9071 context 8697 and Plateau 8 SF 8.33 context 8620) and three from Medieval contexts (Plateau 4 SF 4.27 and SF 4.30 context 4679 and Plateau 4 SF 4.31 context 4808).

Although they differ sufficiently in their petrographical details to suggest they do not come from the same geographical source(s) there is very little difference between the Iron Age-context and Medieval-context lithologies. All are coarse-grained, calcite-cemented, glauconite- (or oxidised glauconite)-bearing, phosphate-bearing, slightly fossiliferous, medium- but mainly coarse-grained sandstones.

The only exception is Plateau 8 SF 8.33 context 8620, this is a medium-grained, oxidised glauconite- and phosphate-bearing, fossiliferous sandstone but with a silica rather than calcite matrix.

Glauconitic sandstones occur within the Cretaceous Lower and Upper Greensands, these have a thin but extensive outcrop in south and south-eastern England. The closest outcrops are in a narrow band running northwest from Folkestone to north of Maidstone. These sandstones have been used to manufacture querns so these quern fragments are regional in origin rather than local.

Both Greensand and Mayern-Niedermendig lava querns are commonly found within medieval contexts in south-eastern England.

Two final quern fragments are a Hertfordshire Puddingstone from Plateau 1 SF 1.34 context 1923 and an altered Kentish Rag from Plateau 2 SF 2.9028 context 9007, both from medieval contexts.

Hertfordshire Puddingstone

The Hertfordshire Puddingstone is a common Prehistoric quern lithic and comprises rounded flint pebbles in a limonite-cemented, fine-grained sand matrix. This lithology primarily originates from north of the Thames. The artefact is exotic with regard to its find spot and is a trans-Thames import; the medieval context is perhaps unusual.

Kentish Rag

The final quern, a part of a rotary quern, is a glauconite- and fossil-bearing, fine-grained sandstone where the original carbonate matrix has been replaced by ?collophane. It is a phosphatised Kentish Rag and so would be local/regional in origin.

Petrographical descriptions

Hones

Plateau 2 SF 2.9037 Context 2319 (Roman context)

Lithology

A fine-grained, micaceous meta-sandstone.

Macroscopical description

Hand specimen

A planar, bedded/laminated, very indurated, very fine-grained (<187µm diameter average grain size) meta-sediment. The freshly broken surface is a brownish black (5YR 3/1 on the Geological Society of America rock-colour chart) whereas the weathered surface is a brownish grey 5YR 5/1.

The cut surface is a medium light grey (N6) and shows a dense, thinly laminated (?foliated), fine-grained (<187µm diameter average grain size) meta-sandstone.

It has metal (iron?) scraped onto it.

Thin section

The well-sorted fine-grained (fine sand 187µm diameter) meta-sandstone comprises 1–2mm thick, pale yellowish brown (10YR 6/2) biotite- and opaque-rich beds alternating with thicker (3 –4mm) but paler (very pale orange 10YR 7/2) beds.

Microscopical description.

The laminated, fine-grained meta-sandstone has phyllosilicates, mainly biotite and muscovite and trace amounts of chlorite, lying along bedding/lamination planes. The rock is well-sorted, clast-supported and comprises dominant amounts of sub-angular quartz accompanied by lesser amounts of colourless muscovite and pale brown biotite and minor amounts of chlorite, untwinned feldspar and plagioclase and trace amounts of zircon, zoned, green tourmaline and opaque minerals. Trace amounts of chert are present.

Provenance.

The rock is not a Kentish Rag but may be a Palaeozoic sandstone, if correct the rock is exotic with respect to its find spot.

Artefact

The shape of artefact and grain size of the sandstone and presence of scraped metal (if not modern) suggests a hone. It may be secondary hone, namely a pebble.

Plateau 5 SF 5.41 context 6525 (medieval context)

Lithology

A metamorphic, fine-grained meta-sandstone/phyllite. Norwegian Rag.

Macroscopical description.

Hand specimen

The freshly broken surface is a light yellowish grey (5Y 7/1 on the Geological Society of America rock-colour chart) but has weathered to a very pale yellowish brown (10YR 7/20. It is a foliated, friable rock with many fine-grained opaques.

Thin section

The cut surface is a very light grey (N8) and shows a fine-grained (250µm diameter) rock with pale and dark grains and some mica. There is little visible fabric but it is limonite stained along ancient breaks and surfaces.

Microscopical description.

In thin section the rock shows little indication of a foliation but this may be due to the orientation of the section. The metamorphic rock comprises intergrown quartz-

muscovite-opaques with lesser amounts of biotite, chlorite, plagioclase, potassium feldspar including perthite and trace amounts of zircon, green tourmaline and calcite.

Quartz is fine-grained (0.1–0.2mm in diameter) and is sheathed within short muscovite laths alongside lesser amounts of pale brown biotite and pale green chlorite. Calcite forms a very local matrix. Rare polycrystalline quartz-rich rock clasts are present.

Provenance

The hone is a Norwegian Rag from the Eidsborg district of the Telemark in central southern Norway. It is an exotic import.

Artefact

Although the hone is rather friable its shape and lithology prove it to be a hone.

Rubbing stones

Plateau 8 SF 8.159 context 12307/12309 (Neolithic context)

Lithology

An indurated, medium-grained, very quartz-rich sandstone (an orthoquartzite).

Macroscopical description

Hand specimen

Freshly broken surfaces are a moderate orange pink (10R 7/4 on the Geological Society of America rock-colour chart) and show a medium-grained sandstone (average grain size 500µm diameter) with white and pink-stained quartz. The rock is slightly friable.

Thin section

A colourless, uniform, very well-sorted, medium-grained, (average grain size is approximately 500µm in diameter), homogeneous sandstone with no visible fabric.

Microscopical description

In thin section the rock is a well-sorted, grain-supported ortho/metaquartzite. Fine-grained, euhedral quartz and opaques infill void spaces between coarse-grained quartz grains, hence the quartz has a bimodal grain size. Polycrystalline quartz rock fragments are rare but metamorphic quartz clasts.

Monocrystalline, rounded, cloudy (due to fine-grained fluid inclusions) quartz grains, showing uniform extinction and many with authigenic, syntaxial overgrowths, are the dominant component. Many quartz grains show triple junctions with their neighbours.

Feldspars are absent but trace amounts of green tourmaline and possible framboidal pyrite are present.

Provenance

There are petrographical similarities to silcretes (sarsen) but also to true quartzite.

If the lithology is sarsen then the artefact is regional in origin but if it is a quartzite then it is exotic with regard to its find spot.

Artefact

One surface is dished through wear suggesting this is a rubbing stone or possibly a saddle quern.

Plateau 2 SF 2.4 context 2039 (medieval context)

Lithology

A fine-grained calcareous sandstone. Kentish Rag

Macroscopical description

Hand specimen

A very fine-grained sandstone with an average grain size <187µm diameter. Its freshly broken surface is a light brownish grey (5YR 5/1 on the Geological Society of America rock-colour chart). The cut surface is a yellowish grey (5Y 7/1) with brown and black clasts and ?mica flakes and shows a uniform, very fine-grained (<187µm diameter) sandstone.

Thin section

The rock is a laminated sandstone with 2mm thick, parallel, planar bedding and has an even grain size (fine sand <187µm diameter). It is a pale yellowish brown (10YR 6/2).

Microscopical description

In thin section the rock is bedded. The most abundant, clastics are sub-angular, but well-sorted, monocrystalline quartz clasts. Quartz is accompanied by very minor to trace amounts of detrital plagioclase and lath-shaped muscovite. Detrital, heavy mineral grains include rare zircon, green-brown tourmaline and brown TiO_2 minerals.

Fossil matter includes rare foraminifera and ?gastropod debris. Rock fragments are very rare but include fine-grained chert. All the clasts are cemented within a fine-grained calcite cement. Authigenic pyrite comprises framboids and euhedral cubes.

Provenance

Although this lithology shows many characteristics of Kentish Rag it is fossil-poor when compared with many Kentish Rag specimens. Kentish rags crop out in southern and south-eastern England and this artefact is probably regional in origin.

Artefact

The artefact shows a dished wear surface, this and the appropriate lithology suggest it was a rubbing stone/whetstone.

Mortar

Plateau 6 SF 6.27 context 6146 (medieval context)

Lithology

A Mesozoic fossiliferous limestone- a biosparite.

Macroscopical description

Hand specimen

A fossiliferous limestone with many bivalve moulds. The freshly broken surface is a very pale orange (10YR 8/2 on the Geological Society of America rock-colour chart). The cut surface is a very pale orange (10YR 8/2) with abundant fossil moulds up to 3mm in length that are lined with crystalline sparite.

Thin section

The fossiliferous vuggy limestone is a yellowish grey (5Y 8/2) with up to 3mm diameter voids and shell debris up to 3mm in length. The fossil content is restricted in size and type.

Microscopical description

A biosparite with micritic shell (?bivalve) and ostracod debris and abundant void spaces. Rare foraminifera are also present as are trace amounts of detrital quartz and untwinned feldspar. Small, euhedral calcite crystals form rims growing into the voids and much of the groundmass is fine-grained sparite.

Provenance

The limestone is Mesozoic in age. Lithologically it is not Caen or Bath Limestone but may be Quarr Stone from the Isle of Wight or Burr Stone from Purbeck. It is an import.

Artefact

The specimen is from a large mortar.

Querns: Niedermendig Lava

Plateau 1 SF 1.128 context 10575. (medieval context)

Lithology

Tephrite with quartz xenocrysts.

Macroscopical description

Hand specimen

A very pale (medium light grey N6) porphyritic vesicular lava.

Thin section

The matrix is a light olive grey (5Y 7/1) that carries zoned, (green core to light brown rim) clinopyroxene and very dark brown/opaque, hexagonal, zoned mafic phenocrysts up to 1mm in diameter. Irregular shaped vesicles are a similar size to the phenocrysts.

Microscopical description

Phenocrysts include euhedral, zoned from green cores to pale brown margins clinopyroxene and rare, zoned, isotropic hauyne, simply twinned feldspar and plagioclase. Altered, hexagonal-shaped mafics (biotite/hornblende) are altered to opaques and rounded quartz xenocrysts are enclosed within fine-grained acicular clinopyroxene reaction rims. All are set within a fine-grained matrix comprising equant

opaques and lath-shaped feldspar. Some quartz is enclosed within an isotropic rim or has no reaction rim and locally nests of acicular pyroxene are present.

Vesicles are partially infilled with euhedral feldspar/feldspathoid

Provenance

The lava is from the Eifel Region in Germany and so is a European import. More specifically the presence of quartz xenocrysts suggests that this quern fragment is from the Niedermendig Millstone quarry.

Artefact

The artefact comprises small fragments that appear to be too thin for a quern. The fragments are embedded within ?daub suggesting the reuse of crushed quern material.

Plateau 7 SF 7.8 context 7183 (medieval context)

Lithology

Tephrite.

Macroscopical description

Hand specimen

A very pale (medium light grey N6) vesicular lava. The cut surface is a medium grey (N5) with many 1–2mm diameter vesicles but few phenocrysts.

Thin section

The matrix is a pale yellowish brown (10YR 5/2) that carries green clinopyroxene and very dark brown/opaque, hexagonal mafics phenocrysts up to 1mm in diameter plus irregular shaped vesicles up to 5mm in size.

Microscopical description

Phenocrysts include euhedral, zoned from green cores to pale brown margins clinopyroxene phenocrysts; hexagonal-shaped mafics (biotite/hornblende) altered to opaques and rare lath-shaped ?hauyne set within a fine-grained matrix comprising equant opaques, lath-shaped clinopyroxene and feldspar/feldspathoid. Vesicles are partially infilled with a euhedral feldspar/feldspathoid.

A complex intergrowth of fine-grained opaques and twinned feldspar may be an altered xenolith.

Provenance

The lava is from the Eifel Region in Germany and so is a European import.

Artefact

The artefact is a rotary quern fragment.

Querns: Greensand

Plateau 8 SF 8.45 context 8480 (Early Iron Age context)

Lithology

Calcite-cemented glauconitic sandstone Greensand.

Macroscopical description

Hand specimen

The freshly broken surface is a light to medium grey (N6–N7 on the Geological Society of America rock-colour chart). A very fine/medium-grained (average grain size 375/500µm diameter), indurated, well-sorted sandstone with rounded, white quartz and dark clasts, green algae? and a few larger quartz grains.

The cut surface is mainly a light grey (N7) with soft, green to brown glauconite-rich areas up to 0.2mm in diameter. The rock is an indurated, medium-grained sandstone (375µm diameter grain size) but has pale and dark, rounded clasts up to 2mm and 1mm in size respectively.

Thin section

Sub-rounded to sub-angular, 500–1500µm diameter, colourless quartz and pale olive (10Y 5/2) glauconite (500–750µm in diameter) and rare, mid olive brown (5Y 4/4) oxidised glauconite are present in a colourless sparry calcite.

Microscopical description

Rounded to sub-angular, monocrystalline quartz, and greenish glauconite with minor amounts of plagioclase and potassium feldspar including perthite and microcline are the

main mineral clasts. Both quartz and feldspars show partial replacement by calcite. Polycrystalline quartz rocks including stretched quartz are present.

Some very fine-grained mudstone-like clasts have a brown, isotropic matrix and may be phosphatic. Fossils are rare but include foraminifera and phosphatic ?echinoid spines.

Very coarse-grained, twinned, sparry calcite is the only cementing material.

Provenance

Glauconitic sandstones occur within the Cretaceous Lower and Upper Greensands, these have a thin but extensive outcrop in south and south-eastern England. The closest outcrops are in a narrow band running northwest from Folkestone to north of Maidstone.

Artefact

A small fragment from a quern.

Plateau 8 SF 8.9071 context 8697 (Iron Age context)

Lithology

Calcite-cemented glauconitic sandstone. Greensand.

Macroscopical description

Hand specimen

The freshly broken surface is a light olive grey (5Y 6/1 on the Geological Society of America rock-colour chart) but has weathered to a pale red (10R 6/2). A coarse-grained, poorly sorted, indurated, sandstone (average grain size 500/750µm) with rounded, white quartz and dark clasts and some larger quartz grains.

The cut surface is mainly a very light grey (N8) with deep green to brown-green (light olive grey 5Y 6/1) glauconitic areas, many dark clasts and rare, red ones but most grains are white quartz. The rock is a dense, indurated, medium-grained sandstone (500–750µm diameter grain size).

Thin section

Rounded to sub-angular, 500–750µm diameter, colourless quartz and similar size light olive (10Y 5/4) glauconite, brown (mid-reddish brown 10R 4/6) mudstone/phosphate and a range of very fine-grained sediments are present in colourless, sparry calcite.

Microscopical description

Rounded to sub-angular, monocrystalline quartz; greenish to green brown glauconite enclosing fine-grained quartz and muscovite; with minor amounts of plagioclase and potassium feldspar including microcline and big perthite grains are the main mineral clasts. Quartz shows a partial replacement by calcite.

Rock clasts are varied and significant in amounts; they include reddish brown, rounded chert, polycrystalline quartz including stretched quartz, a number of fine-grained sandstones and possible mudstones. Some very fine-grained mudstone-like clasts have a brown, isotropic matrix and may be phosphatic as are some fossil debris including fish scales. Carbonate fossils include foraminifera and bivalve shells and many have been partially destroyed through calcite recrystallisation.

Elsewhere micritic calcite ?clasts have recrystallised and very small, rhombic, dark brown to opaque, oxidised dolomite/siderite is present.

Very coarse-grained, twinned, sparry calcite is the only cementing material.

Provenance

The greensand has an unusually wide range of clasts and has small dolomite. It is unlike the majority of the greensand lithologies from Thanet Earth.

Glauconitic sandstones occur within the Cretaceous Lower and Upper Greensands, these have a thin but extensive outcrop in south and south-eastern England. The closest outcrops are in a narrow band running northwest from Folkestone to north of Maidstone

Artefact

A small fragment from a quern.

Plateau 8 SF 8.33 context 8620 (Iron Age context)

Lithology

A chalcedonic quartz-cemented, fine-grained, fossiliferous, ?glauconite-bearing sandstone. Greensand.

Macroscopical description

Hand specimen

The freshly broken surface is a pinky white (5YR 9/1 on the Geological Society of America rock-colour chart). The rock is an indurated sandstone with rounded quartz 250 to 1500µ in size in a white siliceous matrix.

The cut surface is a pinkish grey (5YR 8/1) with many vughs and small, 0.2–0.4mm diameter, rounded black grains. It is sharp to the touch.

Thin section

The sandstone is a very pale orange to a pale yellowish brown (10YR 8/2 to 10YR 6/2) with 0.2 – 0.4mm diameter, rounded, light brown ?oxidised glauconite grains, fossil shell debris up to 1mm in length, fine-grained sandstone clasts and 250–500µm diameter, clear quartz grains and voids all within a silica cement.

Microscopical description

Rounded to sub-angular, monocrystalline quartz, and brownish, ?oxidised glauconite are the main mineral clasts. Fine-grained, indurated quartz arenite (sandstone), polycrystalline quartz, pink-orange chert with oxidised pyrite and chalcedony infilling void spaces, and siltstone are the main rock clasts. Some very fine-grained clasts have an isotropic matrix and may be phosphatic or very, very fine clay. Fossils including echinoid, bivalve/brachiopod, foraminifera and ?algae debris are composed of very fine-grained, micritic carbonate.

Sparry calcite is absent and all clasts are cemented by brown, radiating chalcedonic quartz itself overlain by clear chalcedonic quartz/mosaic quartz. The latter infills the final void spaces.

Provenance

Glauconitic sandstones occur within the Cretaceous Lower and Upper Greensands, these have a thin but extensive outcrop in south and south-eastern England. The closest outcrops are in a narrow band running northwest from Folkestone to north of Maidstone. Locally the Greenstones are silicified.

Artefact

A small fragment from a quern with a smooth upper surface.

Plateau 4 SF 4.27 context 4679 (medieval context)

Lithology

Calcite-cemented glauconitic sandstone Greensand.

Macroscopical description

Hand specimen

The freshly broken surface is a light olive grey (5Y 7/1 on the Geological Society of America rock-colour chart). The rock is a quite well-sorted, coarse-grained, indurated, sandstone (average grain size 500/750µm diameter) with rounded, white quartz and black clasts and a little muscovite.

The cut surface is mainly a light grey (N7) with brown green (light olive grey 5Y 6/1) 1.0–2.0 mm diameter glauconitic areas and many white quartz grains. The rock is an indurated, medium-grained sandstone with an average 500µm diameter grain size.

Thin section

Rounded to sub-rounded, 500–750µm diameter, colourless quartz and similar sized light olive brown (5Y 5/6) glauconite and rare, very fine-grained rocks are present in colourless, sparry calcite.

Microscopical description

Rounded to sub-rounded, monocrystalline quartz; rounded to irregular-shaped, green-brown glauconite; with very minor amounts of potassium feldspar including perthite and microcline are the main mineral clasts. Quartz shows partial replacement by calcite. Polycrystalline, strained quartz, glauconite-cemented, fine-grained micaceous siltstone, rare chert and quartz-?feldspar acidic igneous rock fragments are also present. Fossils are rare but include foraminifera, echinoid spines and shell debris that have been partially lost through recrystallisation, other fossil clasts are brown and isotropic and may be phosphatic in composition.

Coarse-grained, sparry calcite is the main cement but locally the cement comprises fine-grained, irregular calcite grains.

Provenance

Glauconitic sandstones occur within the Cretaceous Lower and Upper Greensands, these have a thin but extensive outcrop in south and south-eastern England. The closest outcrops are in a narrow band running northwest from Folkestone to north of Maidstone.

Artefact

A small fragment from a quern.

Plateau 4 SF 4.30 context 4679 (medieval context)

Lithology

Calcite-cemented glauconitic sandstone Greensand.

Macroscopical description

Hand specimen

The freshly broken surface is a light olive grey (5GY 7/1 on the Geological Society of America rock-colour chart). The rock is a coarse-grained (average grain size 500/750µm diameter), indurated, glauconitic sandstone with rounded, white quartz and green glauconite clasts. The sandstone has a wide size range and is poorly sorted.

Thin section

Rounded to sub-angular, 750–1000µm diameter, colourless quartz and similar sized, dusky yellow to olive grey (5Y 6/4 to 5Y 3/2) glauconite and rare, 500µm diameter, very fine-grained rocks are present in a colourless, sparry calcite matrix. Glauconite grains along the weathered surface of the artefact are darker in colour.

Microscopical description

Rounded to sub-rounded, monocrystalline quartz; rounded to irregular-shaped, green-brown glauconite; with very minor amounts of unaltered plagioclase and potassium feldspar are the main mineral clasts. Quartz shows partial replacement by calcite. Rounded, polycrystalline rocks, including sutured metamorphic quartz and glauconite-cemented, micaceous siltstone, are also present. Some clasts have a brown isotropic matrix and may be phosphatic or very, very fine-grained clays. Fossils are rare but include foraminifera, echinoid and shell debris that have been partially lost through recrystallisation.

Coarse-grained sparry calcite is the main cement.

Provenance

Glauconitic sandstones occur within the Cretaceous Lower and Upper Greensands, these have a thin but extensive outcrop in south and south-eastern England. The closest outcrops are in a narrow band running northwest from Folkestone to north of Maidstone.

Artefact

A small fragment from a quern.

Plateau 4 SF 4.31 context 4808 (medieval context)

Lithology

Calcite-cemented glauconitic sandstone Greensand.

Macroscopical description

Hand specimen

The freshly broken surface is a dark greenish grey (5GY 75/1 on the Geological Society of America rock-colour chart). The rock is a very coarse-grained, indurated, glauconitic sandstone (average grain size 750µm diameter) with rounded, clear quartz and very green glauconite. The sandstone has a wide size range and carries a few large white quartz grains.

The cut surface is mainly a light grey (N7) with deep green (dusky yellow green 5GY 5/2), up to 3.0 mm diameter, glauconite-rich areas and many white quartz grains. It is an indurated, medium-grained sandstone (375–500µm diameter grain size).

Thin section

Sub-rounded to rounded, colourless, 500–750µm diameter quartz and pale to light olive (10Y 6/2 to 10Y 5/4), 500–1000µm diameter glauconite are present in colourless sparry calcite. Locally, pale brown phosphate up to 1.5mm in size forms the cement.

Microscopical description

Rounded to sub-rounded, monocrystalline quartz; rounded to irregular-shaped, greenish glauconite; with very minor amounts of plagioclase and potassium feldspar including microcline are the main mineral clasts. Quartz shows partial replacement by

calcite. Rounded, polycrystalline quartz rocks and glauconite-cemented, micaceous siltstone are also present. Some very fine-grained 'mudstone' clasts have a brown isotropic matrix and may be phosphatic. Fossils are rare but include foraminifera, crinoid and shell debris that have been partially lost through recrystallisation.

Very coarse-grained, twinned, sparry calcite is the main cement but locally pale brown, isotropic ?phosphate encloses patches of quartz, glauconite, fine-grained sandstone and fine-grained calcite.

Provenance

Glauconitic sandstones occur within the Cretaceous Lower and Upper Greensands, these have a thin but extensive outcrop in south and south-eastern England. The closest outcrops are in a narrow band running northwest from Folkestone to north of Maidstone.

Artefact

A small quern fragment.

Quern: Hertfordshire Puddingstone

Plateau 1 SF 1.34 context 1923 (medieval context)

Lithology

A silica-cemented flint conglomerate. Hertfordshire puddingstone.

Macroscopical description

Hand specimen

The wearing surface shows rounded flint pebbles up to 3cm in length set within a dark brown, fine-grained (<187µm diameter) hard cement. The pebbles vary in colour from pale yellow (very pale orange 10YR 8/2 on the Geological Society of America rock-colour chart) to pale blue (medium bluish grey 5B 5/1). The flint pebbles are a uniformly purple brown (greyish red purple (5RP 3/2) where the artefact has been naturally broken due to a limonite-rich skin.

The cut surface has rounded flint pebbles up to 3cm in length set within a brownish grey (5YR 4/1) fine-grained sandstone (<187µm diameter gain size) matrix. The matrix to the fine sandstone is limonite. The pebbles, some of which are broken, vary in colour and are zoned and many have an up to 0.5mm thick, white rim.

Thin section

One to two centimetre diameter, colourless, rounded flint pebbles are set within a fine-grained, well-sorted sand (187µm diameter grain size) itself cemented by brown (greyish red (10R 5/2), botryoidal ?limonite. Some pebbles are shattered and fractures are infilled with the cement. The flint pebbles are zoned and most have a 0.5mm wide alteration rim ('cortex') and others have a thin, limonite-stained margin.

Microscopical description

Rounded flint pebbles carry radiolarian microfossils and small voids infilled with fine-grained quartz mosaics or radiating chalcedony. Thin margins are characterised by an increase in fine-grained opaques and the detailed microstructure and microfossils become more obvious.

The pebbles are set within a fine-grained, angular quartz sand that carries trace amounts of flint and polycrystalline quartz grains. The quartz has a uniform grain size and most shows uniform extinction and, other than trace amounts of possible microcline and tourmaline, no other phase is present.

This sand is cemented by botryoidal light brown limonite.

Provenance

Hertfordshire puddingstone as the name suggests originates north of the Thames and occurrences are concentrated in Hertfordshire although *in situ* outcrops are small and rare. The artefact is exotic with regard to its find spot.

Artefact

Part of a quern with a flat smooth wearing surface.

Quern: Kentish Rag

Plateau 2 SF 2.9028 context 9007 medieval context.

Lithology

Phosphatic Greensand, possibly Kentish Rag.

Macroscopical description

Hand specimen

The freshly broken surface is a dusky yellowish brown (10YR 3/2 on the Geological Society of America rock-colour chart) and the weathered surface is a light brown (5YR 5/4). The rock is a very fine/medium-grained, well-sorted sandstone (average grain size 250µm) with quartz and dark clasts.

The cut surface is a greyish brown (5YR 3/2) and shows a very vuggy, but uniform, medium-grained (250µm diameter), brown sandstone.

Thin section

The rock is a patchy pale yellowish brown (10YR 7/2 to 5/2), matrix-supported fine/medium-grained (250µm diameter) sandstone with clear silicate and dark brown/black grains as the main clasts. It is a grain-supported or locally matrix-supported sandstone with little fabric.

Microscopical description

The sandstone is matrix-supported and the clasts have a very restricted size range. Sub-rounded to sub-angular, monocrystalline quartz grains plus rare, plagioclase, potassium feldspar including microcline and trace amounts of zircon and brown tourmaline are present. Rounded, brownish clasts that are possibly oxidised glauconite are accompanied by rounded opaques, chert and fine-grained, polycrystalline, metamorphic quartz clasts. All the clasts are cemented within a brown, isotropic matrix (collophane?). Void spaces include rare, dissolved echinoid spines, foraminifera and bivalve fossil debris.
Very locally the matrix is clay-rich.

Provenance

Although this lithology shows many characteristics of Kentish Rag it is phosphate-cemented rather than carbonate-cemented. Kentish rags crop our in southern and south-eastern England and the origin is probably regional.

Artefact

A worn rotary quern fragment

Loom Weight

Plateau 8 SF 8.9062 context 8752 (Iron Age context)

A chalk-?tempered ceramic.

Macroscopical description

A medium grey (N5 on the Geological Society of America rock-colour chart) with large white clasts.

The cut surface is an olive grey (5Y 5/1) with sparse white clasts up to 4mm in diameter. It is dense.

Thin section

The ceramic is evenly but densely packed with 0.1 – 0.4mm diameter, clear quartz; 1–2mm diameter, rounded chalk; and rare, fine-grained rock fragments and up to 2mm long, burned-out wood. The ceramic is a greyish brown (5YR 3/2 on the Geological Society of America rock-colour chart).

Microscopical description

Petrographically the ceramic has a dark, very clean clay carrying abundant small angular quartz grains, flint/chert clasts, microfossils dominated by foraminifera and very minor/trace amounts of plagioclase, potassium feldspar including microcline, muscovite, tourmaline and zircon.

Rock clasts include rounded chalk carrying microfossils and rare quartz, these clasts are the largest non-plastics; other rock clasts are internally fine-grained but include polycrystalline quartz and ?siltstone.

Minor amounts of organic matter including cellular wood/charcoal and linear wood clasts are present.

The clay is evenly but densely packed with the non-plastics and these show a very tight size range. There is little fabric.

Provenance

The small rounded chalk clasts and the abundant microfossils within the clay suggest that this is a clay, possibly derived from the chalk. If so then the raw materials for this artefact are local/regional in origin.

Artefact

A dense fragment of baked clay.

Listing

Neolithic context
Plateau 8 SF 8.159 context 12307/12309 Quartzite Rubbing stone

Early Iron Age context
Plateau 8 SF 8.45 context 8480 Greensand Quern

Iron Age
Plateau 8 SF 8.33 context 8620 Silica-Greensand. Quern.
Plateau 8 SF 8.9071 context 8697 Greensand Quern
Plateau 8 SF 8.9062 context 8752 Baked clay Loom weight

Roman
Plateau 2 SF 2.9037 context 2319. Meta-sediment Hone

Medieval
Plateau 1 SF 1.34 context 1923 Puddingstone Quern.
Plateau 1 SF 1.128 context 10575. Niedermendig Lava Quern
Plateau 2 SF 2.4 context 2039 Kent. Rag? Rubbing stone
Plateau 2 SF 2.9028 context 9007 Kent. Rag? Greensand Quern.
Plateau 4 SF 4.27 context 4679 Greensand Quern.
Plateau 4 SF 4.30 context 4679 Greensand Quern.
Plateau 4 SF 4.31 context 4808 Greensand Quern.
Plateau 5 SF 5.41 context 6525 Nor. Rag. Hone
Plateau 6 SF 6.27 context 6146 Limestone Mortar
Plateau 7 SF 7.8 context 7183 Niedermendig lava Quern.

Chapter 14: Earlier Prehistoric Pottery

Barbara McNee

Introduction

A total of 2351 earlier prehistoric sherds weighing 17446 grams and with a mean sherd weight of 7.4 grams were recovered from archaeological fieldwork carried out at Thanet Earth. The condition of the pottery is variable (see Tables 24 and 25). The assemblage dates from the early Neolithic through to the middle to late Bronze Age and derives from contexts including pits, post-holes, ditch segments and barrows. A significant number of Beaker vessels form an important part of the ceramic assemblage, and a full description of each vessel can be found in the catalogue at the end of this report. One Beaker is encased in hard clay and chalk and has not been weighed due the fragile nature of the vessel. It has not been included in the overall quantifications for this assemblage but has been illustrated and fully described in the catalogue (CAT number 12).

Methodology

The pottery was recorded using the methodology set out by the Prehistoric Ceramics Research Group (PCRG 1997). All sherds were assigned a fabric type after macroscopic examination and by using a binocular microscope (x10 power). The assemblage was divided into different fabric groups on the basis of the dominant inclusion types, and to a fabric type based on the variation within the group. Fabric codes were used based on the dominant inclusion or inclusions present (alpha code), followed by a numeric code, which denotes different fabrics within the group (for example, pottery made using different flint tempered recipes is recorded as F/1; F/2 etc.). Some fabrics contained more than one dominant inclusion; therefore more than one alpha code is used.

Density charts (PCRG 1997, appendix 3) were used to standardise assessment of the quantity of inclusion present within the pottery fabric. All sherds were counted and weighed to the nearest whole gram, and given a unique pottery record number for ease of reference. Diagnostic sherds were additionally assigned to a form and decorative scheme; other characteristics noted include individual sherd thickness, surface treatment, levels of abrasion, and evidence of usewear. Featured sherds were recorded onto individual featured sherd record sheets, and key sherds were selected for illustration. The diameter of rims and bases were measured where possible. Parallel form types have been sought from within, and also outside the Kent area, using published and unpublished material. Microsoft Excel has been used to analyse and summarise the data.

The assemblage included sherds deriving from environmental samples. Larger sherds were extracted for full analysis, and incorporated into the report, however most of the samples were tiny crumb sized sherds, and not suitable for analysis.

Chronology

Six ceramic phases have been positively identified (Table 15), though some are poorly represented. A number of sherds could not be identified due to their fragmented state, and these have been classified as general prehistoric or indeterminate (indicated within Table 16). Some sherds have been tentatively identified; however positive identification is difficult due to the lack of formal traits such as rims. The assemblage contained several worn featureless sherds, and close dating cannot be achieved with any degree of confidence when small body sherds alone are represented. Early and middle Neolithic pottery can also be very similar to early Iron Age pottery in terms of fabrics and surface treatment, and this has added further problems in terms of dating some of the Thanet Earth assemblage.

Ceramic phase 1: early to middle Neolithic (approx. 4000–3350 BC)
Ceramic phase 2: middle Neolithic (approx. 3350–2800 BC)
Ceramic phase 3: late Neolithic (approx. 2900–2200 BC)
Ceramic phase 4: early Bronze Age (approx. 2300–1600 BC)
Ceramic phase 5: middle Bronze Age (approx. 1500–1100 BC)
Ceramic phase 6: middle to late Bronze Age (approx. 1300–1100 BC)

Taphonomy

Many of the contexts from Thanet Earth produced small quantities of pottery. Only three contexts produced a large assemblage of pottery (over 100 sherds). In addition there are 19 medium-sized assemblages (25–100 sherds).
The condition of the pottery was assessed on a scale of one to six (see Table 24). A summary of sherd condition by ceramic phase may be found in Table 25. This only includes the pottery that has been positively identified.

W1: Surface treatments are completely worn, and all sherd edges are worn.
W2: Surface treatments are worn but still identifiable, and all sherd edges are worn.
W3: Surface treatments are worn but still identifiable; most of the sherd edges are worn but at least one edge may be less worn.
W4. Surface treatments are is in reasonable condition; all sherd edges are worn.
W5. Surface treatments are in reasonable condition, most of the sherd edges are worn but at least one sherd edge is less worn.
W6. Surface treatments are in reasonable condition; sherd edges are generally fresh.

The mean sherd weight for Thanet Earth assemblage is generally quite low, and indicative of the fragmentary condition of many of the pots. The actual size of the assemblage within each context/feature varies, but is often quite small with a fairly low mean sherd weight which usually averages between 6–8 g. This is very typical of prehistoric assemblages across the region of Kent. A small number of contexts contain pottery with a higher than average mean sherd weight, and on many sites in Kent there are deposits of pottery which stand out as being somewhat 'different' when compared to pottery recovered from the rest of the site. This is often related to vessels which appear to have been carefully deposited. These examples will be discussed later on in this report, but generally speaking 'different' archaeological contexts may contain pottery sherds which are large and fresh, and which can be associated with other types of material culture such as human bone. This may be a result of post-depositional circumstances, but may also be a reflection of pre-depositional factors. The analysis of pottery deposited in such contexts can provide a tremendous amount of information on the distribution of activities across a site, and votive deposits represent another activity-specific deposit in the archaeological record (Sinopoli 1991, 85–86). The Thanet Earth assemblage is no exception.

Fabrics

Thirty seven fabric types were identified which can be placed in eight groups based on the principal inclusion types. The percentage of fabric types according to count and weight can be found in Table 26, and correlation of fabric types to ceramic phases can be found in Table 27. Whilst it has been possible to allocate a fabric type to a small number of very worn sherds, it has not been possible to suggest a date, and these examples have been excluded from Table 27. Some sherds have not been assigned to a fabric group as they are exceptionally worn, and some have been refired causing the inclusions to melt.

Flint Group

Flint type F/1
This is a coarse fabric containing abundant (40 per cent) poorly sorted subangular flint up to 5mm in size. The clay matrix is silty and slightly micaceous; fracture is hackly; surface feels rough, firing is irregular.

Flint type F/2
This is a coarse fabric containing very common (30 per cent) poorly sorted subangular flint up to 5mm in size. The clay matrix is silty and slightly micaceous with rare (2 per cent) red iron ore; fracture is hackly; surface feels rough, firing is irregular and the core is generally unoxidised.

Flint type F/3

This is a fairly coarse fabric containing very common (30 per cent) poorly sorted subangular flint up to 3mm in size. The clay matrix is silty and slightly micaceous with rare (2 per cent) red iron ore; fracture is hackly; surface feels rough, firing is irregular and the core is generally unoxidised.

Flint type F/4
This is a fairly fine fabric containing common (25 per cent) quite well sorted subangular flint average size 0.5mm in size. The clay matrix is silty and slightly micaceous; fracture is fine; surface feels rough, firing is generally unoxidised.

Flint type F/5
This is a fairly coarse fabric containing moderate (15 per cent) poorly sorted subangular flint up to 2mm in size and sparse (3 per cent) flint 3–4mm in size. The clay matrix is silty and slightly micaceous with rare (2 per cent) rounded fine sand; fracture is hackly; surface feels rough, firing is irregular and the core is generally unoxidised.

Flint type F/6
This is a fine fabric containing very common (30 per cent) well sorted subangular flint average size 0.5mm in size. The clay matrix is silty and slightly micaceous; fracture is fine; surface feels fine, firing is generally irregular on both surfaces and the core can be unoxidised.

Flint type F/7
This is a coarse fabric containing abundant (40 per cent) poorly sorted subangular flint up to 7mm in size. The clay matrix is silty and slightly micaceous; fracture is hackly; surface feels rough, firing is irregular.

Flint type F/8
This is a coarse fabric containing moderate (15 per cent) poorly sorted subangular flint up to 6mm in size. The clay matrix is silty and slightly micaceous; fracture is hackly; surface feels rough, firing is irregular and the core is generally unoxidised.

Flint and sand group

Flint and sand type Fsa/1
This is a fairly coarse fabric containing moderate (10 per cent) quite poorly sorted subangular flint up to 2mm in size and rare (2 per cent) flint up to 4mm in size. The clay matrix consists of very fine sand; fracture is hackly; surface feels rough towards the lower part of the pot and smooth around the rim area; the interior surface and core tends to be unoxidised, although the exterior surface show patches of irregular firing.

Flint and sand type Fsa/2

This is a fairly coarse fabric containing common (20 per cent) quite well sorted subangular flint 0.5mm in size and sparse (3 per cent) poorly sorted flint up to 2mm in size. The clay matrix contains moderate (10 per cent) rounded fine sand and is slightly micaceous, fracture is hackly; surface feels rough; the core is unoxidised and the exterior and interior surfaces vary from irregular to oxidized.

Flint and sand type Fsa/3
This is a fairly fine fabric containing moderate (10 per cent) quite well sorted subangular flint 0.5mm in size and sparse (3 per cent) poorly sorted flint up to 1mm in size. The clay matrix consists of very fine sand and is slightly micaceous, fracture is fine; surface feels smooth; firing is unoxidised.

Flint and sand type Fsa/4
This is a coarse fabric containing moderate (15 per cent) poorly sorted subangular flint up to 4mm in size. The clay matrix consists of very fine sand and is slightly micaceous, fracture is hackly; surface feels quite smooth; firing is unoxidised.

Flint and sand type Fsa/5
This is a coarse fabric containing common (25 per cent) poorly sorted subangular flint up to 5mm in size. The clay matrix consists of very fine sand and is slightly micaceous, fracture is hackly; surface feels quite smooth; firing is unoxidised on the interior and core, the exterior surface shows patches of irregular firing.

Flint and sand type Fsa/6
This is a coarse fabric containing moderate (10 per cent) poorly sorted subangular flint up to 5mm size. The clay matrix contains moderate (10 per cent) rounded fine sand and is slightly micaceous, fracture is hackly; surface feels rough; the core is unoxidised and the exterior and interior surfaces vary from irregular to oxidized.

Grog group

Grog type G/1
This is a fairly fine fabric containing common (25 per cent) quite well sorted subangular grog up to 1mm in size, and rare (2 per cent) subangular flint 0.25mm in size. The clay matrix is silty and slightly micaceous, fracture is fine; surface feels soapy; the core is unoxidised and the exterior and interior surfaces vary from irregular to oxidised.

Grog type G/2
This is a fine fabric containing common (25 per cent) well sorted subangular grog average size 0.75mm. The clay matrix is silty and slightly micaceous, fracture is fine; surface feels soapy; the core is unoxidised and the exterior and interior surfaces vary from irregular to oxidised.

Grog type G/3
This is a fairly coarse fabric containing very common (30 per cent) quite well sorted subangular grog up to 3mm in size, and rare (2 per cent) subangular flint 0.25mm in size. The clay matrix is silty and slightly micaceous, fracture is laminated; surface feels soapy; the core is unoxidised and the exterior and interior surfaces vary from irregular to oxidised.

Grog type G/4
This is a fairly coarse fabric containing common (20 per cent) quite poorly sorted subangular grog up to 3mm in size and rare (2 per cent) poorly sorted subangular flint up to 1mm in size. The clay matrix is silty; fracture is hackly; surface feels quite soapy; the core is unoxidised and the exterior and interior surfaces vary from irregular to oxidised.

Grog type G/5
This is a fairly fine fabric containing common (25 per cent) quite well sorted subangular grog average size 0.5mm and sparse (3 per cent) subangular flint up to 1mm in size. The clay matrix is silty and slightly micaceous, fracture is laminated; surface feels soapy; the core is unoxidised and the exterior and interior surfaces vary from irregular to oxidised.

Grog type G/6
This is a fairly coarse fabric containing abundant (40 per cent) quite well sorted subangular grog up to 3mm in size. The clay matrix is silty and slightly micaceous, fracture is laminated; surface feels soapy; the core is unoxidised and the exterior and interior surfaces vary from irregular to oxidised.

Grog type G/7 (contains very small quantities of calcareous inclusion)
This is a fairly coarse fabric containing common (20 per cent) quite poorly sorted subangular grog up to 2mm in size, rare (2 per cent) calcareous inclusions and sparse (3 per cent) voids which may have been some form of calcareous inclusion; fracture is fine; surface feels quite soapy; the core is unoxidised and the exterior and interior surfaces vary from irregular to oxidised.

Grog type G/8 (contains very small quantities of calcareous inclusion)
This is a fairly coarse fabric containing common (20 per cent) quite poorly sorted subangular grog up to 2mm in size, sparse (3 per cent) poorly sorted subangular flint up to 1mm in size and sparse (3 per cent) calcareous inclusions possibly shell; fracture is fine; surface feels quite soapy; the core is unoxidised and the exterior and interior surfaces vary from irregular to oxidised.

Grog and sand group

Grog and sand type Gsa/1

This is a fairly coarse fabric containing common (20 per cent) quite poorly sorted subangular grog up to 3mm in size and rare (2 per cent) poorly sorted subangular flint up to 1mm in size. The clay matrix consists of very fine sand; fracture is hackly; surface feels quite rough; the core is unoxidised and the exterior and interior surfaces vary from irregular to oxidised.

Grog and sand type Gsa/2
This is a fine containing moderate (15 per cent) quite well sorted subangular grog up to 1mm in size and sparse (7 per cent) poorly sorted subangular flint up to 1mm in size. The clay matrix contains moderate (15 per cent) very fine sand and a sprinkling of glauconite; fracture is fine; surface feels quite soapy; the core is unoxidised and the exterior and interior surfaces vary from irregular to oxidised.

Grog and sand type Gsa/3
This is a fairly coarse fabric containing common (25 per cent) quite poorly sorted subangular grog up to 3mm in size. The clay matrix consists of an even scatter of very fine rounded glauconite (40 per cent) and sparse (3 per cent) voids which may have been some form of calcareous inclusion; fracture is fine; surface feels quite soapy; the core is unoxidised and the exterior and interior surfaces vary from irregular to oxidised.

Grog and sand type Gsa/4
This is a fairly fine fabric containing moderate (10 per cent) quite well sorted subangular grog up to 1mm in size and sparse (3 per cent) tiny pieces of flint. The clay matrix consists of very fine sand; fracture is fine; surface feels quite soapy; the core is unoxidised and the exterior and interior surfaces vary from irregular to oxidised.

Grog and sand type Gsa/5
This is a fairly fine fabric containing common (20 per cent) reasonably sorted subangular grog up to 2mm in size. The clay matrix consists of very fine sand; fracture is fine; surface feels quite soapy; the core is unoxidised and the exterior and interior surfaces vary from irregular to oxidised.

Grog and sand type Gsa/6
This is a fine fabric containing common (20 per cent) reasonably sorted subangular grog 0.5mm in size. The clay matrix contains moderate (15 per cent) fine rounded quartz sand; fracture is fine; surface feels quite soapy; the core is unoxidised and the exterior and interior surfaces vary from irregular to oxidised.

Grog and sand type Gsa/7
This is a fairly fine fabric containing common (20 per cent) reasonably sorted subangular grog up to 1mm in size. The clay matrix is fairly silty and micaceous but also contains common (20 per cent) very fine rounded glauconite; fracture is fine; surface feels quite

soapy; the exterior surface has been irregularly fired and the interior surface and core is unoxidised.

Grog and flint group

Grog and flint type GF/1
This is a fairly coarse fabric containing moderate (15 per cent) fairly well sorted subangular grog up to 1mm in size, moderate (10 per cent) poorly sorted subangular flint up to 2mm in size and sparse (3 per cent) poorly sorted flint 3mm in size. The clay matrix is silty; fracture is hackly; surface feels quite soapy; the core is unoxidised and the exterior and interior surfaces vary from irregular to oxidised.

Grog and flint type GF/2
This is a fairly coarse fabric containing common (20 per cent) poorly sorted subangular grog up to 3mm in size and sparse (7 per cent) poorly sorted subangular flint up to 2mm in size. The clay matrix is silty; fracture is hackly; surface feels quite soapy; the core is unoxidised and the exterior and interior surfaces vary from irregular to oxidised.

Grog and flint type GF/3
This is a fairly coarse fabric containing moderate (10 per cent) poorly sorted subangular grog up to 3mm in size and moderate (10 per cent) poorly sorted subangular flint up to 3mm in size. The clay matrix is silty; fracture is hackly; surface feels quite soapy; the core is unoxidised and the exterior and interior surfaces vary from irregular to oxidised

Grog and flint type GF/4
This is a fairly coarse fabric containing very common (30 per cent) poorly sorted subangular grog up to 2mm in size and moderate (10 per cent) poorly sorted subangular flint up to 2mm in size. The clay matrix is silty; fracture is hackly; surface feels quite soapy; the core is unoxidised and the exterior and interior surfaces vary from irregular to oxidised.

Grog, flint and sand group

Grog, flint and sand type GFsa/1
This is a fairly coarse fabric containing moderate (20 per cent) quite well sorted subangular grog average size 0.5mm and moderate (10 per cent) poorly sorted flint up to 2mm in size. The clay matrix consists of very fine sand and also contains moderate (10 per cent) rounded fine sand; fracture is hackly; surface feels rough and soapy; the core is unoxidised and the exterior and interior surfaces vary from irregular to oxidised.

Grog, flint and sand GFsa/2
This is a fairly coarse fabric containing moderate (15 per cent) quite poorly sorted subangular grog up to 2mm in size and sparse (7 per cent) poorly sorted subangular

flint up to 1mm in size. The clay matrix consists of very fine sand; fracture is hackly; surface feels soapy; the core is unoxidised and the exterior and interior surfaces vary from irregular to oxidised.

Flint and grog group

Flint and grog type FG/1
This is a fairly fine fabric containing common (25 per cent) quite well sorted subangular flint average size 0.5–1mm in size and moderate (10 per cent) quite well sorted grog 0.5mm in size. The clay matrix is silty and slightly micaceous; fracture is fine; surface feels smooth, firing is generally unoxidised.

Quartz group

Quartz type Q/1
This is a fine fabric consisting of very fine sand, moderate (10 per cent) fine sand and rare flint detritus. The fresh fracture is fine, surface feels sandy and firing is unoxidised.

Fabrics and geological sources

The geological landscape on the Isle of Thanet forms a broad Chalk 'whaleback' with radial dry valleys (Shepherd-Thorn 1988, 1). Head Brickearth occurs, and the material was formerly exploited for the manufacture of bricks. It consists predominately of silt-grade quartz grains, with a proportion of clay minerals and sometimes a calcareous element (*ibid.* 34). The geology surrounding the Thanet Earth site also includes Thanet Beds (Geological Survey Sheet 274) comprising of glauconite, clays, silts and fine sands (*ibid.* 26). Thanet Beds and Brickearth deposits could have provided plenty of suitable potting clays, and it is interesting to note the similarity of the clay matrix in most of the fabric types. This suggests that much of the pottery produced at Thanet Earths derived from the same clay source, although it is not possible to draw any conclusions due to the ubiquity of this type of clay across Kent.

These geological deposits could suggest reliance on locally available resources for ceramic production. This conclusion is based on the Dean Arnold ethnographic study of resource procurement, and is based on existing accounts of ethnographic ceramic studies, and also his own fieldwork observing the contemporary potters of Mexico. Arnold's studies revealed that the preferred territory of exploitation for both clay and temper is 1 kilometres or less, and the common range of exploitation ranges within 7 kilometres for clay, and up to 6–9 kilometres for temper (Arnold 1985, 54–55, Morris 1994a; 1994b).

Neolithic fabrics

Three flint tempered fabrics have been used to make early Neolithic pottery (Table 27). Flint, the main fabric tempering, could have been obtained locally from the Chalk, which contains nodular flints and flint bands (Shepherd-Thorn 1988, 17). Research has shown that flint does appear to be the preferred fabric type for making early to middle Neolithic pottery (Cleal 1995, Woodward 2002, 107). The Thanet Earth examples have been predominantly made with a very fine sandy clay matrix, and this practice has been observed on other Kentish sites, for example at Beechbrook Wood (Edwards 2006a) and Saltwood Tunnel (Edwards 2006b). Late Neolithic pottery is poorly represented at Thanet Earth, and the few examples present contain deliberately added crushed grog. Five Grooved Ware sherds belong to fabric type G/8 and eight sherds of possible Grooved Ware belong to fabric type G/7. This fabric contains small amounts of calcareous matter which is probably naturally occurring within the clay source and could have derived from Head Brickearth.

It is interesting to note that the fabrics used to make late Neolithic pottery are dominated by grog inclusions, as Grooved Ware pots are often tempered with shell (Cleal 1995, 192). However it seems likely that the Thanet Earth potters were exploiting local resources and consequently grog may have been a more convenient temper to use. Shelly fabrics possibly derive from the vicinity of the Woolwich Beds, and although this clay source is found in numerous locations in Kent (Morris 2006b) it is slightly outside the local procurement area for the Thanet Earth potters. Fabrics used to make some of the Durrington Walls Grooved ware pottery from other sites in Kent, for example Eyhorne Street, also contained grog rather than shell (Edwards 2006d). Another possibility is that the Thanet Earth pottery is very late in the Neolithic sequence as there is a switch to the increased use of grog from the late Neolithic until the end of the early Bronze Age (Barclay *et al*. 2006).

Early Bronze Age fabrics

Early Bronze Age pottery at Thanet Earth is dominated by grog tempered pottery, and grog is particularly common in the early Bronze Age period in Britain (Woodward 2002, 109). Kent appears to follow this pattern, for example, at Beechbrook Wood, Beaker sherds tend to be grog tempered (Edwards 2006a). Several fabrics have been used to make the early Bronze Age vessels, and both silty and very fine sandy clay sources have been utilised (see Table 27). A combination of both grog and flint has also been used. There is no obvious correlation between fabrics used to make the pottery deriving from domestic and ritual/funerary contexts, and there is also no obvious use of a particular fabric type during certain stages of the early Bronze Age.

There are hints that pots made with flint or flint and grog tempered fabrics are more likely to be used in a domestic context. Both fine and coarse fabrics have been used to make the Beaker pottery recovered from Thanet Earth, and this combined with different clay matrices and different densities of added grog and grog and flint displays quite a

variety of fabric recipes. It has been suggested that funerary Beakers were often of poor quality in terms of fabrics and may have been specifically for the grave. The poor fabrics are hidden by better surface treatments and decoration (Boast 1995, 71–72). This is certainly the case with a few of the Thanet Earth Beakers but not all, as some of the funerary Beakers have been made with reasonably fine fabrics. The suggestion that many Beakers are being made for the grave is however an important point, and although some fine fabrics have been utilised the vessels are often quite soft, they appear to have been under fired and may not have been able to withstand the rigours of domestic use.

The fabric used to make the collared urn recovered from plateau 8 (context 12861) displays similarities with the Beaker fabrics, and suggests the use of a common clay source and that certain fabric recipes were continued into the later part of the early Bronze Age. The dominance and preferred use of grog as a deliberately added temper during the early Bronze Age is an interesting phenomenon, particularly when you consider that this practise declines after the end of the early Bronze Age and re-appears during the middle to late Bronze Age transition. During the early Bronze Age pots may have been owned and used by particular individuals rather than owned by communities (Woodward 1995), and it seems highly possible that the grog in such vessels may have derived from particular pots belonging to revered members of society (Woodward 2002, 109).

Middle and middle to late Bronze Age fabrics

As previously mentioned grog is rarely used as a temper during the middle Bronze Age (McNee 2006a), but it re-appears during the middle to late Bronze Age transition usually as a flint and grog tempered fabric (Jones 2006b, McNee 2012a). Fabric type F/1 has been used to make most of the middle Bronze Age pottery from Thanet Earth. This coarse flinty fabric is very typical of the type of fabrics used to make middle Bronze Age pots, and occurs on sites all over Kent. There are numerous examples including Cobham Golf Course (McNee and Morris 2006); Kemsley (McNee 2006b) and Shrubsoles (Raymond 2003). A limited range of fabrics have been used to make the Thanet Earth middle Bronze Age pottery, and it is silty clays rather than sandy clays that dominate. Clays vary greatly in their strength when dry, and a fine grained clay is usually stronger when dried than a coarse-grained one (Shepard 1954, 18). This may suggest that the potters were deliberately using fine grained clays for this reason. Very fine flint tempered fabrics have not been used, and coarse flint temper is very common.

A greater variety of fabrics have been used to make pottery, which has been dated to the middle to late Bronze Age transition, and this is fairly typical of ceramic assemblages of this period. Two fabrics recipes have been made with a sandy clay matrix (Fsa/3 and Fsa/4) and appear to represent developments from the Deverel-Rimbury through to the late Bronze Age plain ware fabric tradition. Fabrics made with sandier clays grow in

popularity throughout the late Bronze Age, and there is generally a greater variety of fabric recipes than in previous phases, and a greater variety of fine fabrics (McNee and Morris 2006). It is suggested that these changes start to take place during the end of the middle Bronze Age at Thanet Earth, and it is during this transition that fabrics made with very fine sandy clays start to re-appear, some fabrics become slightly finer and some vessels have slightly thinner walls. Coarse flinty fabrics are also still very popular, for example fabric type F/1 and F/2, and appear to be quite long lived. The greater variety of fabrics would have enabled the production of a greater range of vessel forms, and it is during this period that changes in the technology of pottery production may be a reflection of social transformations (Morris 2006b).

Forms

Due to the fragmentary nature of the Thanet Earth assemblage identification of form types has proved difficult. There is a lack of featured sherds, and available rim sherds are often very small. This presents problems in assessing vessel size and the orientation of the rim itself. It has been possible to reconstruct Beaker forms deriving from grave contexts, and these have been described in detail in the catalogue. It had not been possible to formally classify the more fragmentary Beaker sherds recovered from domestic contexts.

Neolithic forms

The earliest identifiable prehistoric form types at Thanet Earth belong to an early Neolithic bowl tradition. The most complete vessel comes from Plateau 8, contexts (C3839 and C3840) and this has been described in the catalogue. A second bowl was recovered from Plateau 1 (S10454). This has the same fine finish, and has a slightly different rim type. The neck is longer and there is evidence of a slight carinated shoulder which is consistent with a Carinated Bowl tradition. A third bowl was found in the lower fills of the same pit. This is also slightly different, and is a small thin walled roughly wiped bowl with an uneven rim. This might be more in keeping with a Simple Neutral Bowl tradition as described by Cleal (2004), or a slightly closed form.

Form type ENR/1: see catalogue, CAT no 1.
Form type ENR/2: long necked open bowl with a slightly everted rounded rim top (Fig. 265/25).
Parallels: Yabsley St, Blackwall, London (Raymond 2008, fig. 4/5).
Form type ENR/3: fairly upright or slightly inverted medium length neck with a round topped rim joining a slight carinated shoulder (Fig. 266/26).
Parallels: Staines, Surrey (Robertson-Mackay 1987, fig. 38/P1 and P6 and fig. 40/P46).
Creteway Down, Folkestone (Dunning 1966, fig. 6/6).
Preston near Stourmouth, east Kent (Dunning 1966, fig. 7).
Shoebury, Essex (Brown 1995, fig. 61/34).

Middle Neolithic pottery is poorly represented and it has not been possible to assign the sherds to a particular form. The same may be said of the late Neolithic sherds with the exception of one rim.

Form type LNR/1: pointed rounded rim with internal concave above horizontal deep moulding (Fig. 266/27).
Parallels: Durrington Walls, Wiltshire (Wainwright and Longworth 1971a, fig. 33/P29).
Marden, Wiltshire (Wainwright and Longworth 1971b, fig. 15/P41).

Bronze Age forms

The early Bronze Age forms are dominated by East Anglian and Southern Style Beakers (see catalogue for descriptions and parallels). One collared urn was also recovered from the assemblage (plateau 8, S12863). Only one tiny rim sherd remains so it has not been possible to estimate the rim diameter. The collar itself is very slightly concave and the overall form and decoration is typical of the Longworth's Secondary Series South-eastern style (Longworth 1984, 35–40).

Form type EBA/1: simple pointed rounded rim with internal moulding (Fig. 269/55).
Parallels: Westhampnett, Sussex (Longworth 1984, plate 137/1578g).
Brighton, Sussex (Longworth 1984, plate 147/544e).

A limited range of forms occur in the middle Bronze Age, and these are well paralleled across Kent.

Form type MBA/1: Straight sided bucket jar with flat topped rim, neutral form (Fig. 267/40).
Parallels: Kemsley, Sittingbourne (McNee 2006b, figs. 16/12 and 16/13).
Holborough Quarry (McNee 2007)
Willow Farm (McNee 2001)
Cobham Golf Course (McNee and Morris 2006).
Form type MBA/2: Straight sided bucket jar with round topped rim, neutral form (Fig. 268/48).
Parallels: Kemsley, Sittingbourne (McNee 2006b, fig. 15/7).
Beechbrook Wood (Jones 2006a).
Form type MBA/3: This vessel finds similarities with form types MBA/1 and MBA/2 and is almost a hybrid of all three vessel types. The walls are fairly straight and upright, and the upper part of the vessel curves in slightly (Fig. 266/28).
Parallels: Shelford Pond (McNee 2010)
Tutt Hill (Morris 2006c).

A few rim sherds may be attributed to the middle to late Bronze Age. This transitional period between the middle Bronze Age and late Bronze Age is a recognisable phenomenon in Kent (McNee and Morris 2006, Morris 2006b). It is tentatively suggested here that this transitional period is characterised by the continued use of very coarse middle Bronze Age flint-tempered fabrics, however vessel walls are becoming thinner and new forms are slowly being introduced, for example, there is a slight shift from straight-sided neutral jars to vessels with slight shoulders and everted rims. Another innovation sees the introduction of finer flint fabrics which are used to make traditional middle Bronze Age bucket forms. This pattern may be seen at Thanet Earth, and a middle to late Bronze Age assemblage is suggested by the continuation of thinner walled bucket jars and jars with slightly everted rims. One rim sherd is unusual and not easily paralleled (form type M-LBA/5, Fig. 269/57). One final form type (M-LBA/6) may represent a middle to late Bronze Age ovoid jar. The ovoid or convex jar is a very long-lived, later prehistoric vessel type and can date from the late Bronze Age through to the middle Iron Age (Morris 200dc). It may also emerge at some point during the middle Bronze Age. Ovoid jars have been found in association with Deverel-Rimbury pottery, for example at Coldharbour Road (Barclay 1994, fig. 10.8). One ovoid or convex jar was recovered from Westwood Cross (Couldrey 2004), and has been made with a coarse middle Bronze Age fabric (McNee pers. ob.). This particular jar may indicate that it is either contemporary with the Deverel-Rimbury pottery, or that it is an example of a transitional middle to late Bronze Age form.

Form type M-LBA/1: Straight sided bucket jar with flat topped rim, neutral form (Fig. 265/14).
Parallels: Ellington School (McNee 2012a)
Holborough Quarry (McNee 2007)
Form type M-LBA/2: Slight shouldered jar with medium length slightly flaring rim (Fig. 268/43).
Parallels: Updown Farm (McNee 2008a)
Form type M-LBA/3: Straight sided bucket jar with very short slightly everted rim (Fig. 268/44).
Parallels: Shoebury (Brown 1995, fig. 62/3)
Form type M-LBA/4: Possible small shouldered jar with short everted rim (Fig. 269/56).
Parallels: Tutt Hill (Morris 2006c)
Updown Farm (McNee 2008a)
Form type M-LBA/5: Upright vessel with round topped rim that slopes inwards with internal bevel (Fig. 269/57).
Parallels: None known
Form type M-LBA/6: Ovoid jar (Fig. 269/58).
Parallels: Tutt Hill (Morris 2006c)
Beechbrook Wood (Jones 2006b)

Surface Treatments

Four types of surface treatments were identified (Table 28). 1660 sherds (70.5 per cent) display some form of surface treatment, and this percentage would probably be higher if the assemblage was less worn.

A small number of middle to late Bronze Age sherds have been coated with a thin clay slurry and then smoothed. All examples contain coarse flint temper, and may suggest that the addition of a clay coat may have helped with achieving a smooth finish. The application of this extra coating of clay may have helped reduce permeability in vessels intended for storage, or may have been used to make the pot more attractive by disguising unsightly coil joins. This technique has been observed from many sites including Monkton Court Farm (Macpherson-Grant 1994, 248) and Willow Farm (McNee 2001).

The Thanet Earth vessels were often smoothed on the exterior walls, the interior walls, or on both. Smoothing can be similar to burnishing, however the final surface has a matt rather than a lustrous finish because the clay particles are not aligned or compacted (Rice 1987, 138). Smoothing a vessel would have provided aesthetic and technological advantages. Rubbing the surface of the vessel with a hard tool can serve to conceal irregularities and to alter the vessel appearance and create a uniform texture (Sinopoli 1991, 25). Smoothing may also be carried out with a soft yielding tool such as cloth, leather, a bunch of grass, or the potter's hand (Rice 1987, 138). The smoothing on some of the pots may actually be a very superficial burnish, but is it difficult to tell because of the poor condition of the sherds (McNee 2007). The Thanet Earth Beakers have been carefully smoothed, and in some cases there is evidence of burnishing. It is possible that most of the Beakers were actually burnished but the polish has been eroded.

The surface treatments on the early Neolithic sherds from Thanet Earth have generally been finely finished, and the exterior and interior of many sherds would have been quite highly burnished. Middle and middle to late Bronze Age pots are not usually burnished, and any surface treatment consists of simple wiping.

Decoration

Neolithic decoration

The early Neolithic pottery from Thanet Earth is undecorated. This would suggest an early date for these pots, as the use of decoration tends to occur in the later centuries of the early Neolithic period (after 3700 cal BC). However, the later period tends to include the manufacture of heavier rim types such as rolled and thickened rims (Barclay et *al.* 2006). One of the Thanet Earth vessels (Fig. 262/1) has a rolled rim, and it is possible that the pot was made on the cusp of these two traditions. The middle Neolithic is represented by a small number of fingernail decorated body sherds, and probably

belongs to a Peterborough Ware vessel (Fig. 269/53). It is not possible to suggest which style as there are no rim or shoulder sherds. A few sherds may be attributed to the late Neolithic. One large moulded rim sherd (context 2175, Fig. 266/27) has fingernail pinched decoration below the rim, and this is followed by horizontal and diagonal incised decoration. This suggests affinities with the Durrington Walls sub-styles. The form is similar to a small assemblage of Grooved Ware vessels recovered from Harrietsham Churchyard (McNee 2008b). The form and decoration is also similar to an example from Durrington Walls, Wiltshire (Wainwright and Longworth 1971, fig. 33/P29). Grooved Ware pottery with Durrington Walls affinities were recovered from a pit at Eyhorne Street. Radiocarbon dates obtained from this pit suggest a date range that falls within the period 2900–2500 cal BC (Edwards 2006d).

A few late Neolithic body sherds from context 4390 (Fig. 267/38) display horizontal grooved bands, and these might be consistent with Clacton style vessels.

Early Bronze Age decoration

The most common type of decoration at Thanet Earth consists of comb decoration. Toothed combs have been used to create complex patterns on the exterior surface of the Beaker assemblage, and these motifs have been described in the catalogue. The collared urn (Fig. 269/55**)** has been decorated with horizontal twisted cord impressions on the collar. There is a small worn applied fingertip impressed cordon below the collar, and the rest of the vessel would appear to be undecorated. The Thanet Earth example shares some similarities with urns recovered from Otford and Cliff (Longworth 1984, plate 194/797b and plate 217/794).

Middle and middle to late Bronze Age decoration

A small number of middle Bronze Age vessels have been decorated with fingertips on the shoulder of the vessel (Fig. 267/39). The middle Bronze Age cremation vessel (context 3042) has fingertip decoration on the exterior edge of the rim (Fig. 266/28) and one further vessel has fingernail decoration on the exterior of the rim and shoulder (Fig. 268/47). These decorative techniques are common during the middle Bronze Age, and continue into the middle to late Bronze Age on a very small number of vessels.

One sherd (context 5307, Fig. 269/52) may belong to a globular vessel, and consists of fine tooling in the shape of a chevron pattern. A very similar example can be seen at Saltwood Tunnel (Jones 2006b).

Two sherds are very similar to the Birchington Bowl type globular bowls, and have been decorated with horizontal tooling and ring and stamp decoration (Figs. 267/41 and 268/51). These distinct ring and stamp decorated bowls are quite rare in Kent, and have mostly been recovered in Thanet, including the Birchington hoard pot (Powell Cotton

and Crawford 1924, Macpherson-Grant 1992, fig. 6). The Thanet Earth examples have been assigned to ceramic phase 6, but may be slightly earlier. The Birchington Bowl contained fourteen bronze palstaves dated to 1300–1100 BC (Macpherson-Grant 1992, Powell-Cotton and Crawford 1924), it is however possible that the pot belongs to an earlier middle Bronze Age phase. Different stamps would have been used, as some pots are stamped with two concentric circles (Powell-Cotton and Crawford 1924, 220) and others with three circles (Couldrey 2004). The Thanet Earth example has three circles (Fig. 267/41). Stamping involves the use of a tool as a die in order to impress a repeated pattern of identical motifs (Rice 1987, 145), and it is difficult to tell what kind of tool might have been used to carry out this type of decoration. The head of a pin would have been a suitable implement; however, evidence for pins with concentric rings tend to be recovered from late Bronze Age contexts (Peter Couldrey, pers. comm.), and this type of decoration tends to relate to the pottery of the middle or middle to late Bronze Age. Another suggestion is that the impressions were made using a bone, possibly that of a hare or wild cat (Jones and Leivers 2009, 86).

One rim sherd (plateau 7, context 7640, Fig. 269/57) has been decorated on the exterior with a 'horse-shoe' shaped applied cordon. Although this type of decoration exists in Kent on middle to late Bronze Age bucket jars (McNee 2006b), this example is unusual. The cordon itself looks more like a foot ring base, and it has not been possible to find any parallels.

Usewear

The Thanet Earth vessels displayed little evidence of visible usewear such as burnt residues, and this may be partly due to the evidence not surviving post-depositional wear and tear. 313 sherds have sooty residues adhering to either the inside of the pot, the exterior of the vessel or both. 39 sherds belong to a middle Bronze Age cremation urn (context 3042). This particular vessel has sooty patches on both the upper interior and exterior of the pot, and this might be related to its function as a funerary container. At Simons Ground in Dorset, middle Bronze Age cremation urns frequently contain charcoal which may have derived from the funeral pyre or are associated with burning a ritual fire before placing the urn in a pit (White 1982, 22).

The pattern of sooting on the Thanet Earth cremation urn is also very similar to domestic soot and evidence of cooking activities, and exterior soot deposits in the upper part of the vessel indicate that vessels were placed directly on an open fire (Hally 1983, 10). Sooty deposits suggest that the vessels in question were used in cooking or heating activities. Vessels placed in the fire were probably used for boiling (Rice 1987, 235). It is therefore possible that the cremation urn had been carefully selected from a domestic context in order to be reused in a sepulchral context.

Eight sherds belonging to a middle to late Bronze Age jar (context 5179) have burnt residue on the interior of the pot. Carbon deposits on the interior of the vessel are caused by the charring of food, and governed by heat intensity, moisture in the vessel interior and source of heat (Skibo 1992, 148). This particular pot may have been associated with a cremation therefore it is also possible that the charred residues may be associated with this ritual. One sherd is quite warped and has been refired. This may have occurred if the pot was set close to, or in a fire.

None of the Beaker sherds have any sooty residues adhering to their surfaces with the exception of one sherd from context (3265). This has some form of carbonised residue on the interior of the vessel which might suggest the vessel had been used in a cooking activity. It is not clear that Beakers were used for cooking (Edwards 2006a); although research has shown that some contain organic residues associated with food (Guerra-Doce 2006, 247). This particular Beaker accompanied an inhumation (S3267), and it is possible that the burial rite included the celebration of special meals served in these vessels (*ibid.* 252).

One final example of visible usewear evidence has been observed on several sherds belonging to an early Neolithic bowl (S10454). All the sherds are covered in very fine soot and there is also evidence of patches of fine carbonised material on the interior of several sherds. This might be evidence of cooking activities, and charred residues have also been observed on other early Neolithic sherds, for example at White Horse Stone (Barclay *et al*. 2006). The overall sooting coating is also consistent with vessels associated with cremation practices (McNee 1999), and suggests that the vessel was somehow connected with a special event. This will be discussed in more detail later on in this report.

Firing

Evidence for onsite pottery production is rare on prehistoric sites because of the absence of bonfire kilns, and Kent is no exception. Prior to the Roman invasion, almost all native pottery in Britain was open-fired (Gibson and Woods 1997, 26). In terms of firing technology, the early Neolithic sherds frequently have a black core, which is indicative of short term firing (Gibson 2002, 36). Beaker sherds are smooth with orange-brown or brown outer zones and reduced black/dark brown inner zones or core. This might suggest that oxygen was unable to circulate around the interior area of the sherd during the firing process. Some of the Beakers are quite soft and crumbly, and this suggests under firing. Other sherds, especially those belonging to a middle and middle to Bronze tradition are a varied and irregular mix of reddish and grey colours, and suggest that it was difficult to control firing conditions. Middle to late Bronze Age pottery is often unoxidised throughout and exhibits a more uniform colour of darkish grey. It is possible that potters had developed different ways of firing pottery.

Discussion

The Prehistoric Ceramics Research Group has suggested that a minimum of 25 sherds should be present in a context in order for a statistically reliable estimation of phase to be carried out (PCRG 1997, 21). Groups producing very small quantities of mostly indeterminate pottery have not been discussed.

The Plateau assemblages

Tables 16–23 present a summary of the amount of pottery recovered from each plateau area (indeterminate quantities of pottery not included). This may offer some information regarding settlement patterns over the course of hundreds of years although the nature of the excavation itself must be taken into consideration.

Plateau 1

Almost half of the Thanet Earth earlier prehistoric pottery was recovered from Plateau 1 (43 per cent). Early Neolithic pottery representing two vessels was recovered from the fill of an isolated pit (Group 10001, S10454). One small almost complete bowl derived from the lower fills of this pit (C10453), and part of a large Carinated Bowl was found in the same context (Fig. 265/25). The remainder of the pot was dispersed throughout the middle and upper deposits. Both vessels are badly fragmented but in reasonable condition, so it is possible that the small bowl was fairly complete when deposited (Fig. 266/26). This may suggest a ritual deposition which is discussed later on in this report. The large bowl was also in good condition, and covered in sooty residues. It may have been associated with cooking activities and not subjected to a great deal of wear and tear prior to deposition. The pot may have been deliberately broken and deposited soon after breakage, or carefully curated before final deposition. In terms of date both these vessels could be contemporary and date to around 3900–3750 cal BC. The large bowl is very similar to an early Neolithic Carinated Bowl recovered from Plateau 8; however the slight carination is set lower on the vessel. In the later centuries of the early Neolithic (after 3700 cal BC) shoulders tend to set higher or are absent altogether (Barclay *et al.* 2006), so it is possible that the Plateau 1 bowl is slightly earlier. Middle and late Neolithic pottery was not observed.

The next ceramic phase of activity belongs to the early Bronze Age and Plateau 1 is dominated by a good assemblage of Beaker pottery. Beaker pots were recovered from graves (G10002). One Beaker (CAT no 2, context 10845) is a rusticated vessel, and finger rusticated Beakers are most commonly found in domestic assemblages (Gibson 1986, 33). However, this example was recovered from a grave. Beaker two (CAT no 5, context 10827) was associated with an adult inhumation and is a highly decorated Southern Style Beaker. The decoration has been particularly well executed, and it has been suggested that Beakers displaying more complex design elements are chosen for

inclusion in graves (Boast 1995, 76). A third Beaker (CAT no 6, context 10848) was found in a grave that did not contain human remains. This particular vessel is much more fragmented and several sherds are missing. This could be a result post depositional damage, but it is also possible that certain parts of the pot were chosen for burial. This vessel could be accommodated within Clarke's (1970) Southern series although may be a slightly earlier version (S1). This would suggest that two of the Beaker vessels were fairly contemporary (CAT no's 2 and 5), and Beaker no 3 (CAT no 6) may have been made slightly earlier. A few small comb decorated Beaker body sherds derived from contexts (10836 and 1119).

One broken Beaker vessel was recovered from pit S1148 (CAT no 7, context 1147, G1121) and is too fragmented to allow identification as to its form. The slight flaring rim and decoration is similar to a Beaker recovered from Chislet, Kent (Clarke 1970, corpus no 393), and this has been classified as a European Beaker. This may hint at an early date for this Beaker. It is the only Beaker that has been made with a purely flint fabric, and may suggest that the vessel was originally intended for use in a domestic context. It is interesting to note that some of the Beakers from Beechbrook Wood (Edwards 2006a) have also been made with similar fabrics, and these also derive from a pit context.

One grave (G10003) contained two small finely grog tempered Beakers (CAT no's 3 and 4, context 10234, S10199). Beaker (CAT no 4) appears to be incomplete and part of the pot may have been broken prior to deposition. Both vessels may be accommodated within Clarke's (1970) Primary Southern Group. This could suggest a slightly earlier grave than those located in Group (G10002).

The next phase of activity on Plateau 1 is represented by a small assemblage of middle Bronze Age bucket type vessels (G1041, G1124 and G1133). Context (273) contained several body sherds belonging to a thick walled middle Bronze bucket jar.

No featured sherds were identified, and the condition of the sherds may suggest that they derived from a rubbish dump. The middle to late Bronze Age pottery assemblage is also in fairly poor condition, and was recovered from several contexts. Three rims sherds belong to straight sided bucket vessels but have thinner walls and have been made with slightly finer fabrics than middle Bronze Age bucket jars. These were recovered from pits (S261, S682 and S746). Other sherds derive from a number of contexts along trackway 7, and this area may represent middle and middle to late Bronze Age settlement activity.

Plateau 2

Neolithic activity is represented by a few sherds of Durrington Walls style Grooved Ware pottery, this was recovered from an isolated pit (context 2174, S2175, Fig. 266/27). There is undeniably great complexity and formality surrounding pit deposits associated

with Grooved Ware, and this is seen in processes of selection and arrangement of material within pit fills (Pollard 2002, 29). Isolated pits may have been dug specifically for the burial of particular materials, maybe debris from a communal feast, or to mark out distinct locations (Thomas 1991, 86–7).

Early Bronze Age activity is represented by fragmented Beaker sherds, and a sherd of unidentifiable early Bronze Age pottery. Several tiny sherds representing a comb impressed decorated Beaker was recovered from a pit (context 2275, S2276, Fig. 263/8). It has not been possible to classify the Beaker; however a short everted rim may suggest an East Anglian tradition. It is interesting to note that the fabric includes coarse flint, and this may suggest that the vessel was not intended for a funerary use.

Five tiny worn sherds may also belong to Beaker pots, and these were found in contexts (C2388 and C2068). A small number of middle to late Bronze Age sherds were identified based on fabric. The examples are very worn and featureless and had been subjected to much wear and tear prior to deposition.

Plateau 3

A few scraps of possible early Neolithic pottery derived from a pit (C11016, S11017).

The next phase of activity is represented by Beaker pottery. One East Anglian style Beaker was found in a crouched burial (CAT no 10, C3265, S3267, burial group Barrow 5, Fig. 264/10). A small Beaker base was recovered quite nearby from a segment of ring-ditch of Barrow 5 (context 3300). A second East Anglian type Beaker was found associated with a crouched adult inhumation (CAT no 11, C3016, S3012, G3004, Fig. 264/11). This pot is a fatter 'honey pot' version of the East Anglian type Beaker and is located in a different area of Plateau 3. This might suggest slightly different pots were buried in different areas. The two pots are likely to be contemporary. If following Needham's sequence both vessels fit into an 'S' profile (SP) series, and later SP Beakers are united in having bellies around mid-height and variation is expressed in a contrast between squat and slender forms (Needham 2005, 200).

Fifteen Beaker sherds were recovered from a possible Beaker burial (CAT no 9, C3174, S3173, G3005, Fig. 263/9). The decoration and slightly everted rim would suggest an East Anglian style Beaker, and although there are slight differences relating to fabric and decoration there are clear similarities to the Beaker recovered from context (C3265). The two Beakers were found in close proximity to each other, and may indicate that this feature could relate to a disturbed Beaker burial. One small Beaker rim sherd derived from a pit (C11016, S11017, G3073). The rim is slightly everted and has been decorated with horizontal tooth impressions (Fig. 267/36). This example is also similar to East Anglian style Beakers, and may suggest a disturbed cremation feature.

A small number of worn body sherds suggest further Beaker activity on Plateau 3 (C11001, S11002, G3076). The fingernail impressions on the exterior of some of sherds may suggest rusticated or finger-nail (FN) Beakers. This could relate to a disturbed cremation or the deposition of sherds deriving from a rubbish pit.

The middle Bronze Age is represented by a cremation urn (C3042, S3043, G3017, Fig. 266/28). It is possible the cremation urn was inverted as there are no surviving base sherds. Middle Bronze Age cremation urns were often inverted, for example at Itford Hill (Ellison 1972, 104). The urn has been phased to the middle Bronze Age, but may be slightly later. It is very similar to a middle to late Bronze Age cremation from Tutt Hill (Morris 2006c) which has a radiocarbon date of 1200–1050 BC. A few other sherds have been phased to the middle to late Bronze Age, and these belong to bucket jars (C3104, G3109, Fig. 266/30).

Plateau 4

A small number of early prehistoric sherds were recovered from this plateau. Identification is difficult due to the poor condition and lack of diagnostic pottery. A few sherds of possible late Neolithic Grooved Ware was found in a ditch (S4391, G4106, Fig. 267/38), and a few scraps of middle to late Bronze Age pottery derived from ditch (S4031 and S4037). The most significant pot is a Beaker vessel recovered from an inhumation grave (CAT no 12, C4628, S4622, G4043, Fig. 264/12).

Plateau 5

A few sherds of pottery may date to the early Neolithic (C5215). Small sherds of Beaker pottery was also observed which derived from pit and ditch features (see Table 20). The condition of the pottery may suggest domestic use or that the pottery came from a badly disturbed burial. Several sherds of middle and middle to late Bronze Age pottery was recovered from pit (S5308). The upper fill (C5307) contained sherds belonging to bucket jars (Fig. 267/40) and a Birchington Bowl type vessel (Fig. 267/41). It is interesting to note that some of the pottery is in quite good condition and with a higher than average sherd weight. It is not unusual for a mixture of ceramic phases to occur in the same features, and for the condition of the pots to vary from highly abraded to less abraded (McNee 2010). The varied condition of the ceramics would suggest that the pottery itself might have come from different sources prior to deposition. Pots which are in very good condition may have been deliberately smashed and placed within the pit soon after breakage, and may also have been carefully curated. Sherds which are quite worn may have derived from a rubbish dump. If the pit was filled within a single act, it may suggest that freshly broken pots were mixed with pots that had fallen out of use. A small number of other features also contained sherds of higher than average mean sherd weight. Middle to late Bronze Age sherds were recovered from ditch features (S5155 and

S5131). This could suggest the deliberate deposition of selected artefacts within the settlement, and this may relate to a special event.

Plateau 6

Neolithic pottery was not positively identified on Plateau 6. A fine East Anglian style Beaker was recovered from a grave (CAT no C6027, S6025, G6004), and is therefore similar to the Beaker vessels identified on Plateau 3. A few crumbs of possible middle to late Bronze Age pottery may also be present on Plateau 6.

Plateau 7

The pottery on Plateau 7 is also fragmented and difficult to identify. The presence of middle Neolithic activity may be suggested by a few sherds of possible fingernail impressed Peterborough Ware (C7002, F7003, G7013, Fig. 269/53). The next phase of activity is represented by a Beaker sherd (Fig. 269/54). This was found at the bottom of a grave (G7001, Barrow 2 graves), and may represent a grave good or the remains of a more complete vessel which has been disturbed. The sherd has been decorated with a toothed comb (Clarke 1970, Basic European, Motif Group 1, motif no) but cannot be formally classified.

A few middle to late Bronze Age sherds (Figs. 269/56 and 269/57) were retrieved from the upper fills of Barrow 2 (C7640, G7004).

Plateau 8

Middle Bronze Age pottery was not observed on this plateau, and there appears to be two ceramic phases which relate to the early Neolithic and the early Bronze Age. A fine early Neolithic Carinated bowl was recovered from a pit (CAT no 1, S3941, G8004). The vessel is in good condition which suggests it was buried soon after it went out of use. It was recovered from a possible refuse pit dispersed throughout contexts (C3839 and 3840), and parts of the pot are missing. This might indicate that the pot was not deliberately deposited, however the pottery from this pit pottery has an unusually higher than average mean sherd weight. The vast majority of features on prehistoric Kentish sites contain sherds which have a low mean sherd weight, so it is interesting to observe the sherds recovered from a minority of pit and ditch fills which have a high mean sherd weight. It is possibly that token pieces of the bowl were chosen for disposal, and it may also be possible that the pots were carefully curated before burial. This may suggest that this pit was involved in some form of deliberate and structured deposition.

Several sherds belonging to a second early Neolithic vessel were recovered from another pit located within close proximity (C3455, S3456, G8001). By comparison the condition of

this vessel is poor, and it has not been possible to suggest a form type. The fabric is however very similar, and the two vessels may be contemporary.

Early Bronze Age activity is represented by a late style Collared Urn (Fig. 269/55). This was excavated from a ditch terminus (C12861, S12863, G8011). A total of 11 Collared Urns were mentioned by Longworth (1984, 216–217) mostly from the north-east Kent and the Isle of Thanet and generally speaking this type of vessel is quite rare in Kent. Collared Urns are often associated with burials (Gibson 2002, 96); however the Thanet Earth example appears to be from a domestic context.

Chronology

In ceramic terms the earliest phase on the Thanet Earth site occurs on plateau's 1 and 8, and is represented by early Neolithic Carinated bowls. It is tentatively suggested that the bowl recovered from plateau 1 is slightly earlier in the Carinated Bowl sequence. Radiocarbon dates associated with a Carinated Bowl from White Horse Stone was estimated to fall between 3900–3750 cal BC (Barclay and Edwards 2006). Radiocarbon dates are also available from Chalk Hill, Ramsgate (3710–3630 cal BC and 3710–3510 cal BC). These are however associated with early Neolithic Plain Bowls (Bayliss *et al*. 2011, 374–375), and according to conventional chronologies these secondary Neolithic ceramics start to appear around 3800 BC (Gibson 2006). This would suggest that the Thanet Earth bowls have more in common with primary early Neolithic assemblages and a date range of between 3900–3700 is suggested.

There are hints of middle and late Neolithic occupation at Thanet Earth. A few sherds of Peterborough Ware were recovered from plateau 7, and a small number of late Neolithic Grooved Wares sherds were recovered from pits on plateau's 2 and 4. It has not been possible to suggest a particular style of Peterborough Ware, and therefore a broad date range of 3350–2800 cal BC is suggested. This would suggest a slight hiatus between the later early Neolithic and middle Neolithic periods. Radiocarbon dates associated with Grooved Ware excavated from pits on Mill Hill, in Deal, indicate that such pottery was in use there between 2880 and 2450 cal BC (Parfitt 1998, 377). Grooved Ware pottery with Durrington Walls affinities were recovered from a pit at Eyhorne Street, and radiocarbon dates obtained from this pit suggest a date range that falls within the period 2900–2500 cal BC (Edwards 2006d).

The next phase of activity relates to the early Bronze Age and specifically East Anglian style Beakers. These were recovered from plateau's 3, 6 and possibly 2. East Anglian style Beakers fall within Step 3 of Lanting and van der Waals series (Lanting and van der Waals 1972), Needham's 'S' profile Beakers (Needham 2005) and Case's style 2, Middle style (Case 1993).

Two East Anglian Beakers were associated with crouched burials on plateau 3. A sample taken from human bone within grave G3004 (CAT no 11) provided a radiocarbon date of 2195–1977 cal BC (at 95 per cent probability; Table 6, UBA-12624). A second radiocarbon date was obtained from another East Anglian Beaker burial on plateau 6 (CAT no 13, grave G6004) and shows a radiocarbon date of 2193–1981 cal BC (at 95 per cent probability; Table 6, UBA-12610).

Two more radiocarbon dates were obtained, and these are associated with Southern style Beakers. These are considered to be slightly later in terms of an expected typological sequence, and fall within Steps 5 and 6 of Lanting and van der Waals series (Lanting and van der Waals 1972), Needham's long necked (LN) group (Needham 2005) and Case's style 3, Late style (Case 1993). A number of Southern style Beakers were recovered from plateau's 1, 4 and probably 5. A sample taken from human bone within grave S10843 (plateau 1) shows a radiocarbon date of 2019–1829 cal BC (at 95 per cent probability; Table 6, UBA-12622). Another sample taken from human bone within grave G4043 (plateau 4) shows a radiocarbon date of 2108–1895 cal BC (at 95 per cent probability; Table 6, UBA-12630). Both of these Beakers have been classified as typologically later within the Beaker sequence, and these four radiocarbon dates do tend to fit into the chronological order of Beaker vessels in terms of existing typologies. If that is the case it may suggest that during the early Bronze Age the earliest use of the Thanet Earth site occurred on plateau's 3 and 6. The recovery of two Beakers which are characteristic of Step 4 of Lanting and van der Waals's (1972) scheme occur within grave 10199, Plateau 1, and may represent the next phase of Beaker use. Step 5 and 6 Beakers *(ibid.)* were also recovered from plateau 1, and this might suggest use of this particular area over a long period of time.

Needham (2005) suggests that Beakers burials are generally rare before 2250 cal BC, and this may be the case in Kent (Barclay *et al* 2006). This is suggested by the radiocarbon dates from Beaker related contexts at Thanet Earth and other sites in Kent. Radiocarbon dates relating to Beaker associated contexts at Beechbrook Wood fall within a range of 2290–1780 BC. The pottery has been placed in Clarke's (1970) East Anglian and Barbed Wire styles (Barclay *et al* 2006). Two Beaker burials from Northumberland Bottom shows a similar date range (2120–1780 and 2280–1980 cal BC). These relate to East Anglian style vessels (*ibid*, Edwards 2006e).

Beaker pottery was not observed on plateau 8, however the early Bronze Age is represented by a late style Collared urn. This example may have been used in a domestic context. Collared urns appear in the archaeological record at around 2200 BC (Gibson 2002, 96).

Middle Bronze Age pottery was recovered from plateau's 1, 3 and 5. Some pottery has been phased to a middle to late Bronze Age phase, and slight changes in form and fabrics hint at a visible transition. This pottery was observed on all the plateaus with the

exception of plateau 8, and there is a higher concentration on plateau's 1, 3 and 5. This would suggest occupation of these areas from 1500–1100 BC. Most of the pottery derives from plateau 5, and it is interesting to note the possibility that some form of structured deposition was taking place. Unusual or special pit deposits may be associated with monumental events such as site abandonment, and research indicates that on some sites special closing deposits appear to have been made on the abandonment of the house (Brück 2001, 151).

The Thanet Earth assemblage does not appear to have any other pottery belonging to the late Bronze Age Plain Phase as defined by Barrett (1980), and there may be a hiatus of activity until the earliest Iron Age (800–600 BC), or early Iron Age (600 BC). The pottery on plateau 5 relates to the latest ceramic phase (until the early Iron Age) and it is possible that some of it was deliberately deposited when the area was abandoned.

Research by the author may suggest that whilst some settlement sites in Kent are very long lived, and may span from the middle Bronze Age through to the early Iron Age and sometimes beyond, others may have been occupied for just a short period. Some sites are abandoned and may be re-occupied at a later date. The inhabitants may be moving a few kilometres away and establishing new sites or joining pre-existing household type groups. Communities are shifting around in the landscape throughout the Bronze Age but in a fairly defined area (McNee 2012b, 232). A number of other sites in Kent would suggest occupation during the middle Bronze Age, abandonment during the post Deverel-Rimbury phase, and then re-occupation during the early Iron Age. These include Northumberland Bottom (Bryan and Morris 2006) and Tutt Hill (Morris 2006c).

Conclusions

Thanet Earth is a site of some importance. Early Neolithic pottery is not well represented in Kent; therefore the recovery of a small number of early Neolithic bowls is notable. A regionally important assemblage of Beaker vessels represents the early Bronze Age. A minimum of twelve Beaker vessels was recovered, and several decorated body sherds, which probably belong to Beakers, are also present. Clarke (1970) listed over thirty beakers for the county, and Champion (1982) noted that at least 36 substantial or near complete Beakers had been found in Kent mostly from funerary contexts (Champion 1982, 32). More recently a number of Beaker burials have been excavated (Champion 2007a, 92), and the Thanet Earth assemblage is a welcome addition to this relatively small corpus of Beaker vessels. The Thanet Earth site makes a substantial contribution to the total number of Beaker vessels present in Kent and an up to date corpus would be valuable in terms of future research.

The middle and middle to late Bronze Age ceramics are well paralleled on sites across the region (approx. 1600–1100 BC). The characteristics of the pots would suggest that

most of the vessels were utilitarian, and made for household consumption, rather than trade and exchange, but it is also possible that pots were made for use during social activities on sites across Kent. Production is likely to be localised, and on-site production is a possibility but difficult to prove due to a lack of firing evidence and tools used for constructing the pots. Clays and tempers were likely to have derived from local geological sources.

It is clear that Kentish potters had wide-ranging contacts with potters from other regions in England and Northern Europe. Form types are well paralleled over a large area, however the lack of evidence for imported pottery would suggest that it is the ideas for making certain types of pot that are moving, and not the vessels themselves. Typological or attribute similarities are believed to be the result of cultural contact or diffusion; people in one area acquire pots or the ideas of how to make and decorate them by trade, exchange, migration or conquest (Arnold 1985, 1). It is apparent that in terms of both a regional and broader geographical area, similar forms appear in the middle and middle to late Bronze Age, and this may also be applied to pottery of earlier periods. It is also the case that vessel forms, whilst conforming to a certain stylistic identity, also display traits that represent technological variability and a lack of standardisation. The exploitation of local clay resources by the Kentish potters has already been discussed, so this picture might suggest that pottery production operates on two levels. Potters, while conforming to umbrella uniformity dictated by regional concerns, also work within the boundaries of their own physical technique borne out of family and kinship traditions. There is a common regional tradition, and the possibility that potters are operating within their own communities.

The specialist production of pots might be quite a rare occurrence, although it can certainly not be ruled out. It is interesting to note that a few sherds of Birchington Bowl type pottery were found at Thanet Earth. Body sherds with dot and ring stamped decoration were recovered from a number of sites within close proximity to where the Birchington bowl was found, and it is possible that these vessels are contemporary.

Body sherds with this type of decoration have been found at Westwood Cross (Couldrey 2004) and Netherhale Farm, Thanet (Macpherson-Grant 1992, fig. 6) and a further two examples can be seen on The Museum of Thanet's virtual museum website. One more example which also has a similar fabric to the Thanet Earth example has been observed by the author, and this was recovered from Cliffs End, Thanet. One possible example occurs slightly outside the area at Willow Farm, Herne Bay (McNee 2001, fig. 14/5). The restricted distribution and fineness of the decoration and fabric may suggest that these pots were made for a special purpose. The Birchington Bowl type vessels are not easily paralleled in other regions; however, a similar stamped example does occur in Shoebury, Essex (Brown 1995, fig. 62/9).

Unusual deposits also occur at Thanet Earth. Burial practises including the deposition of pottery vessels in graves, and cremations within pots are deliberate and special events. Formalised deposits of ceramics are not just restricted to the funerary, and it is suggested that some of the early Neolithic and middle to late Bronze Age ceramics have been deposited in a slightly atypical fashion. The early Neolithic pottery from Thanet Earth suggests deposition of semi complete vessels soon after breakage, or careful curation perhaps protected within a midden. Sooty residues on one of the bowls may indicate that it was used in a feasting activity, particularly as the vessel is large.

During the earlier Neolithic pits probably provide the single most frequent context from which pottery is recovered (Pollard 2002, 25), and the concept of an early Neolithic to early Bronze Age pit deposition tradition — a tradition distinct from preceding and later practises- was first articulated by Julian Thomas (Anderson-Whymark 2012, 187). In terms of the ceramics recovered from pits, research has demonstrated that pits can contain whole pots, but more often parts of a number of vessels are found (Thomas 1999, 68). Some of the Neolithic pits excavated in the Kent area share many of the characteristics observed by Thomas, including Thanet Earth.

There are three almost complete early Neolithic vessels from Thanet Earth (Figs. 262/1, 265/25 and 266/26). All three are missing their rounded base sherds. At Ellington School, Ramsgate, several early Neolithic rim sherds were recovered from a pit. These belong to burnished bowls and are in good condition. No complete vessels are present and there is also a distinct absence of base sherds (McNee 2012a). At Mill Road, Kent, five early Neolithic pots were discovered and had been placed upright in the bottom of a pit (Dunning 1966, 1–3). It is interesting to note that these pots are also missing their base sherds. These early Neolithic vessels could suggest that certain portions were selected for burial, and that these were represented by rims and the upper part of the vessels rather than the lower vessel walls and bases. The selection of materials for deposition, which can include specific parts of a pottery vessel, may be part of particular symbolic practises.

Analysis of Neolithic pits from other areas can show that pottery in a fresh condition was collected from a midden and then placed within pits with other artefacts, for example bone, burnt stone and charred plant remains (Hey and Robinson 2011, 244). It is possible that some pits contain the gathered-up products of a single act of consumption, and it is more often that parts of a number of vessels are found implying that the material had been selected from more substantial deposits (Thomas 1999, 68). These aspects of pit deposits appear to indicate purposeful redeposition of middens, perhaps at the end of occupational phases as acts of settlement closure (Evans *et al* 1999, Barclay and Garwood 2011, 375). The presence of unusual deposits at Thanet Earth may represent life-affirming events, marriages, deaths, feasting, and the coming together of communities to construct enclosures and settlements and finally to abandon them.

Catalogue of Thanet Earth early Neolithic and Beaker vessels

CAT No 1: Early Neolithic bowl (plateau 8, contexts 3839 and 3840)

The bowl has a rim diameter of 240mm and a height of approximately 185mm. The bowl is not complete, but it has been possible to reconstruct it and estimate the overall profile. It is an open bowl with a slight carination which appears to have been raised. The rim has been folded over and has been made by adding an extra strip of clay to the interior top of the pot which was then rolled over. This may have been applied rather badly as the rim has snapped off in several places. It has two perforations below the rim made while the clay was fairly wet. The pot has been perforated from the exterior, and there is another hole which has been started from the interior and not completed. The pot is quite worn in places, but traces of burnish still remain on both the exterior and interior. Burnishing on top of the rim suggests that the quality of the burnish was quite high, and the pot was well smoothed. The pot is undecorated, and has been made with fabric type Fsa/1. The bowl may fit into a Carinated Bowl tradition. The angle of the shoulder is not particularly sharp, and a Pseudo-Carinated Bowl description as described by Cleal (2004) might be more appropriate.

Parallels

Kingsborough, Sheppey (Gibson and Leivers 2008, fig. 7/P210 and 7/P360)
White Horse Stone (Edwards 2006b)
Saltwood Tunnel (Edwards 2006c)
Chestnuts megalithic tomb (Alexander 1961)
Yabsley Street, Blackwall, London (Raymond 2008, figs. 4/4 and 4/5)
Staines, Surrey (Robertson-Mackay 1987, fig. P127)

Possible date

Early assemblages tend to have quite simple rims with squared, everted or rounded profiles, while later assemblages can contain rolled rims and other heavy types (Barclay and Edwards 2006). Radiocarbon dates associated with a Carinated Bowl from White Horse Stone was estimated to fall between 3900–3750 cal BC (*ibid*). It is therefore possible that the Thanet Earth bowl is of a similar date.

CAT No 2: Beaker 1 (plateau 1, context 10845, grave 10843, skeleton 10842)

The Beaker has a rim diameter of 170mm, a base diameter of 85mm, a height of 200mm, and has been made with fabric type Gsa/1. The belly is quite bulbous and has a long slightly everted neck. It is a finger pinched rusticated Beaker and has been decorated on the exterior with all over fingertip and occasional fingernail impressions. The clay would have been reasonably soft as there are raised bosses of clay adjacent to the finger

marks. These occur mostly in pairs arranged in fairly horizontal lines; however some of the decoration appears to be quite randomly applied resulting in diagonal finger decoration. The neck itself is 90mm long and this would place the vessel in Needham's long necked group (Needham 2005, 195). Needham's (LN) Beakers are also sometimes distinctly bulbous (*ibid*.) and this characteristic is true of this particular Beaker. The form is characteristic of Clarke's (1970) Late Southern British Beaker Group (S3). Clarke summarises this particular Beaker group as representing the intermediate development between the Developed (S2) and the Final Southern Group (S4). He describes the S4 types as usually being made with coarse fabrics and having paired fingernail decoration (Clarke 1970, 42–43). Based on Clarke's observation, The Thanet Earth example seems to share the characteristics of both the S3 and S4 Beaker groups, and may be attributed to a late Southern series, or Step 6 of Lanting and van der Waals's (1972) scheme. Either scheme would suggest that this Thanet Earth Beaker is typologically late.

Parallels

Possibly Beechbrook Wood (Edwards 2006a)
Laundry Road, Minster (Boast and Gibson 2000; fig. 6.2/7)
Chippenham Barrow, Cambridge (Bamford 1982, fig. 35/a)

Possible date

In terms of date it is not a specifically late form although there are late examples. Radiocarbon dates fall between the 22nd century BC and perhaps earlier to sometime after 1800 cal BC. In particular, dated funerary LNs with rustication seem mainly to be associated with later stages (Needham 2005, 195). A sample taken from human bone within this grave provided a radiocarbon date of 2019–1829 cal BC (at 95 per cent probability; Table 6, UBA-12622).

CAT No 3: Beaker 2 (plateau 1, context 10234, grave 10199, skeleton 10003)

This is one of two Beakers recovered from context (10234, find number 78). It is a small Beaker with a rim diameter of 120mm, a base diameter of 60mm, a height of 141mm and has been made with fabric type G/1. It has been finely decorated with a rectangular toothed comb. The decoration consists of nine parallel horizontal lines below the rim (Clarke 1970, Basic European, Motif Group 1, no 1), followed by a zone of multiple running zigzags (Clarke 1970, Basic European, Motif Group 1, no 7). This is followed by two parallel horizontal lines and another zone of multiple zigzags. This pattern continues as follows: six parallel horizontal lines, one plain zone, three parallel horizontal lines, one zone of multiple zigzags, four parallel horizontal lines, one plain zone, three parallel horizontal lines, one zone of multiple zigzags and finally two more zones of parallel horizontal lines. The neck itself is 55mm long and this would place the vessel in Needham's long necked group (Needham 2005, 195). The form is characteristic

of Clarke's (1970) Primary Southern (S1) group, or Step 4 of Lanting and van der Waals's (1972) scheme.

CAT No 4: Beaker 3 (plateau 1, context 10234, grave 10199, skeleton 10003)

This is second of two Beakers recovered from context (10234, find number 79). It is a small Beaker with a rim with a rim diameter of 105mm, a base diameter of 68mm, height of 143mm and has been made with fabric type G/2. The neck itself is long and fairly upright (55mm) and this would place the vessel in Needham's long necked group (Needham 2005, 195). It is a Barbed-Wire Beaker, so called because it has been decorated with a thread-wound stamp. This has created small stab impressions which could have been made by a tool such as the pointed end of a piece of flint or bone. Parts of the pot are quite worn, but it is still possible to see a stamp caused by the thread wrapped around the implement which was used to create the decoration (see Fig. 263/4). The stab impressions have created mostly horizontal parallel lines, and in a few areas of the vessel the impressions are more diagonal stabs. The pot has been slightly burnished on the interior, and has also been smoothed. The smoothing has not been executed very well, and irregular lumps of clay are evident. British Barbed-Wire Beakers are considered by Lanting and van der Waals's to belong to either steps 3 or 4 (Lanting and van der Waals's 1972, 34). The general shape of the Thanet Earth Beaker may be accommodated within Clarke's Southern Series and therefore the form is similar to the other Beaker recovered from this grave.

Parallels

Monkton-Mount Pleasant, Thanet, Grave 751 (Gibson 2008, fig. 1/29. No 19)
Capel-le-Ferne (Clarke 1970, no 391)
Eyhorne Street (Edwards 2006d)
Manston (Perkins and Gibson 1990, fig. 3/1)
Ramsgate Harbour Approach Road (Gibson 2006)

Possible date

The two Beakers recovered from grave 10199 may be accommodated within Clark's Primary Southern (S1) or Developed Southern (S2) series (Clarke 1970). Similar Beakers were recovered from Eyhorne Street and Manston. The Beaker phase at Eyhorne was radiocarbon dated to 2300–1900 cal BC (Edwards 2006d), and a radiocarbon date relating to the Manston Beaker falls between 2132–1922 cal BC (Perkins and Gibson 1990). One of the Thanet Earth Beakers (find number 78) is very similar to an example recovered from Monkton-Mount Pleasant (Gibson 2008, fig. 1/29). Two radiocarbon dates were obtained from associated human remains and fall between 2180–1890 cal BC and 2289–1925 cal BC (Clark and Rady 2008, 94).

CAT No 5: Beaker 4 (plateau 1, context 10827, grave 10824, skeleton 10823)

This is a highly decorated slightly carinated Beaker with a rim diameter of 100mm, a base diameter of 60mm, a height of 153mm and has been made with fabric type G/1. The neck itself is long, straight and fairly upright (65mm) and this would place the vessel in Needham's long necked group (Needham 2005: 195). The walls are thin and the base is raised in the middle. The decoration has been carried out using a toothed comb and consists of three horizontal parallel lines just below the rim. This followed by a row of open chevrons and a zone of filled pendant triangles (Clarke 1970, Southern British Motif Group 4, no 32/ii). The area above the carination consists of two more areas of open chevrons and a row of diagonal combed impressions sloping from top right to bottom left. There is a plain band marking the area of the carination or waist and the rest of the vessel is decorated with areas of closed running open chevrons and closed diagonals. This Beaker may be accommodated in Clarke's late Southern (S3) series (Clarke 1970) or step 6 of Lanting and van der Waals (1972) alternative scheme.

Parallels

Little Downham, Cambridge (Clarke 1970, corpus no 959)

Possible date

This Beaker would appear to be typologically late. A radiocarbon date associated with a Late Southern Beaker recovered from a grave in Barrow Hills, Radley, Oxfordshire suggests that a date of 1770–1520 cal BC is in accordance with other dates for similar vessels (Garwood 1999, 282)

CAT NO 6: Beaker 5 (plateau 1, context 10848, grave 10833, no skeleton)

This Beaker is extremely worn and fragmented, and it has not been possible to reconstruct it. Most of the sherds consist of worn decorated body sherds with the exception of six possible tiny base sherds, six rim sherds and a shoulder sherd. The shoulder is bulbous, and the rim belongs to a long necked vessel which is slightly everted but turns inwards at the top of the rim. It has been made with fabric type G/3. The decoration has been carried out with a toothed comb, and consists of two parallel lines below the rim and then a zone of filled pendant triangles 50mm deep (Clarke 1970, Southern British Motif Group 4, no 29). There appears to be a plain band around the belly area, and this is followed by a possible three parallel lines and another zone of pendant triangles. The vessel would not be out of place in within Clark's (1970) Southern Group (S1or S2), and Step 5 of Lanting and van der Waals's (1972) scheme.

Parallels

Ramsgate Harbour Approach Road (Gibson 2006)
Gt Chesterfield, Essex (Clarke 1970, corpus no 234)
Manston (Perkins and Gibson 1990, fig. 3/1)

CAT No 7: Beaker 6 (plateau 1, context 1147, pit 1148)

This Beaker is extremely worn and fragmented, and it has not been possible to reconstruct it. Most of the Beaker is missing. One rim sherd would suggest that the rim was fairly long, slightly everted and may be similar to one of the Beakers recovered from context (10234, find number 78). It has been decorated with a toothed comb, and there is a zone of lattice decoration enclosed within two parallel lines just below the exterior of the rim (Clarke 1970, Basic European, Motif group 1, no 4). This is followed by three horizontal parallel lines (Clarke 1970, Basic European Motif Group 1, no 1), and traces of ladder decoration (Clarke 1970, Basic European Motif Group 1, no 5). It has been made with fabric type Fsa/2.

CAT No 8: Beaker 7 (plateau 2, context 2275, pit 2276)

This Beaker is extremely worn and fragmented, and it has not been possible to reconstruct it. Most of the Beaker is missing with the exception of one rim sherd, and has been made with fabric type GFsa/1. The rim is short and everted and therefore suggests that this particular Beaker belongs to Clarke's East Anglian series. Traces of burnish would suggest that the Beaker would have been quite highly polished. There are traces of toothed comb decoration consisting of diagonal lines running from top right to bottom left (Clarke 1970, Basic European Motif group 1, motif no 2) and two parallel horizontal lines.

CAT No 9: Beaker 8 (plateau 3, context 3174, grave or natural feature? 3173)

This Beaker is represented by one small rim sherd and a small number of base and body sherds. The rim is fairly long and upright becoming slightly everted at the top, and there are traces of a possible raised cordon. The decoration has been applied with a toothed comb, and consists of four horizontal parallel lines 20mm below the top of the rim. This is followed by a zone of ladder decoration (Clarke 1970, Basic European Motif Group 1, no 5). This pattern is then repeated. It has been made with fabric type G/4. The decoration and slightly everted rim would suggest an East Anglian style Beaker.

CAT No 10: Beaker 9 (plateau 3, context 3265, grave 3267, skeleton 3266)

The Beaker has a rim diameter of 120mm, a base diameter of 60mm, a height of 178mm and has been made with fabric type Gsa/2. It is a fairly tall vessel, with a rounded belly, a raised base and a thick everted rim. It is a version of the East Anglian type Beaker (Clarke 1970) and would fall into Lanting and van der Waals' Step 3 (1972). The

decoration consists of zones of horizontal comb impressions which become more incomplete and uneven towards the base. Separating each zone are two rows of horizontal parallel stab marks, possibly made with a comb containing two teeth. The interior of the vessel shows evidence of rough burnishing.

Parallels

Beechbrook Wood (Edwards 2006a)
Erith (Clarke 1970, corpus no 399)
Felixstowe, Suffolk (Clarke 1970, corpus no 890)

CAT No 11: Beaker 10 (plateau 3, context 3016, grave G3004, skeleton 3015)

The Beaker has a rim diameter of 140mm, a base diameter of 70mm, a height of 190mm and has been made with fabric type GFsa/2. It is a rounded 'honey pot' version of the East Anglian type Beaker (Clarke 1970) and would fall into Lanting and van der Waals' Step 3 (1972) and Case (1993) Group E. The decoration consists of zones of five horizontal grooves which become more incomplete and uneven towards the base. There are also two zones of alternating diagonal stab impressions which occur on the neck and mid belly area.

Parallels

Beechbrook Wood (Edwards 2006a)
Cottington Lane, Ebbsfleet (Gibson 1992, fig. 4)
Bawdsey, Suffolk (Clarke 1970, corpus no 848)
Swalecliffe (Tatton-Brown 1978, fig. 4)

Possible date

The Cottington Lane Beaker has been dated as part of the British Museum's radiocarbon dating for Beaker pottery, and the date range calibrates at 2130–2075 or 2045–1930 cal BC. This date is somewhat later than might be expected for a stylistically early vessel but nonetheless falls within the range of Beaker-associated dates (Gibson 1992, 284). A sample taken from human bone within this grave at Thanet Earth provided a radiocarbon date of 2195–1977 cal BC (at 95 per cent probability; Table 6, UBA-12624).

CAT No 12: Beaker 11 (plateau 4, context 4628, grave G4043, skeleton 4621)

The Beaker is complete but is very soft and crumbly and has not been weighed. It is encased in hard clay and chalk, and removal of this material may cause the Beaker to disintegrate. The Beaker has a rim diameter of 120mm, a base diameter of 95mm, a height of 160mm and has been made with fabric type G/4. It has a long upright rim

which slightly turns inwards at the top. The decoration has been carried out with a toothed comb, and consists of a zone of diagonal/vertical lines closed within two parallel lines. This is followed by a zone of elongated filled pendant triangles (Clarke 1970, Southern British Motif Group 4, no 29 and 32). The triangles are slightly unusual as they are internally decorated with vertical rather than horizontal combed impressions. There are two more zones of enclosed slightly diagonal or vertical lines followed by a row of 'half' pendant triangles filled with vertical impressions and then plain and filled running zigzags. The vessel can be placed Needham's long necked group (Needham 2005), and in Clarke's (1970) Developed Southern Group (S2) or Lanting and van der Waals' Step 6 (1972).

Possible date

The skeleton was radiocarbon dated to 2108–1895 cal BC (at 95 per cent probability; Table 6, UBA-12630).

CAT No 13: Beaker 12 (plateau 6, context 6027, grave G6004, skeleton 6025)

The Beaker has a rim diameter of 130mm, a base diameter of 70mm and a height of 170mm. It is a finely made vessel, with thin walls and has made with a fabric recipe which contains finely crushed flint and grog (fabric type GF/1). The rim is very slightly everted, and the body is an S-shaped profile. The rounded waist is set fairly close to the rim, and the base is small. This Beaker is characteristic of Clarke's East Anglian Group (Clarke 1970) and falls within Step 3 of Lanting and van der Waals series (Lanting and van der Waals 1972), and would belong in Case's Group E (Case 1993). The decoration consists of multiple horizontal lines of incisions, made by inserting a sharp point into the clay. Some of the incisions are quite deep, particularly towards the base area, and others are shallower. The horizontal lines are occasionally broken and uneven. There are five parallel horizontal lines below the rim (Clarke 1970, Basic European, Motif Group 1), followed by a zone of lattice hatching (Clarke 1970, Basic European, Motif Group 4). This is followed by another zone of five horizontal incisions, and an undecorated band. This is then repeated twice, and ends with four fairly deep incised lines, a plain band and finally four slightly uneven horizontal lines. The incised lines towards the bottom end of the Beaker are less regular, and have a stab and drag effect.

Parallels

Lodge Farm, St Osyth, Essex (Germany 2007, fig. 49/72)

Possible date

The skeleton was radiocarbon dated to 2193–1981 cal BC (at 95 per cent probability; Table 6, UBA-12610).

List of illustrations

267/40. Middle Bronze Age rim sherd; context 5307; plateau 5; prn 180.
267/41. Decorated dot and ring body sherd; context 5307; plateau 5, prn 183.
267/42. Possible middle to late Bronze Age decorated body sherd; context 5307; plateau 5, prn 187.
268/43. Early late Bronze Age rim sherd; context 5179; plateau 5, prn 190.
268/44. Middle Bronze Age rim sherd; context 5130; plateau 5; prn 194.
268/45. Beaker sherd; context 15029; plateau 5; prn 196.
268/46. Beaker sherd; context 5107; plateau 5; prn 197.
268/47. Middle Bronze Age bucket jar; context 5275; plateau 5; prn 198.
268/48. Middle Bronze Age rim sherd; context 5540; plateau 5; prn 202.
268/49. Beaker rim; context 6612; plateau 5; prn 205.
268/50. Possible collared urn sherd; context 15027; plateau 5; prn 225.
268/51. Decorated dot and ring body sherd; context 5036; plateau 5; prn 241.
269/52. Middle to late Bronze Age sherd; context 5273; plateau 5; prn 245.
269/53. Early prehistoric fingernail decorated body sherd; context 7002; plateau 7; prn 260.
269/54. Beaker sherd; context 7571; plateau 7; prn 264.
269/55. Collared urn; context 12861; plateau 8, prn 265–267.
269/56. Middle to late Bronze Age sherd with applied cordon; context 7640; plateau 7; prn 271.
269/57. Middle to late Bronze Age sherd; context 7640; plateau 7; prn 272.
269/58. Middle to late Bronze Age rim; context 5307, plateau 5, prn 238.

Appendix 1

A total of 416 sherds weighing 1410g and with a mean sherd weight of 3.4g were presented following the completion of the main report. The pottery is mostly in very poor condition and detailed analysis is therefore limited. Four small bags of vitrified crumbs from Plateau 5 (context 5185) and Plateau 8 (sample 1420, context 12302) and samples 1402 and 1403 (context 12306) have not been recorded. Details relating to fabrics, forms and ceramic phasing can be found in the main report.

Plateau 1

A total of 32 sherds derived from ditch-enclosure Group 10006 (contexts 10004 and 10761). The pottery consists of worn body sherds but the fabrics are consistent with the clay recipes used to make middle and middle to late Bronze Age pottery. The sherds probably belong to coarse thick walled bucket jars and three sherds may have derived from a finer globular type jar.

Plateau 8

Early to middle Neolithic

A total of 346 sherds have been assigned to the early to middle Neolithic phase and a further 29 sherds might also belong to this period. The sherds were recovered from pit features (Group's 8003 and 8004) and mostly consist of worn body sherds plus three rim sherds. The fabrics and forms are similar to the early to middle Neolithic carinated bowls described in the main report. There are traces of smoothing or burnishing on the interior surface, and it is possible that the vessels were once highly burnished.

Early Bronze Age

One sherd can be positively identified as belonging to a Beaker vessel. This was recovered from pit (Group 8045, context 14453, S14454). The sherd has been decorated with a toothed comb but it is too small to allow identification as to style or form. A further eight sherds may also belong to an early Bronze Age ceramic tradition. Five grog tempered sherds (context 14493, Group 8096) have been decorated with an incised chevron pattern. The decoration is similar to Clarke's (1970) Basic European Motif Group 1, number 7, and may therefore represent part of a Beaker pot. Three plain body sherds (context 3453, Group 8225) are grog tempered and have a crumbly 'cottage cheese' texture which can be associated with collared urns.

Chapter 15: Later Prehistoric Pottery

Peter Couldrey

Iron Age Pottery from Plateau 8

Introduction

This report covers pottery from the Early and Middle Iron Age. It discusses the condition of the sherds and describes the forms, decoration, surface treatment, and the fabric groups and the source of the fabrics. It provides an outline of the chronology, based primarily on the typology of the forms, supplemented by four radiocarbon dates and stratigraphy. The styles and techniques of decoration are then linked into the chronological scheme and specific comments are made on the date of the Linear Ditches, Ring Ditches, and the fabrics followed by general comments on the proposed chronology. Sections are then devoted to the manufacture, use, repair and deposition, and there is a brief conclusion with comments on the affinities of the pottery with other sites both within south-east England and across the Channel. The report follows the guidelines of the Prehistoric Ceramics Research Group (PCRG 2010).

The pottery forms an important group primarily because of the current paucity of sites of this period in East Kent (Champion 200b7, 296–297). For this reason one of the main purposes of this report is to present as much of the evidence as possible. While the abraded condition of the sherds and the apparently mixed nature of the assemblage do reduce its impact to some extent, the range of forms and fabrics provides a valuable database for this period in the region. Unless explicitly stated otherwise, period names follow the terminology and chronology employed by the Channel Tunnel Rail Link (CTRL) project (Champion 2011, 156, table 4.1): Late Bronze Age (c. 1100–800 BC), Earliest Iron Age (c. 800–500? BC), Early Iron Age (c. 550–300 BC), and Middle Iron Age (c. 300–100 BC). In parallel with these terms, analysis of the pottery has enabled four Ceramic Phases (CP) to be proposed: CP1: ?600–400 BC, CP2: 400–300 BC, CP3: 300–150 BC and CP4: 150–100 BC.

Condition of the sherds

The condition of pottery is a critical factor when using it to interpret either the chronology or activities on the site. Each surface of each vessel was coded according to the degree of wear (0: none; 1: slight; 2: slight-moderate; 3: moderate; 4: moderate-severe; 5: severe, where none of the original surface survives). While this is not a precise system; involves some subjectivity, and sherds can display a variable degree of wear on one surface, it does provide a useful measure when analyzing the assemblage. This measure of the degree of wear is used in the discussion of repair and deposition in

Tables 41–45. It is clear that many sherds were well worn before arriving in their final archaeological context.

The cause of the wear, whether through use, treatment after breakage and discard, weathering while exposed on the surface or alteration during burial, is rarely known. Nor is there a simple relationship between the degree of wear and the length of time separating a pot's manufacture from burial. Nevertheless, confidence in their use as chronological indicators is reduced when sherds are heavily worn. Many variables are involved, not least the hardness and strength of the sherds. The hardness of each surface was measured (1 – surface easily scratch by finger nail; 1.5 – difficult to scratch by finger nail; 2 – scratched by pin). Strength, as in the pressure required to break the sherds, was not measured, though when creating fresh fractures for examination of the fabric, a few sherds were found to be difficult to break, having a very solid core, even though they had soft surfaces.

Forms

The size of the assemblage and the number of forms not previously recorded from East Kent, justifies establishing a typology for the site. There were just eleven vessels with complete or completely reconstructable profiles; and thirty for which the top half of the profile has survived. Most of the forms identified here are represented by rim, neck and shoulder. In some cases the rim and neck, or shoulder and base, alone were sufficiently distinctive to be classed as a form. In most cases where no shoulder survives, if sufficiently characteristic, separate rim forms have been identified. When there was doubt about the angle of a rim or shoulder, it remained unclassified.

The forms are defined based on the shape, size, wall thickness and, occasionally, surface treatment and decoration. Several share general characteristic traits which changed gradually over time and while some are clearly defined, others tend to merge together. Many forms are closely paralleled on the continent where typological schemes have been established using the larger number of complete vessels from cemeteries. These schemes, which often form the primary evidence for chronology, reflect the overall shape of the vessel, including distinguishing the depth of shoulder below the rim as a ratio of the height of the whole vessel (e.g. Buchez 2011b). For the bulk of the featured forms from Thanet Earth however, the height is one measurement which is missing. The only fixed measurement about which there may be a degree of certainty is the radius of rim, shoulder or base. In some instances, the ratio of rim radius to shoulder depth was used as an aid to defining shape. Nevertheless, the identification of forms remains a subjective decision.

Alongside each description is a profile of the form which is designed to provide an aid to identification.

Plain convex forms in which the profile forms, or is assumed to form, a continuous curve from base to rim:

F1 - Convex profiled vessel with plain inturned rim; wall thickness 7–10mm:

Dia 20–22cm: 8038570037 (Pit 3861), 8085410002 (Pit 8543), 8086200005 (Pit 8722)
Dia 25cm: 8082410060 (Recut 8242) (angle slightly uncertain)
Dia 30cm: 8082410062 (Recut 8242)

F2 - Convex profiled vessel with plain inturned rim; wall thickness 6–8mm:

Dia *c.* 16cm: 8143730003 (layer 14373)

F3 - Jar with convex profile and plain slightly inturned rim; wall thickness 7.5–12mm:

Dia 10cm: 8035950025 (Pit 3596)
Dia 24–26cm: 8080620007 (Pit 8063)
Dia 34cm: 8086200011 (Pit 8722)

F4 – Open convex profiled vessel with plain slightly inturned rim and high shoulder; wall thickness 7–10mm:

Dia 13.5cm: 8143360012 (Pit 14342)
Dia 22–26cm: 8035850003 (Recut 3668), 8086260006 (Pit 8722)
Dia 31 cm: 8086110002 (Pit 8616)

F5 – Miniature cup with plain rim on convex wall; wall thickness 7–10mm:

Dia 5.6cm: 8084620002 (Pit 8456)

F6 – Open bowl with slightly inturned rim, high rounded shoulder and smooth surfaces, wall thickness 6–8mm :

Dia *c.* 16cm: 8143360025 (Pit 14342)

F7 – Conical form with a slack shoulder, vertical rim and wiped surfaces; walsl thickness 6.5–11mm:

Dia 13.5–16?cm: 8086180093 (Pit 8722), 8086350010 (Pit 8642), 8144950007 (Pit 14496)
Dia 19cm: 8037270005 (Pit 3724)

F8 – Plain hemispherical bowl with lightly burnished surfaces; wall thickness 4–5mm:

Dia 16cm: 8087520001 (Pit 8757)

F9 – Open bowl with roughly wiped convex wall which rises to a plain almost flat-topped rim, wall thickness 7–9mm:

Dia 20–24?cm: 8039120001 (Pit 3913), 8086270038 (Pit 8722)
Dia 30cm: 8037230001 (Pit 3724)

F10 – Open bowl with upright, internally thickened rim; wall thickness 6–8.5mm:

Dia 13–14cm: 8037630003 (Pit 3767)
Dia 22cm: 8082840002 (Pit 8286)

F11 – Shallow open bowl or lid; wall thickness 6–7mm:

Dia 18cm: 8086180130 (Pit 8722)

Convex forms with a slight neck or modification of the rim:

F12 – Convex profiled vessel with slight external groove just beneath a plain flat-topped rim; wall thickness 7.5–10mm:

Dia 15cm: 8086380007 (Pit 8642)
Dia 19–22cm: 8086210007 (Pit 8722)
Dia 25–26cm: 8086410003 (Pit 8642), 8089020002 (LIA/ER Ditch 8836)

F13 – Globular jar with externally expanded almost bead rim; wall thickness 6–14mm:

Dia 10–12cm: 8038570004 (Pit 3861)
Dia 19cm: 8086350011 (Pit 8642)

F14 – Jar with internally expanded bead rim and highly burnished surfaces; wall thickness 10mm:

Dia 16cm: 8039030003 (Pit 3905)

F15 – Globular jar with finger-tip impressions across the top of the rim; wall thickness 6–8.5mm:

Dia 12cm: 8086200009 (Pit 8722)

F16 – Fine convex profiled jar with burnished surfaces. This example has light horizontal grooved decoration and wall thickness 6–7mm:

Dia 12–14cm: 8086830001 (Pit 8733)

F17 – Fine slightly inturned rim with burnished surfaces. There is a light irregular horizontal groove just below the rim formed as a result of smoothing the clay along the top; wall thickness 6–7mm:

Dia *c.* 25cm: 8085740001 (Pit 8572)

F18 – Fine globular jar with a short concave neck, externally thickened bead rim and burnished surfaces. There are two light horizontal grooves around the neck; wall thickness 3.5–7mm:

Dia 15cm: 8035560009 (Pit 3557)

F19 – Globular jar with sharply inturned convex body beneath a short concave neck and externally expanded bead rim; wall thickness 7–11mm:

Dia 30cm: 8084210003 (Pit 8424)
Dia uncertain: 8038760003 (Pit 3877), 8081850001 (Pit 8188)

F20 – Globular jars with externally expanded everted rim; wall thickness 7–15mm:

Dia 38cm: 8081870001 (Pit 8188)
Dia 42cm: 8086900001 (Pit 8701)
Likely to belong to this group: 8087520004 (Pit 8757)

F21 – Convex profiled jar with bead rim; wall thickness 6–10mm:

Dia 18–22cm: 8037210009 (Pit 3724), 8082550006 (Pit 8260), 8086270006 (Pit 8722)

Convex form with a more accentuated concave neck

F22 – Jar with rounded shoulder, short concave neck and inturned, externally expanded, straight-topped rim; wall thickness 6–10mm:

Dia 16cm: 8086880001 (Layer 8688)
Dia 22cm: 8037210041 (Pit 3724)
Dia 26cm: 8038740001 (Pit 3875), 8145090017 (Pit 14510)
Dia uncertain: 8143060001 (Pit 14307)

F23 – Jar with high rounded shoulder, inturned neck and externally expanded flat-topped rim; wall thickness 10–12mm:

Dia: 30cm: 8038570026 (Pit 3861)

Slack Shouldered vessels

F24 – Slack shouldered jar with slightly concave inturned neck and roughly wiped almost vertical body. The wall is noticeably thinner below the shoulder than above; wall thickness 6.5–10mm:

Dia 24cm: 8037210016 (Pit 3724)

F25 – Jars with high shoulder, plain rim on slightly inturned neck and roughly wiped almost vertical body; wall thickness 6.5–14mm:

Dia 14–17cm: 8082550003 (Pit 8260), 8086380013 (Pit 8642)
Dia 20–23cm: 8035480008 (Pit 3550), 8036330001 (Pit 3635), 8086320002 (Pit 8722); 8086390002 (Pit 8642)
Dia *c.* 28cm: 8082950001 (Pit 8329)

F26 – Slack shouldered jar with concave neck and everted rim; wall thickness 7–9mm:

Dia 17.5–20cm: 8081360004 (Pit 8134)
Dia 26cm: 8037270001 (Pit 3724)

F27 – Open vessel with slack shoulder, slight concave neck and upright flat-topped rim; wall thickness 7–12mm:

Dia 22–30cm: 8035560001 (Pit 3557), 8089000001 (Pit 8901)

F28 – Open bowl with a very slight convex shoulder on an out-turned wall and rounded, eternally expanded rim. With exception of 8038570003 which is worn, the surfaces are slipped or burnished; wall thickness 6–8mm:

Dia: 11–13.5cm: 8038570003 (Pit 3861), 8038570012 (Pit 3861)
Dia 18cm: 8142140004 (Pit 14219)

F29 – Open bowl with gently everted rim on a concave neck and slack shoulder; wall thickness 5–8mm:

Dia 7cm: 8082410066 (Recut 8242)
Dia 19–22cm: 8037230009 (Pit 3724), 8087120001 (Pit 8722), 8144180002 (Pit 14419)

Round shouldered vessels with inturned or upright rims:

F30 – Vessel with high rounded shoulder, short concave neck and externally expanded flat-topped rim; wall thickness 8–13mm:

Dia *c.* 27–28cm: 8084000003 (Pit 8445), 8087060001 (Pit 8707)

F31 – Open bowl with bead rim on a short neck and high rounded shoulder; wall thickness 6–9mm:

Dia 20?cm: 8037200003 (Pit 3722)

F32 – Jar with high shoulder and almost vertical body and a sharply inturned neck on a round shoulder; wall thickness 7–10mm:

Dia 18–22cm: 8084180004 (Pit 8424), 8086270003 (Pit 8722)
Dia 25?cm: 8087790001 (Pit 8783)
Dia uncertain: 8089400001 (Pit 8833)

F33 – Jar with high shoulder and a wiped or slurried inturned neck and plain rim; wall thickness 6–10mm:

Dia 14cm: 8037210032 (Pit 3724)
Dia 18cm: 8037230011 (Pit 3724)
Dia 24–26cm: 8037280004 (Pit 3724), 8142740008 (Pit 14276)
Dia 38cm: 8145600001 (Pit 14561)

F34 – Vessel with high rounded shoulder narrowing to a plain inturned rim; wall thickness 7–13mm:

Dia 24cm: 8086400022 (Pit 8642)
Dia 32cm: 8087450003 (Pit 8746)

F35 – Jar with high rounded shoulder, inturned slightly concave neck and expanded flat-topped rim; wall thickness 5–7.5mm:

Dia 18–20cm: 8037770003 (Ring Ditch 3 – 3778), 8145090013 (Pit 14510), 8145090015 (Pit 14510)

F36 – Vessel with high rounded shoulder and internally expanded flat-topped rim; wall thickness 5–6mm:

Dia 12cm: 8037650002 (Pit 3767)

F37 – Plain inturned rim and straight, or very slightly concave, neck on rounded shoulder; wall thickness 7–14mm:

Dia 19cm: 8036560004 (Pit 3657)
Dia 25–28cm: 8086430032 (Pit 8645), 8144870001 (Pit 14488)
Dia 32cm: 8035440004 (Pit 3584)

F38 – Bowl with plain rim on a slightly inturned neck and sharply rounded shoulder; wall thickness 7–8mm:

Dia 21cm: 8084350001 (Pit 8434)

F39 – Shouldered jar with a rounded shoulder, inturned slightly concave neck and a plain or flat-topped upright rim; wall thickness 6–9mm:

Dia 11cm: 8086380001 (Pit 8642)
Dia ?16cm: 8038760004 (Pit 3877)

F40 – Shouldered jar with a rounded shoulder, inturned slightly concave neck and a flat-topped upright rim, with finger-tip impressions on the rim or shoulder; wall thickness 7–12mm:

Dia 17cm: 8086190019 (Pit 8722)
Dia 23cm: 8087120004 (Pit 8722)
Dia uncertain: 8082550011 (Pit 8260), 8086430022 (Pit 8645)

F41 – Shouldered vessel with a rounded shoulder, inturned slightly concave neck, with a rounded, externally thickened plain rim; wall thickness 5–8mm:

Dia 15–18cm: 8083130001 (Pit 8312), 8084210001 (Pit 8424), 8087690001 (Pit 8774)
Dia 25cm: 8035310002 (Pit 3534)

F42 – Shouldered jar with rough, sometimes rusticated, surface; wall thickness 10–15mm:

Dia 30–35cm: 8089100003 (Pit 8921), 8121880002 (Posthole 12189)
Dia uncertain: 8086250003 (Pit 8722)

F43 – Shouldered jar, similar to form F41, but with a thicker wall and a flat topped rim with internal and external projections; wall thickness 6.5–10mm:

Dia 18–20cm: 8086370001 (Pit 8642), 8088950001 (Grave 8896)

F44 – Jar with high rounded shoulder, inturned slightly concave neck and plain inturned or upright rim; wall thickness 5–10 mm:

Dia 16cm: 8037210005 (Pit 3724)
Dia 22–23cm: 8037210012 (Pit 3724), 8080620012 (Pit 8063), 8080620013 (Pit 8063)
Dia 30cm: 8035860004 (Recut 3668), 8086410002 (Pit 8642)
Dia uncertain: 8037210027 (Pit 3724)

F45 – Open jar with irregular high slack shoulder and straight or slightly concave neck and upright rim. The wall narrows above the shoulder, as if the clay has been squeezed to create a thinner neck and rim above the shoulder. The inner surface is almost vertical, straight and smoothed or lightly burnished; wall thickness 6.5–15mm:

Dia 13cm: 8084050009 (Pit 8445)
Dia 22–25?cm: 8036150002 (Pit 3621), 8038740003 (Pit 3875)
Dia uncertain: 8082410061 (Pit 8242)

F46 – Open bowl, 10–13mm thick, with roughly wiped convex wall and round shoulder with upright neck and plain almost flat-topped rim; wall thickness 11–13mm:

Dia 22cm: 8036430002 (Pit 3644)

F47 – Shouldered jar with plain upright rim on a tall neck and rounded shoulder; wall thickness 7–13mm:

Dia 18cm: 8083340001 (Pit 8722),
Dia 24cm: 8144950004 (Pit 14496)

F48 – Tall jar with expanded flat-topped rim, upright neck and rounded shoulder; with slight traces of rustication on the wall beneath the shoulder, wall thickness 13–15mm:

Dia 42cm: 8126450004 (Pit 12646).

F49 – Vessel with high rounded shoulder, a slight concave neck and plain slightly everted rim; wall thickness 6–13mm:

Dia 19cm: 8082840001 (Pit 8286)
Dia 26cm: 8087750003 (Ring-Ditch 2 — 8776), 8144700001 (LIA/ER Ditch 14471)
Dia 30cm: 8088680002 (Pit 8869)

F50 – Vessel with smooth surfaces, gently rounded shoulder, short slight concave neck and short upright rim; wall thickness 5–8mm:

Dia 17.5 cm: 8144820006 (Pit 14488)

F51 – Bowl with rounded shoulder, gently concave neck and plain slightly everted rim; wall thickness 5–9mm:

Dia 13.5cm: 8080620001 (Pit 8063)
Dia 19cm: 8037270002 (Pit 3724)

F52 – Bipartite jar with low rounded shoulder and tall, slightly inturned concave neck and upright flat-topped rim. The interior has broad horizontal burnish marks and, above the shoulder, the exterior has been wiped smooth and below the shoulder is rough; wall thickness 12–18mm:

Dia 25cm: 8086390004 (Pit 8642)

F53 – Fine burnished jar with upright flat-topped rim on a tall slightly inturned neck. The profile is constructed of almost straight sections. Both surfaces are burnished; wall thickness 9–10mm:

Dia 30cm: 8126450003 (Pit 12646)

F54 – Jar with slight rounded shoulder and everted rim with burnished surfaces; wall thickness 6–9.5mm:

Dia 20cm: 8084000005 (Pit 8445)

F55 – Fine open vessel with low rounded shoulder, slightly concave neck and gently everted rim; wall thickness 4–11mm:

Dia 12–12.5cm: 8081790001 (Pit 8180), 8082950002 (Pit 8329)

Vessels with sharper angular shoulders

F56 – Jar with high carinated shoulder, sharply inturned neck and flat-topped rim; wall thickness 5–10mm:

Dia 13–16cm: 8035180006 (Pit 14807), 8036420002 (Pit 3644), 8084190001 (Pit 8424), 8121480001 (Pit 12154)
Dia 18cm: 8088590009 (Pit 8861)
Dia 25cm: 8037230012 (Pit 3724), 8081350004 (Pit 8134)

Dia uncertain: 8037770002 (Ring Ditch 3 – 3778), 8084420006 (Pit 8434)

F57 – Jar with carinated shoulder, decorated with finger-tip impressions, inturned slightly concave neck and flat-topped rim; wall thickness 7–12mm:

Dia 19.5cm: 8082440002 (Pit 8247)
Dia 32cm: 8035860025 (Recut 3668)

F58 – Jar with carinated shoulder with a horizontally wiped neck rather than burnished; wall thickness 7–14mm:

Dia 21?cm: 8081360005 (Pit 8134)
Dia 32–34?cm: 8037260005 (Pit 3724), 8121080001 (Pit 8722)
Dia uncertain: 8035190001 (Pit 14807)

F59 – Jar with high carinated shoulder inturned neck and slightly externally expanded rim. Beneath the shoulder, the body is decorated with narrow horizontal combed grooves; wall thickness 8–13mm:

Dia 25cm: 8088000003 (Pit 8801)

F60 – Vessels with high carinated shoulder, inturned thinned neck and a flat slightly expanded rim. This form includes a bowl and jars which share the characteristic thinning of the neck and formation of the rim; wall thickness 6–9mm:

Dia 21–25cm: 8035180001 (Pit 14807); 8081360002 (Pit 8134)
Dia 36?cm: 8037280006 (Pit 3724)

F61 – Shallow bowl with carinated shoulder, plain upright rim on a concave neck, an omphalos base and burnished linear decoration ; wall thickness 6.5–10mm:

Dia 18cm: 8085920001 (Pit 8592)

F62 – Jar with high carinated shoulder, smooth (burnished or polished) neck and externally expanded bead rim; wall thickness 5.5–9mm:

Dia 22–26cm; 8088590001 (Pit 8861), 8123650004 (Pit 12366), 8142790001 (Pit 14280)

F63 – Jar with high carinated shoulder, inturned concave neck and plain upright rim; wall thickness 6-11.5mm:

Dia 22–24cm: 8081770002 (Pit 8178), 8082900001 (Pit 8293), 8086400003 (Pit 8642)

Dia 31–32cm: 8087880003 (Pit 8789)

F64 – Bowl with high carinated shoulder, slightly inturned burnished neck and plain externally expanded rim; wall thickness 7–12mm:

Dia 21.5cm: 8038570001 (Pit 3861)
Dia 26cm: 8035310001 (Pit 3534)
Dia 31cm: 8035950001 (Pit 3596)

F65 – Jar with high carinated shoulder and plain or externally expanded inturned rim; wall thickness 4–8mm:

Dia 12–12.5cm: 8086200024 (Pit 8722), 8086270001 (Pit 8722)
Dia *c.* 20–21cm: 8081330002 (Pit 8130)

F66 – Jar with high carinated shoulder and flat-topped inturned rim, decorated with diagonal grooves; wall thickness 5–7.5mm:

Dia *c.* 30cm: 8037210036 (Pit 3724)

F67 – Jar with carinated shoulder, inturned burnished neck and a flat-topped externally expanded rim. Two examples have light crisp rustication beneath the shoulder and the others are smooth; wall thickness 8–13mm:

Dia 16cm: 8038570007 (Pit 3861), 8144950001 (Pit 14496)
Dia 23–24cm: 8089100002 (Pit 8921), 8145090016 (Pit 14510)
Dia 30–32cm: 8085540001 (Pit 8555)
Dia uncertain: 8086270004 (Pit 8722)

F68 – Vessel with high sharply carinated shoulder, inturned concave neck and plain or externally expanded flat-topped rim. These are distinguished from form F67 by having a more sharply inturned body below the shoulder which is correspondingly more angular. Indeed some may have been bowls; wall thickness 6.5–12mm:

Dia 19.5–20cm: 8038570008 (Pit 3861), 8082840021 (Pit 8286)
Dia 24–26cm: 8035910002 (Pit 3596), 8082410019 (Recut 8242)
Dia uncertain: 8082670002 (Pit 8264), 8082930002 (Pit 8293)

F69 – Large flat-topped, slightly everted rim on a burnished inturned concave neck; wall thickness 5–13mm:

Dia 20cm: 8089780001 (Pit 8722)
Dia 23–25cm: 8037230024 (Pit 3724), 8084000001 (Pit 8445)

Dia 30cm: 8146030007 (Pit 14604)

F70 – Open bowl with high almost carinated shoulder, inturned slightly concave neck and plain rim; wall thickness 7–9mm:

Dia 15.5cm: 8037210007 (Pit 3724)
Dia 22–25cm: 8035350006 (Pit 3541), 8085280001 (Posthole 8529), 8142990001 (Trackway Ditch G8081)
Dia 32cm: 8142580001 (Pit 14259)

F71 – Vessel with high shoulder, inturned slightly concave neck and plain upright rim; wall thickness 6–11mm:

Dia 14–16cm: 8035180004 (Pit 14807), 8035550002 (Pit 3584)
Dia 24cm: 8036730001 (Pit 3674)

F72 – Vessel with an inturned slightly everted rim, concave neck and high shoulder, with burnished surfaces and wall thickness of 5–8mm:

Dia 16–19cm: 8085410001 (Pit 8543), 8086200012 (Pit 8722)

F73 – Open vessel with everted rim on a high carinated shoulder and burnished surfaces; wall thickness 6mm:

Dia 20cm: 8086240003 (Pit 8722)

F74 – Tripartite vessel with carinated shoulder and burnished or decorated surfaces. The shoulders on the smaller vessels, up to 13cm in diameter, are relatively lower than those on the larger ones; wall thickness 3–7mm:

Dia 7cm: 8121700001 (Trackway Ditch **12171**)
Dia 10–11.5cm: 8037210026 (**Pit 3724**), 8037230007 (**Pit 3724**)
Dia 13–14cm: 8037280005 (Pit **3724**), 8082410020 (**Recut 8242**)
Dia 15.5–17.5cm: 8037210006 (Pit **3724**), 8037210030 (**Pit 3724**), 8086830003 (Pit 8733)

F75 – Jar with high carinated shoulder, concave neck and slightly everted or externally expanded rim. Similar to form F74, but with thicker wall and coarser surfaces. Wall thickness 6.5–10mm:

Dia 16cm: 8085320001 (Ph 8533)
Dia 20cm: 8035440014 (Pit 3584)

F76 – Vessel with a slightly everted rim on concave neck and sharply carinated shoulder, with the rim almost straight above the shoulder; wall thickness 5–8mm:

Dia 26cm? 8145600003 (Pit 14561)

F77 – Open bowl with high almost carinated shoulder, slightly concave neck and plain everted rim; wall thickness 7–12mm:

Dia 19cm: 8083910001 (Pit 8392)
Dia 28cm: 8087080001 (Pit 8722)

F78 – Bowl with high carinated shoulder, upright slightly concave neck, similar to **F77**, but with a flat-topped rim; wall thickness 7–10mm:

Dia 15cm: 8087640002 (Ph 8764)
Dia 29–32cm: 8035480005 (Pit 3550), 8035490003 (Pit 3550)

F79 – Carinated jar or beaker with fine everted rim; wall thickness 3–4mm:

Dia 8cm: 8086430025 (Pit 8645)

F80 – Carinated Bowl with flaring rim; wall thickness 4–6.5mm:

Dia 13cm: 8145340001 (Ph 14535)
Dia 15cm: 8126440001 (Pit 12646)
Dia 19cm: 8140510001 (Ph 14053)

F81 – Open bowl with flaring rim and low carinated shoulder; wall thickness 5–7.5mm:

Shoulder dia 9cm: 8122040003 (Ditch 8080/3432)
Shoulder dia 24cm: 8122040001 (Ditch 8080/3432)

F82 – Open bowl with low rounded shoulder. The only example of this form from the site is severely worn; wall thickness 6.5–8.5mm:

Dia 24cm: 8085610003 (Pit 8563)

F83 – Deep bowl with carinated shoulder, upright neck and plain rim with slight external bead; wall thickness 6–8mm:

Dia 24.5cm: 8037230002 (Pit 3724)

Vessels with short concave necks and everted rims:

F84 – Jar with tall slightly inturned convex neck and upright flat-topped rim; wall thickness 5–10mm:

Dia 16–18cm: 8037300001 (Pit 3731), 8084570003 (Pit 8456)
Dia *c.* 26cm: 8036460001 (Pit 3648), 8038860001 (Pit 3888)

F85 – Thick-walled jar with high shoulder, deep concave neck and short smooth everted rim; wall thickness 9–11mm:

Dia 21–24cm: 8035350005 (Pit 3541), 8035360001 (Pit 3541)

F86 – Thick-walled jar with high shoulder, deep concave neck and short irregular everted rim; wall thickness 5–11mm:

Dia 18–21cm: 8144820003 (Pit 14488), 8144830003 (Pit 14488)
Dia 26cm: 8037640002 (Pit 3767)

F87 – Jar with rounded shoulder, short concave neck and irregular everted rim; wall thickness 5–12mm:

Dia 15.5cm: 8035180009 (Pit 14807)
Dia 22–25cm: 8036490001 (Pit 3655), 8087610001 (Pit 8762)
Dia 36?cm: 8086410001 (Pit 8642)

F88 – Everted rim jar with a high neck and roughly wiped surfaces, whose profile forms a smooth curve from rim to the shoulder. The diameter of rim and shoulder (widest point) are the same and the depth of the shoulder below the rim is equal to about one third of the rim diameter; wall thickness 6–10mm:

Dia 25.5cm: 8121100001 (Pit 8722)

F89 – S-profile jar with plain everted rim and high rounded shoulder, which is wider than the rim; wall thickness 6–8mm:

Dia 16cm: 8087980001 (Pit 8799)
Dia 25cm: 8083440004 (Pit 8340)

F90 – Thick-walled jar with a short slightly everted rim; wall thickness 8–10mm:

Dia 19.5cm: 8088910003 (Pit 8921)

F91 – S-profiled jar with everted rim and rounded shoulder at medium height, projecting beyond the rim; wall thickness 4–7mm:

Dia 17cm: 8142130001 (Pit 14219)

F92 – Globular jar with short concave neck and short irregular everted rim; wall thickness 6–9mm:

Dia 22cm: 8035560004 (Pit 3557)
Dia *c.* 24–26cm: 8037230013 (Pit 3724)
Dia 32cm: 8127330001 (Ph 12734)

F93 – Thick-walled s-profiled jar with a short concave neck; and a short, sharply everted rim; wall thickness 8–11mm:

Dia 26?cm: 8088670004 (Pit 8869)

F94 – Smooth everted rim jar with a shoulder wider than the rim radius. One example, PRN 8035540001, has a red coated exterior the other is smooth and worn; wall thickness 4.5–7mm:

Dia 12cm: 8035540001 (Pit 3584)
Dia 16cm: 8038570023 (Pit 3861)

F95 – S-profiled everted rim jar with a shoulder considerably wider and lower than the rim radius; both surfaces burnished; wall thickness 7–0mm:

Dia 20–21cm: 8082100001 (Pit 8211), 8086430027 (Pit 8645)

F96 – Everted rim jar with a shoulder considerably wider and lower than the rim radius, with moderate to heavy rustication; wall thickness 8–11mm:

Dia 20cm: 8035950006 (Pit 3596)

F97 – Jar with the fine rounded shoulder projecting far beyond the slightly everted rim, frequently referred to as 'onion-shaped'; wall thickness 4.5–6mm:

Dia 13.5cm: 8145090006 (Pit 14510)
Shoulders likely to be from similar vessel: 8080620020 (Pit 8063), 8088000025 (Pit 8801), 8145090007 (Pit 14510), 8145090018 (Pit 14510), 8146030017 (Pit 14604)

F98 – Miniature round-shouldered red-coated cup; wall thickness 3–5mm:

Shoulder dia: 8cm: 8123650003 (Pit 12366)

F99 – Small cup or bowl with rounded shoulder and short everted rim; wall thickness 5–7.5mm:

Dia 11cm: 8086400005 (Pit 8642)
Dia 19cm: 8086110001 (Pit 8616)

Straight-sided forms

F100 – Vessels with almost vertical walls and roughly wiped exterior surfaces; wall thickness 5–12mm:

Dia 15–19cm: 8035540005 (Pit 3584), 8035850002 (Recut 3668), 8036970001 (Pit 3699), 8083340002 (Pit 8722), 8086180037 (Pit 8722), 8086180120 (Pit 8722), 8086210005 (Pit 8722), 8086200023 (Pit 8722), 8086240004 (Pit 8722), 8086830008 (Pit 8733), 8143360002 (Pit 14342)
Dia 20–24cm: 8035920003 (Pit 3596), 8038870001 (Pit 3888), 8082850003 (Pit 8286), 8085920002 (Pit 8592), 8089400003 (Pit 8833), 8086180092 (Pit 8722), 8144830001 (Pit 14488)
Dia 27–30cm: 8035900005 (Pit 3596), 8038760002 (Pit 3877), 8080620017 (Pit 8063), 8082700005 (Pit 8264), 8085900001 (Pit 8592), 8086270005 (Pit 8722), 8144800002 (Pit 14488)

F101 – Vessels with near vertical walls but smoother surfaces than form **F100**, one exhibiting signs of burnishing; wall thickness 6–15mm:

Dia 15cm: 8035920002 (Pit 3596)
Dia 19–22cm: 8035350008 (Pit 3541), 8035870003 (Recut 3668), 8037230003 (Pit 3724), 8037340002 (Pit 3735)
Dia 25–27cm: 8038570005 (Pit 3861), 8038570029 (Pit 3861), 8082410004 (recut 8242)
Dia 34?cm: 8039030014 (Pit 3905)

F102 – Miniature cup with plain rim on vertical wall with flat base; wall thickness 6–7mm:

Dia 7.5cm: 8123650005 (Pit 12366)
Dia 9.7cm: 8082280001 (Pit 8229)

F103 – Plain open vessel with out-turned wall and roughly wiped exterior and burnished interior; wall thickness 7–8mm:

Dia 11cm: 8082660008 (Pit 8264)

F104 – Bowl with an out-turned rim with plain slightly rounded top and highly burnished surfaces. It is distinguished by a narrowing of the wall from both sides just beneath rim; wall thickness 9.5–12mm:

Dia 24cm: 8035950004 (Pit 3596)

F105 – Open bowl with rough surfaces. The short upright rim sits on a flaring wall; wall thickness 10–11mm:

Dia 26cm: 8037630001 (Pit 3767)

F106 – Thick-walled wide flaring bowl; wall thickness 9–16mm:

Dia 30–38cm: rim fragments possibly belonging to this form: 8084000002 (Pit 8445), 8086830005 (Pit 8733)
Dia unknown (re-fired and warped): 8086260002 (Pit 8722)

F107 – Flaring rim with irregular surface (one possibly a pinched pot) with rough burnishing on the interior; wall thickness 6–10mm:

Dia 26?cm: 8086400002 (Pit 8642)
Dia uncertain: 8086390003 (Pit 8642)

F108 – Miniature cup with flaring wall and plain rim; wall thickness 7mm:

Dia 7.6–8cm: 8086280006 (Pit 8722)

F109 – Shallow dish. This particular example has a thick expanded base and may just represent a re-use of the base of a jar whose wall was too thin to support the required height but was smoothed down before firing (90 per cent diameter survives) to provide a shallow dish; wall thickness 3–9mm:

Dia 14.5cm: 8089100001 (Pit 8921)

F110 – Deep bowl with horizontally projecting flanged rim; wall thickness 9–10mm:

Dia 35cm: 8145580018 (LIA/ER Ditch 14559)

F111 – Jar with horizontally projecting rim; wall thickness 5–7mm. PRN 8145600012 provides the form. The others are assumed to be similar, but are represented by their rims alone, which are flatter and less swollen than that on F110:

Dia 13cm: 8142430001 (EIA Ditch group 8300)
Dia 19cm: 8145600012 (Pit 14561)
Dia 23cm: 8146030016 (Pit 14604)

Rims

R1 – Deeply recessed horizontally projecting rim on a flaring neck:

Dia 15cm: 8121040001 (Pit 8722)

R2 – Tall slightly everted rim on inturned concave neck:

Dia 10?cm: 8086350006 (Pit 8642)
Dia 14 cm: 8120890001 (Pit 8642)
Dia 17.5cm: 8086350007 (Pit 8642)

R3 – Fine slightly everted rim. Several of these examples are worn, but some have been burnished. One, 8146030006, has a painted design, and another, 8122020005, a red coating:

Dia 10cm: 8081770006 (Pit 8178)
Dia *c.* 13.5–16cm: 8034570001 (Pit 3458), 8037260002 (Pit 3724), 8081330004 (Pit 8130), 8086180230 (Pit 8722)
Dia 19cm: 8081330007 (Pit 8130)
Dia 21–22cm: 8122020005 (Trackway ditch terminus 12166), 8126440004 (Pit 12646), 8146030006 (Pit 14604)

R4 – Fine slightly everted rim which narrows at the top:

Dia *c.* 11cm: 8144950008 (Pit 14496)
Dia 19cm: 8081320004 (Pit 8130)
Dia uncertain: 8143490003 (Pit 14352)

R5– Slightly everted fine rim which narrows towards the top. The exterior profile is straight and the interior has a smooth convex curve:

Dia 13–19cm: 8080620003 (Pit 8063), 8080620019 (Pit 8063), 8122020008 (Trackway Ditch terminus 12166), 8143210002 (Trackway 8101)

R6 – Slightly everted rim which becomes thinner towards the base of the neck. Two of the three examples are decorated with light horizontal grooves. The third (PRN

8085610007) may have been similarly decorated, but is severely worn. They are all up to 8mm thick.

Dia 16cm: 8036710001 (Pit 3674)
Dia 22–24?cm: 8085610007 (Pit 8563), 8088990004 (Pit 8901)

R7 – Short everted rim with internal bevel:

Dia 13–14cm: 8034700002 (LIA/ER Ditch 3471), 8035480011 (Pit 3550)

R8 – Short everted rim with internal swelling of more than 8mm, more than twice the thickness of the wall:

Dia 16–18cm: 8082000003 (Pit 8189), 8082020001 (Pit 8189), 8084830001 (Pit 8482)

R9 – Short everted rim rim with internal swelling, similar to R8, but less than 8mm at its thickest point:

Dia uncertain: 8082170001 (Pit 8219), 8086100005 (Pit 8616 — not illustrated)

R10 – Short almost everted rim on a globular vessel:

Dia 18–21?cm: 8084880001 (Pit 8490), 8088810004 (LIA/ER Ditch 8882)

R11 – Plain everted rim from a small cup or beaker:

Dia 8cm: 8035440012 (Pit 3584)

R12 – Everted rim on a slightly concave, almost straight, neck with a sharp projection as it joins the shoulder. Both surfaces are burnished:

Dia ?26cm: 8082840009 (Pit 8286)

R13 – Fine flaring rim. This rim was burnished on both surfaces:

Dia 17cm: 8084420013 (Pit 8434)

R14 – Fine flaring rim, possibly belonging to a **F81** bowl. Both examples are severely worn, though 8089730001 shows signs of having been burnished on the exterior at least:

Dia 28cm: 8039730001 (Ditch 3974), 8089730001 (Pre-Enclosure Ditch 8080)

R15 – Externally expanded bead rim on an inturned neck:

Dia uncertain: 8086830004 (Pit 8733), 8087230003 (Pit 8733)

R16 – Externally expanded horizontal, flat-topped, or slightly rounded, rim on an inturned slightly concave neck, which is noticeably smooth or burnished. It is likely that these were associated with **F67** jars. One example, PRN 8035900003, has a slightly irregular rim and is in a shell tempered fabric and may well belong to jars in the same fabric with sub-circular impressed decoration (D38) below the shoulder, such as PRN 8035900006:

Dia 14cm: 8084020002 (Pit 8445); 8084050007 (Pit 8445)
Dia 16–18cm: 8035950007 (Pit 3596), 8086180017 (Pit 8722), 8086600001 (Pit 8670), 8086620002 (Pit 8670)
Dia 20–22cm: 8035900003 (Pit 3596), 8082410063 (Recut 8242), 8082840005 (Pit 8286), 8083990002 (Pit 8445), 8085540002 (Pit 8555), 8087120002 (Pit 8722)
Dia 26–28cm: 8036000003 (Pit 3602), 8082410064 (Recut 8242), 8082840011 (Pit 8286), 8086250004 (Pit 8722)
Dia 30–31cm: 8037230004 (Pit 3724), 8038570024 (Pit 3861), 8081310001 (Pit 8130)
Dia 34–40cm: 8086310005 (Pit 8722), 8086320004 (Pit 8722), 8036610002 (Pit 3664), 8145240001 (LIA/ER Ditch 14526), 8146930003 (Quarry 14874)
Dia uncertain: 8086240002 (Pit 8722), 8086260039 (Pit 8722), 8086400004 (Pit 8642)

R17 – Externally expanded flat-topped rim on an inturned slightly concave neck. This form is distinguished from R16 by having an external surface which has been wiped smooth rather than burnished. Most have an inturned rather than horizontal top to the rim:

Dia 16cm: 8038080010 (Pit 3814)
Dia 22cm; 8086180020 (Pit 8722),
Dia 27–30cm: 8081750005 (Pit 8178), 8089370001 (Pit 8833), 8082450008 (Pit 8247)
Dia 36cm: 8085610005 (Pit 8563)
Dia uncertain: 8037210024 (Pit 3724), 8144820002 (Pit 14488)

R18 – Externally expanded flat-topped rim.

Dia uncertain: 8035920008 (Pit 3596), 8036560001 (Pit 3657), 8037220003 (Pit 3722)

R19 – Flat-topped rim with internal and external expansion on an open flaring neck:

Dia <=20cm: 8083480001 (Pit 8349)
Dia 24?cm: 8146890013 (Quarry 14874)
Dia 35?cm: 8086620001 (Pit 8670)

R20 – Globular jar with thick walls (12–17mm), short neck and flat-topped plain upright or slightly everted rim:

Dia 22cm: 8086350001 (Pit 8642), 8086920004 (Pit 8701)
Dia 45cm: 8083380001 (Ph 8339)

R21 – Globular jar with short neck and flat-topped plain upright or slightly everted rim, similar to R20, but with wall thickness 9–10mm:

Dia 22?cm: 8086430045 (Pit 8645)

R22 – Globular jar with short neck and expanded flat-topped upright or slightly everted rim on an inturned sharply concave neck:

Dia 29–30cm: 8036710005 (Pit 3674), 8086350012 (Pit 8642)

Shoulders

S1 – Jars with rounded shoulders decorated with one or more fine horizontal grooves above which are panels of linear decoration:

Shoulder dia 19–22cm: 8037210001 (Pit 3724), 8086430024 (Pit 8645)
Shoulder dia 41cm: 8088920001 (Pit 8921)

S2 – Angular shoulder with a groove emphasizing a slight recess just above:

Dia of shoulder: 20cm: 8038570035 (Pit 3861)

S3 – Neck and shoulder of an everted rim jar:

8037600002 (Pit 3761), 8082550004 (Pit 8260), 8088590039 (Pit 8861)

S4 – Expanded rounded shoulder (10mm) projecting beyond a narrow neck (5mm) above:

Dia uncertain: 8086260012 (Pit 8722)

Miscellaneous forms

H1 – Handle with a small aperture *c.* 10 x 15mm. The slight wear suggests that it was vertical; wall thickness 7–10mm:

8086260001 (Pit 8722)

C1 – In addition to the bases with multiple perforations (B11, below), two body sherds had a single perforation, *c.* 7 – 8mm in diameter, which had been made before firing, and are assumed to belong to a colander. Their position on the vessels is uncertain, but may have been close to the base:

8082870026 (Pit 8293), 8086180198 (Pit 8722)

Bases

All bases were drawn and while there is no doubt that some of their forms and techniques of construction may be of regional and chronological interest, no analysis of plain flat bases was undertaken. Instead, the following have been selected for discussion.

B1 – Omphalos base:

8037180003 (Ring Ditch 3 — 3719), 8085920001 (Pit 8592), 8122040003 (Ditch 8080/3432)

B2 – Low footring on a wide flaring base:

Dia 5.6–6cm: 8126440001 (Pit 12646), 8140510002 (Posthole 14053) and 8145600004 (Pit 14561) (assumed to be same form)
Dia ?14cm: 8083410001 (Pit 8340)

B3 – Low footring with a smooth flat base forming a distinct heel, projecting beyond the body of the vessel:

Dia 5.5 cm: 8120990001 (LBA/EIA Ditch 12100)
Dia 7.5–8 cm: 8037260004 (Pit 3724), 8088810001 (LIA/ER Ditch 8882)

B4 – Low rounded footring *c.* 3–5mm below a burnished base. The ratio of height of footring/radius of base is <=0.1:

Dia 7.75–8cm: 8084570001 (Pit 8456), 8087950001 (Pit 8799), 8088680001 (Pit 8869)
Dia 9–9.5cm: 8037770033 (Ring Ditch 3 – 3778), 8086600005 (Pit 8670)

B5 – High rounded footring *c.* 5–10mm below a burnished base. The ratio of height of footring/radius of base is between 0.15 and 0.25:

Dia 7.7–8.5cm: 8038570030 (Pit 3861), 8081810002 (Pit 8184), 8081850002 (Pit 8188), 8086920002 (Pit 8701), 8143730007 (layer 14373)

B6 – Small pedestal bases in which the surface rises in a smooth curve up to the center of the vessel. The ratio of height of pedestal/radius of the base is 0.2–0.5:

Dia 5–5.5cm: 8034080001 (Grave 3513), 8080640001 (LIA/ER Ditch 8065), 8087510001 (Pit 8757), 8088000004 (Pit 8801)

B7 – Larger pedestal bases in which the surface rises in a smooth curve up to the center of the vessel. The ratio of height of pedestal/radius of the base is 0.4–0.8:

Dia 7.5–8.5cm: 8086900002 (Pit 8701), 8089330001 (Pit 8934), 8146030008 (Pit 14604)
Dia uncertain: 8080680001 (Pit 8069)

B8 – Tall pedestal base which forms a clear angle with the horizontal central section. The ration of height of pedestal/radius of base is 0.67–0.75:

Dia *c.* 5.5cm: 8144170003 (Pit 14419)
Dia 8cm: 8128720003 (Pit 12873)

B9 – Uncertain pedestal or footring bases:

Dia uncertain: 8034230001 (Ditch 8080, 3424), 8086180148 (Pit 8722), 8089020001 (LIA/ER Ditch 8836)

B10 – Flat base with calcined flint fragments adhering to the bottom:

Dia 9.5–10.5cm: 8086250019 (Pit 8722), 8086210003 (Pit 8722)
Dia 15–17cm: 8034030001 (LIA/ER Ditch 3404), 8121080014 (Pit 8722)
Dia 27cm: 8125900003 (Pit 12595)

Several flat sherds with abundant flint on one surface, but no original edge, are assumed to belong to this type of base:

Dia unknown: 8038080020 (Pit 3814), 8039080001 (Pit 3913), 8081460001 (Pit 8147), 8081510001 (Pit 8151), 8084180016 (Pit 8424), 8085540012 (Pit 8555), 8086350041 (Pit 8642), 8087120003 (Pit 8722), 8088940004 (Grave 8896), 8121730001 (Pit 12177), 8122060051 (Trackway ditch terminus 8303), 8144180003 (Pit 14419), 8145090039 (Pit 14510), 8146920001 (Quarry 14874)

In rare instances (e.g. PRN 8086350041) there has been an attempt to smooth the bottom, though this is patchy and the flints are considerably more numerous than within the core of the fabric.

B11 – Flat base with multiple perforations:

Dia 8–9cm: 8082240001 (Pit 8227), 8086200001 (8722)

B12 – Flat base with a single central perforation:

Dia 9cm: 8086100002 (Pit 8616)

Decoration

Decoration was found on *c.* 5 per cent of the vessels. The motifs, position on the vessel and method application are listed in Table 32. The classification draws a distinction between narrow grooves which are less than 2.5mm wide and broad grooves which tend to be 3–5mm wide. Inevitably, when dealing with fragmentary sherds rather than complete vessels, it is rarely possible to identify complete designs and the distinctions here are intended to represent the variety present. Rather than list all the decorated sherds, key examples are illustrated and their distribution and chronology are discussed below. The association of forms and decoration is shown in Table 33.

In addition to the motifs in Table 32, a few sherds had areas of black which may represent deliberate decoration. In particular, form **F85** (PRNs 8035350005 and 8035360001, Pit 3541, from CP3), had a clearly defined black neck with brown surfaces on the shoulder and rim, presenting an appearance of an intended horizontal band. However much of the neck was covered with soot and examination of the surface showed that there was no apparent difference between the surface treatment of the neck and that of the surrounding body, the different colours being due to variations in firing or re-firing during the use of the vessel. It is certainly possible that deliberate decorative variations in colour were achieved during firing, but the evidence from the small surviving sherds remains inconclusive.

Surface Treatment

Broad categories of surface treatment are summarized in Table 34 and their association with forms in Table 35. In practice, detailed surface treatment varies both on individual vessels and within the categories. In some cases it blurs almost imperceptibly into decoration, as in the case of PRN 8146890014, which has a surface coated with slurry, concealing most of the flint tempering. This has been wiped smooth with light striations which are visible under a x10 microscope in one area and gradually become more pronounced, visible as light irregular vertical grooves, almost equivalent to decoration type D81, in another. On other vessels the juxtaposition of different styles of surface treatment can produce a decorative effect: burnishing or smoothing above shoulders and rustication or wiping beneath is commonly found on jars.

Inevitably the original surface treatment is often obscured: worn slips may have been burnished; smooth surfaces may have been slipped — several sherds have slip flaking off revealing a smooth surface below. Thus the picture presented by the associations in Table 35 may not be a true reflection of the original surface of the forms.

The term 'Rustication' is used to refer to a very specific form of surface treatment in which thick coating of clay is added to a leather hard surface, possibly applied by rolling the vessel in a bed of slurry. Changing the consistency and content of the slurry would account for the varying appearance of the surfaces of the pots. This method of application would also account for the position of the rustication which is generally found below the shoulders of vessels, where the inturned neck and rim of the vessel would naturally be above the slurry as it was being rolled; or on straight flaring bowls, where it can extend over the whole surface.

Fabrics

Each sherd was examined by binocular microscope (x10 and occasionally, x20) and a record made of the size and density of the main inclusions present, and the modal grain size of the matrix (silty to medium sandy), following the PCRG Guidelines (PCRG 2010). These fabrics were then divided into the broad groups described below. In many cases the divisions between the fabrics are based on slight variations in size and frequency of common inclusions and their matrix, and are not always separated by clear boundaries. More detailed descriptions are held with the archive. Deliberately smashed calcined flint was present in the majority, and fabrics without flint, such as the occasional shell, quartz sand and grog, were rare. Here the main characteristics of the groups are outlined. The association of forms and fabric groups is shown in Table 36.

In the descriptions which follow, flint always refers to calcined flint. Non-calcined flint was very rare and comprised flints that probably occurred naturally within the clay. When they were present they were always accompanied by calcined flint.

Many sherds contained voids representing the former presence of organic inclusions including rootlet tubes, seeds, and other vegetation. When these voids are smaller than 3mm and occupy less than 3 per cent of the matrix, they are ignored in the description. When they are larger or more frequent they are then identified as organic inclusions. In practice they very rarely exceeded 5mm in length and they could all have occurred naturally within the clay and it is doubtful whether any were deliberately added. Shell was sometimes present in the fabric, but more often represented by voids. Occasionally linings of the voids aided the identification of its former presence. More often though, the presence of striations and overall shape were used to identify shell, though confusion with other organic inclusions, such as chaff, may have distorted the picture. Grog generally has clear crisp edges, and the dark stains representing the former

presence of organic inclusions frequently have blurred edges but there were instances when it was difficult to distinguish them. Many of the matrices were slightly micaceous, to the extent that this was not used as a characterising feature. For the main groups, the key distinguishing traits are the presence of deliberately added temper (flint and grog) together with naturally occurring iron oxides, organic inclusions, shell, quartz and glauconite. In reality, these groups merge and the small samples of fresh breaks used for the identification of inclusions mean that sherds can be assigned to the 'wrong' group. Nevertheless, they allow the presentation of the character of the fabrics present and enable a discussion of their sourcing.

Flint

Flint in a silty matrix

F/1 – Rare flint (<1 per cent) up to 1mm in size.
F/2 – Sparse to common flint (<30 per cent) up to 1mm in size and very rare flint (<1 per cent) up to 2mm in size.
F/3 – Moderate to common flint (<30 per cent) up to 2mm in size.
F/4 – Sparse flint (<10 per cent) up to 1mm in size and rare up to 3mm.
F/5 – Sparse flint (<10 per cent) up to 2mm and rare up to 3mm.
F/6 – Moderate to abundant flint (<40 per cent) up to 3mm.
F/7 – Rare flint (<1 per cent) up to 5mm.
F/8 – Moderate flint (<20 per cent) up to 3mm and rare (<1 per cent) up to 7mm.
F/9 – Moderate flint (<20 per cent) up to 5mm..

Flint in a very fine sandy matrix

F/10 – Moderate flint (<15 per cent) up to 0.5mm
F/11 – Rare to sparse flint (<10 per cent) up to 1mm.
F/12 – Common – very common flint (40 per cent) up to 1mm
F/13 – Sparse flint (<5 per cent) up to 1mm, very rare (<1 per cent) up to 2mm
F/14 – Moderate to very common flint (<40 per cent) up to 1mm, rare up to 3mm
F/15 – Rare - sparse flint (<10 per cent) up to 2mm.
F/16 – Moderate to common flint (<30 per cent) up to 2mm.
F/17 – Rare flint (<3 per cent) up to 3mm.
F/18 – Sparse flint (<10 per cent) up to 1mm, very rare (<1 per cent) up to 3mm.
F/19 – Sparse to moderate flint (<20 per cent) up to 2mm, very rare (<1 per cent) up to 3mm.
F/20 – Sparse - moderate flint (<20 per cent) up to 3mm.
F/21 – Very common flint (35 per cent) up to 3mm.
F/22 – Rare – sparse flint (<10 per cent) up to 5mm.
F/23 – Sparse to moderate flint (<15 per cent) up to 1mm and rare (<2 per cent) up to 5mm.

F/24 – Common flint (<30 per cent) up to 2mm and very rare (<1 per cent) up to 5mm.
F/25 – Moderate to very common flint (<35 per cent) up to 5mm.
F/26 – Rare – sparse flint (<10 per cent) up to 2mm and very rare (<1 per cent) up to 7mm.
F/27 – Moderate flint (<20 per cent) up to 3mm and rare (1 per cent) up to 7mm.
F/28 – Moderate – common (<40 per cent) up to 7mm and very rare (<1 per cent) up to 15mm.

Flint in a fine sandy matrix

F/29 – Moderate to common (<30 per cent) flint up to 0.5mm.
F/30 – Very rare (<1 per cent) flint up to 1mm.
F/31 – Rare to sparse (<10 per cent) flint up to 1mm.
F/32 – Moderate flint (<20 per cent) up to 0.5mm rare (<3 per cent) up to 1mm.
F/33 – Moderate to common flint (<30 per cent) up to 1mm.
F/34 – Rare to sparse flint (<10 per cent) up to 1mm, very rare (<1 per cent) up to 2mm.
F/35 – Moderate – common flint (<25 per cent) up to 1mm, very rare(<1 per cent) up to 2mm.
F/36 – Sparse to moderate flint (<20 per cent) up to 2mm.
F/37 – Common flint (<30 per cent)up to 2mm.
F/38 – Rare flint (<3 per cent) up to 3mm.
F/39 – Sparse flint (<10 per cent) up to 1mm, very rare – rare (<3 per cent) up to 3mm.
F/40 – Moderate to common flint (<30 per cent) up to 1mm, rare up to 3mm.
F/41 – Moderate to common flint (<30 per cent) up to 2mm, rare up to 3mm.
F/42 – Common flint (<30 per cent) up to 3mm.
F/43 – Very rare (<1 per cent) flint up to 5mm.
F/44 – Flint, sparse – moderate (<20 per cent) up to 2mm, very rare – rare (1 per cent) up to 5mm.
F/45 – Flint, moderate (<20 per cent) up to 3mm, rare (<2 per cent) up to 5mm.
F/46 – Flint, sparse – common (<25 per cent) up to 2mm, rare (<2 per cent) up to 7mm.
F/47 – Flint, common (<25 per cent) up to 7mm.
F/48 – Flint, moderate (<20 per cent) up to 5mm, rare (1 per cent) up to 15mm.

Flint in a medium sandy matrix

F/49 – Flint, very rare (<1 per cent) up to 1mm.
F/50 – Flint, sparse – moderate (<15 per cent) up to 1mm.
F/51 – Flint, moderate - common (<25 per cent) up to 1mm, rare (2 per cent) up to 2mm.
F/52 – Flint, moderate (10-20 per cent) up to 2mm.
F/53 – Flint, very rare (<1 per cent) up to 3mm.F/54 – Flint, rare – sparse (1-9 per cent) up to 1mm, rare (<3 per cent) up to 3mm.
F/55 – Flint, sparse – moderate (<20 per cent) up to 2mm, rare up to 3mm.

F/56 – Flint, moderate – common (<25 per cent) up to 2mm, very rare (<1 per cent) up to 3mm.
F/57 – Flint, moderate – very common (<40 per cent) up to 3mm.
F/58 – Flint, rare – sparse (<5 per cent) up to 5mm.
F/59 – Flint, moderate (<20 per cent) up to 1mm, rare (<1 per cent) up to 5mm.
F/60 – Flint, sparse (<10 per cent) up to 3mm, very rare (<1 per cent) up to 5mm.
F/61 – Flint, sparse (5 per cent) up to 5mm.
F/62 – Flint, sparse – moderate (<20 per cent) up to 5mm, rare up to 7mm.
F/63 – Flint, common (<25 per cent) up to 7mm.
F/64 – Flint, very rare - sparse (<5 per cent) up to 10mm.

Flint in very fine glauconitic sandy matrix

F/65 – Flint, moderate (10 per cent) up to 2mm, very rare (<1 per cent) up to 3mm.

Flint and Iron Oxide

Flint and Iron Oxide in a silty/very fine sandy matrix

FI/1 - Very rare (<1 per cent) flint up to 1mm; with rare (2 per cent) iron oxides up to 1mm.
FI/2 – Flint, sparse – moderate (5–20 per cent) up to 1mm, rare (<3 per cent) up to 2mm; with rare–sparse (1–5 per cent) iron oxides up to 1mm.
FI/3 – Sparse (5 per cent) flint up to 2mm, rare (1 per cent) up to 3mm, withrare (2 per cent) iron oxides up to 2mm.
FI/4 – Flint, moderate - common (10 – 25 per cent) up to 2mm, rare (1 per cent) up to 3mm; with rare (2 per cent) iron oxides up to 2mm.
FI/5 – Flint, sparse – common (5–30 per cent) up to 2mm, rare (<3 per cent) up to 3mm; with rare (<3 per cent) iron oxides up to 3mm.
FI/6 – Flint, moderate–common (10-25 per cent) up to 3mm, rare (<1 per cent) up to 5mm, with rare iron oxides up to 1mm.
FI/7 – Flint, sparse (8 per cent) up to 3mm, rare–sparse (2–5 per cent) up to 8mm; with rare (<3 per cent) iron oxides up to 1mm.
FI/8 – Flint, sparse – moderate (8–12 per cent) up to 5mm; with sparse (5 per cent) iron oxides up to 2mm.

Flint and Iron Oxide in a fine sandy matrix

FI/9 – Flint, sparse (<10 per cent) up to 1mm, very rare (<1 per cent) up to 2mm; with rare (1 per cent) iron oxides up to 1mm.
FI/10 – Flint, sparse–moderate (5-15 per cent) up to 1mm, with very rare (<1 per cent) iron oxides up to 1mm.

FI/11 – Flint, very rare (<1 per cent) up to 2mm; with rare (2 per cent) iron oxide up to 1mm.
FI/12 – Flint, sparse–common (5–25 per cent) up to 3mm, rare (1 per cent) up to 7mm; with rare (1 per cent) iron oxides up to 1mm.

Flint and Iron Oxide in a medium sandy matrix

FI/13 – Flint, sparse (4 per cent) up to 1mm; with very rare (<1 per cent) iron oxides up to 1mm.
FI/14 – Flint, sparse (5-8 per cent) up to 2mm, rare (1 per cent) up to 5mm; with very rare (<1 per cent) iron oxides up to 2mm.

Flint and Iron Oxide in glauconitic sandy matrix

Glauconite is sometimes present in very small quantities in the Flint and Iron Oxide groups, but is not always easy to see and these groups merge.

Very fine glauconitic matrix

FI/15 – Flint, sparse (7 per cent) up to 0.5mm and rare (2 per cent) up to 2mm; with rare (2 per cent) iron oxides up to 1mm.
FI/16 – Flint, rare (<3 per cent) up to 2mm; with sparse (3 per cent) iron oxide and sparse (5 per cent) glauconite up to 0.2mm.
FI/17 – Flint, sparse - moderate (5–15 per cent) up to 3mm and rare (<1 per cent) up to 5mm; with rare (2 per cent) iron oxides up to 1mm.
FI/18 – Flint, sparse (9 per cent) up to 7mm; with rare (1 per cent) iron oxides up to 0.5mm.

Fine glauconitic matrix

FI/19 – Flint, rare (2 per cent) up to 2mm; with rare (1 per cent) iron oxides up to 1mm, with abundant glauconite up to 0.2mm.
FI/20 – Flint, sparse (4 per cent) up to 3mm; with sparse (3 per cent) iron oxides up to 2mm.

Flint and organic in a silty matrix

This is distinguished from the purely flint groups by including organic matter forming at least 3 per cent of the sample. These appear as black-lined voids or black smudges with indistinct edges. On very rare occasions carbonized vegetation survives. The size of the organic component can be up to 7mm, but rarely exceeds 3mm.

FVE/1 – Common flint up to 1mm.

FVE/2 – Rare flint (<3 per cent) up to 2mm.
FVE/3 – Moderate flint (<20 per cent) up to 2mm.
FVE/4 – Sparse to moderate flint up to 3mm.
FVE/5 – Sparse to moderate flint up to 2mm, rare up to 5mm.
FVE/6 – Sparse to moderate flint up to 3mm, rare up to 7mm.

Flint and organic in a very fine sandy matrix

FVE/7 – Flint, rare (<2 per cent) up to 1mm.
FVE/8 – Flint, moderate to common (10-20 per cent) up to 1mm, rare (<3 per cent) up to 3mm.
FVE/9 – Flint, rare to sparse (<10 per cent) up to 2mm.
FVE/10 – Flint, common up to 2mm.
FVE/11 – Flint, sparse to moderate (<15 per cent) flint up to 2mm, rare up to 3mm.
FVE/12 – Flint, moderate to common (flint up to 3mm.
FVE/13 – Flint, rare (<3 per cent) up to 5mm.
FVE/14 – Flint, sparse to moderate (6-19 per cent) up to 2mm, very rare (<1 per cent) up to 5mm.
FVE/15 – Flint, common (25 per cent) up to 3mm, very rare (<1 per cent) up to 5mm.
FVE/16 – Flint, sparse to common (<20 per cent) up to 5mm, very rare (<1 per cent) up to 7mm.

Flint and organic in fine sandy matrix

FVE/17 – Flint, rare (<1 per cent) up to 1mm.
FVE/18 – Flint, sparse to moderate (<15 per cent) up to 0.5mm, rare (<3 per cent) up to 1mm.
FVE/19 – Flint, common (<30 per cent) up to 1mm.
FVE/20 – Flint, sparse (up to 1mm, rare (<3 per cent) up to 3mm.
FVE/21 – Flintcommon (<25 per cent) up to 1mm, rare (<3 per cent) up to 2mm.
FVE/22 – Flint, moderate to common (<25 per cent) up to 2mm, rare (<3 per cent) up to 5mm.
FVE/23 – Flint, sparse (<9 per cent) up to 5mm.
FVE/24 – Flint, sparse to moderate (<15 per cent) up to 3mm, very rare (<1 per cent) up to 10mm.

Flint and organic in medium sandy matrix

FVE/25 – Flint, very rare (<1 per cent) up to 1mm.
FVE/26 – Flint, moderate (<15 per cent) up to 1mm.
FVE/27 – Flint, very rare (<1 per cent) up to 3mm.
FVE/28 – Flint, moderate (<15 per cent) up to 2mm, rare up to 5mm.
FVE/29 – Flint, common (<10 per cent) flint up to 0.5mm, rare (<3 per cent) up to 3mm.

FVE/30 – Flint, sparse (<10%) up to 5mm.
FVE/31 – Flint, common (<25 per cent) between 3 and 5mm.

Flint and Organic inclusions in a very fine glauconitic sandy matrix

FVE/32 – Flint, rare (<3 per cent) up to 2mm with sparse (<9 per cent) organic inclusions up to 1mm.
FVE/33 – Flint, sparse (5 per cent) up to 1mm, very rare (<1 per cent) up to 5mm, with rare (1 per cent) organic inclusions up to 5mm.

Flint, Iron Oxide and Organic inclusions

Flint, Iron Oxide and Organic inclusions in a very fine sandy matrix

FIVE/1 – Flint, rare–sparse (2–7 per cent) up to 1mm, with rare (<3 per cent) iron oxide up to 1mm, and sparse (5 per cent) voids up to 2mm.
FIVE/2 – Flint, moderate–common (10-27 per cent) up to 1mm, very rare (<1 per cent) iron oxides and sparse (3 per cent) voids up to 1mm.
FIVE/3 – Flint, sparse–moderate (4–15 per cent) up to 1mm, very rare (<1 per cent) up to 2mm, with rare–sparse (1–5 per cent) iron oxide up to 1mm and sparse (3 per cent) voids up to 1mm.
FIVE/4 – Flint, moderate–common (12–30 per cent) up to 2mm, and rare (2 per cent) iron oxide up to 2mm with sparse (3 per cent) voids up to 1mm.
FIVE/5 – Flint, sparse–moderate (5–12 per cent) up to 2mm, with sparse (3 per cent) iron oxide up to 2mm and sparse (3 per cent) voids up to 1mm.
FIVE/6 – Flint, sparse–moderate (3–11 per cent) up to 2mm, very rare <1 per cent) up to 3mm, with rare (<3 per cent) iron oxides up to 1mm and rare (2 per cent) voids up to 3mm.
FIVE/7 – Flint, common (23 per cent) up to 2mm, very rare (<1 per cent) up to 3mm with very rare (<1 per cent) iron oxides up to 5mm and sparse (7 per cent) voids up to 3mm.
FIVE/8 – Flint, moderate–common (10–27 per cent) up to 3mm, with very rare (<1 per cent) iron oxides up to 5mm and rare–sparse (1–3 per cent) voids up to 3mm.
FIVE/6 – Flint, very rare (<1 per cent) flint up to 5mm, with very rare (<1 per cent) iron oxides up to 2mm and sparse (3 per cent) voids up to 1mm.
FIVE/9 – Flint, sparse–common (6–23 per cent) up to 3mm, very rare (<1 per cent) up to 5mm with rare (2 per cent) iron oxide up to 2mm and sparse organic inclusions up to 1mm.
FIVE/10 – Flint, moderate–common (18–22 per cent) up to 5mm with rare (2 per cent) iron oxide up to 1mm and sparse (5 per cent) up to 2mm.
FIVE/11 – Flint, moderate (18 per cent) up to 3mm and rare (<2 per cent) up to 10mm, with rare (1 per cent) iron oxide up to 1mm and sparse (5 per cent) organic inclusions up to 2mm.

Flint, Iron Oxide and Organic inclusions in a fine sandy matrix

FIVE/12 – Flint, very rare (<1 per cent) up to 0.5mm, sparse (3 per cent) iron oxide up to 2mm and sparse (5 per cent) linear voids up to 2mm.
FIVE/13 – Flint, sparse - moderate (6-12 per cent) up to 2mm, with sparse (3 per cent) iron oxide up to 1mm and sparse (3 per cent) organic inclusions up to 2mm.
FIVE/14 – Flint, sparse – moderate (12 per cent) up to 3mm, with rare (1 per cent) iron oxide up to 1mm and sparse (3 per cent) organic inclusions up to 1mm.

Flint, Iron Oxide and Organic inclusions in a medium sandy matrix

FIVE/15 – Flint, sparse (6 per cent) up to 2mm, with rare (1 per cent) iron oxide up to 1mm and rare (3 per cent) organic inclusions up to 2mm.

Flint, iron oxide and organic inclusions in a very fine glauconitic sandy matrix

FIVE/16 – Flint, sparse (8 per cent) up to 2mm, with rare–sparse (1–6 per cent) iron oxide up to 3mm.
FIVE/17 – Flint, sparse (9 per cent) up to 3mm, with rare (2 per cent) iron oxide up to 1mm.
FIVE/18 – Flint, common (20 per cent) up to 5mm with rare (1 per cent) iron oxide up to 1mm.

Flint and Grog

Flint and grog in a silty matrix

FG/1 – Flint, rare (<3 per cent) up to 1mm, grog, rare (<3 per cent) up to 2mm. In this instance the grog includes orange/brown inclusions which can be sub-rounded or angular.
FG/2 – Flint, moderate (10 per cent) up to 3mm, grog sparse (5 per cent) up to 1mm.
FG/3 – Flint, sparse (<10 per cent) up to 2mm, very rare (<1 per cent) up to 3mm with grog, rare to sparse (<5 per cent) up to 3mm.
FG/4 – Flint, moderate (15 per cent) up to 3mm, with grog rare (1 per cent) up to 1mm.
FG/5 – Flint, rare (<3 per cent) up to 5mm and grog, sparse (7 per cent) up to 1mm.
FG/6 – Flint, moderate (<20 per cent) up to 5mm, and grog is very rare (<1 per cent) up to 1mm.

Flint and grog in a very fine sandy matrix

FG/7 – Flint rare to sparse (<5 per cent) up to 1mm and rare (1 per cent) up to 2mm, with grog rare to sparse (<3 per cent) up to 2mm.

FG/8 – Flint, moderate to common (12 – 20 percent) up to 2mm, very rare (<1 per cent) up to 3mm, and grog sparse (<10 per cent) up to 1mm.
FG/9 – Flint, very rare (<1 per cent) up to 3mm, grog rare (<3 per cent) up to 2mm.
FG/10 – Flint, sparse to moderate (<18 per cent) up to 2mm, rare (<1 per cent) up to 3mm, with rare to sparse (<7 per cent) grog up to 2mm,
FG/11 – Flint, sparse (<7 per cent) up to 2mm, and rare (<2 per cent) up to 5mm, with rare to sparse grog up to 2mm.
FG/12 – Flint, moderate (19 per cent) up to 3mm, and sparse (3 per cent) grog up to 1mm.
FG/13 – Flint, moderate (19 per cent) up to 5mm, and sparse (3 per cent) grog up to 3mm.
FG/14 – Flint, sparse (7 per cent) up to 7mm, and rare (<3 per cent) grog up to 2mm, with a very rare rock (<1 per cent) up to 8mm.

Flint and grog in a fine sandy matrix

FG/15 – Flint, rare–moderate (1–10 per cent) up to 1mm, and rare-sparse (2–5 per cent) grog up to 1mm.
FG/16 – Flint, sparse-moderate (4–12 per cent) up to 2mm and rare–sparse (1–5 per cent) grog up to 3mm.
FG/17 – Flint, sparse–moderate (3–12 per cent) up to 2mm, very rare (<1 per cent) up to 5mm, with rare (2 per cent) grog up to 3mm.
FG/18 – Flint, sparse–moderate (7–18 per cent) up to 3mm, very rare up to 5mm, with sparse (7 per cent) grog up to 2mm.
FG/19 – Flint, sparse (7 per cent) up to 7mm, with rare (1 per cent) grog up to 1mm.

Flint and grog in a medium sandy matrix

FG/20 – Flint, rare (1 per cent) up to 1mm, with rare–sparse (1–5 per cent) grog up to 2mm.
FG/21 – Flint, sparse (5 per cent) up to 1mm, very rare (<1 per cent) up to 3mm, with rare–sparse (1–5 per cent) grog up to 1mm.
FG/22 – Flint, sparse (<10 per cent) up to 3mm, very rare (<1 per cent) up to 7mm, with rare–sparse (0.1–5 per cent) grog up to 2mm.

Flint and grog in a very fine glauconitic sandy matrix

FG/23 – Flint, sparse (8 per cent) up to 3mm, with sparse (3 per cent) grog up to 2mm.

Flint, Grog and Iron Oxide in a very fine sandy matrix

FGI/1 – Flint, very rare (<1 per cent) up to 2mm, with rare–sparse (<7 per cent) grog up to 3mm and rare (1 per cent) iron oxide up to 1mm.

FGI/2 – Flint, rare to moderate (2–17 per cent) up to 1mm, very rare (<1 per cent) up to 2mm, with sparse (<7 per cent) grog up to 3mm and rare (1 per cent) iron oxide up to 1mm.
FGI/3 – Flint, rare–moderate (2–8 per cent) up to 2mm, very rare (<1 per cent) up to 3mm, with rare–sparse–moderate grog up to 5mm and very rare (<1 per cent) iron oxide up to 1mm.
FGI/4 – Flint, moderate (10–18 per cent) up to 3mm and very rare (<1 per cent) up to 5mm, with rare (2 per cent) grog up to 3mm and very rare (<1 per cent) iron oxide up to 5mm.

Flint, Grog and Iron Oxide in a fine sandy matrix

FGI/5 – Flint, rare (1 per cent) up to 1mm, with rare–sparse (1–5 per cent) grog up to 1mm and rare (1 per cent) iron oxide up to 2mm.
FGI/6 – Flint, sparse–moderate (3–14 per cent) up to 1mm, rare up to 3mm, with rare (1 per cent) grog up to 1mm and rare (1 per cent) iron oxide up to 1mm.
FGI/7 – Flint, sparse to moderate (7–12 per cent) up to 2mm, with moderate (10 per cent) grog up to 1mm and very rare (<1 per cent) iron oxide up to 1mm.
FGI/8 – Flint, sparse (8 per cent) up to 3mm, very rare (<1 per cent) up to 7mm, with rare (2 per cent) grog up to 1mm and very rare (<1 per cent) iron oxide up to 1mm.
FGI/9 – Flint, moderate (15 per cent) up to 5mm, with very rare (<1 per cent) grog up to 3mm and rare (1 per cent) iron oxide.

Flint, Grog and Organic inclusions

Flint, Grog and Organic in a silty matrix

FGVE/1 – Flint, very rare (<1 per cent) up to 1mm, sparse (3 per cent) grog up to 2mm and rare (<3 per cent) voids representing organic inclusions up to 2mm.
FGVE/2 – Flint, sparse (3–6 per cent) up to 1mm, rare (1 per cent) up to 2mm, with rare–sparse (3 per cent) grog up to 2mm and sparse (3 per cent) voids representing organic inclusions up to 3mm.
FGVE/3 – Flint, moderate (13 per cent) up to 2mm, with sparse (3 per cent) grog up to 1mm and sparse (4 per cent) linear voids.

Flint, Grog and Organic in a very fine sandy matrix

FGVE/4 – Flint, rare–sparse (<9 per cent) up to 1mm, rare (<2 per cent) up to 3mm, with rare–sparse (2–5 per cent) grog up to 3mm and rare–sparse (2–7 per cent) linear voids up to 3mm.
FGVE/5 – Flint, rare–sparse (2–5 per cent) up to 2mm, with rare–sparse (1–5 per cent) grog up to 2mm and sparse (3–5 per cent) linear voids up to 2mm.

FGVE/6 – Flint, sparse–moderate (6–16 per cent) up to 3mm, with sparse (4 per cent) grog up to 1mm and sparse (3–9 per cent) linear voids up to 2mm.

FGVE/7 – Flint, sparse to moderate (7–16 per cent) up to 3mm, very rare (<1 per cent) up to 5mm, with rare (<3 per cent) grog up to 3mm and rare–sparse (2–5 per cent) voids or black smudges up to 3mm.

FGVE/8 – Flint, very rare to rare (<3 per cent) up to 2mm, with very rare to sparse (<1-10 per cent) grog up to 2mm and rare (1 per cent) voids or black smudges up to 3mm. This group includes sherds with a hard centre, though whether this is due to the firing or post-depositional changes is uncertain.

FGVE/9 – Flint, sparse (6 per cent) up to 2mm and very rare–rare (<1 per cent–2 per cent) up to 3mm, with rare–sparse (2–5 per cent) grog up to 2mm and rare–sparse (2–5 per cent) organic inclusions.

FGVE/10 – Flint, sparse (8 per cent) up to 2mm and very rare–rare (1 per cent) up to 5mm, with rare–sparse (1–10 per cent) grog up to 2mm and sparse (3–7 per cent) organic inclusions.

FGVE/11 – Flint, very rare (<1 per cent) up to 2mm, rare (<3 per cent) grog up to 1mm, with sparse (4 per cent) voids up to 2mm in a fine sandy matrix. The grog in this group (as in the others) was mostly dark grey, with the exception of one sherd which included a fragment of a light brown sherd in its grey core.

FGVE/12 – Flint very rare (<1 per cent) up to 3mm, with rare (2 per cent) grog up to 1mm and rare (2 per cent) voids up to 2mm.

FGVE/13 – Flint, sparse (5 per cent) up to 2mm and very rare (<1 per cent) up to 3mm, with rare (2 per cent) grog up to 2mm and sparse (3 per cent) voids up to 2mm.

FGVE/14 – Flint, sparse–moderate (5–10 per cent) up to 3mm, with moderate (10 per cent) grog up to 2mm and sparse (3 per cent) voids up to 2mm.

FGVE/15 – Flint, moderate–common (10–25 per cent) up to 2mm, rare (3 per cent) up to 7mm, with sparse (3–7 per cent) grog up to 2mm and sparse (5 per cent) voids up to 3mm.

FGVE/16 – Flint, rare–sparse (2–6 per cent) up to 2mm, very rare up to 5mm, with rare (2 per cent) grog up to 1mm and rare (2 per cent) voids up to 3mm.

FGVE/17 – Flint, very rare (<1 per cent) up to 5mm, with very rare–sparse (1–6 per cent) grog up to 2mm and sparse (3 per cent) voids up to 2mm.

FGVE/18 – Flint, sparse–moderate (7–15 per cent) up to 7mm, with sparse (5 per cent) grog up to 5mm and rare (2 per cent) voids up to 3mm.

Flint, Grog, Iron Oxide and Organic inclusions

Flint, Grog, Iron Oxide and Organic inclusions in a very fine sandy matrix

FGIVE/1 – Flint, very rare–sparse (0.1–8 per cent) up to 2mm, with sparse (5 per cent) grog up to 1mm, very rare–rare (<1–2 per cent) iron oxides and rare (2 per cent) organic inclusions up to 2mm.

FGIVE/2 – Flint, sparse (5 per cent) up to 2mm, with rare (1 per cent) grog up to 3mm, rare (1 per cent) iron oxide up to 1mm and rare (<3mm) organic inclusions up to 3mm.
FGIVE/3 – Flint, moderate (15 per cent) up to 3mm, with rare (2 per cent) grog up to 1mm, rare (1 per cent) iron oxide up to 1mm and sparse (3 per cent) organic inclusions up to 3mm.
FGIVE/4 – Flint, sparse (9 per cent) up to 2mm, very rare (<1 per cent) up to 7mm, with rare (2 per cent) grog up to 1mm, rare–sparse (1–5 per cent) iron oxide up to 1mm and rare (2–7 per cent) organic inclusions up to 3mm.

Flint, Grog, Iron Oxide and Organic inclusions in a fine sandy matrix

FGIVE/5 – Flint, sparse (4 per cent) up to 1mm, very rare (<1 per cent) up to 3mm, with (2 per cent) grog) up to 1mm, very rare (<1 per cent) iron oxide up to 1mm, and rare (2 per cent) organic inclusions up to 3mm.

SHELL

Fragments of shell survived in some of these fabrics, but in others were identified by the presence of voids with striations. There is a chance that the voids in some of these sherds represent burnt out seeds or inclusions other than shell. Nine sherds, kindly examined by John Cooper, were confirmed to contain oyster shell, including one example of a ribbed bivalve (Cooper 2013), these are indicated alongside the relevant group below.

Shell in very fine sandy matrix

SH/1 – Shell, sparse–common (5–25 per cent) up to 1mm.
SH/2 – Shell, common–very common (25–40 per cent) up to 2mm.
SH/3 – Shell, sparse (5 per cent) up to 3mm. The shell in PRNs 8144950036 and 8035900006 was identified as oyster (Cooper 2013).
SH/4 – Shell, abundant (>40 per cent) up to 5mm.

Shell in a fine sandy matrix

SH/5 – Shell, moderate–common (15–25 per cent) up to 1mm.
SH/6 – Shell, very common (30 per cent) up to 1mm, sparse (5 per cent) up to 8mm.
SH/7 – Shell, sparse–common (7–30 per cent) up to 2mm.
SH/8 –Shell, common–abundant (20–60 per cent) up to 3mm, rare (2 per cent) up to 5mm.

Shell in a medium sandy matrix

SH/10 – Shell, sparse (5 per cent) up to 2mm with rare (2 per cent) sub-rounded quartz up to 0.5mm.
SH/11 – Shell, moderate–common up to 2mm, with sparse (5 per cent) quartz up to 0.5mm.

Shell in a fine glauconitic sandy matrix

SH/12 – Shell, sparse to moderate (7–18 per cent) up to 2mm.

Grog

Grog appears as angular or sub-rounded inclusions, usually dark grey against a lighter grey matrix; very occasionally as light grey in a dark grey matrix.

Grog in a very fine/silty matrix

G/1 – Grog, sparse (7 per cent) up to 0.5mm.
G/2 – Grog, sparse (7 per cent) up to 1mm.
G/3 – Grog, moderate–common (10–20 per cent) up to 1mm.
G/4 – Grog, abundant (70 per cent) up to 1mm.
G/5 – Grog, sparse (5 per cent) up to 2mm.
G/6 – Grog, common (20 per cent) up to 2mm.

Grog in a fine sandy matrix

G/7 – Grog, sparse (3 per cent) up to 2mm.

G/8 – Grog, common (25–30 per cent) up to 2mm.

Grog in a medium sandy matrix

G/9 – Grog, moderate–very common (12–40 per cent) up to 1mm, very rare (<1 per cent) up to 2mm.

Grog and organic

GVE/1 – Grog, rare–sparse (1–7 per cent) up to 1mm, very rare up to 2mm, in a very fine sandy matrix, with rare–sparse (<5 per cent) sub-rounded quartz up to 0.5mm.

Shell and Grog

Shell and Grog in a silty/very fine sandy matrix

SHG/1 – Sparse (5 per cent) shell up to 1mm and rare (2 per cent) grog up to 1mm.
SHG/2 – Shell, common (20 per cent) up to 1mm and rare (1 per cent) up to 2mm and very rare (<1 per cent) grog up to 1mm. The extremely rare grog may be accidental.
SHG/3 – Shell, sparse (5 per cent) up to 2mm, and very rare (1 per cent) up to 7mm. with rare (3 per cent) grog up to 2mm
SHG/4 – Shell, common (20 per cent) up to 2mm and rare (1 per cent) up to 3mm, and sparse (5 per cent) grog up to 2mm.

Shell and Iron Oxide

SHI/1 – Shell, abundant (40 per cent) up to 3mm, with rare (<3 per cent) iron oxides up to 1mm. The shell in PRN 8035900003 was identified as oyster (Cooper 2013).

Shell and Flint

SHF/1 – Shell, sparse–common (5–20 per cent) up to 2mm, rare up to 7mm; with very rare (<1 per cent) calcined flint up to 5mm in a very fine sandy matrix. The shell in PRN 8084020008 was identified as some oyster with a ribbed bivalve, likely to be derived from carbonaceous Woolwich Beds (Cooper 2013).
SHF/2 – Shell, moderate (15–20 per cent) up to 2mm, with rare (1 per cent) flint up to 2mm in a fine sandy matrix. The shell in PRN 8084020009 was identified as oyster (Cooper 2013).
SHF/3 – Shell, sparse (3–7 per cent) up to 7mm, with rare (2 per cent) flint up to 2mm in a fine sandy matrix. The shell in PRN 8084050027 was identified as oyster (Cooper 2013).
SHF/4 – Shell, rare (2 per cent) up to 2mm, with very rare (<1 per cent) flint up to 1mm in a medium sandy matrix.
SHF/6 – Shell, moderate–very common (10–40 per cent) up to 3mm, with rare (1 per cent) flint up to 5mm in a medium sandy matrix. The shell in PRN 8086300003 was identified as oyster (Cooper 2013).

Shell, Flint and Iron Oxide

SHFI/1 – Shell, common (20 per cent) up to 0.5mm, with sparse (9 per cent) flint up to 2mm and sparse (3 per cent) iron oxides up to 0.5mm in a very fine sandy matrix.
SHFI/2 – Shell, sparse 6 per cent) up to 2mm, with rare–sparse (2–4 per cent) flint up to 1mm and rare (2 per cent) iron oxides up to 2mm in a very fine sandy matrix.
SHFI/3 – Shell, common (30 per cent) up to 3mm, with very rare (<1 per cent) flint up to 2mm and sparse (6 per cent) iron oxides up to 3mm in a very fine sandy matrix.

SHFI/4 – Shell, moderate (10 per cent) up to 1mm, with sparse (4 per cent) flint up to 2mm and rare (2 per cent) iron oxides up to 0.5mm in a very fine glauconitic sandy matrix.

Shell, Grog and Flint

SHGF/1 – Shell, moderate (10 per cent) up to 1mm, with sparse (3 per cent) grog up to 1mm and rare (1 per cent) flint up to 1mm in a very fine sandy matrix.

Flint and Shell

Flint and Shell in a very fine/silty matrix

FSH/1 – Flint, rare (<3 per cent) up to 3mm, and rare (<3 per cent) shell up to 1mm.
FSH/2 – Flint, rare (1 per cent) up to 1mm, with very rare (<1 per cent) shell up to 2mm.
FSH/3 – Flint, rare–sparse (<5 per cent) up to 2mm, with sparse (3 per cent) shell up to 3mm.
FSH/4 – Flint, moderate (16 per cent) up to 3mm, with moderate (15 per cent) shell up to 1mm.
FSH/5 – Flint, moderate (10–15 per cent) up to 5mm, with sparse (3–9 per cent) shell up to 5mm.
FSH/6 – Flint, moderate (12–15 per cent) up to 5mm, with rare–moderate (2–12 per cent) shell up to 5mm.

Flint and Shell in a fine sandy matrix

FSH/7 – Flint, rare–sparse (1–7 per cent) up to 1mm, shell rare (1 per cent) up to 2mm.
FSH/8 – Flint, moderate (15 per cent) up to 3mm, rare (2 per cent) up to 7mm, with rare–sparse (2–4 per cent) shell up to 1mm.
FSH/9 - Flint, moderate (12 per cent) up to 5mm, with rare (<3 per cent) shell up to 1mm.
FSH/10 – Flint, moderate (10 per cent) up to 5mm, with very rare (<1 per cent) shell up to 3mm.
FSH/11 – Flint, sparse (7 per cent) up to 2mm, with sparse (7-9 per cent) shell up to 5mm.
FSH/12 – Flint, sparse (3–8 per cent) up to 3mm, with rare–moderate (2–13 per cent) shell up to 3mm.

Flint, Grog and Shell

FGSH/1 – Flint, sparse (5 per cent) up to 2mm, with rare grog (<3 per cent) up to 1mm and sparse (6 per cent) shell up to 3mm in a very fine sandy matrix.

FGSH/2 – Flint, rare (2 per cent) up to 1mm, with rare–moderate (2–15 per cent) grog up to 2mm and sparse shell (5 per cent) up to 1mm in a fine sandy matrix.

Flint and Chalk

FC/1 – Flint, sparse (5 per cent) up to 3mm, with very rare (<1 per cent) chalk up to 2mm in a very fine sandy matrix.

Grog and Flint

Grog and Flint in a very fine/silty matrix

GF/1 – Grog, moderate (10 per cent) up to 1mm, with rare (<3 per cent) flint up to 1mm.
GF/2 – Grog, sparse – moderate (5–20 per cent) up to 2mm, with rare (1 per cent) flint up to 1mm.
GF/3 – Grog, sparse (8 per cent) up to 2mm, with moderate (11 per cent) flint up to 4mm.GF/4 – Grog, sparse – common (5–25 per cent) up to 1mm, with rare (1 per cent) flint up to 5mm.
GF/5 – Grog, sparse - moderate (5–15 per cent) up to 2mm, with rare (2 per cent) flint up to 1mm. One sherd has rare (1 per cent) quartz grains up to 1mm.

Grog and Flint in a fine sandy matrix

GF/6 – Grog, very common (>40 per cent) up to 3mm, with sparse (6 per cent) flint up to 5mm.
GF/7 – Grog, sparse (6 per cent) up to 2mm, with very rare (<1 per cent) flint up to 1mm.

Grog, Flint and Iron Oxide in a very fine sandy matrix

GFI/1 – Grog, moderate (11 per cent) up to 2mm, with very rare (<1 per cent) flint up to 1mm and rare (1 per cent) iron oxide up to 1mm.

Grog and Shell

GSH/1 – Grog, sparse (5 per cent) up to 1mm, and rare (3 per cent) shell up to 0.5mm in a fine sandy matrix, with rare (1 per cent) quartz up to 0.5mm.
GSH/2 – Grog, abundant (40 per cent) up to 1mm, rare up to 2mm and rare shell (2 per cent) up to 1mm in a very fine sandy matrix.
GSH/3 – Grog, common (20 per cent) up to 2mm, and shell sparse (8 per cent) up to 3mm in a very fine–fine sandy matrix.
GSH/4 – Grog, abundant (40 per cent) up to 2mm, and sparse (5 per cent) up to 3mm, with rare (1 per cent) shell up to 1mm in a very fine sandy matrix.

GSH/5 – Grog, sparse (5–10 per cent) up to 5mm with rare (1 per cent) shell up to 2mm in a medium sandy matrix. A small fragment of shell (PRN 8082920001) was identified as possibly from an oyster (Cooper 2013).

Silty/Very fine Quartz Sandy

Q/1 – A silty/very fine quartz sandy matrix with abundant grains up to 0.1mm and sparse (3 per cent) grains up to 0.5mm. This is represented by one sherd weighing 3g from the Trackway 11. Both surfaces were worn.

Q/2 – A very fine/silty quartz sandy matrix with abundant (50 per cent) grains up to 0.1mm. This was represented by two scraps (total weight 7g) in pit 8722, dated to CP2. One of the sherds was burnished on the interior.

Medium Quartz Sandy

Q/3 – Abundant (40–60 per cent) quartz up to 0.75mm. Four sherds (11g) were recovered from the bottom of pit 8445, dated to CP2. One fragment (1g) was found in Trackway 11; and individual scraps were recovered from pit 8130, dated to CP2, (2g); pit 8921, CP3 (1g), and pit 12265, which is undated (4g).

Quartz and Iron Oxide

QI/1 – Abundant rounded quartz up to 0.2mm, with sparse iron oxide up to 2mm. One sherd (3g), worn on both surfaces, was found in ditch 12166, CP1.

QI/2 – Abundant (40 per cent) rounded quartz up to 0.75mm, with sparse (4 per cent) iron oxide up to 1mm. Represented by one scrap (1g), worn on both surfaces, from pit 8645, CP3.

Very fine Quartz sandy with Organic inclusions

QVE/1 – Sparse (3 per cent) organic inclusions up to 1mm, very rare (<1 per cent) iron oxide up to 1mm, in a very fine quartz sandy matrix. This fabric was employed for an everted rim (PRN 8086270013), of unknown diameter, 5mm thick, and which is now worn on the exterior but might have been burnished on the interior. It was found in pit 8722, CP2.

QVE/2 – Moderate (12 per cent) linear voids up to 2mm in length in a very fine quartz sandy matrix. A single body sherd, worn on both surfaces, 6.5–7mm thick, (7g) from pit 8645, CP3.

Fine Quartz sandy with Organic inclusions

QVE/3 – Rare (2 per cent) linear voids and black smudges up to 1mm in a matrix with very abundant quartz up to 0.25mm. There were four sherds in this fabric: a scrap

(1g) (PRN 8085410036) with worn surfaces from pit 8543, CP1; two sherds (7g) (PRN 8086180194) from pit 8722, CP2; and one scrap (2g) (PRN 8036470003) which retained traces of a red coating on its external surface and had been burnished internally.

QVE/4 – Sparse (7 per cent) linear voids up to 5mm in a matrix with very abundant quartz up to 0.25mm. One sherd, a plain flat-topped inturned rim (14g) (PRN 8086180019), worn on both surfaces from pit 8722, CP2.

Medium Quartz Sandy with Organic inclusions

QVE/5 – Sparse (6 per cent) voids up to 2mm in size in a medium quartz sandy matrix. This is represented by one sherd, worn n both surfaces, 7.5mm thick, (3g) from pit 8861, CP3.

Medium Quartz sandy with Chalk

QCh/1 – Abundant (50 per cent) quartz up to 0.5mm with moderate (10 per cent) chalk lumps up to 7mm. This was represented by: one scrap (4g) with worn surfaces from pit 3807, undated. Three scraps (totalling 3g) from pit 8670, CP2, may not have been from a pot and are regarded as fired clay. Similarly one 'sherd' (7g) from pit 8642, CP3, also probably represents fired clay.

Medium Quartz sandy with Calcareous inclusions and Grog

QCaG/1 – Sparse (3 per cent) sub-rounded lumps, probably chalk, up to 2mm and rare (2 per cent) grog up to 1mm in a quartz sandy matrix. This fabric was used for a pot decorated with a segmented groove (D64) (PRN 8035490001). One body sherd (4g) from pit 3550, CP2, was represented, with a minimum thickness of 5mm. The interior was severely worn.

Uncertain fabric - Possible shell in very fine/silty matrix?

SH/0 – There is a fine rim sherd (or just possibly the fragment of a pedestal base) in an uncertain fabric (PRN 8141380003, from undated pit 14140) with sparse (5 per cent) voids up to 0.5mm, and very rare (<1 per cent) voids up to 1mm in a very fine/silty matrix. It is characterized by having worn black surfaces and an orange core. The edge of the rim has worn away and its diameter is uncertain. On its lower surface there is a clear groove, 0.2mm wide, probably running parallel to the rim. The sherd is about 15 x 20mm in size, and 3-6mm thick, too small to be thin sectioned or even to enable a suitable fresh break to be taken to view the fabric in detail.

The source of the fabrics

The site was situated on younger Head Brickearth, loess, which overlies the Upper Chalk. This brickearth is likely to have provided the range of clays required for the vessels with a silty matrix (Geological Survey Sheet 274, Shephard-Thorn 1988, 34–5). It has been shown to contain rootlet tubes, glauconite, limonitic iron ore and flint (Smart *et al* 1966, 214). Grain-size distribution of the younger Head Brickearth at Pegwell Bay, 6km to the south-east, is predominantly silty (Pitcher *et al* 1954, table 1; Weir *et al* 1971, table 1). In particular, clay samples collected from the site were silty and included very rare (<1 per cent) sub-rounded quartz grains up to 0.5mm in the silty matrix.

Those fabrics with a fine to medium sandy matrix are more likely to have derived from the Thanet Beds with coarser grained deposits (Entwistle *et al* 2013, fig. 2.3). These mixed beds include glauconitic sandy and silty marls with some mica (Shephard-Thorn 1988, 26). On Thanet these are mostly overlain by the loess drift deposits with few small outcrops north of the Wantsum Channel, 1–2 km south of the site; and they appear in the cliff section at Pegwell Bay (Shephard-Thorn 1988, fig. 14). However, they are also exposed in periglacial features which are found across the chalk closer to the site (Moody 2008, fig. 8). Which of these were accessible or accessed during the Iron Age, remains uncertain; but it is likely that suitable clays would have been available within *c.* 2km of the site.

Most of the pottery was tempered with calcined flint. This flint would have been available from nodules in the chalk. Several pits and sections of ditch contained quantities of calcined flint in their fills, possibly cached or discarded after sessions of pottery manufacture. Very rare sherds also included fragments of flat tabular flint which would have been available at intervals in the chalk and appears in the cliff section at Pegwell Bay (Shephard-Thorn 1988, pl. 8).

Many of the sherds had small quantities of voids or black smudges indicating the presence of organic inclusions. These probably reflect their origin as a natural occurrence in the clay rather than deliberate additions. The same probably applies to those fabrics identified as including more organic inclusions.

Samples of the shell inclusions have been identified by John Cooper as being derived from oysters. The origin of this oyster shell remains uncertain: "Oysters have changed little from Ostrea bellovacina (Tertiary) to Ostrea edulis (modern), so it is not possible to tell from tiny pieces their age. A possible origin for the dark carbonaceous matrix is the black clays of the Woolwich Beds" (Cooper 2013). The nearest occurrence of the Woolwich Beds is to be found across the Wantsum Channel, about 3.5 km in a straight line to the south-west of the site. Alternatively, oyster shells were found on site, presumably having contributed to the diet of the inhabitants; and these may have

provided the source of the tempering agent for pottery manufacture. However, the large numbers of shell fragments required and the effort to add them, wedging them into fresh clay perhaps makes this suggestion less likely.

Thus it appears that almost all the raw materials required for the manufacture of the pottery from CPs1-4 were available locally, either on the site itself, or within 2–3 km. Local production might be assumed. However, across the Channel a very similar range of fabrics was in use: flint, grog and shell (Blancquaert and Bostyn 1998, 112; Buchez 2011a, 149–151) and imports would be hard to identify without further analysis. However, the source of two rare fabric groups is uncertain. In particular, those involving quartz sandy matrices apparently without the deliberate addition of temper (Q/1-3, QI/1-2, QVE/1-5, QCh/1 and QCaG/1). The very small scraps in which these fabrics appear show that some at least are from fine sherds with burnished, even red coated, surfaces. Their rarity and their relatively high quality might be taken to support viewing them as imports.

The uncertain fabric (SH/0) appears to represent a vessel of similarly high quality and its uniqueness may support a case for it, too, being an import.

Chronology

The pottery was recovered from pits, postholes, linear ditches and ring ditches. Very few of these intersected to provide vertical stratigraphy. Just four radiocarbon dates relate to Iron Age pottery-bearing features, and apart from two potin coins towards the end of the sequence, there was no associated metalwork to contribute to the construction of a chronological framework. The result is that this discussion relies heavily on typology, citing parallels from other sites in the south-east England and on the continent – a procedure not without its problems. Within south-east England there can be confusion caused by variable use of terminology. In particular, as an example, the Middle Iron Age, which here refers to the third and second centuries BC, is also assumed by others to begin in the fourth century. Thus a pot can be described as late Early Iron Age in this report and the typological parallel referred to may be published as Middle Iron Age. For this reason, wherever possible, chronological parallels are cited using calendar dates, even if these create a false impression of accuracy. A summary of continental chronologies is shown in Table 38.

Some quite precise parallels are known from Belgium and the Netherlands. In particular, the excavations at Oss-Ussen provided a valuable sequence supported by stratigraphy and radiocarbon dates, including evidence for the long-term use of broad form-types, some of which existed, but fluctuated in popularity, throughout most of the first millennium BC (Van den Broeke 2012).

When seeking parallels in northern France use has been made of published syntheses, in particular recent assessments from the late Bronze Age to late Iron Age in Picardie (Buchez 2011a; 2011b, Bardel *et al* 2013). The chronological sequences are largely based on seriation and typological comparisons with neighbouring regions, and include material from settlements and cemeteries. Many of the forms were in use over an extended period and the few radiocarbon dates published from these sites have not increased the precision of the chronology (Bardel *et al* 2013, 158–162).

The chronology of comparable material from Kent and south-east England, being derived from settlement sites, is inevitably more fluid. Nevertheless, recent excavations in Kent have produced useful groups associated with radiocarbon dates (e.g. Allen *et al* 2012; Bennett *et al* 2014; Booth *et al* 2011; McKinley *et al* 2014). The pottery from East Kent however, while sharing some forms and traits with examples further to the west, retains its distinctive character. Here the evidence from Cliffs End (McKinley *et al* 2014), has provided a closely dated sequence, assigned to the 10th – 8th centuries, including some forms and surface treatment previously thought to be later. In particular, rustication (specifically surfaces with a rough applied slurry, referred to on the continent as 'éclabousée', 'crépisage', 'tamponnage' or 'besmeten'), which is well represented at Thanet Earth, has been found in 10th century contexts (Leivers 2014). While this surface treatment has been known in the Low Countries from Hallstatt A for some time (e.g. Desittere 1968, fig. I), and an example from Roundstone Lane, Angmering in Sussex has been assigned to the PDR decorated phase (Seager Thomas 2008, 41), in the report on Highstead (Couldrey 2007) its appearance in Kent was thought to belong to the 6th century and later, based on continental parallels with the associated forms. Rustication is discussed below, but even if its earlier appearance is shown to have been sporadic, it is now clear that when dating Kentish pottery, its presence alone can no longer be assumed to represent a post-600 BC date.

Evidence for occupation between *c.* 900–600 BC

The pottery from the site up until the Middle-Late Bronze Age has been presented by Barbara McNee. The bulk of the pottery discussed here can be assigned to the Early–Middle Iron Age, and no features produced groups which are certain to precede the sixth century BC. However, some of the individual forms were in use over a long period, from the Late Bronze Age through to the Early Iron Age. Indeed, some occur more commonly in the early first millennium than later and, if found in isolation, would probably have been dated earlier. The possibility exists, therefore, that some of the pottery dates from before the sixth century. With one exception though, these forms which might indicate use of the site before the EIA, were associated with later examples. Elsewhere, beyond the confines of East Kent, local variation in fabrics can allow a degree of refinement in determining chronology. The range of fabrics at Thanet Earth however, offers little assistance in this respect.

The bowl with projecting horizontal rim, **F110,** is rare in Britain, but a decorated example, probably imported, is known from the LBA assemblage at the Boreham Interchange, Essex (Brown 1999, 13, fig. 2.4, 21). This form is more common on the continent with examples from the Netherlands (Desittere 1968, 37, fig. 21, 8; van Impe 1980, 5), and dated to 800–650 BC, phases A2–B, at Oss-Ussen (Van den Broeke 2012, 52, fig. 3.7, 8, type 12; 396, pl. 2, 6; 399, pl. 5, 17). In France they are known from Bronze final III to Ha D1, *c.* 565 BC (e.g. Bardel 2009, 78, fig. 6, type 21100; 79; 83, fig. 8, type 21200; Bardel *et al* 2013, fig. 20, SQPA10, 5458–81). The severely worn fragment from Thanet Earth (PRN 8145580018) was recovered from the fill of the LIA/RB ditch (section 14559, group 8166).

Horizontally projecting rims are also associated with a jar form, **F111**, though these are thinner and flatter than that attached to the **F110** bowl. Like the F110 bowl, these jars, which are frequently associated with tall flaring or upright necks and wide rounded shoulders (e.g. Brun 1986, 107, pl. 17.1, 5), are found in continental urnfields, from the late Bronze Age to the Earliest Iron Age. They are known from the most southerly of Desittere's lower Rhine groups, the Neuwiedbekken (Desittere 1968, fig. 20, 8) and in France, south of the river Oise (Brun 1986, figs. 37-30) where they continue until the end of of Brun's Etape 3/Ha C, *c.* 520 BC. North of the Oise, the pottery more closely resembles PDR plain and decorated forms commonly found in Southern England (Bourgeois and Talon 2009, figs. 3.17 and 3.18), though rare examples are known as from the settlement at Vignacourt dated to *c.* 1000 BC (Buchez 2011a, 138, fig. 6, 118). A similar rim, but with a diameter of c. 11cm, was found at the Kemmelberg (van Doorselaer *et al* 1987, 147, fig. 61, 318). This may represent an early form within that assemblage, most of which falls within the fifth century BC (De Mulder and Bourgeois 2011, 312). All three examples of this form at Thanet Earth are severely worn.

Short everted rims with internal bevels, **R7**, tend to be associated with Late Bronze Age and Earliest Iron Age assemblages on both sides of the Channel (eg. Needham 1991, 186. Fig. 83, P91; Buchez 2011a, 139, fig. 6). Two examples were found: one in pit 3550, placed in ceramic phase 2, the early Iron Age, and the other in the LIA/RB ditch 3471.

Many more common forms were in use over a long period and examples include: the open bead-rimmed bowl with high rounded shoulder, **F31**. Very similar examples have been dated to 10th/9th–early 6th centuries at Potterne (bowl type 3.2, Gingell and Morris 2000, 149; 158, fig. 48); late 9th–8th centuries for the group 3 fills of the enclosure ditch at Springfield Lyons (Brown 2013, 106, fig. 3.26, 114), and from Sussex at Bishopstone (Hamilton 1977, fig. 45.34) and Hawkinge Aerodrome, where comparable bowls were associated with a PDR 'decorated' tradition (Seager Thomas and Hamilton 2001, fig. 3.P7). A later date in the second half of the first millennium BC is supported by an example from the EIA, period 3B at Highstead (Couldrey 2007, 163, fig. 98, 461), and finds from northern France, place it in *c.* 550–475 BC (Bardel *et al* 2013, fig. 20, SPQA10, 5458–39, fig.25, CYS-LR 397–3 and 397–9), and later, in the Middle Iron Age, from the

third to early first century BC (Blancquaert 2002, fig. 20, 2; fig. 25, 1 and 377–381; Buchez 2011b, 325, form 14.11; Prilaux 2000, 238, fig. 6). In the Netherlands the form appears in phase H at Oss-Ussen, *c.* 350–250 BC (Van den Broeke 2012, pl. 22, 8). This Thanet Earth example (PRN 8037200003) was found in pit 3722 which was itself a recut in the top if the fill of EIA pit 3724.

Form **F52**, a bipartite jar with low slack rounded shoulder and almost vertical rim is broadly similar to examples found in northern France during, HaC2–D1, *c.* 700–550 BC, for example at Allaines and Lauwin-Planque (Bardel *et al* 2013, form 72000, fig. 18, LP-ZAC1a, 2016-11; fig. 19, ACB3, étapes 1–2), though the profile below the shoulder is unknown. The example from Thanet Earth was recovered from pit 8642, which included MIA forms. The thinner-walled version of the same form, with burnished surfaces, **F53** (PRN 8126450003) from pit 12646 also survives only from the shoulder up. If it is from a short jar with a sharply curved body beneath the shoulder, it has parallels in the Late Bronze Age contexts (e.g. Jones 2012, 129, fig. 5.31, 73). At Cliffs End radiocarbon dates enable one to be placed in the ninth century BC (Leivers 2014, 158, fig. 5.4, 28), and a comparable example from Allaines has been dated to *c.* 650–600 BC (Bardel *et al* 2013, fig. 19, ACB3). Both of surfaces of the Thanet Earth example have been burnished and are only moderately worn and its associations here, in the fill of pit 12646, support a later date.

Several examples exist of bases being placed on abundant calcined flint fragments (**B10**). This practice is well recognized from elsewhere in southern England and is now known, though rarely, from the Middle Bronze Age (Jones 2006a, 34–35), becomes common in the Late Bronze Age and Earliest Iron Age and, in East Kent, appears to fall out of use during the Early/Middle Iron Age (Couldrey 2014). At Thanet Earth, with the exception of three vessels (PRN 8034030001, LIA/ER Ditch, 71g; PRN 814600001, posthole 8147, 66g; and PRN 8125900003, from pit 12595, 1024g), the sherds are small and abraded, with an average weight of 13g. They are found in Early Iron Age contexts (Ceramic Phases 1–2), with one severely worn example recovered from the Middle Iron Age, Ceramic Phase 3 (Table 38).

Pit 14348 contained just one severely worn sherd, comprising a cordon with finger-tip impressions, D13 (PRN 8143470001), probably from the neck of a storage jar. Jars with such cordons are well known from the Late Bronze Age (e.g. Needham 1991, fig. 96, P391; Adkins and Needham 1985, figs. 4, 7 and 8), the Earliest Iron Age and may well have lasted into the fifth century BC. This particular example could represent an earlier phase of settlement, but equally could be contemporary with the EIA. Certainly on the continent examples are known from as late as the fifth century BC (e.g. Van Doorselaer *et al* 1987, fig. 81, 435–438; Ralph *et al* 1969, figs. 32, 17 and 22; 33, 15 and 30; 34, 19).

Thus while the pottery may hint at some use of the site earlier in the first half of the first millennium BC, no features can be attributed to this period with certainty, and none need be earlier than the sixth century.

Phasing of the features

The identification of ceramic phases has been hindered by the long life of some of the forms, apparent re-deposition and the lack of chronologically distinct fabrics. The chronology outlined below is based primarily on the typology of forms associated together in features, on the assumption that they are 'contemporary'. This ignores the possibility that the pits and ditches may have filled up over extended periods of time and that the units of analysis may themselves result in mixing early and late material. It was recognized that using forms associated within each context rather than complete fills might have produced a more 'accurate' picture. An early attempt however, found that the numbers of forms in individual contexts rapidly became too small to enable any manageable sequencing of the pottery. Futhermore, when sampling identifiable early and late forms within the fills of a small number of pits, it was clear that the sequence within the fills was mixed. So this more detailed approach was abandoned.

Four Ceramic Phases (CP1–CP4) are tentatively proposed here using typological comparisons, stratigraphy and radiocarbon dates. The distribution of forms throughout these phases is shown in Table 37(a–d). In constructing this chronology, seriation on its own was found to be of limited value. There are several floating sequences and allocation of forms to a ceramic phase is here based on an initial manual seriation and typological comparison, modified by stratigraphical relationships. CP1 (*c.* 550–400 BC) contains forms known to date from the sixth–fifth centuries BC, many of which continued later. CP2 (*c.* 400–300 BC) sees the introduction of forms which are often placed in La Tène B1 (Buchez 2011a). CP3 (*c.* 300–150 BC) witnesses the increasing use of vessels more commonly associated with the Middle Iron Age. CP4 (*c.* 150–100 BC) includes early examples of forms which were to last into the Late Iron Age. The end date of *c.* 100 BC is not secure but has been suggested by parallels with other Kentish sites, continental La Tène D1 forms, and the lack of a substantial body of grog tempered LIA forms or decoration. Parallels have been cited to contribute to the discussion of the chronology, they do not represent an exhaustive list.

Divisions between these phases are blurred. There is considerable overlap with early forms appearing alongside later; and while this proposed phasing gives a broad picture of change through the likely span of occupation of the site, it cannot be relied upon to provide a secure chronology for each feature. The evidence for the phasing of many of the features is extremely slim. Of the 117 features with classified forms, only six have more than 9 examples and the chronological position of 44 features is based on one sherd alone. In particular, the distinction between CP1 and 2, may be more apparent than real, the attribution of features to CP1 being based on the absence of certain forms,

often from small samples. Even features placed in CP4 (*c.* 150–100 BC) are attributed to this phase on the basis of just one or two sherds without which some would be considered to be Early or Middle Iron Age. The following section examines the forms associated within each feature in the order in which they appear in Table 37.

Ceramic Phase 1 (c. 600–400 BC) Early Iron Age (Table 37a)

This phase is characterized by Early Iron Age forms which can be paralleled in 6th–5th century contexts in this country and on the continent. Pit 14604 contained jars with smooth or burnished surfaces on concave necks rising to upright rims, **F69**. These are found in the first half of the first millennium BC (Needham and Spence 1996, 148, fig. 75, P729; Couldrey 2007, 144, fig. 78, 239; 151, fig. 85, 314) and in the fifth century at Lauwin-Planque ZAC2 (Bardel *et al* 2013, fig. 28, 3250–12). The same pit produced a horizontally projecting rim, **F111,** discussed above. These are associated with a pedestal base, **B7** (PRN 8146030008). Such bases do occur in continental urnfield groups, often on bowls with horizontally projecting rims (e.g. Desittere 1968, vol 2, fig. 1.5), though they are usually more elaborate — both plain and decorated are found in Brun's Étape 3 (Brun 1986, pl. 68, 9; pl. 69, 21). They are more commonly found in the EIA (*cf* Morris 2006a, pot no. 83 from pit 8079). Together with these was a rounded shoulder likely to belong to form **F97**, reminiscent of urns from Eastbourne (Hodson 1962, fig. 1.2, 1–3), and similar to other vessels in the region (Macpherson-Grant 1980, 138, fig. 4, 8; Macpherson-Grant 1992, 290, fig. 6; Seager Thomas and Hamilton 2001, fig.17,P175) dated to the EIA, and one from White Horse Stone (Morris 2006b, fig.3.7c,WHS/83) placed in the Early/Middle Iron Age.

A second example of a horizontally projecting rim (PRN 8145600012) was recovered from pit 14561, which also contained a severely worn sherd probably from a tripartite jar with sharply carinated shoulder and slightly out-turned rim, **F76** (PRN 8145600003), comparable with an example from Villeneuve-d'Ascq dated *c.* 550–475 BC (Bardel et al. 2013, fig.26, VDA39RL, 136tr.5–18), and a jar with high shoulder and short inturned rim, **F33** (PRN 8145600001). The latter has been wiped leaving slight horizontal grooves above the shoulder and has moderate rustication beneath. The general form is found in southern England and France; but this rusticated version is closer to form 34 at Oss-Ussen where it is popular in the 5th–early 4th centuries (Van den Broeke 2012, 62, fig. 3.12; 86, fig. 3.3). Associated with these was a low footring on a wide flaring base (**B2**) (PRN 8145600004), a form that occurs in the sixth and fifth centuries BC (e.g. Van Doorselaer *et al* 1987, 89, fig. 3, 7; Bardel *et al* 2013, fig. 26, LJV, 8–9) and was found with a carinated vessel, **F80,** in posthole 14053. The latter is commonly found in fifth century assemblages (Buchez 2011a, 168, fig. 23; Hurtrelle *et al* 1990, 48, fig. 4, 1 and 2; Bardel *et al* 2013, fig. 10, form 32320).

Pit 12646 produced the distinctive large shouldered jar, **F48** (PRN 8126450004), with tall vertical neck, expanded flat-topped rim *c.* 42cm in diameter, and rustication beneath a

rounded shoulder. This is close to one from phase E at Oss-Ussen (Van den Broeke 2012, 84, fig., 3.28, 5), dated to 500–450 BC. Broadly similar examples, but without the rustication, are known from France (e.g. Stead *et al* 2006, 201, fig. 58, Q11.3; Bardel *et al* 2013, fig. 25, 506–3), and can be highly decorated (Delnef 2003, 31, figs. 22 and 23). In Kent this form is closest to an example, also without rustication, from Rainham, for which an EIA date was proposed (Seager Thomas 2014, fig. 10, pot 39). The **B2** footring beneath a wide flaring base is found on carinated vessels of the early La Tène period (e.g. Van Doorselaer *et al* 1987, 89, fig. 3, 7). Associated with these was the **F53** jar, referred to above as being similar to LBA forms, but also matched closely by an example from *c.* 650–550 BC in Allaines, Somme (Bardel *et a*. 2013, fig. 19, ACB3, 363/1).

The small quantity of pottery from ditches G8300, G8303 and G8081 has been grouped together in Table 37a on the assumption that the ditches were associated and may well have formed part of a trackway. In practice, they need not have been precisely contemporary. There clearly were recuts and extensions and, in cut 12166 of ditch G8303, a re-alignment. Their chronology is discussed with that of other linear ditches below.

Tripartite jars with high carinated shoulders, **F74** and **F75**, are known from the early first millennium (O'Connell 1986, 66, fig. 46, 56; 70, fig. 54, 17) and the EIA (Termote 1987, 69, fig. 55, 240). In the north of France they appear throughout HaD to La Tène A1 (Bardel *et al* 2013, fig. 10a, form 32110).

Bowls similar to form **F70** are found in a group dated to *c.* 550–475 BC from Méaulte (Bardel *et al* 2013, fig. 20, MPFI11, lower left hand corner) and in contexts dated to 350–250 BC at Avion La République (Hurtrelle *et al* 1990, 130, fig. 25, 9; 132, fig. 26, 6). From Kent three examples are known from pit 6132 at White Horse Stone (Morris 2006a, pot nos. 63–65), which contained a jar with carbonized grain (Morris 2006a, pot no. 61), dated to 490–160 cal BC (Allen *et al* 2006, GU–9088). **R5** rims**,** with straight exterior and convex inner profile, are frequently, though not exclusively, associated with wide open bowls with flaring rims and carinated shoulders characteristic of the EIA (*cf* McNee 2010, 48, fig. 32, 8–10).

The largest group of classified forms in the phase was recovered from pit 8063, which had a single fill containing emmer/spelt grains from which was obtained a radiocarbon date of 513–382 cal BC (at 95 per cent probability; Table 6, UBA-22214). The forms recovered included a form **F44** jar, found in period 3B, fifth century, at Highstead (Couldrey 2007, 159, fig. 94, 411) and at Méaulte and Saint-Quentin, Somme, placed in HaD3, *c.* 520–475 (Bardel *et al* 2013, fig. 20, MPFI17, 53 bottom, and SQPA10, 5458–17) and the shoulder from a fine bowl with slightly everted rim, **F97**, discussed above. Open bowls with smooth or burnished surfaces, **F51,** are very similar to an example from the earliest LBA contexts in the river channel sequence at Runneymede Bridge (Needham 1991, 167; 180, fig. 77, P8) but are also known later, *c.* 350–250 BC (Hurtrelle *et al* 1990,

114, fig. 15, 3 and 4); while plain convex jars with slightly inturned rims, **F3**, are not closely datable, (*cf* form 51100, Bardel *et al* 2013, fig. 10). Importantly, this pit also produced an example of the coarse jars with roughly wiped almost vertical walls, **F100**. These have simple or roughly shaped rims, sometimes with finger-tip impressions (3 examples out of 25), and are very common on the site, being found throughout CP1–2, and appearing as a residual element in CP3–4. They are known, though never so common, from other EIA sites in East Kent, e.g. Eyhorne Street, Hollingbourne (Jones 2006d, form R2), Highstead, period 3B (Couldrey 2007, 162, fig. 97, 455 ; 164, fig. 99, 483) and may have begun earlier (Couldrey 2007, 138, fig. 72, 202). Further west, as far as central Southern England, they are referred to as proto-saucepan pots (Morris 2006b, 65), and this form is similar to PA1 from Danebury, dated to *c.* 470–310 BC (Brown 2000, 90). They are not common on the continent, but possible similar examples occur sporadically from France (e.g. Bardel *et al* 2013, form 13000, fig. 10), Belgium and the Netherlands. Two examples from pit S78 at Kontich-*Rozengaard*, south of Antwerp, (Van Liefferinge *et al* 2103, 30, fig. 24) were associated with three radiocarbon dates: KIA-49106, 2460±25 BP; KIA-49123, 2425±30 BP; and KIA-49128, 2420±25 BP (Van Liefferinge *et al* 2103, 20–21). Unfortunately the calibrated dates were tri-modal, but within the 95.4 per cent probability range in which they all fell (*c.* 750–400 BC), the modes with the highest probabilities were: KIA-49106, 670–410 cal BC (66.7 per cent), KIA-49123, 600–400 cal BC (73.6 per cent) and KIA-49128, 550–400 cal BC (80.2 per cent).

Associated with the **F100** jar in pit 14342, were two bowls with plain inturned rims, forms **F4** and **F6**, possibly both from similar vessels. Parallels can be found in the first half of the first millennium BC and into the Early Iron Age (e.g. Jones 2006a, form R7, pot no. 14; Jones 2006c, Pot no. 14; Bardel *et al* 2013, form 51200, fig. 10).

From pit 8733, the barrel shaped jar or goblet, **F16**, is found in early La Tène assemblages (e.g. Saurel 2004, 99, fig. 6, st. 8-8), decorated with light horizontal grooves on the shoulder and a single groove beneath the rim, following an early La Tène style (Stead and Rigby 1999, fig. 22, 2631). The flaring bowl, **F106**, probably represented by rim fragment PRN 8086830005, has been recognized in EIA contexts in East Kent and on the continent. It is known with plain, rusticated and finger-tip impressed surface. At Highstead a rusticated version was found in period 3a, dated to the 6th century BC (Couldrey 2007, 148, fig. 82, 293); similar bowls were found at Oss-Ussen both earlier and later, but most commonly in phases D-F, *c.* 575–375 BC (Van den Broeke 2012, 46, fig. 3.5, type 3b).

Jars with slightly everted rims on smooth inturned necks, **F94**, are known sporadically from the early first millennium BC (e.g. Runneymede Bridge; Needham 1991, 187, fig. 84, P112 and 114; 191, fig. 88, P195). They are also found in the EIA (Brown and Couldrey 2012, 207, fig. 3.53, 5100832). This form merges with jars whose rims are more everted and which predominate during the MIA (e.g. Couldrey 1984, 46, Form 4; Jones 2006a, Beechbrook Wood form 16). This example (PRN 8035540001) from pit 3584 has a

red coated exterior, distinguishing it from later examples. The same pit produced forms **F71**, with a high carinated shoulder and very slightly inturned concave neck supporting a plain upright rim, and an **F75** jar, both of which can be subsumed within Bardel *et al*'s form 32110 and dated thoughout their phases 1–4, *c.* 650–450 BC (Bardel *et al* 2013, 167, fig. 10a). Included with these was an **F37** jar, comparable to an example from Brebières, dated to *c.* 625–550 BC (Bardel *et al* 2013, fig. 16, 1053-14).

Everted rims with light horizontal grooved decoration, **R6**, are found from the 9th century (Leivers 2014, 149, fig. 5.2, 10) and on a variety of forms from the fifth–fourth centuries (e.g. van Doorselaer *et al* 1987, 138, fig. 52, 270; Rozoy 1986, pl. 18, MT50.1; Stead *et al* 2006, 200, fig. 57, 4b). This particular example is a very similar form to that on a pedestalled bowl from Highstead Period 3B, dated to the fifth century BC (Couldrey 2007, fig. 90, 380). Associated with this in pit 3674 was a flat-topped expanded rim, **R22**, on a short concave neck, from a large globular jar, comparable with pot no. 92 from White Horse Stone (Morris 2006a).

Bowls with low rounded shoulders, **F81**, are found in *c.* 550–425 BC (Bardel *et al* 2013, fig. 10, form 32310). This form is well known in Cunliffe's Long Wittenham-Allen's Pit and Chinnor-Wandlebury groups which he places in the fifth to third centuries (e.g. Cunliffe 2005, figs. A11, 12; A12, 4) while a start in the sixth century was preferred by Harding using continental parallels (Harding 1972, 79). Several examples are known from Kent, all attributed to the sixth or fifth centuries BC (e.g. Couldrey 1991, 215; fig. 60, 181; Macpherson-Grant 1980, fig. 7, 48). Flaring rims, **R14**, can be associated with a range of forms, of which F81 is just one. On their own, they are not closely dateable. The shallow carinated bowl with omphalos base, **F61**, is known from the fifth century BC (*cf* Debord 1981, fig. 6; Demoule 1999, 347, fig. 218, type 5721, tables 9.1 and 9.2).

The angular bipartite jar from Pit 8801(PRN 8088000003), **F59**, with burnishing above the shoulder and light horizontal combed decoration below, **D30h,** is closely paralleled in *c.* 450–400 BC (Smeets and Vansweevelt 2009, 174, fig. 5,12). From the same pit, the small pedestal base, **B6** (PRN 8088000004), is frequently found with tripartite and barrel-shaped beakers, (Stead and Rigby 1999, fig. 18, 2835; fig. 22, 1330, 2839), attributed to Aisne-Marne II–IIIa (*c.* 475–370 BC; Demoule 1999, 145–146, figs. 9.2 and 9.3). More locally, on the A2 Pepperhill to Cobham Road scheme, a slightly larger example (Brown and Couldrey 2012, 210, fig. 3.56, 9063003), was recovered from pit 9052, which contained articulating ribs from a juvenile red deer dated to 405–365 cal BC (NZA 32406; Nicholson and Allen 2012, 287).

The globular jar, with the appearance of a light horizontal groove running beneath a tapering rim, **F17**, is rare, but can be matched with decorated examples from the Kemmelberg (van Doorselaer *et al* 1987, 146, fig. 60, 307–8) where they are attributed to the fifth century.

Form **F55**, an open vessel with fine burnished surfaces and low rounded shoulder from pit 8180 is known from fifth (Buchez 2011a, 174, fig. 28) and fourth centuries BC (Demoule 1999, 347, type 5532). This pit contained just five sherds and its chronological position is uncertain.

Plain bipartite vessels with high carinated shoulders are known from the early first millennium BC and continue until the Early Iron Age both in England (e.g. O'Connell 1986, fig.48, 98–101) and France (Buchez 2011a, 137; 138, fig. 5, 94; 173, fig. 27). The jars grouped together in form **F56** exhibit a thinned neck — more noticeable in the narrower walls (e.g. PRNs 8037230012, 8084190001, 8121480001, 8088590009) — a characteristic more commonly found on vessels of the EIA (e.g. Morris 2006a, pot 25). In pit 3644 this was associated with a more open bipartite bowl with vertical neck above a rounded shoulder, **F46**, and thick walls, found in EIA contexts (Brown and Couldrey 2012, 201, fig. 3.47, 1200269, 1200271 and 1200298).

The open bowl with almost rounded shoulder, form **F38** from pit 8434, is known from the fifth century BC (Hurtrelle *et al* 1990, 66, fig. 12.19) to *c.* 210–150 BC (Haselgrove and Lowther 2005, 363, fig. 11, 14). A similar date could accommodate the accompanying fine flaring **R13** rim, though the precise form of the vessel it represents is uncertain: it could belong to an open bowl, a shallow conical vessel (Stead and Rigby 1999, fig. 11), a flaring rim of a tripartite jar (Stead *et al* 2006, 204, fig. 60, Q14, 1), or perhaps, a type **F81** bowl with wide low shoulder.

Pit 12366 contained a form **F62** carinated jar, a form which has been recovered from LBA plainware contexts associated with a radiocarbon date of 1130–890 cal BC, in pit 5421 at White Horse Stone (Morris 2006a, pot no. 9), but which is also commonly found in EIA contexts (e.g. Buchez 2011a, 168, fig. 23). This was found with two miniature vessels: form **F98**, a fine cup with red-coated exterior, but missing its rim and base, which may copy a beaker form falling within Aisne-Marne III, *c.* 400–300 BC (Demoule 1999, 348, fig. 2.19, 57533, table 9.3) or our form **F97**, placed in CP1 above. The second was a plain **F102**, which is found in *c.* 475–427 BC (Bardel *et al* 2013, fig. 28, L-ZAC2, 3096-8).

Pit 8264 produced a bowl with sharply carinated shoulders, **F68**, a form found in EIA contexts in northern France (e.g. at Quivières; Bardel *et al* 2013, fig. 27, QEQ, 33-15) and Kent in pit 6132 at White Horse Stone (Morris 2006a, pot nos. 63–65), where carbonized grain from another pot in this pit was dated to 490–160 cal BC (GU–9088); Morris 2006a, pot no. 61; Allen *et al* 2006a). Together with this was recovered a small open bowl, **F103**, a simple form and not closely dated; but examples exist from the fifth-fourth centuries (e.g. Hurtrelle 1990, 48, fig. 4.10).

Also associated with the carinated bowl in pit 8293, was a vessel with perforated walls, form **C1**, known sporadically throughout the first millennium BC (e.g. Needham 1991, 192, fig. 89, 197; Hurtrelle *et al* 1990, 165, fig. 7, 33 and 34), and a jar with high carinated

shoulder, **F63**, distinguished from many of the other shouldered jars by being highly burnished on both surfaces.

Similarly, jars with high shoulders, sharply inturned necks and almost vertical walls, **F32**, and vessels with high rounded shoulders and plain rims on slightly convex necks, **F34**, were in use for a long period (e.g. Bardel *et al* 2013, fig. 10, forms 52120 and 22200); but they were both found in the EIA (e.g. Buchez 2011a, 190, fig. 38; Termote 1987, fig. 7, 6).

Open bowls with high sharp shoulders, short concave necks and burnished surfaces, **F77**, are known from late Ha (Bardel 2009, 92, type 24100; Bardel *et al* 2013, fig. 10, form 25110) and continued into the EIA. Examples were found on the line of the A2 south of Gravesend in the fill of pit L-12527=12700, which contained grain at the bottom dated to 410–230 cal BC (NZA-32308; Brown and Couldrey 2012, 201, fig. 3.47, 1200015, 1200268 and 1200272). While the less everted **F72** form is known from Period 3 at Highstead (Couldrey 2007, 156, fig. 91.384).

Pit 8543 produced a plain ovoid jar, **F1**, and the burnished inturned concave neck and plain rim from a vessel with high almost carinated shoulder, **F72**. Neither of these is closely dateable: the ovoid jar is found throughout much of the first half of the first millennium BC and into the fifth century (Bardel *et al* 2013, form 51100, fig. 10) and the F72 rim could be as early as the 8th century as at Saleux "Les Traneaux" (Buchez 2011a, fig. 7) or *c.* 625–550 BC at Lauwin-Planque ZAC1b (Bardel *et al* 2013, fig. 18, 2024-14, 5232-9). The date of this pit is therefore uncertain.

Ceramic phase 2 (*c.* 400–300 BC) (Late Early Iron Age) (Table 37b)

This phase contains forms which fall after *c.* 400 BC on the basis of typological comparisons with other sites. Several groups contain predominantly Early Iron Age forms together with one or two which were to become more popular during the Middle Iron Age. It includes two pits (3724 and 8722) with the largest groups on the site. Many forms present during CP1 continue, and there is no clear break between the phases. Chief among the new forms are shouldered jars with expanded rims, burnished or smooth upper surfaces and decorated or lightly rusticated lower bodies (**F67, R16, R17**). They clearly reveal influences from across the Channel. While they share traits with **F68** bowls, which appeared in CP1, these jars are predominantly from the fourth century and continue into the first half of the third (Buchez 2011a, 169, fig. 24). One example of an **R17** rim was recovered from pit 8178 which was stratified after pit 8180, placed in CP1. Earlier examples in Kent and on the continent (Hamilton and Seager Thomas 2005, 31, fig.33.11; Bardel *et al* 2013, fig. 23, PRO-FB, 3.11–14) are rare.

The open bowl with low rounded shoulder, **F82**, has a slacker shoulder than CP1's **F81** and can similarly be placed in the sixth–fifth century BC (*cf* Bardel *et al* 2013, fig. 24,

ONN99Z09, 9208/9-1 and LSQ09LAC, 1012-1). Bipartite carinated jars, **F65** in pit 8130**,** and deep bowls, **F60,** continue the tradition known from the Earliest Iron Age (e.g. O'Connell 1986, 67, figs. 48 and 49) and remained in use over a long period, being commonly found in Early Iron Age contexts (van Doorselaer *et al* 1987, 108, fig. 22, 105–107; Smeets and Vansweevelt 2009, 173, fig. 4.7).

Pit 14496 provided an **F47** jar, with a which can be paralleled at Lauwin-Planque in HaD1 and D2, *c.* 630–525 (Bardel *et al* 2013, fig. 18, 2013-1) and a coarse conical bowl, form **F7**, which is found in late Hallstatt and early La Tène assemblages (Bardel *et al* 2013, fig. 15, FND05, 02-01; fig. 21, 2007/18; fig. 28, 3701-1). Comparable vessels were recovered from a later early Iron Age pit group on the Pepperhill to Cobham road scheme (Brown and Couldrey 2012, fig. 3.49, 5000831) and pit 6132 at White Horse Stone which contained carbonized grain dated to 490–160 cal BC (Morris 2006a, pot 62).

Out-turned rims with flat widely expanded tops, **R19**, are known from EIA sites in Kent (e.g. Highstead (Couldrey 2007, 155, fig. 90, 382) and White Horse Stone (Morris 2006a, pot no.145)) and La Tène A in France (Buchez 2011a, 174, fig. 28).

Form **F35**, a jar with high rounded shoulder and expanded flat-topped inturned rim is known from the EIA (Hurtrelle *et al* 1990, 39, fig. 5.9) and an example from pit 6132 at White Horse Stone contained carbonised grain dated to 490–160 cal BC (Morris 2006a, pot no. 61). Associated with this form in pit 14510 was an ovoid jar with a slightly expanded rim, **F22**, similar to examples in other EIA pits from White Horse Stone (Morris 2006a, pot nos. 42 and 50).

The top fill of pit 8445 contained an **R16** rim with burnt residue on the inside which produced a radiocarbon date of 394–209 cal BC (at 95 per cent probability; Table 6, UBA-22218). A jar with a similar rim, sharing the burnished surface with R16, and the rim profile with R17, was found in pit F16 at Church Whitfield Crossroads, immediately above a fill containing burnt grain which provided a radiocarbon date of 390–165 cal BC (Beta-142011; Bennett *et al* 2014, table 64; Couldrey 2014, fig. 81, 14). Other forms were stratified below this: an **F45** jar, with a narrow neck above a thick lower body, similar to EIA and late EIA examples from the A2 (Brown and Couldrey 2012, 202, fig. 3.48, 5101058), a form found in sixth and fifth century contexts in northern France (e.g. Bardel *et al* 2103, fig. 15, EBCN3, 2003-11; fig. 21, 2007/8 and possibly fig. 26,VDA39RL, 136 tr. 5-21); a slack shouldered burnished jar, **F54,** and a coarse jar with high rounded shoulder and expanded flat-topped rim, but with thick walls, **F30**.

Pit 3596 contained a highly burnished flaring rim with thinned neck from an open bowl, **F104**, found in EIA contexts at Hamblain-les-Pres (Hurtrelle *et al* 1990, 165, fig. 7.23–24); an everted rim jar with heavy rustication, **F96**, found in Belgium in early to early middle La Tène contexts as at Overbroek, Brecht near Antwerp (Gautier and Annaert 2006, fig. 22, 1 and fig. 23, 6, type IIIh) and the Netherlands at Oss-Ussen where it is dated to 350–

250 BC (Van den Broeke 2012, 417, pl. 23, 27); a deep bowl with high carinated shoulder and concave neck, **F64**, similar to examples from Glisy, dated to *c.* 550–475 BC (Bardel *et al* 2013, fig. 21, GTV2, 2007/21, fig. 22, GTV1, 8-13), and a large shouldered jar with a thick expanded flat-topped rim, **R18**, dated to the fifth century at Highstead (Couldrey 2007, 162, fig. 97, 451). Also with this group was an **F101** jar, a slightly finer version of the coarse vertically sided vessels, **F100**, which first appeared during CP1; though by no means as fine as saucepan pots known elsewhere from the MIA. It is similar to Brown's PA2 form from Danebury and dated to *c.* 360–270 BC (Brown 2000, 90).

In recut 3668 in the top of pit 3596, **F101** was joined by a bipartite jar with finger-tip impressions around the shoulder, **F57**, a form well known from the Earliest Iron Age (O'Connell 1986, 63, fig. 42, 11) and the Early Iron Age (Brown 1995, 86, fig. 67.125). This form was also found in pit 8247 which was cut by pit 8242. The latter contained an open bowl with slack shoulder, **F29**, a form very similar to bowls known from LBA plainware assemblages (e.g. Brown 1995, 42, fig. 65, 86; Needham 1991, 207, fig. 104, P612; Jones 2006b, fig.3, 22); but also found in *c.* 390–250 BC (Van den Broeke 2012, 414, pl. 20, 12–13).

Pit 3724 contained thirty-two vessels recognizable as belonging to the EIA. Slack shouldered jars, forms **F24** and **F26**, (*cf* North Shoebury; Brown 1995, 84, fig. 65, 95); a shouldered jar with horizontally wiped neck and flattened, slightly expanded rim, **F58**, falls primarily within *c.* 550–475 BC (Bardel *et al* 2013, fig. 10, form 52210), and a similar form and rim type, though with external slashed decoration, from Hawkinge was regarded as characteristic of later PDR pottery (Hamilton and Seager Thomas 2002, 14; fig. 4, pot 87). A jar with a pronounced but rounded shoulder is decorated with horizontal grooves and crosses in metopes, **S1**, a design (D24) commonly dated to *c.* 450–400 (e.g. Hurtrelle *et al* 1990, 50, fig. 2.5; 81, fig. 2.1; 91, fig. 5.22) and now recognized at several sites in East Kent (e.g. Couldrey 2007, fig. 89, 368). An open bowl with upright neck and slight bead rim on a carinated shoulder, **F83**, is dated to *c.* 550–475 BC (*cf* Demoule 1999, 343, fig. 2, 14, form 5112; Bardel *et al* 2013, form 24230, fig. 10). Broadly similar examples, though with more rounded shoulders and slightly concave necks were found in pit L-12527 on the A2, associated with a radiocarbon date from material at the bottom of the pit (410–230 cal BC; NZA-32308; Allen *et al* 2012, table 3.27; Brown and Couldrey 2012, 223, fig. 3.47, 1200271 and 1200298). A coarse thick-walled open bowl, **F9**, is known from period 3B, in the fifth century at Highstead (Couldrey fig. 89, 371) and is similar to one found in pit 6132 at White Horse Stone (Morris 2006, pot no. 67) associated with a radiocarbon date of 490–160 cal BC. A smaller version of the same form (PRN 8039120001) in pit 3913 at Thanet Earth contained residue dated to 356–59 cal BC. Form **F66** a coarser example of a bipartite jar with high carinated shoulders, is not closely dateable (*cf* form 52120, Bardel *et al* 2013, fig. 10). Form **F92**, a jar with round shoulder and slight irregular everted rim is very close to form **F95** jars with more substantial everted rims, which become more popular in the MIA, CP3. The convex profiled bead rimmed jar, **F21**, makes its first appearance in this period, the fourth

century BC, La Tène B1 (Buchez 2011a, 143, fig. 8), but commonly occurs later (Buchez 2011b, 276, fig. 5, 21.124), as at Vignacourt "Au Chemin du Haut-Nord/Le College", structure 301 (Buchez 2011a, 148, fig. 10) in an assemblage dated to 300–250 BC.

Pit 3557 adds the fine concave jar, **F18**, with a delicate externally thickened bead rim and decorated with two crisp horizontal grooves around the neck, similar to the style of examples from the fifth-fourth centuries on the continent (Demoule 1999, 146, table 9.3, form 5522; Delnef 2003, 18, fig. 2.1) and a slack shouldered bowl with finger-tip impressions on the rim, **F27**. The latter can be matched by one from Phase E at Oss-Ussen, *c.* 500–450 (Blancquaert and Bostyn 1998, 123, fig. 16, 21.4; Van den Broeke 2012, pl. 12.8).

Pit 8722 produced the largest group of pottery on the site. This included some forms in use over a long period. A bowl with high carinated shoulder, **F73,** placed in c. 650-425 BC (Bardel et al 2013, form 32110, fig. 10a); a complete miniature cup with straight flaring walls, **F108**, a form found from the Early and Middle Iron Age (Demoule 1999, 145, Type 5762; Merleau 2002, 91, fig. 44, B; 100, fig. 53, D; 221–228; Bardel *et al* 2013, fig. 28, 3250-1); shouldered jars with impressed decoration on the rim or shoulder, **F40**, are found in the Late Bronze Age, tenth century BC (Leivers 2014, 149. Fig. 5.2, 4) but become more common during the earliest Iron Age, after *c.* 800 BC and continue into the Early and Middle Iron Age (e.g. Brown and Couldrey 2012, figs. 3.47–3.56). These were accompanied by a smooth jar, **F88**, with curvilinear profile similar to the continental 'tulipform' shape (Demoule 1999, 347, fig. 218, Type 5533), dated to *c.* 400–360 BC. Plain convex forms are notoriously difficult to date and clearly were in use over a long period during the first millennium BC. Form **F12**, is popular during phases F-H at Oss-Ussen, *c.* 450–250 BC (Van den Broeke 2012, 409, pl. 15.3). Similar comments can be made of the plain shallow open dish, **F11**, which occurs sporadically from the 8th century (Lemaire and Buchez 2001, 117, fig. 12, 3; Van den Broeke 2012, 396, pl. 2.4, phase A), the sixth and fifth centuries (Bardel *et al* 2013, fig. 21, GTV2, 2007/1), up to *c.* 375 BC (Van den Broeke 2012, 408, phase F). The globular jar, **F15**, can be paralleled in the sixth century (Van den Broeke 2012, 404, pl. 10.14) and into the third century (Buchez 2011a, 148. fig. 10).

From the top of pit 8722, the unique deeply recessed rim, **R1,** from the top of pit 8722 is matched by numerous examples at the Kemmelberg (van Doorselaer *et al* 1987, 152–3, figs. 66–67) dated to the fifth century BC. These rims belong to open bowls, sometimes represented as lids, and are distributed primarily in Belgium with outliers as far as west as Thiverny in France (Palmer 2010, fig. 13).

Handles broadly similar to our form **H1**, are well known from the Middle and Late Bronze Ages and Earliest Iron Age (e.g. Mill Hill; Champion 1980, fig. 6.1; O'Connell 1986, 69, fig. 52, 195; Saltwood Tunnel; Jones 2006b, 24, fig. 3.25). Our example may well be residual. The fabric, F57, with common, 25 per cent, flint up to 5mm, is relatively

coarse, but the aperture is small, between 11mm and 17mm across on the exterior, and it appears to have been constructed as a perforated lug rather than a strap. Examples have been recorded from the Early and Middle Iron Age in southern England (e.g. Orsett; Barrett 1978, 116, fig. 42, Danebury; Cunliffe 1984b, 307, fig. 6.78, 370, Gravelly Guy; Duncan *et al* 2004, 295, fig. 7.5.91) and on the continent (e.g. van Doorselaer *et al* 1987, 173, fig. 87, 492).

Gradually becoming more popular during CP2 are jars with everted rims (forms **F88** and **F92**). These are well known in MIA deposits in Kent and Essex. While becoming very popular during the MIA, almost dominating some assemblages, they first appear with otherwise acceptable EIA forms (e.g. Brown and Couldrey 2012, 206, fig. 3.51, 5100137) as at Thanet Earth.

A single fragment possibly belonging to a projecting shoulder (**S4**) was recovered from this pit (8722). Vessels with these shoulders (à èpaulement) are known in France, and are associated with other CP2 forms at Harbonnières "Le Fond de Warcourt" and dated to the 4th century BC (Buchez 2011a, figs. 8 and 24). In France they become more common during the third century BC, but this was the only example from Thanet Earth. The large shouldered jar, **F42**, with an almost straight neck and short upright or slightly everted rim is matched by an example with roughened surface below the shoulder at White Horse Stone (Morris 2006a, pot 70). The pot from White Horse Stone was not directly associated with any radiocarbon dates, though an assessment of the chronology of the Iron Age settlement as a whole concluded that it fell between *c.* 500–300 BC (Allen *et al* 2006a, 38).

Perforated bases, **B11**, occur sporadically throughout the first millennium BC. EIA examples are known locally (Couldrey 2007, 153, fig. 88, 349) and on the continent from Fontaine-Notre-Dame, *c.* 450–400 BC (Hurtrelle *et al* 1990, 70, fig. 14, 58).

Pit 3550 contained a short everted rim with internal bevel, **R7**, mentioned above as likely to belong to the Late Bronze Age. However, it is small (13g) and its surface wear was moderate to severe suggesting that it may not be contemporary with the fill of the pit. Also within this pit was a carinated bowl, **F78**, which is of the same general form as F77 but with a flat-topped rim and falls broadly within *c.* 650–425 BC (Bardel *et al* 2013, form 25110, fig. 10).

Ceramic Phase 3 (CP3) (300–*c.* 150 BC) (Middle Iron Age) (Table 37c)

In Ceramic Phase 3 earlier forms continue but round-bodied vessels, already present during CP2, become more common. In particular, the S-profiled jar with burnished surfaces, form **F95**, is found often with other coarser everted rim round shouldered forms.

In pit 8645 the moderately worn carinated beaker, **F79**, is closely paralleled by a beaker from Milly-sur-Therain, Oise (Buchez *et al* 2004, fig. 25, 139/1), dated to *c.* 330–250 BC. It is associated with an S-profiled everted rim jar, **F95**. These everted rim jars are characteristic of the MIA. An example was found in enclosure ditch 2150 at Beechbrook Wood, stratified below context 2346 which produced a radiocarbon date of 390–170 cal BC (Jones 2006a, pots 21 and 31; Allen and Brady 2006). From the same context at Beechbrook Wood (2213) and immediately below it (2214), in the primary fill of ditch 2150, were found jars similar to our form **R21** (Jones 2006a, pots 17 and 45).

Stratified above pit 8645, pit 8642 contained many EIA forms together with others more commonly found in the MIA. A radiocarbon measurement from this pit produced a date of 389–204 cal BC (at 95 per cent probability; Table 6, UBA-22215). Form **F52**, a bipartite jar with low slack rounded shoulder and almost vertical rim is broadly similar to examples found in northern France during, HaC2–D1, *c.* 700–550 BC, e.g. at Allaines and Lauwin-Planque (Bardel *et al* 2013, form 72000, fig. 18, LP-ZAC1a, 2016-11; fig. 19, ACB3, étapes 1–2); though the profile below the shoulder is unknown. Associated with this were: a lightly everted rim, **R2**, commonly associated with EIA forms, such as **F97**; an irregular everted rim jar **F87**; and a coarse flaring bowl, **F107**, a simple form, similar to an example from Highstead Period 3A, *c.* 600–500 BC (Couldrey 2007, 150, fig. 84, 302) and Glisy (GTV2), dated *c.* 550–475 BC (Bardel *et al* 2013, fig. 21, 2007/50). A small jar with high rounded shoulder, **F43**, is broadly similar to a jar in the Middle Iron Age pit B-3662/3676 from the A2 south of Gravesend (Brown and Couldrey 2012, 213, fig. 3.57, 400187). A globular jar with short thick everted rim, similar to our type **R20**, was recovered from enclosure ditch 2150 at Beechbrook Wood, stratified below context 2346 which produced a radiocarbon date of 390–170 cal BC (Jones 2006a, pot 17; Allen and Brady 2006). The bowl with short everted rim and rounded shoulder, **F99**, forms part of the Park Brow-Caesar's Camp group, from the fifth to the third centuries BC (Cunliffe 2005, 621, figs. A10 and A1313); examples with everted or a slightly more upright rim from Bow Hill, Wickbourne and Ford in Sussex are placed at the end of the Early Iron Age (Seager Thomas 2015, 4, fig. 2.7; 11, fig. 7; Hamilton 2004, 35, fig. 17, 58), and an example from Pont-Rémy, France has been placed in the third century (Prilaux 2000, 238, fig. 6). The plain globular jar, **F13**, with an almost bead rim with slight external projection is found in early La Tène contexts (Saurel 2004, fig. 6, st. 8-8). The example from this pit (PRN 8086350011) is coarse and worn with wall thickness up to 14mm.

Pit 8642 also produced a small jar with smooth or burnished surfaces and a high rounded shoulder, **F39**, a more rounded example of the earlier shouldered jars and falls within the broad EIA/MIA transition. This example (PRN 8086380001) is decorated with deep horizontal and vertical grooves, D33, a style which is known since late Hallstatt times, but which became more popular in the Early La Tène (Bardel 2009, 96, fig. 11.23; 98; pl. 14, 515). This design was found on a body sherd from Avion La République, placed between 350–250 BC (Hurtrelle *et al* 1990, 116, fig. 16), and on an imported vessel,

associated with a radiocarbon date of 380–170 cal BC, from pit 2037 at Little Stock Farm (Bryan 2006, pot no. 1).

Form **F84** covers a collection of round-shouldered jars with upright thickened rims that are found in the late EIA and MIA groups. Several Kentish examples are known from this period, including Northumberland Bottom (Bryan and Morris 2006, pot nos. 38–40, 44), Beechbrook Wood (Jones 2006a, pot no. 64), the Pepperhill to Cobham road scheme (Brown and Couldrey 2012, 209, fig. 3.55, 9170006). In pit 8456 the form is associated with the miniature cup, **F5**. Miniature cups are found sporadically throughout the first millennium BC and, in isolation, this example is not closely dated.

Form **F89,** a fine everted rim jar with high rounded shoulder, is dated to *c.* 300–100 BC at Oss-Ussen (Van den Broeke 2012, 419, pl. 25, 3). The example from pit 8340 (PRN 8083440004) has two horizontal grooves, close to an example placed towards the end of the second century at Pont-Rémy (Prilaux 2000, 241, fig. 10).

The shoulder and neck form, **S3**, almost certainly belong to everted rim jars, **F95**, common during the MIA.

The chronology of the bead rim bowl with high rounded shoulder, **F31**, has been discussed above, when considering evidence for settlement before the sixth century BC. The form had a long life appearing from the Earliest Iron Age to the Middle Iron Age. In their recent survey of northern France, Bardel *et al* place this form in their Étape 3, *c.* 550–475 BC (Bardel *et al* 2013, fig. 10, form 22130). Pit 3722, in which this Thanet Earth example (PRN 8037200003) was found, was cut into the fill of pit 3724, itself attributed to CP2; so using typology and stratigraphy this form could be placed in CP2 or later.

Form **F41** from pit 3534 is closely paralleled by a bowl from Avion La République (Hurtrelle *et al* 1990, 114, fig. 15, 4), dated to 350–250 BC.

Pit 8921 contained mainly EIA forms, including an almost complete flat dish, **F109**. Open dishes or platters are known from the Early and Middle Iron Age (e.g. Debord 1981, 112, fig. 7.78E01.001; Gaudefroy *et al* 2006, p.112, fig.67; Couldrey 1991, p.218, fig.60,171). One from Oss-Ussen was dated to Phase H, *c.* 350–250 BC (Van den Broeke 2012, 44). The Thanet Earth vessel differs from other examples in that its base is extremely heavy, rising to over 20mm thick at the centre, creating the impression that it might have been an accidental by-product from the failed construction of a jar. Its form therefore may be unique. The thick walled, round shouldered jar, **F90**, is responsible for placing the fill of this pit in this phase. It is very similar to a transitional Early-Middle Iron Age example from the Pepperhill to Cobham road scheme (Brown and Couldrey 2012, 213, fig. 3.57, 400406), associated with a cremation dated to 380–200 BC (NZA-31265; Allen *et al* 2012, 287, table 3.27).

The vessel with high rounded shoulder and short slightly out-turned rim, **F50**, is comparable to form R30 at Beechbrook Wood (Jones 2006a, pot 64), retrieved when machining in the area of MIA ditch 2150. In pit 14488 this is associated with a form **F86** everted-rim jar, representing a coarse version of the more common burnished form, **F95**, commonly found in the MIA.

From pit 8286, was a vessel with an everted rim, tall upright neck and what appears to be a projecting cordon or shoulder at the base of the neck, **R12.** It is burnished on both surfaces and difficult to scratch with a fingernail. A projecting shoulder, S4, was found in pit 8722 and placed in CP2. This thinner-walled example, possibly from a bowl, is closely paralleled in La Tene B2, *c.* 300–250 BC (e.g. Buchez 2011a, 143, fig. 8; Buchez 2011b, 273, fig. 3, form 13.212). With this was a form **F49** vessel with a slack rounded shoulder, slight concave neck and plain upright rim. While the body profile is uncertain, this has a profile similar to **F43**, mentioned above and placed in CP3. The final classified form from this pit was from an open bowl with internally thickened flat-topped rim, **F10**. These are known from La Tène C1, *c.* 250–150 BC (Lemaire 2000, 174, fig. 13) and associated with MIA everted rim jars in pit 5 from phase 1 at Farningham Hill (Couldrey 1984, fig. 15, 19 — this phase would now be placed in the second or third century, considerably earlier than in the original report). The same internal thickening of the rim is commonly associated with saucepan pots as at Beechbrook Wood (e.g. Jones 2006a, pot 25), and the waterhole at Bigberry, dating to the second century BC (Thompson 1983, fig. 11, 65; Clark and Thompson 1989). The same trait was applied to the rim of a jar with high convex shoulder, **F36**, similar to forms attributed to La Tène D1, *c.* 150–50 BC (Blancquaert and Bostyn 1998, fig. 18, 11-9; Buchez 2011b, table 1, form 12.131).

Pit 8869 shared a form **F49** with the previous pit and contained a thick-walled coarse everted rim jar, **F93**, both indicating a MIA date. This pit was stratigraphically below pit 8701, placed in CP4.

F105 the open bowl with short upright rim, and finger-tip impressions. Similar bowls with slightly lower and more rounded shoulders are known throughout Bardel *et al*'s Étapes 1-4 (Bardel *et al* 2013, fig. 10, form 23200). A bowl very close to our F105 is known from La Tène Ancienne, *c.* 475–225 from structure ST201 from 'ZAC de Ther' (Paris 1998, 285, fig. 14, 2).

Pit 3861 produced an open bowl form with a very slight convex shoulder, **F28** (PRN 8038570012), dated from La Tène C1–first half of La Tène D1, *c.* 250–100 BC in France (Lemaire 2000, 174, fig. 13). From the A2 Pepperhill to Cobham Road Scheme an example was placed in the MIA (Brown and Couldrey 2012, fig. 3.58, 401211). This is supported by the dates from the enclosure ditch at Church Whitfield Crossroads where an example from the fill of the first recut was sandwiched between two radiocarbon dates: one bimodal, from the bottom of the ditch, before any recuts: 350–310 cal BC or

210–45 cal BC, and the second calibrated to 170 BC–AD 45 from the top, after the third recut (Parfitt 2014, 103–104; Bennett *et al* 2014, table 64; Thompson 2014, 150, fig. 85, 40).

Associated with this were other forms which are likely to be residual: the high footring base, **B5**, is known over a long period; a notched or offset carinated shoulder, **S2** (PRN 8038570035), from a thin-walled vessel, is broadly similar to examples from Periods 2 and 3a at Highstead (Couldrey 2007, figs. 78, 234 and 82, 284) and found in PDR Decorated (Earliest Iron Age) assemblages (Seager Thomas 2008, fig. 10, 7 and 11); and a worn jar, **F23** (PRN 8038570026), with rounded shoulder and upright externally expanded rim, similar to an example from the 5th century at Quivières (Buchez 2011a, 168, fig. 23; Bardel *et al* 2013, fig. 27, 13-29).

In pit 14219 an **F28** bowl was found with the everted rim jar, **F91**, with curvilinear decoration, **D59**, a well-known form found in Kent and Essex, characteristic of the Mucking-Oldbury style attributed to the Middle Iron Age (Brown 1991) and preceding the Mucking-Crayford style (Cunliffe 2005, 115). A plain version, though in the form of a bowl, was buried in the primary fill of pit 226 at Eyhorne Street, Hollingbourne, beneath a deposit of charred grain which produced a radiocarbon date (NZA-22594) with a bimodal calibration of either 410–350 cal BC (64 per cent) or 300–230 cal BC (30 per cent) (Allen *et al* 2006b). A date in the third or early second century BC would satisfy the typological evidence. Across the Channel an example broadly similar to ours is dated to the third century (Prilaux 2000, 238, fig. 6). This particular vessel from Thanet Earth is unique on the site and its condition suggests that it had been in use for a long period before being deliberately buried in this pit (see below).

Ceramic Phase 4 (c. 150–100/75? BC) Late Middle Iron Age

This phase sees the use of purely grog-tempered fabrics associated with what was to become LIA decoration, though the number of these grog-tempered sherds is very small. No LIA grog-tempered forms were recognised. Most of the sherds are from earlier forms and fabrics, and very few are attributable to this late date. It is certainly possible that the features included here were dug and in use earlier. This section presents the chronology of the pottery. The nature of the occupation during this phase is discussed below.

Dating this phase is closely related to the chronology of Late Iron Age pottery in East Kent. A start date preceding 100 BC is now supported by radiocarbon dates from the enclosure ditch at Church Whitfield Crossroads (Parfitt 2014; Bennett *et al* 2014, table 64). The enclosure ditch was filled at the time Late Iron Age grog-tempering was being introduced. In the primary fill pure grog-tempered sherds represented less than 1 per cent of the pottery by weight. A placed deposit in this primary fill included a grog-tempered sherd and a cattle humerus, which provided a radiocarbon date calibrated at 2 sigma to 350–310 BC or 210–45 BC (Beta 142009; Parfitt 2014; Bennett *et al* 2014, table 64).

Thus while the evidence is not conclusive, the earliest LIA grog-tempered sherds at Church Whitfield Crossroads are unlikely to be later than the second century BC.

Further dating evidence is provided by two Potin coins of the Kentish Primary Series which were recovered from two pits within this phase: the top of pit 8616 (context 8610) and the bottom of pit 3905 (context 3904). These are dated to the mid–late second century, though their circulation into the first century BC cannot be ruled out.

Ring Ditch 2 is included in this phase because it contained three grog-tempered sherds: two (PRNs 8087750001 and 8087780001) with a rough combed decoration (D86); and one (PRN 8087750005) with broad cordon and grooved decoration (D80). Both these are associated with Late Iron Age forms. Most of the sherds from this Ring Ditch however, were flint tempered and the only classified form, **F49**, found in features attributed to CP3.

Pit 8774 is included in this phase because it cut through the fill of Ring Ditch 2. It contained only one classified form, **F41**, which first appears in CP3. It did however include three sherds tempered with flint and grog, which though difficult to distinguish from some of the EIA fabrics, could well be associated with late second century pottery. Had it not been stratigraphically later than the fill of Ring Ditch 2, it would probably have been placed earlier, in CP3.

Other features have been attributed to this phase on the basis of the forms recovered. Plain convex vessels, both jars and bowls, with internally thickened bead rims are regularly associated with the Late Iron Age in Kent, though Thompson recognized that they probably began earlier (Thompson 1982, 235, type C3). In France they begin to appear during the third century (Buchez 2011a, 143, fig. 8), but become common during La Tène D1 (*c.* 150–50 BC). From context 3903 in pit 3905, flint tempered jar form **F14** is comparable with La Tène D1 examples (Blancquaert 2001, 94, fig. 12, type 3.3). Beneath this, at the bottom of this pit (context 3904) was a potin coin of the Kentish Primary Series.

The top fill of pit 8616 (context 8610) produced a flat base with central perforation, **B12**, similar in appearance to a modern flowerpot. These occur occasionally in the late Bronze Age (Adkins and Needham 1985, fig. 7, 99), and in France and the Netherlands they are recorded from *c.* 350–125 BC (Gaudefroy *et al* 2006, 128, fig. 84; 132, fig. 88; Van den Broeke 2012, 417, pl. 23, 33). In the same context, was a short upright internally thickened rim, **R9**. These fragmentary rims probably belonged to globular jars and precede the floruit of Late Iron Age pottery (Macpherson-Grant 1991, 46, group 'b'). Also in this top fill was a second potin coin of the Kentish Primary Series.

The precise profiles of these internally thickened rims tend to merge. Type **R8**, is more common and was also recognized by Macpherson-Grant (1991) as beginning before the

use of more traditional Late Iron Age pottery. Examples were found in the water-hole at Bigberry, which also contained grog tempered Late Iron Age forms dated to the second century BC (Thompson 1983, 262, figs. 11, 62 and 68; Clark and Thompson 1989).

Pit 3877 was stratified above pit 3875, placed in CP2, and contained a globular jar with externally thickened bead rim (**F19**). Standard bead rims had been known from the Earliest Iron Age but begin to appear thicker during the second century and into the first (Buchez 2011b, 276, fig. 5, type 21.124). They are well known from Late Iron Age sites in Kent. They are found in the waterhole at Bigberry (Thompson 1983, fig. 11, 57–58), dated to the second century BC (Clark and Thompson 1989). Examples from the middle and upper fills of the enclosure ditch at Church Whitfield Crossroads (Thompson 2014, fig. 84, 34) were found together with jars with thickened everted rims, **F20**, before the recuts of the ditch. They were thus sealed between two radiocarbon determinations as noted above: a bimodal date of 350–310 cal BC or 210–45 cal BC from the lower fill, and the single calibrated range of 170 BC–AD 45 from the skeleton of a dog buried at the base of the third recut (Parfitt 2014, 103–104; Bennett *et al* 2014, table 64). A similar jar, form **F20**, is also present in pit 8701, which is stratigraphically later than pit 8869, assigned to CP3.

With the **F20** jar in pit 8757, open hemispherical bowl, form **F8,** is well known from the Late Bronze Age and Earliest Iron Age (e.g. Bradley *et al* 1980, 237, fig. 13, 30F; Buchez 2011a, 136, fig. 4; Couldrey 2007, 144, fig. 78, 236). It is also found, though less frequently, in EIA assemblages (e.g. Bardel *et al* 2013 175, fig. 21, 2007/9; Smeets and Vansweevelt 2009, 173, fig. 4, 11), but it is clearly residual in this pit.

Decoration throughout Ceramic Phases 1–4

The styles and techniques of decoration and their position were presented in Table 32. Their chronological spread is shown in Table 39, which also shows the total number of decorated sherds in each position per ceramic phase. These totals are displayed beside the sub-title for the relevant position; thus they represent the sum of the figures below them. Many of the basic motifs and techniques were part of a standard repertoire which had appeared in the first half of the first millennium BC, such as finger-tip impressions on rim and shoulder; linear grooves and combing on neck (Leivers 2014, 154–155), but some details of the designs and their position differ in the EIA. While decoration on and above the shoulder remains common, 12.4 per cent of the decorated sherds from Thanet Earth assemblage are solely from beneath the shoulder.

The most favoured techniques of decoration throughout CPs 1–2 were finger-tip impressions, narrow linear grooves and light combing; while the rim, the shoulder and the body below the shoulder were the most popular areas for decoration. The allocation of features to one of the ceramic phases was based on typology of form and the few instances of stratigraphy. The distribution of decoration in Table 39 reflects the position

of the types of decoration in features already allocated to a CP on the basis of typology. The chronology of some specific styles and techniques are discussed below.

Decoration in the Early Iron Age (CPs 1–2)

Barbotine painted linear designs are found during CPs 1–2. This usually takes the form of a fine slip trailed within grooves (D75). In one instance however (PRN 8146030006, pit 14604, CP1), it also includes a row of slipped dots placed on the surface between horizontal lines (D12). These lines and dots now appear pinkish grey (Munsell No. 5YR6/2), and slight traces, now only surviving below the lower horizontal line, indicate that they would have been on a red background (Munsell No. 10R4/8). It is noticeable that the trailed slip now projects above the surface which, apart from the red area at the bottom, is severely worn. The row of dots between horizontal lines is a motif known from the early La Tène in France (e.g. Delnef 2003, 40, fig. 36, E5) and its ancestry is found in at least the late Bronze Age, Bronze final IIIb (e.g. Bardel 2009, fig. 7, 16). From the same pit, a body sherd (PRN 8146030005) has two straight lines, reddish yellow in colour (Munsell No. 5YR7/6), which join at about 92˚, apparently forming the corner of a panel. In this case, the slip forming the lines appears to have been trailed on top, and projects slightly above, the worn surface which now varies in colour from brown to black with a few irregular patches of red.

On other sherds revealing the same technique, the design is less clear. Again from pit 14604, sherd PRN 8146030009 has a slightly worn surface but appears to show short lengths of red lines (Munsell No. 10R5/6) on a dark red background (Munsell No. 10R3/3) (D75). Two other examples are from CP2 contexts: in pit 8247, a body sherd, PRN 8082440003, is slightly worn but shows an area of red (Munsell No. 10R4/6) apparently bordering two parallel lines now appearing as light brown slip (Munsell No. 5YR7/4) separated by red brown zones (Munsell No. 5YR5/3) (D75). This interpretation is extremely tentative as the sherd is worn, the pattern subtle and only visible under oblique light. These lines have possible corners, indicating that one might be nested within the other. On the second example, from pit 3724, the moderately worn but rather more distinct exterior of sherd PRN 8037280002, has a broad cherry red area bordering a predominantly dark grey panel (Munsell No. N4) with cream coloured lines (Munsell No. 7.5YR7/6) separating the two (D75). The diagonal line in the photograph has been scored twice, with the two attempts diverging as they join the horizontal. In practice, the dark grey panel has traces of red within it. It is quite possible that the colour distinction between these panels is due to the use of different slips on the surface, with the colours revealed after firing. This example shows the slip within a groove spilling over the edge onto the neighbouring surface.

This use of barbotine has been found on other EIA ceramics in Kent (e.g. Macpherson-Grant 1980, 138, fig. 4, 8; Macpherson-Grant 1992, 289–290; Couldrey 2007, 128, 154, fig. 89, 368; Middleton and Tite 2007) and it is paralleled with late sixth and fifth century

assemblages in northern France (e.g. Bardel 2012, 315, fig. 190; Bardel *et al* 2013, 180, fig. 10a, decoration type Ab2; Buchez 2011a, 144; Hurtrelle *et al* 1990, 71, ph. 4, 12; Delnef 2003, 38) and Belgium (e.g. Van Doorselaer *et al* 1987, 79; Palmer 2010, 49).

Burnishing of a wide area is included in the discussion of surface treatment. One carinated dish (**F61**) however, PRN 8085920001 (Pit 8592, CP1), had a highly burnished surface with panels of burnished grooves radiating out from its omphalos base (D56). While the impact is subtle, this was clearly a deliberate decorative design. On the continent similar forms are often decorated with the same design, but with combed grooves rather than burnishing during the early La Tène (e.g. Debord 1981, 111, fig. 6; Van Doorselaer *et al* 1987, 88, fig. 2.5).

Narrow horizontal linear grooves provided the main building block of many designs. In East Kent, examples with a variety of spacing are known from the tenth to the fourth centuries BC (e.g. Leivers 2014, fig. 5.2; Couldrey 2007, table 8, style D; Couldrey 2014, fig. 80; Seager Thomas and Hamilton 2001, fig. 3, P8, P9, P14; fig. 5, P30; fig. 8,P59). They are also found widely distributed from central Southern England into East Anglia (e.g. Cunliffe 2005, figs. A2, A3, A5, A9, A13). When present on small sherds from an uncertain position they are hard to date. In some cases their association with particular forms enables more specific parallels to be identified.

A single groove below a fine inturned rim (D6), PRN 8085740001, from pit 8572 (CP1) is matched by examples from the Kemmelberg (Van Doorselaer *et al* 1987, fig. 60, 307 and 308). While slightly everted or flaring rims with single and multiple grooves as in PRN 8086180230 from pit 8722 (CP2), and PRN 8037260002 from pit 3724, (CP2), are more common and can be matched in assemblages spanning Hallstatt D3 (Bardel *et al* 2013, fig. 26, VDA39RL, 136 surf tr. S-16) and early La Tène (e.g. Van Doorselaer *et al* 1987, fig. 44, 211–212, fig. 50, 262).

A more distinctive appearance is created by the two crisp grooves immediately beneath an externally expanded rim (D7), PRN 8035560009, from pit 3557 (CP2) which are found on a jar from Church Whitfield Crossroads dated to the fifth or early fourth centuries BC (Couldrey 2014, fig. 80.9) and on the continent from late LT1 to LTII (e.g. Hurtrelle *et al* 1990, 66, fig. 12, 21; Livingstone Smith *et al* 1995, 20, fig. 6).

A single chevron (D73) was found close to the edge of a sherd (PRN 8145600023, (pit 14561, CP1). Whether it was originally an isolated example or part of a larger design, is not clear. Chevrons, whether single, in pairs, or as part of larger groups, are known from the tenth century from the Northern Enclosure group at Cliffs End (Leivers 2014, 154, table 5.4) and from EIA assemblages in Essex (e.g. Brown 1998, fig. 96, 43–44), East Kent (e.g. Couldrey 2014, fig. 79, 2) and on the continent (e.g. Blancquaert and Bostyn 1998, fig. 12, 52-11 and fig. 13, 59-1; Blancquaert 2003, fig. 5; Buchez 2011a, 143, fig. 8; Hurtrelle *et al* 1990, 163, fig. 6, 45; Van Doorselaer *et al* 1987, fig. 16.87 and 90; Bardel *et al* 2013, fig.

28, 3250-1). A nested pair of chevrons (D73) (PRN 8086120003, pit 8616) from CP4 was clearly residual.

A more complex design, involving widely spaced horizontal and diagonal grooves (D43) appears below a carinated shoulder, PRN 8126440003, (Pit 12646, CP1) and is similar to vessels from the fifth century BC (Buchez 2011a, 190, fig. 38).

Panels of grooved diagonal crosses above horizontal grooves on the shoulder (D24) were found on vessels from CP2, PRN 8037210001, (Pit 3724), and CP3 contexts, PRN 8086430024 (pit 8645). One, also from a CP3 context (PRN 8088920001, Pit 8921) has slight traces of a red coating which runs above the burnished surfaces and into the grooves. This design is well known from EIA assemblages in East Kent (e.g. Macpherson-Grant 1980, fig. 4, 8; Macpherson-Grant 1992, 290, fig. 6, 7; Couldrey 2007, fig. 89, 368), and early La Tène contexts in northern France (e.g. Buchez 2011a, 173, fig. 27; Hurtrelle *et al* 1990, 50, fig. 2.5) and Belgium (e.g. Van Doorselaer *et al* 1987, fig. 45, 224–226; Dumont 2005, fig. 4, 16).

Panels of very distinct vertical grooves just above a base (D54) (PRN 8037320002, Ring Ditch 3, CP2), are broadly similar to an example from Saint-Laurent-Blangy, "Les Fontaines" placed in *c.* 450–400 BC (Jacques and Rossignol 1996, 30, fig. 10, 4).

Fine combing, with grooves *c.* 0.5–2mm wide, appears throughout CPs 1–4 and was used for different styles, some of which are chronologically distinct. It covered whole sherds and appeared in panels. The treatment of the edges of these panels can be distinctive.

Fine vertical combing covering whole sherds (D44) was found running vertically from beneath shoulders (PRN 8086430019, Pit 8465) to above a smooth zone around the base (PRN 8086210004, Pit 8722, CP1; 8122400001, Trackway 12, CP1). Diagonal combing (D45) is less frequent (PRN 8084000006, Pit 8445, CP2).

Vertical panels were frequently separated by a smooth surface: (D46), PRNs 8087450004 and 8087450007 (Pit 8746 — CP1), PRN 86200019 (pit 8722 — CP2), and PRN 8087690002 (pit 8774 — CP4). These are common in Ha D and LT1 contexts (e.g. Destexhe 1987, pl. 113, 379; Hurtrelle *et al* 1990, 23, fig. 3, 8-9; 39, 11 and 15). On one example the combed area had been truncated by a diagonal wipe across the surface (D47) (PRN 8037220005, Pit 3722, CP3), a technique recognized from late Hallstatt and early La Tène contexts as at Fooz and Lamine in Hesbaye (Destexhe 1987, pl. 58, 3, 10; pl. 59, 3, 7). While panels separated by a single deeper groove (D48), PRN 8085620001 (Pit 8563 — CP2) are matched on different forms by EIA examples from Mucking (Brudenel 2016, fig. 4.11.13, 1 and 4.12.15) and at Saint-Laurent-Blangy, dated to 350–300 BC (Debiak *et al* 1998, 37–38, fig. 10.5).

Some overall designs were clear: A jar with fine horizontal combing beneath a high carinated shoulder (F59, D51), PRN 8088000003 (Pit 8801, CP1) is closely paralleled by an example from Kumtich-Medekensveld (Tienen, Vlaams-Brabant, Belgium) dated to *c.* 450–400 BC (Smeets and Vansweevelt 2009, 174, fig. 5, 12).

The combination of a horizontal band of grooves above spaced vertical bands, which sometimes have a corresponding horizontal band beneath (D33), is a pattern which appears from as early as Ha A2 (Desittere 1968, fig. I, 6), becoming more common from Ha D and throughout La Tène (Bardel 2009, 98; Buchez 2011a, 143, fig. 8; 190, fig. 38), and continuing after the Roman conquest. Several examples are known from Kent (e.g. Macpherson-Grant 1985, 218, fig. 7.36; Macpherson-Grant 1992, 299, fig. 12, 84). One from Little Stock Farm (Bryan 2006, pot no.1) was associated with a radiocarbon date of 380–70 cal BC (NZA-19987; Allen and Richie 2006). At Thanet Earth the design appears both as combed groups (D33) and as more deliberate deep narrow tooled grooves (D76). It is found on a plain globular jar, form **F3** (PRN 8080620007, pit 8063, CP1), and near the base of a jar (PRN 8086180001, pit 8722, CP2).

One body sherd had short lengths of combing appearing randomly over the surface (D49), (PRN 8085870001, posthole 8588, CP2), a style found in the Netherlands at Oss-Ussen *c.* 575–500 BC but continuing until *c.* 375 BC (Van den Broeke 2012, 404, pl. 10, 3; 411, pl. 17, 25-39) and in Belgium where it is often associated with early La Tène assemblages (e.g. Cahen-Delhaye 1974, fig. 12, 137; De Swaef and Bourgeois 1986, fig. 17). An earlier start may be supported by a single radiocarbon date of 810–590 cal BC (KIA-31720) from charcoal in the bottom of a pit containing similarly decorated sherds at Erps-Kwerps/Villershof in Vlaams-Brabant, Belgium; though the sample may have derived from old wood (De Mulder and Hoorne 2008). In other examples lengths of combing overlapped and crossed each other (D84) (PRN 8086270010, pit 8722, CP2 and PRN 8082830003, pit 8286, CP3), a trait similarly found in early La Tène assemblages (e.g. De Swaef and Bourgeois 1986, fig. 16, 11; fig. 17, 1).

Combing in the form of an arc just below the shoulder (D53), (PRN 8121580001, the southern ditch of Enclosure 06 (G8078), CP2) which is well known on globular jars of the LIA (e.g. Thompson 1982, 219), is also found in EIA Kent (Seager Thomas and Hamilton 2001, fig. 6, P47) and in France and Belgium (e.g. Cahen-Delhaye 1974, fig. 12, 138; Debord 1981, 111, fig. 6.78E04-001; Hurtrelle *et al* 1990, 18, fig. 3,2; 119, photo 7, 27.26; Durvin and Brunaux 1983, 24, fig. 8, 20).

Random impressions were frequently found, though mostly on undiagnostic body sherds. The forms of vessels with which it was associated can only be inferred from evidence elsewhere. In particular, on the continent many examples exist, though not exclusively, of jars with high carinated shoulders, similar to our form **F67** with rims **R16** and **R17**, which have random stabbed impressions, finger-tip impressions and irregular or short linear grooves beneath the shoulder.

Thus, beneath a broad groove on the shoulder ran columns of paired finger-tip impressions (D31) (PRNs 8082660003 and 8082670008, from pit 8264) from CP1, similar to examples on shouldered jars from early La Tène groups at Herleville "La Fosse" (Buchez 2011a, 190, fig. 38).

Finger-tip impressions with raised clay alongside (D35) were found on one sherd from CP1, PRN 8087430002 (Pit 8733); but were more popular between CP2–3 where there were three from CP2, PRNs 8086270007, 8086300003 and 8087120005 (pit 8722); and four from CP3, PRNs 8086350015, 8086380012 and 8086410005 (pit 8642) and 8086430001 (pit 8645). Comparable examples are known from EIA groups in southern England as at Shoebury (Brown 1995, fig. 66.120) and White Horse Stone (Morris 2006a, pot nos. 126, 152) and on the continent in early La Tène (Blancquaert 2003, fig. 6; Bulard *et al* 1983, fig. 10, 6), at Houplin-Ancoisne, dated to 450–400 BC (Hurtrelle *et al* 1990, 89, fig. 3, 14) and Hamblain-les-Pres (Hurtrelle *et al* 1990, 159, photos 4 and 7), dated to 400–350 BC.

Six examples of irregular sub-circular impressions (D38) are from CP2 contexts: PRN 8035880001 and 8035900006 (pit 3596); PRN 8035860006, 8035860079 and 8035870001 (recut 3668) and PRN 8089390002 (pit 8833) similar impressions were found on a jar with high carinated shoulder, attributed to 400–350 BC at Avion La République, fosse 04 (Hurtrelle *et al* 1990, 100, fig. 6.3). Three sherds were found with impressions possibly caused by a small finger and thumb pinching the clay (D34). These fell within CP2 (PRN 8035900010, Pit 3596) and CP3 (PRNs 8086390006 and 8086400008, Pit 8642) and can be paralleled at North Shoebury where they occurred frequently with EIA pottery (Brown 1995, 85, fig. 66, 114, 118 and 120) and in France, as at Avion La République, fosse 28, dated to 350–250 BC (Hurtrelle *et al* 1990, 123, photo 8.28.8). All of the sherds decorated in styles D34 and D38 were shell tempered.

Light impressions using the very tip or pad of a finger with no raised clay (D37) were found on a round-shouldered vessel (PRN 812080005) from pit 8722 (CP2) as at Shoebury, dated to between 6th and 4th century (Brown 1995, 85–87, fig. 66.116) and Avion La République, fosse 27, where the same form and decoration was dated to 400–350 BC (Hurtrelle *et al* 1990, 119, photo 7, 27-25).

Horizontal rows of light finger-tip impressions below the shoulder (D36), PRN 8080620016 (pit 8063, CP1) were attributed to 480 – 460 BC at Huppy "Trinquies" (Buchez 2011a, 174, fig. 28).

An irregular row of widely spaced triangular impressions (D19) above the shoulder of a jar (PRN 8086320002, Pit 8722) falls within CP2. Similar impressions, but more closely grouped together, were found on a sherd from ditch B70 at Highstead (Couldrey 2007, fig. 64, 112). The style has been recorded from the Bronze Age (e.g. Blanchet and Talon

1987, fig. 12, 2 and 6) but is also found in the Iron Age (e.g. Destexhe 1987, pl. 117, 454–5).

Numerous small impressed dots (D41) from CP1: PRN 8145600002 (pit 14561), were found at Les Prés on a jar, broadly similar to our form **F67** (Leman-Delerive 1989, fig. 110, 31). While in the same vein, irregular diagonal stabbed impressions (D40) were found beneath a carinated shoulder: PRN 8037320001 (Ring Ditch 3) from CP2, comparable to more upright example from Avion La République, fosse 33 (Hurtrelle *et al* 1990, 129, fig. 24, 1) placed between 350–250 BC.

Decoration over the whole body was identified on just three vessels on the site but may have been more common than the evidence suggests since it is only recognizable when a sufficient extent of the profile is preserved. Multiple finger-tip impressions (D57) were found on a wide flaring bowl of form **F106**, PRN 8086260002 (pit 8722, CP2). Examples from Houplin-Ancoisne have been dated from *c.* 500–300 BC (Hurtrelle *et al* 1990, 90, fig. 4, 34; Bourgeois *et al* 2003, 70, fig. 21.5).

Sherds from a beaker, form **F79**, PRN 8086430025 (pit 8645 — CP3), reveal horizontal grooved decoration from just below the rim to below the shoulder (D58), though from other parallels they may well have covered the whole vessel. Across the Channel, this style is found in the fifth–fourth centuries BC (Buchez *et al* 2004, fig. 27, 143/6; Cahen-Delhaye 1974, fig. 3,12; van Doorselaer *et al* 1987, 138, fig. 52, 270), and is closely paralleled by a beaker from Milly-sur-Therain, Oise (Buchez *et al* 2004, fig. 25, 139/1), dated to *c.* 330–250 BC.

The technique of using deeply incised grooves (D76) appear on jars, form **F39**, from CP3: PRNs 8086380001 and 8086350008 from pit 8642. Both examples depict horizontal bands above groups of vertical bands. Deep cut grooves from an unknown design are found on three other sherds: PRN 8035860027, Pit 3668, CP2; PRN 8085610004, Pit 8563, CP2 and PRN 8087750006, Ring Ditch 2, CP4. This technique is closely matched by sherds from Northern France at Avion La République, fosse 22 dated *c.* 300–250 BC (Hurtrelle *et al* 1990, 111, photo 5; 214-5; 142, photo 1) and Period 3B at Highstead (Couldrey 2007, 129).

Another example of unusually deep incisions, depicting a standing triangle above a horizontal line on a shoulder (D18) and then coated with a red slip (which did not reach the bottom of the groove), PRN 8035350002, was recovered from pit 3541, in CP3. The use of triangles in a design was common in EIA East Kent (e.g. Cunliffe 2005, 625, fig. A14, 8; Couldrey 2014, 142, fig. 79, 2) and on the Continent in the fifth and fourth centuries BC (e.g. Buchez 2011a, 143, fig. 8). This example may be residual.

In complete contrast to the more rigid linear motifs normally associated with the EIA, a short length of narrow curvilinear groove (D74) was found (PRN 8145340004, posthole

14535, part of group 8020, CP1). Other examples are rare and tend to be fragmentary revealing nothing of the overall design. One was recovered from Period 3B contexts at Highstead (Couldrey 2007, 122, table 8, style G, but not illustrated).

Rare sherds with broad horizontal grooves (up to 3mm wide), were found in CPs 1 and 2. From CP1, a globular jar (PRN 8086830001, Pit 8733) has a broad groove just below the rim with narrow horizontal grooves around the girth (D14) and a body sherd (PRN 8085740003, Pit 8572) with a broad horizontal groove above a diagonal line of uncertain width (D65). From CP2 was a sherd with three more or less parallel grooves (PRN 8144940003, pit 14496). On the continent examples of broad grooves are uncommon, but do occasionally occur in Ha D and La Tène contexts (Destexhe 1987, pl. 116, 447; pl. 123, 548; Bruyninckx 2012, p54, fig. 49, 3).

The association of broad horizontal and diagonal grooves (D79) is found on two sherds from undated contexts (PRNs 8081580006, Pit 8160 and 8086040004, Pit 8605). In France close parallels are found on an ovoid pot in burial 20 at Les Rouliers, originally placed in the third century BC (Rozoy 1986, Vol. 2 pl. 82, RO 20.3), but later revised to Aisne-Marne IIIc, *c.* 330–300 BC (Demoule 1999).

Decoration in the Middle Iron Age (CPs 3–4)

CP3 sees the continued use of narrow horizontal grooves, impressed decoration on the rim and shoulder and, particularly, below the shoulder, though the picture could be confused by the presence of residual material. Impressed designs continue: a single crescentic impression (D22) above a shoulder appears from a CP3 context (PRN 8144820007, Pit 14488). The overall design is unclear, but it is comparable to the broad impressions found on bowls from the Trou de Han in Han-sur-Lesse, Namur, Belgium (Warmenbol and Leclercq 2007, fig. 1, 2) and other sites dated to La Tène moyenne (Marien 1970, fig. 15, 11).

Irregular vertical impressions and short grooves (D42) from CP3: PRNs 8086380029 and 8086420013 (pit 8642) were found on a jar beneath a horizontal groove on a high rounded shoulder at Avion La République dated to 350–250 BC (Hurtrelle *et al* 1990, 129, fig. 24, 1; photo 10). More regular rows of similar short grooves were found on a globular jar from pit 12527=12700 on the A2 Pepperhill to Cobham road-scheme, associated with a radiocarbon date of 410–230 cal BC (NZA 32308; Allen *et al* 2012, table 3.27; Brown and Couldrey 2012, fig. 3.47, 1200197).

Widely spaced diagonal grooves on the neck (D8) (PRN 8086430026, pit 8645, CP3) and above the shoulder (D17) (PRN 8034850001) are found on a bowl from Sains-en-Gohelle, dated 450–400 BC (Hurtrelle *et al* 1990, 45, fig. 2, 3).

The surviving portions of irregular grooved lines (D69) on two sherds (PRNs 8086430006, Pit 8645 and 8144780012 from Pit 14488, both CP3) are too small to reveal the overall appearance. They may be merely the result of a poor application of horizontal grooves or may form part of a deliberate oscillating wave. The latter is known running below the shoulder of a bowl from the third century BC, La Tène Moyenne at Coquelles "La Route" (Blancquaert and Bostyn 1998, 122; fig. 16, 21-16) and La "Zac de Ther", Allonne, Oise (Paris 1998, fig. 20, 6), the latter employing broad grooves.

The combination of a slightly curvilinear groove appearing alongside linear horizontal and diagonal grooves (D21) is found above a shoulder of a jar (PRN 8084210001, Pit 8424, CP4). This can be broadly matched by the design above the shoulder of a jar from Onnaing (Mathiot 2005, fig. 6, 9011-1) and dated to La Tène moyenne.

A distinctive development was the appearance of a broad curvilinear grooved design (D59) over the whole body of an everted rim jar, form **F91**, PRN 8142130001 (pit 14219, CP3), bordered by horizontal grooves above and below. This curvilinear style of decoration is commonly associated with MIA round-shouldered jars in west Kent (e.g. Couldrey 1984, 58, fig. 16, 41; Piercy Fox 1969, fig. 5, 11) and Essex, and forms the basis of Brown's Mucking-Oldbury style (Brown 1991). The Thanet Earth example is closely matched in the third century BC (La Tène C1) at Pont-Remy (Somme) (Prilaux 2000, 238, fig. 6).

In contrast to the previous examples of combing which continue, this period sees the introduction of rough irregular grooves which are deflected by lumps of temper just beneath the surface. Two types have been defined: the first consists of narrow grooves up to 1.5mm wide (D85) which were found on a single shell tempered sherd (PRN 8082840018, pit 8286), dated to CP3; the second has grooves 2–4mm wide (D86), and was found on two grog tempered sherds from Ring Ditch 2 (PRNs 8087750001 and 8087780001) from CP4. The latter are quite distinctive and correspond well with the type that was to become common during the LIA (e.g. Thompson 1982, 242).

Chronology of the Linear Ditches

The ceramic phases proposed above are based on identifiable pottery forms, and clear stratigraphical relationships. Establishing the chronology of the linear ditches is less clear. Most had been severely eroded and the surviving evidence often comprised shallow traces of isolated short lengths. These produced relatively little pottery and interpretation is largely dependent on relating separate lengths according to their horizontal alignment and a few stratigraphical relationships.

An exception to this is ditch G8080, which ran on a north-south axis to the east of the main settlement; it produced larger sherds than the other ditches, and included forms which enable its fill to be placed in CP1 (Table 37a). It clearly pre-dated the east-west

enclosure ditch G8044. Beneath it however, were two parallel ditches (G8012 and G8280), running east-west, thought to have flanked a hollow way. This earlier phase may also belong to the EIA: G8012 produced two severely worn body sherds weighing 56g and 9g, from cut 12141, fill 12140. Their fabrics, FI3 and FVE13, ware not closely dated but are similar to those used for other EIA pottery. Ditch G8280 contained no pottery.

Trackways 11 and 13 and other ditches in the west of the site

Trackway 11 (G8081, G8300 and G8239) and Trackway 13 (G8082 and G8299) ran parallel to each other in an approximate north-south alignment. Apart from G8299, which consisted of a line of four widely spaced shallow lengths running parallel to G8082, substantial lengths of these ditches survived, though rarely to a depth greater than 0.3 m. Pottery typology has been used to indicate a CP1 date (Table 37a) for two of the ditches forming Trackway 11 (G8239 produced undecorated body sherds). Trackway 13 produced no classified forms. However, stratigraphic relationships with dated pits suggest that Trackways 11 and 13 may not have been contemporary. Ditch 8081, Trackway 11, is cut by pit 14259, which is itself placed in CP1, but this may be of little significance since the pit is dated only by the presence of a sherd from an F70 bowl (PRN 8142580001), a form which also appears in the ditch fill. The example in the pit is of the same fabric as that in the ditch, and while the sherds do not join, they may be from the same bowl (PRN 8142990001) having derived from the collapse of the ditch fill. None of the pottery in these sections can be placed after CP1.

Ditch G8082, from Trackway 13, produced no independent dating evidence, just 16 sherds with an average weight of 2g. However, it cuts pit 14307, tentatively placed in CP2 (Table 38b), and is itself cut by pit 3767 attributed to CP3. Thus it is assigned to CP2. Both trackways may well belong to the EIA (CPs 1–2), but need not be strictly contemporary, with Trackway 11 preceding Trackway 13.

Trackway 12, which lay south of Trackway 13, consists of ditches G8306 and G8304 and, running parallel to the west, G8076. G8304 produced one sherd with combed decoration which could belong to almost any period. G8076 produced eight undiagnostic body sherds, seven flint tempered and one with flint and grog temper, with an average weight of 14g. Cutting into the fill of G8306 was a short length of ditch, G8303. After following the line of G8306 for a short distance, it turns east at right angles to G8306. The pottery from this re-aligned section (cut 12166) falls within CP1 (Table 37a). The evidence provided by the pottery for this section however, is not strong. The three forms identified (two scraps of rim and a base with abundant flints protruding on its underside) could be dated earlier in the first millennium. Either way, on this evidence, G8306 and hence the other ditches belonging to Trackway 12, fall in CP1 or earlier.

Enclosure 06

Along the south and east of the settlement ran ditches which form two sides of sub-rectangular Enclosure 06. Pottery, comprising 124 sherds with a MSW of 8.25g, was recovered from nine cuts across these ditches. It included a small fragment likely to be from a B3 base, and on this slender evidence has been attributed to CP2. One other sherd, PRN 8121580001, weighing 18g and with moderate – severe wear on both surfaces, decorated with curvilinear combing (D31), was also attributable to CP2. This evidence is supported by the stratigraphy. The western length of the southern ditch (G8075) was cut by pit 8799 which has been placed in CP3 (Table 37c), indicating that it was out of use at some time before or during the MIA. On the eastern side, cut 8829, the latest in a series of recuts at that point, contained a Potin Coin of the Kentish Primary Series (see David Holman's report above/below), suggesting that section at least remained open until CP4. The localized recuts and re-alignments indicate that sections of the eastern side may well have remained partly open after the south-western stretch had fallen out of use. The northern end of the eastern side was truncated by ditch G8044, forming a corner of Enclosure 05. Thus the evidence suggests that these ditches could have been dug as early as CP2. The western length of the southern side was out of use during CP3 and the eastern side, with several recuts, remained at least partially open until CP4.

Enclosure 05

Ditch G8044 in the east, which cut Enclosure 06 ditch (G8296) (CP4), also cut pit 8921 (CP3) and appears to line up with ditch G8048 in the west, which cut ditch G8082 (CP2). In addition to EIA and MIA sherds, its fill contained some LIA and Roman material. Several recuts were apparent within it but traces of an early phase, cut 3996, produced no pottery or other datable evidence. The digging of this ditch may have occurred at the end of CP4, during the LIA, when all traces of the earlier settlement had been levelled. The practice of interring bodies in the fill of the southern ditch of Enclosure 06 was continued in this later east-west boundary of Enclosure 05, suggesting continuity of tradition and that there may have been no extended period of abandonment.

Chronology of the Ring Ditches

Three ring ditches were excavated, but their chronology remains uncertain. Apart from their overall form, they share characteristics in their fills. They produced small, worn sherds with an average weight of 9.5g and an average wear value of 3.76 showing that they were smaller and more worn than the average from the site (Tables 42 and 43). In this respect their fills appear to reflect similar patterns of deposition. Ring Ditch 1, the smallest, produced sixteen body sherds with an average weight of 8.7g. None of these was sufficiently distinctive to provide a date beyond a broad EIA-MIA designation. Ring Ditch 3, produced 254 sherds with an average weight of 9.9g, including four forms attributable to CP2 (Table 37b), and was cut by pit 3735 which was also placed in CP2.

Ring Ditch 2 was twice the size of Ring Ditch 1 and has been placed in CP4 because of the presence of two grog tempered sherds decorated with rough combing (D86), distinctive of the LIA. These sherds were recovered from two separate cuts through the fill (8776 and 8777). Superficially the pottery evidence indicates that Ring Ditch 3 was filled in CP2, Ring Ditch 2 in CP4, and Ring Ditch 1 remains undated, its fabrics being acceptable throughout CPs 1–4. Other considerations are required to refine this interpretation.

Chronology of the fabrics

The mixed nature of the assemblage prevents an informative examination of the distribution of the fabrics employed during CPs 1–4. The association of fabrics with dateable forms is more instructive, though still hampered by longevity of use and residuality. Table 36 shows the fabrics used by forms ordered by ceramic phase. In all phases the three most popular fabric groups (flint and organic (FVE), flint (F) and flint, organic and iron oxide (FIVE)) consistently maintained their relative positions: Flint and Organic (FVE) falling between 36–52 per cent; Flint alone (F) between 23–29 per cent and Flint, Organic and Iron Oxide (FIVE) between 9–13 per cent. Overall these three most common groups accounted for 80 per cent of the fabrics used and flint tempered groups together accounted for 98 per cent.

Nor is the chronology of the rarer fabrics more certain. One example of the tripartite bowl, **F74**, was made in a grog tempered fabric in CP1. There were seven other examples of this form from CPs 1–2, all made with the three most common flint tempered fabric groups. This perhaps suggests that the grog tempered version might have been an import, and certainly this form was well known in France where grog tempering was also common. Again in CP1, a fabric containing grog with organic inclusions was used for an **F81** bowl, also a possible French import. As in the case of the **F74** tripartite bowl, the only other **F81** bowl, also allocated to CP1, was flint tempered. Twenty-one instances of purely grog tempered sherds were found on the site, distributed throughout all four phases. Grog tempering is well known from the LIA and it is not possible to distinguish between early and late sherds on the basis of fabric alone with any degree of confidence. The use of grog to supplement other fabrics, with flint, iron oxide or organic inclusions, was well established throughout all four phases, so the presence of grog tempered fabrics alone cannot be used as a reliable chronological indicator.

Shell tempering was used in CP1 for forms **F63** and **R6**, in CP2 for a rim **R16** and a shoulder **S1**; and in CP3 for the beaker **F79**. Three examples of **F63** jars were found, one was worn but the other two including the shell tempered example, had burnished surfaces. Two of the three **R6** rims were decorated with light horizontal grooves. Of these two, one was tempered with shell and the other with shell and grog. The third was in a flint tempered fabric and any decoration had worn away. In CP2 there were twenty **R16** rims. One was shell tempered and the others were all in a variety of flint tempered

fabrics. The shell tempered **S1** decorated shoulder from CP2 was unique. The two other examples, similarly decorated, from CP3 contexts, were flint tempered. The **F79** beaker surviving as two worn fragments, was worn when buried in a CP3 pit. It is a finer version of the shell tempered vessels with the **R6** rims. In addition to these forms, shell tempering was used for body sherds from jars with impressed decoration beneath the shoulder, a jar form which may well have been associated with the **R16** rim. Thus this fabric group was not restricted to a single ceramic phase but used for a variety of forms during the EIA and even into the MIA, and cannot be restricted to a single ceramic phase.

Comments on the proposed chronology

The chronology outlined above has been based on the typology of forms and comparison with pottery from other sites. It has incorporated four radiocarbon dates and the few stratigraphic sequences available. Such an approach was inevitable because of the lack of sufficient independent dates. But the results must be treated with caution, recognizing the problems inherent in this method. The typology employed is a subjective grouping of forms. It is also constrained by the quantity (number of occurrences) and extent (whole vessels or fragments) of the surviving forms. Some groups appear indisputable and others vary depending on which traits are preferred. Individuals perceive patterns differently, introducing their own bias to their selection, and others would almost certainly have grouped some of the pots in other ways. A change to this selection would probably result in a change to the chronological ordering of the features. Once the typology was established however, the chronological ordering was largely based on the assumption that similar forms were likely to be contemporary and that the dates of many of the forms were well established.

The phasing was developed by manual manipulation of the sequence to satisfy established chronologies as far as possible. Automated seriation was not used because of the need to maintain stratigraphical relationships and the presence of dateable items that were found in the features alongside to the classified forms. These most noticeably affected CP4 features, particularly Ring Ditch 2 which was placed in that late phase (Table 37d) because it contained grog-tempered rough combed sherds (which were not listed with the forms), and Pit 8774 which was stratigraphically later than Ring Ditch 2, but contained no CP4 forms.

Inevitably the distribution of forms across features was erratic, and the results have been affected by the popularity of a large numbers of relatively few forms: the coarse **F100** proto-saucepan pots and **F101**, their smoother versions, together with **R16** rims and the related **F67** jars. These dominant forms tended to provide the basis of CPs 1 and 2, with other forms falling in alongside them. This gave a largely satisfactory result with the early La Tène carinated bowl, **F80**, being present in CP1 together with early **F100** proto-saucepan pots, which had been dated to *c.* 470–310 BC (Brown 2000, 90). The **F67** jars,

R16 rims and smoother **F101** proto-saucepan pots fell within CP2. **F67** jars were known to be common in the fourth to early third centuries (Buchez 2011a, fig. 8), a date supported by a radiocarbon date of 394–209 cal BC (at 95 per cent probability; Table 6, UBA-22218) taken from residue inside an **R16** rim from pit 8445 and the **F101** proto-saucepan pots were dated to *c.* 360–270 BC (Brown 2000, 90). The problem is that the method, particularly with large numbers of these forms, can produce clumping. Forms that were found accompanying **F100** proto-saucepan pots, for example, may not be contemporary each other. Thus the sequence presented here does not represent an entirely accurate chronological ordering, but it does reflect the associations of the buried forms. Displaying the associations in Table 37 is intended to present the data for others to evaluate.

In addition to the defects of the method used, the data presents its own problems. Some features contained sherds which may well have been hundreds of years old at the time of burial. Eighteen features tentatively placed in CP1 contained only one identifiable form. The occurrence of pottery of CP1 date as a residual element in features attributed to CP4 on the basis of just one or two sherds (Table 37d), provides a salutary warning that some of the features attributed to CP1 themselves, could be later and might even, as an extreme example, belong to CP4.

The proposed scheme provides a framework for ordering his material. But future excavations and research, employing objective independent dating methods will amend and improve it.

Manufacture

While there was no direct evidence for *in situ* forming and firing of pottery and no obvious wasters, indirect evidence for pottery manufacture was strong. Raw material was available in abundance both on the site and within a few kilometers; layers of burnt clay and dumps of burnt flints were found within the fills of some features, and there was evidence for quarrying in the chalk. While each of these individually may have had other causes, taken together, they do conform to what might be expected if local pottery manufacture did occur, particularly as all traces of the original land surface had been removed. Flint nodules were available in the top of the chalk and within it, but would need to have been quarried, collected together and burnt to enable them to be broken down small enough to be used as temper. With the majority of flints in the pottery being smaller than 2mm, and often less than 1mm, this would have been a considerable task; so caches of flint may be expected to have formed an important element of the potters' landscape.

The small size of the flint temper demonstrates that great control appears to have been exercised in its preparation. The use of flint shows a continuity of tradition that extends back to the Neolithic (see Barbara McNee's report); and the quality control exercised in

maintaining the small size of the inclusions demonstrates the strength of that tradition. Grog was probably prepared deliberately rather than by just breaking up old pots. While one sherd was found to contain a single fragment of a pot rim, grog inclusions containing flint were extremely scarce. The overwhelming majority consisted of just fired clay.

Manufacture — forming

No systematic attempt was made to record details of manufacture, but some relevant points were noted when cataloguing the material. Inevitably, the more visible indications, through surface treatment and fracture patterns, were apparent from sherds of coarser vessels. The majority of vessels were constructed using techniques which had been familiar to prehistoric potters over millennia (Gibson and Woods 1997, 26–59). However, specific styles of surface treatment and decoration, such as rustication and the barbotine technique employed in the application of coloured designs, demonstrate that at certain stages the production of some of the pottery of East Kent differs from that in other parts of Britain. Even some thick-walled sherds from commonplace jars, **F67**, have the appearance of being of particularly fine quality — a subjective view which needs to be substantiated with measureable data. A small minority of sherds for example, are particularly hard and difficult to break, even with a pincer (e.g. PRN 8086270004), and the impression that there is an apparent tendency for pottery from sites in Thanet to be harder than elsewhere has been confirmed by others (Nigel Macpherson-Grant, *pers. com.*). Whether this is due to the clay being used, the firing conditions, or even burial conditions, remains uncertain.

The manufacturing process therefore offers plenty of scope for further study. The following comments are largely anecdotal, but are intended to highlight some particular construction techniques.

Very rare examples may have been of pinched construction, in which the whole pot was made from a single lump of clay. Three miniature pots were probably made this way, though the evidence is based on the lack of visible coils: PRN 8123650005, Pit 12366, and 8082280001, Pit 8229, both from CP1 had smoothed surfaces hiding any positive evidence and PRN 8084620002, Pit 8456, from CP3 with a smoothed exterior and severely worn interior. Just one larger vessel was possibly of similar construction: a flaring bowl, **F107 (**PRN 8086400002, Pit 8642, CP3), represented by just one sherd 6.5 x 6 cm in size, had numerous indentations over both surfaces which had been smoothed, suggesting it might have been made as a pinched pot, though they may just represent squeezing of rings. It shares these characteristics with a similar form from Highstead (Couldrey 2007, 150, fig. 84, 302).

Manufacture — Bases and basal walls

Flat bases were usually made from a single slab. Nineteen examples, classified as a particular form, **B10**, were placed on a bed of calcined flints. This trait is well known from a wide area. Why it was used for some vessels, both coarse and fine, large and small, but not the majority, over at least 500 years is uncertain. Just one base (PRN 8086350002, pit 8642) showed signs of having been placed on grass. In most cases subsequent smoothing or burnishing of the surfaces has obscured the original condition of the sherds.

With one possible exception, the wall was built up from the base using rings or coils of clay. These were pressed down onto the top of the edge of the slab (PRN 8035550003, pit 3584, CP1), sometimes causing a corresponding depression in the slab (PRN 8035560001, pit 3557, CP2). Rarely, the wall was built up by attaching a ring around the outer edge of the slab (PRN 8035480006, pit 3550, CP2). Another had evidently been placed inside the outer edge of the slab and the projecting edge of the base was smoothed up over the bottom of the wall (PRN 8083240008, Pit 8329, CP2). Another had evidently been placed inside the outer edge of the slab and the projecting edge of the base was smoothed up over the bottom of the wall (PRN 8083240008, Pit 8329, CP2). Occasionally it was fashioned into a smooth or burnished heel (PRN 8086280001, Pit 8722, CP2).

Some jars had a ring added around the edge of the base and protruding over the previously completed wall (PRN 8035350007, pit 3541, CP3) or extended to produce a heel (PRN 8144170001, pit 14419, CP2). The exterior would then be smoothed or burnished, as much to secure the join as to provide a decorative effect (PRN 8086180133, pit 8722, CP2). On one example (PRN 8086270002, Pit 8722, CP2) the outer edge of the base was chamfered as if it had been cut with a blade. Frequently, the outer edge was well finished and smooth, sometimes burnished, with the line of the wall forming a sharp angle at the bottom of the base (PRN 8084020004, Pit 8445, CP2). In rare examples (PRN 8037200002, pit 3722, CP3), the wall was wiped vertically leaving finger grooves rising up from the base. More usually, the vessel was inverted and the underside was wiped, occasionally leaving concentric finger grooves (PRN 8035860026, Recut 3668, CP2, PRN 83340003, Pit 8722, CP2); or, more usually, smoothed (PRN 8086260004, pit 8722, CP2) or burnished, (PRN 8086400001, pit 8642, CP3). Commonly, bases were left flat and became worn through use. In other cases, the pressure of smoothing and burnishing would depress the centre, producing a raised, more stable base when the vessel was upright and resting only on the outer edge (PRN 8086400001, pit 8642, CP3). The junction with the wall was sometimes supported with the addition of clay across the

The interior of some bases had grooves around the wall (e.g. PRN 8089430001 pit 8833, CP2), where pressure had been applied to secure the join from the inside. Others had finger-tip impressions across the interior of the base possibly as a result of attempting to smooth the surface with an outstretched arm after finishing the jar.

The fracture patterns on surviving sherds demonstrate that the join between wall and base was obviously a weak point, having to withstand more pressure than any other part of the body. The construction of one vessel however, the flat dish, F109, appears to have attempted to avoid this problem. Its section shows a base apparently comprising a single slab up to 23mm thick at the centre, reducing to 15mm around the edge, just inside the wall. The short wall appears to have been built of clay raised up from the base. There is no certain trace of a join between the base and the wall, though this needs to be confirmed with a thin section. The result is that the wall has remained attached to the base for 80 per cent of its length. While the thick base is heavy and the short wall lacks the finess of some of the other pots, its construction was effective in ensuring that the wall remained attached to the base.

Pedestals and footrings

As with walls, pedestals and footrings were usually also added as rings after the main body of the pot, usually with a flat base, had dried sufficiently. A tall pedestal could be added to a flat base, PRN 8146030008 (Pit 14604, CP1) and supported with additional clay around the interior of the pedestal, PRN 8088000004 (Pit 8801, CP1), and rising up the wall. The site produced several fragments of detached footrings and pedestals.

As with the junction between wall and base, the pedestals and footring had to endure considerable pressure. One example appears to show a deliberate attempt to solve or reduce the problem of footrings becoming detached, by employing a similar technique to that used for the wall of the F109 dish. One vessel with a wide flaring body (PRN 8037220001, Pit 3722, CP3), the lower wall may have been built using a mould, creating a smooth round bottomed slab up to 9mm thick. The exterior was smoothed and, while still sufficiently moist, a footring appears to have been formed by squeezing clay out from beneath the centre. The result has produced a base with a centre conspicuously thinner than the wall, gradually increasing in thickness as it spreads out to the inside of footring, whose exterior has been rolled up and imperfectly smoothed and burnished onto the wall — a characteristic profile for this technique. Because the clay for the footring formed an integral part of the base rather than being added as a separate entity, the resulting footring may well have been more durable than those constructed with applied rings of clay. Furthermore, the use of a continuous curve to form the wall also removed the weakness that might have been associated with the wall joining a flat base.

Mould construction was probably used for many of the wide flaring lower bodies of vessels. Below the shoulder, the tripartite carinated bowl, **F80**, (PRN 8126440001, Pit 12646, CP1), has an irregular smoothed and burnished interior, but a more regular and burnished exterior, possibly indicating that the clay was pressed up against a mould. Application of the small footring base involved pressure leaving faint cracks around the inside. Forms **F60** and **F81** are similarly likely to have been made using a mould, but few exhibit unequivocal evidence.

Manufacture — body and shoulders

Most often, walls were built up with rings which were smoothed together leaving few external traces. Occasionally, at critical points in the profile, these were pinched together and the results remain visible: particularly beneath rims while they were being shaped, expanded or just smoothed, e.g. PRN 8035870003 (recut 3668, CP2); and at the shoulder, where rings were often attached obliquely with the lower rising to the outside of the upper, and pressed together to secure the join (e.g. PRN 8038570035 pit 3861, CP3). Additional clay was often spread along the interior of carinated shoulders for support and lengths of these triangular sectioned rings were occasionally found detached from their vessels. The surfaces were then generally smoothed or burnished, sometimes leaving the hollows visible.

One example, PRN 8036560004 (pit 3657, CP2) displayed signs of possible slab construction: the interior of the inturned neck, *c.* 55mm tall, reveals irregular vertical depressions at *c.* 25mm intervals, some associated with faint vertical cracks. These may represent the joining of small slabs. The exterior was slurried and wiped smooth leaving no traces of the construction technique.

A few sherds (e.g. PRN 8038570036, pit 3861, CP3) had fractures within their bodies running parallel to the surfaces. Corresponding indentations on the surface were probably too small to represent use of a paddle and anvil (cf. Rye 1981, p.84), and may reflect pressure from pinching, or even indicate that vertical layers of clay had been used.

Manufacture-Necks and Rims

Rims were usually built up from the wall, with the top ring being smoothed or shaped as required. On some coarse vessels the top ring forming the rim has been placed over a wall of irregular thickness and, where the wall is thin, the clay has been smoothed or rolled down onto the surface, leaving a slight overhang (PRN 8037230002, Pit 3724, CP2). This can be found on both interior and exterior surfaces (PRN 8037210041, Pit 3724, CP2). A characteristic trait of the EIA is a short neck which has been roughly squeezed with multiple finger impressions immediately below an everted or upright rim.

A few slightly expanded rims were created by running a finger along the top, squeezing out the clay on one or both sides, then smoothing or burnishing along the top, occasionally leaving a central irregular, unsmoothed, groove (e.g. PRN 8083500001, Pit 8354). Some required additional rings to be added: More obviously the thickened rims (**R8**, **F20**) from CP4 occasionally display a crack running parallel to the wall (PRN 8082020001, Pit 8189 and PRN 8081870001, Pit 8188).

The flat, horizontally projecting rims on form **F111** appear to have been added as a separate disc and joined to the top ring (PRN 8145600012, pit 14561). The need to dry the clay before their attachment has resulted in joins which were clearly zones of weakness. In contrast, the projecting rim on the bowl, **F110**, (8145580018, LIA/ER Ditch 14559) is thicker and more curved in section than those of form **F111**, indicating that it may have been built up around the top of the bowl rather than prefabricated and allowed to dry. Certainly the surviving example remains firmly attached to the wall.

Surface treatment

The surface treatment (Table 34) often varied at the shoulder, with the lower body tending to be more coarsely finished than the upper. Overlapping treatment indicates that the lower body of the pot was generally treated before the upper. This was visible with the vertical or diagonal wiping of the lower body contrasting with horizontal wiping above the shoulder, and applied to jars with a high rounded shoulder, as well as those with more angular shoulders which could be smoothed, wiped or rusticated below and burnished above. On one example, towards the bottom of the lower body, a groove projected from just beneath a layer of rustication, possibly intended as a guide to indicate the limit of the area to be covered.

Inevitably, the application of a slip or slurry, including rustication, effectively introduced a second fabric to the body of the vessel. Some more distinctive examples have been noted in the catalogue, but are not addressed in this report. They would be worthy of further study in the future.

Firing

The site produced no *in situ* evidence for pottery firing, no kiln fragments and no obvious wasters. One vessel, the large shouldered jar, **F48**, was incompletely fired and had a soft partially crumbly fabric, probably confirming the use of an open fire for firing. By contrast some vessels were very hard and displayed light yellow/brown hard burnished surfaces and a light brown or orange core. Superficially at least the range of colours and the hard well fired sherds suggests that for some vessels the potters were able to exercise good control over the firing conditions. Further work on is required.

Use

The size and shape of the pottery forms demonstrate a degree of specialization, broadly equivalent to what we might today recognize as storage jars, cooking pots, jars, dishes, bowls, colanders, cups and beakers; but direct evidence for their use was lacking. Some sherds displayed patterns of wear or had deposits providing a general indication of a range of possibilities.

Elsewhere, it has been shown that the position of carbon deposits can be used to infer vessel function (Skibo 1992, 147–173), and in some contexts the causes of specific instances of deposit on a pot might be understood. In this group from Thanet Earth carbon deposits were found on the interior and exterior surfaces of 35 recognizable forms and 267 body sherds. Some of these may have been used for cooking, or placed near a hearth. The forms encompass a range of sizes with rims from 11–36cm in diameter, the majority falling within 14–24cm. There is no clear preference for one form, of group of forms, or size, over others. By their nature such deposits are more likely to stick to rough surfaces. Vessels with painted or slipped surfaces are free from them except when those surfaces have moderate to severe wear. Similarly, sherds with burnished surfaces only retain such deposits when they are at least moderately worn or when they have deep grooved decoration. Furthermore, each pot can be burnt and attract soot from the time of its original firing, without being used for cooking; and after breakage, individual sherds may encounter soot in a fire, or midden before arriving in their final archaeological deposit. Even when pots are cleaned after use some of the deposit remains, and what survives on the surface of a pot can reflect multiple events in that pot's life (Gur-Arieh *et al* 2011, 351). These deposits require further analysis to understand the substance that has been burnt, then they may become more informative and allow a greater understanding of the use of the pots.

Limescale was found on the interior of one **R16** rim, and several body sherds and bases. These include rusticated sherds, probably from jars; but particularly recognisable are sherds likely to belong to **F67** jars, such as: the **R16** rim (PRN 8086310005, Pit 8722, CP2), a body sherd (PRN 8086270018, Pit 8722, CP2) and base (PRN 803510001, Pit 3595, CP2).

No briquetage was found, but 199 vessels exhibited purple and pink colours in section, mainly as external margins (58 per cent) but also internal margins, surfaces and core. This is likely to have been caused by association with salt. These pots included five recognisable forms: **F29** (PRN 8087120001, Pit 8722, CP2), **F40** (PRN 8086430022, Pit 8645, CP3), **F68** (PRN 8085900001, Pit 8592, CP1), **F75** (PRN 8085320001, posthole 8533, CP1) and **F100** (PRN 8085900001, Pit 8592, CP1); nine decorated sherds and thirteen bases, including one with a footring (PRN 8038570030, Pit 3861, CP3) and one that may well have belonged to an **F67** jar (PRN 8086220006, Pit 8722, CP2). To have an impact on the colours of the sherds salt would need to have been in contact for a significant amount of time and it is likely that these vessels were used to carry salt at some stage rather than just brushing up against it. None of these examples appear to have been in contact with salt for any length of time after breakage; the colouring was not seen to spill across a broken edge. With data from more excavations it may become apparent if particular vessel forms were used for its use or storage.

Vessels with perforated walls, our form **C1**, possibly from colanders, or for use in steaming food (Stilborg 2006), are known sporadically throughout the first millennium

BC, e.g. (Needham 1991, 192, fig. 89, 197), Villeneuve-Saint-Germain, LT1a (Debord 1981, 117, fig. 11, 78E01-003), Hamblain-les-Pres, *c.* 400–350 BC (Hurtrelle *et al* 1990, 165, fig. 7, 33 and 34).

There was very little evidence for re-use after breakage. About one third of the everted rim jar, **F91**, with curvilinear decoration (D59) PRN 80142130001 (Pit 14219, CP3) survived with a worn outer broken edge. It is just possible that this was used in this broken state since the fractured edge is worn; but the evidence is inconclusive. The interior surface of the rim and the upper half is severely worn. Below this, this slip remains intact perhaps reflecting wear acquired while in use when the jar was complete or, equally likely, acquired as the result of natural erosion when the broken vessel lay partially buried in a midden. Inevitably, other examples are less easy to identify; though a rim, PRN 8037210007 (pit 3724, CP2) had been worn smooth after the top ring had become detached; and the top of a shoulder, PRN 8035180005 (pit 14807, CP3), appears to have been smoothed down after breakage. The worn state of most of the sherds however, disguises any evidence for re-use.

Evidence for the repair of vessels

Single post-firing perforations were found in four sherds (PRN 8086180198, pit 8722; PRN 8086450005, pit 8645; PRN 8142130009, pit 14219; PRN 8088680002, pit 8869). These may have been used to enable broken vessels to be mended by binding across cracks. However, no joining sherds with holes on either side of a fracture were recovered to demonstrate this; nor did any of the perforations show clear signs of uni-directional wear that might be expected from any binding to effect the repair. It is possible that they served other purposes.

More commonly, repairs were carried out with the use of an adhesive. Forty-eight sherds had black glue adhering to one or more of their edges, or along surfaces close to broken edges (Table 41). In most cases it was applied as a thick layer which filled the join and was spread over one or both surfaces of the pot in a band up to *c.* 15mm wide on either side of the fracture (photo?). Occasionally, as evidenced by PRN 8037230001, from pit 3724, it had been applied delicately along the break without apparently spreading onto the surfaces.

A wide range of vessels was repaired in this way, from fine decorated examples (e.g. PRN 8086180119), including one with a polychrome-coloured surface (PRN 8037280002), to coarser forms (e.g. PRN 8086830008). Examples also exhibited the full range of wear, from one which was almost pristine (PRN 8086180119) to those with severely worn surfaces. However, the application of the adhesive was often irregular, and its survival erratic, with occasional large lumps appearing alongside areas where it had apparently flaked off, and it is very likely that other sherds had been similarly glued without any traces of the adhesive surviving, and that the examples found represent a small

percentage of the vessels originally repaired in this way. Clearly, at least in these instances, it was preferable to mend a pot than to make or obtain a replacement. Given the local availability of raw materials and the inference that most of the pottery was locally made, this raises the question of why the pottery needed to be repaired: how was access to pottery controlled; was the community dependent on itinerant potters, or was potting a seasonal activity?

The black glue has not been analysed, but is likely to have been birch bark tar, which has been employed as an adhesive throughout much of prehistory. Its specific application to the repair of pottery has been recognized on other EIA and MIA sites in East Kent, Surrey and beyond, and extended into the Roman period (Marter Brown and Seager Smith 2012; English 2005). The method was successful: from a MIA context at Church Whitfield Crossroads, for example, the lower fill of the enclosure ditch produced a fragment of a footring which was glued to the base of a jar (Thompson 2014, 149, fig. 84, 24). However, unlike the example from Whitfield, where the join remained intact, none of the repairs from Thanet Earth have survived the discard of the pots. The use of a resinous substance for the repair of pots has also been recorded from France (e.g. in La Tène D1, Blancquaert 2001, 96).

Deposition

At Thanet Earth no original land surface survived; many of the features were truncated; and many produced no pottery at all. Thus we have only the final resting place of a restricted sample of the ceramics used. Few features were completely excavated: the ditches were sectioned at intervals, and most of the pits and postholes were only half-sectioned; so the total quantity of pottery buried within these features could well have been twice the amount recovered. Before reaching the archaeological context from which they were recovered, many sherds were eroded, burnt and became worn on surfaces and edges, and some were possibly used as artefacts in their own right. Evidence from other sites shows that they are likely to have been left lying around on the ground (e.g. at Mingies Ditch; Allen and Robinson 1993, 90–91) or dumped in a midden (e.g. at Norton, East Sussex; Seager Thomas 2005).

This discussion employs summary characteristics of the pottery, including the number of sherds, mean sherd weight (MSW), mean sherd wear, the percentage rim diameter, and the number of 'vessels'. (The latter refers to catalogue entries, which group together sherds sharing common traits, such as fabric, surface treatment and, wall thickness, and are described together with a single Pot Reference Number (PRN). They are treated as if they belonged to a single vessel.) Small differences in any of these measures are not necessarily meaningful in isolation, but taken together they can reveal broad patterns of deposition both between periods and between types of feature, and may be of value in comparison with other sites.

Distinctions between Ceramic Phases.

The figures for all features (Table 42) show that the bulk of the pottery (number of sherds and weight) was deposited during CPs 1–3, peaking in CP2. During the final phase, CP4, not only did the total quantity of pottery (sherd count and weight) diminish, but the sherds were smaller (reduced MSW and average percentage of surviving rim diameters) and more worn than in CPs 2 and 3. Most of the pottery was recovered from the pits which showed the same pattern of deposition during CPs 1–3, followed in CP4 by a drop of almost 50 per cent in the average number of sherds buried in each pit, and in the number of sherds per pot-bearing context within each pit. All these measures point to a considerably reduced level of activity on the site in the final phase. However, pits were still used, and perhaps dug, during this phase with four having late forms, or a potin coin in their lowest, or only fill (Pits 3877, 3905, 8188 and 8482). Two others had late forms close to the bottom (Pits 8424 and 8189). In the others (Pits 8189, 8219, 8616, and 8757) the late forms were either at or close to the top. This phase was not solely concerned with backfilling features and levelling middens, though some of that might have taken place; and while the picture is possibly obscured by truncation of features, no obvious closure deposit was recognized.

Distinctions between categories of feature

Summary values of average wear and MSW show that there are clear distinctions between the assemblages derived from the pits, postholes, ring ditches and linear ditches (Table 43). This may have been influenced by the heavy truncation of shallow features; nevertheless, some general observations can be made. The pits produced the least worn sherds with average wear value of 3.3 and MSW of 21.4g. Pottery from the linear ditches was more worn (3.57) and noticeably smaller with MSW of 9.57g. That from the ring ditches was of a similar size to the linear ditches (MSW = 9.51g) but was more worn (3.76). By contrast, the postholes contained sherds which were both larger (MSW = 25.8g) and considerably more worn (4.15) than those from any of the other groups. While these average figures reveal broad tendencies, when examined in more detail there was overlap between the groups.

Deposition within Features

Ring Ditches 1–3

The pottery from the ring ditches RD2 (CP4) and RD3 (CP2) was small and worn (Tables 43 and 44). Ring Ditch RD3 (CP2) was between 0.11–0.32m deep and contained sherds with MSW of 9.98g and average wear of 3.68. Those from Ring Ditch RD2 (CP4), which survived to a greater depth, between 0.44–0.6m, were smaller and more worn: with a MSW of 7.96g and average wear of 4.05. The 16 sherds from Ring Ditch RD1, between 0.14–0.23m deep, lacked sufficient diagnostic traits to allow them to be allocated to one

of the ceramic phases, but were small with a MSW of 8.69, and average wear of 3.9, figures which fall within the range of those of RD2 and RD3, and appear to indicate the same depositional pattern as those from the other ring ditches. Only Ring Ditch RD3 had any vessels above 39g, with the majority (up to 79 per cent) falling below 20g (Table 44).

The linear ditches

Trackways 11, 12 and 13 (G8300, G8081, G8239, G8082, G8304)

Little remained of the trackway ditches whose surviving traces were rarely more than 0.1m deep; and there is scant evidence for deposition within them. Several sections produced no pottery. Sherds from Trackway 13 were all less than 7g with moderate-severe wear (Table 44). Trackways 11 and 12 had sherds with a wider range of sizes and wear (Table 44), the largest from Trackway 11 which produced a vessel represented by 3 body sherds weighing 159g. Considered together though, at least 89 per cent of the pottery from the trackways weighed less than 20g, a pattern very similar to that found in the Ring Ditches.

Ditch G8303

This short length of ditch followed part of the north-south line of an earlier and much longer ditch G8306 before turning east to form a right-angled corner just before its trace ran out. Two cuts were made: one across the terminal (12171) and the other across the corner (12166). The terminal produced just seven sherds, representing five vessels with a total weight of 35g, including the fine rim and shoulder of an F74 cup (PRN 8121700001). The corner of the ditch however, was exceptional. It survived to a depth of just 0.27m but produced more pottery (193 sherds) than all the other sections of trackway ditches combined. The sherds however, were still generally small, with a MSW of 5.28g, and worn (3.5) (Tables 43 and 44). Up to 77 per cent of the vessels weighed less than 20g, but there was a wider spread of larger sherds with one rusticated body sherd weighing 135g, and ten body sherds possibly belong to a single vessel weighing 157g (Table 44), indicating more active and probably deliberate burial of pottery than that found in the trackway ditches.

Ditches forming Enclosure 06 (G8078, G8296)

Two ditches formed the eastern (G8296) and southern (G8078) sides of Enclosure 06. The eastern ditch (G8296) contained sixteen sherds with an average weight of 3.8g, representing perhaps nine vessels. By contrast, the eastern end of the southern ditch (G8078) contained two human burials which had been cut through the fill. The presence of these burials might suggest that this location had been regarded as significant before they were interred. However this was not reflected in the pottery, which comprised 108

sherds with an average weight of 8.9g. The pottery in this southern ditch (G8078) however, did provide a wider spread of weights than the eastern length (Table 44), with one vessel represented by three joining body sherds weighing 208g, a pattern comparable with that found in the pit fills and perhaps indicating some deliberate back-filling of the ditch, rather than allowing it to be silted up. Any comparison of these deposits though is hindered by the small sample size.

Ditch (G8080)

The short length of ditch G8080 survived to a depth of between 0.13–0.19m and produced 210 sherds from three excavated cuts. These sherds were larger (MSW 14.6g) and marginally less worn (average wear 3.2) than those from the trackway ditches (Table 43). The spread of pot weights (Table 44) reflects the pattern found in the pits rather than the trackway ditches or ring ditches. In common with other features on the site, this ditch also contained groups of burnt flints, which may themselves be significant for potters or others (Seager Thomas 2010), but no particular patterns were observed to suggest any deliberate placing of pottery.

Human Burials

The pottery associated with human burials provides an indication of contrasting practices of deposition. Complete human skeletons were found in two graves dug into the fill of ditch 8078, defining the southern side of Enclosure 06, and in pits 8833 and 8934. Pottery was associated with disarticulated human bone recovered from pits 3724, 8722, 12821, 14488. The percentage distribution of the weight of vessels from the contexts containing the human bone is shown in Table 45.

With complete skeletons in graves we might expect to find deliberate deposits of artefacts, including pottery. In practice, only one (Grave 8896, dug into the fill 8897 of the ditch forming the southern boundary of Enclosure 06, G8078) produced a substantially complete jar, form **F43** (PRN 8088950001), weighing 877g, with 88 per cent of its rim and 98 per cent of its base surviving and slight to moderate wear. With this were two other vessels, one represented by 9 sherds (144g) and the second comprising one sherd (38g). Immediately above the burial within the grave cut (context 8894), were eight sherds representing perhaps six vessels with a total weight of 29g, including one fragment (5g, <2 per cent diameter) of a type **B10** flint gritted base. These were noticeably more worn than the pottery buried with the skeleton. No pottery was found with the second burial, **8912**, also in ditch G8078, which had been severely truncated at that point.

The skeleton of a young juvenile, aged *c.* 13–16 years, was found in Pit 8833 (context 8832), associated with six sherds of pottery, the largest weighing 29g and the remainder with an average weight of 2.6g. Pit 8934 contained an articulated burial (context 3414),

under a fill (8933) with 22 sherds of pottery, nine of which weighed 36g and appeared to derive from one vessel, two others of 21g and 26g, and the remainder having an average weight of 8g. The skeleton was badly degraded, possibly as a result of having been exposed. The sherds associated with these pit burials were also more worn than the pottery buried with the skeleton in from Grave 8896 (Table 45).

Three pits contained fragments of disarticulated human bone (Table 45). Pit 8722, context 8624, contained a lower jaw bone together with 74 sherds, the largest weighing 83g. Pit 3724, context 3726 contained a human femur with 32 sherds, the largest weighing 87g, and Pit 14488, context 14483 also produced a human femur, together with 65 sherds, the largest of which weighed 377g. The pottery associated with these bones, while more worn than that associated with burial 8896, was less worn than that found with the complete skeletons buried in pits (Table 45).

Thus the pottery evidence shows contrasting patterns of behavior associated with a skeleton in a grave, skeletons in pits and disarticulated human bone in pits. The only specifically cut grave to have produced pottery (Grave 8896) contained an almost complete vessel which appears to have been intended to accompany the burial. Two sherds directly associated with the skeleton may also have been placed deliberately. Above this, the fill of the grave included a few very small and more worn sherds introduced possibly accidentally in a light filling of soil. Skeletons in pits 8833 and 8934 were accompanied by small sherds weighing a maximum of 37g and more worn than those buried directly with the skeleton in grave 8896. These may reflect the body being covered with care; they may have been thrown in by mourners, or they may have entered the fill as a result of weathering from the surface, accumulated while the body was left exposed, a suggestion which would be in keeping with the degraded condition of the burial in pit 8934. By contrast, disarticulated bone fragments in the fills of pits were associated with a larger number of vessels, represented by larger and less worn sherds (Table 45). The distribution of their weight is of a similar size and range to that found for sherds in other fills in pits. Superficially, they do not appear to have been singled out for special treatment, but may have entered the fill, possibly unnoticed among other artefacts and animal bones.

Further consideration of deposition above and below the burials needs to include the full range of the contents of the pits and is beyond the scope of this report.

The postholes

Most of the postholes were undated. None were attributed to CP4. A total of 122 sherds with a MSW of 25.8g, were recovered from those postholes from structures attributable to CPs 1–3. The MSW figures are relatively large; indeed those for CPs 2 and 3 are larger than those for all other feature types. The sherds from CPs 2 and 3 are also more worn than those from the pits (Table 43). It is possible that some of these entered the postholes

during their original construction, but no evidence of *in situ* postpipes and packing material survived and it is more likely that all the pottery formed part of the fill after the collapse or demolition of the posts. These structures are considered below, and details of contexts, numbers of sherds, with their weight and average wear are shown in Table 46.

Group G8020 (CP1) consists of two postholes which may be related. One, 14535, contained the severely worn upper portion of an **F80** carinated bowl (PRN 8145340001) weighing 126g and with 22 per cent of rim surviving, together with smaller sherds from three other vessels: one small scrap (2g) with a narrow curvilinear groove (PRN 8145340004), and two represented by plain body sherds weighing 46g and 8g. The fill also contained burnt flint, clay and bone, as well as sandstone. However, the pottery itself shows no sign of having been refired. The second posthole, 14440, contained just five body sherds with a MSW of 10.8g and average wear of 4.

Group G8016 (CP1), comprises a single posthole, 8533, associated with pit 8481. The only fill of the posthole produced a two joining sherds representing 11 per cent of the rim from a form F75 carinated jar and two other body sherds.

Structure 20 (Group G8064, CP1), a four-post structure, with pottery in three of the postholes. The largest collection, from 14053, had 29 sherds, of which 28 belonged to a single **F80** carinated bowl (PRN 81410510001) weighing 274g with 20 per cent of the rim and 98 per cent of the base surviving. Two other postholes, 14050 and 14068 contained small body sherds (Table 46).

Group G8019 (CP2), a single posthole, 12734, within Ring Ditch 3, though not necessarily related to it, contained two severely worn sherds from the upper part of an **F92** jar (PRN 8127330001) weighing 129g and with 8 per cent of the rim surviving.

Structure 15 (Group G8054, CP2) comprised nine postholes, of which four contained pottery. Posthole 8586 had one severely worn sherd representing 14 per cent of a flat base (PRN 8085850001), a body sherd weighing 14g and two scraps, each weighing 1g. Posthole 8588 contained a single moderately worn sherd decorated with irregular groups of combing (D49) (PRN 8085870001), and posthole 8529 contained two vessels: represented by one body sherd (101g) and nine sherds (48g) from a **F70** bowl (PRN 8085280001)with fresh breaks, likely to have entered the posthole as a single sherd with moderate–severe wear. The fourth, 12189, produced almost 2kg of pottery. Most of this (35 sherds, 1155g) belonged to body sherds with severely worn surfaces and edges, with moderate – heavy rustication. Three sherds from the rim and neck of a **F42** storage jar (PRN 8121880002), represented by 14 per cent of the rim, were also severely worn and may belong to the same vessel. A flat base (PRN 8121890001), with moderate to severe wear, and 14 per cent of the circumference surviving, probably belonged to a separate vessel.

Group G8141 (CP2), a group of five postholes alongside pit 8645. Just one of these, 8764, produced pottery. This included two rounded shoulders, a plain inturned rim (3g) and a moderately worn fragment of an **F78** bowl weighing 42g (PRN 8087640002) with 12 per cent of the rim surviving.

Structure 13 (Group G8053, CP3) was a four-post structure. The fills of all the postholes belonging to this structure contained some burnt material including flints, clay, and bone, suggesting that the structure may have burnt down. The pottery, which showed no signs of having been re-fired, was recovered from three of them: posthole 8339 produced a single sherd from a large storage jar (PRN 8083380001), weighing 203g and represented by 6 per cent of the rim. Posthole 8271 contained one moderately worn sherd weighing 14g (PRN 8082980001) in the lowest of its three fills; and posthole 8337 produced just three sherds each weighing less than 7g.

With the exception of G8016 and G8019, which comprised individual postholes, each structure had one posthole which contained considerably more pottery than the others (Table 46). Even in the case of the largest sherds, none of the vessels was complete and all had moderate-severe or severe wear. Initial impressions of this unusual pattern of deposition, which singles out these posthole structures from other features, are that the burial of the larger pot fragments is unlikely to be accidental. Furthermore, it may be no coincidence that of the three **F80** carinated bowls on the site, substantial portions of two were recovered from these postholes and the third, which was almost complete, may have been deliberately placed in pit 12646 (see below).

The pits

The pits produced most of the pottery and the sherds within them were generally larger and less worn than those from the ditches (Table 43). Table 47 summarises the quantity of pottery in pits throughout CPs1-4, in terms of the number of sherds (Table 47a) and their weight (Table 47b). Some contained considerable quantities, culminating in 1315 sherds from pit 8722 during CP2; while pits with more than 300 sherds are found throughout CPs 1–3. The distribution of the pottery within the individual pits (table held in archive) shows that there was a wide variation in the sizes and quantities of pots incorporated within the individual pot-bearing fills. The overall distribution shows up to 80 per cent of the pots were extremely fragmentary, weighing less than 20g. The percentages then fall rapidly with the occasional vessel being represented by sherds up to 2047g in weight. While the prevalence of small sherds <20g repeats the pattern found in the ditches, the spread is much greater. Studying the pattern from individual contexts within the fills shows that the range of variability within the pits encompasses that found in other feature types.

This section begins by examining the rare instances where the condition of the sherds, or the position occupied by the pottery when excavated, may be indicative of deliberate deposition.

Possible evidence for the deliberate burial of a pot, as suggested by its condition, was found in pit 14219 (CP3). This pit had seven fills. The second from the top, context 14213, produced about a third of an everted rim jar, form **F91**, decorated with a curvilinear design, D59, PRN 8142130001. It comprised eight sherds weighing 322g, including three scraps each less than 1g. Four of these sherds joined to form one (317g) representing 14 per cent of the rim, expanding to 50 per cent of the shoulder (the widest girth) and then reducing in width until breaking an estimated 10–20mm above the base, preserving a profile for *c.* 90 per cent of the assumed height. In this state when buried, the single sherd, with wall thickness of 4–7mm, would have been extremely fragile. The broken edge of this large sherd shows some wear, indicating that it may have been used in its broken condition before being buried (see Use, above). When buried, it would have measured *c.* 190mm across and retained a considerable curvature: 42 per cent horizontally and 30 per cent vertically. Survival in this condition reflects either an extremely lucky circumstance, with it landing by chance on soft material, or its careful placing with suitable support. That this unique decorated pot may have been regarded as 'special' and may have been a prized possession in its own right lends further support to the case for its deliberate placing.

The position of sherds within a pit fill can indicate possible deliberate placing, and spreads of sherds across the bottom of a pit or the bottom of a fill within a pit may be significant.

Pit 8211 (CP3), had a single fill (8210) and contained forty-eight sherds, forty-one of which formed the upper portion of an everted rim jar (PRN 8082100001) with 52 per cent of the rim surviving, moderate to severe wear, and weighing 1755g. Sherds from this pot had been spread across the base of the pit, extending further than expected had a single complete sherd been broken by the weight of overburden. Several of them join and it is possible that the sherd broke as a result of having been thrown in.

Pit 14276 (CP1) had four fills and had been recut by pit 14271. The lowest fill, 14275, contained just 3 sherds with a total weight of 3g. Above this there was a spread of sherds, 14274, below fill 14272 and it is the placing of these sherds at the interface of two layers which is of interest. None of the vessels was complete: four were represented by sherds weighing over 100g: one sherd from a form **F33** jar (237g) (PRN 8142740008) with slight wear on the exterior and almost none on the interior; 26 sherds from an inturned expanded flat-topped rim (217g) (not illustrated); 18 body sherds (1.3kg) from a large rusticated jar (not illustrated); and seven body sherds (123g) and nine other vessels represented by smaller sherds. In total it is likely that 13 vessels are represented. It is

notable however, that the recut (14271) penetrates down to the level of the spread of sherds and no further, possibly indicating the retrieval of a previously buried object.

Pit 12646 (CP1) had two fills. Both contained pottery. The lower, context 12645, produced a considerable quantity: 503 sherds, weighing 5.3kg, scattered at the bottom. Of these, 487, weighing 4.5kg represent about 25 per cent of a single jar of form **F48** (PRN 8126450004). Sherds from this jar were crumbly and severely worn on the interior. Associated with this were: a single sherd representing the upper portion of a **F53** jar, also apparently unique (PRN 8126450003), and a flat base (PRN 8126450001). A fragment (11g) from a flaring rim joined an almost complete **F80** carinated bowl (PRN 8126440001) from the higher fill, context 12644. The remaining 29 sherds from this upper fill weighed from 2g to 25g. They included a form **R3** flaring rim (PRN 8126440004), and three carinated shoulders (PRN 8126440002 and 8126440005), one with linear grooved decoration, D29 (PRN 8126440003). The pottery from this pit has been selected because the spread of sherds at its base had the appearance of being deliberated placed. It is possible that all the other sherds in the pit, including the almost complete **F80** bowl from the upper fill, also represent deliberate deposits; but it is hard to be certain. A small pit (12643), a recut within the edge of 12646, dug into both fills, appeared to have been left open to silt up and contained no sherds.

Other examples of possible deliberate placing of pots include Pit 8456 (CP3) in which a slight depression appears to have been intentionally made to hold a pot. This pit contained three main fills: at the bottom, fill 8458 contained two scraps weighing a total of 2g, together with a quern fragment, some bone, flint and chalk fragments. Above this, in the centre of the pit at the bottom of fill 8462, was a slight depression containing a miniature cup, form **F5**, consisting of 100 per cent of the base rising to *c.* 2 per cent of the rim, PRN 8084620002, and two joining sherds from a flat base, PRN 8084620001. Above these were piled burnt flints. No other sherds were recovered from this fill, but their position together, set in a slight hollow in its base, appears to have been intentional. Above this, the highest surviving fill, 8457, contained a considerable quantity of large burnt flints and six sherds of pottery; two joining sherds from an everted rim, form **F84** (PRN 8084570003), three joining sherds from a **B4** footring base (PRN 8084570001) and one from a flat base (PRN 8084570002).

It is possible that miniature vessels were of some significance in their own right. They make occasional appearances in settlements (e.g. Morris 2006a, pot 138); but in France, they are frequently found in burials (Demoule 1999, 348, fig. 219; Merleau *et al* 2002, 142). Two were found in pit 12366 (CP1). The shallow remains of the base of this pit had two fills. The upper produced no pot. The lower, 12365, contained a miniature cup or flask, form **F98**, with red-coated exterior and severely worn black interior (PRN 8123650003), represented by two joining sherds. The rim and base are missing, but 47 per cent of the shoulder (maximum girth) and probably about 80 per cent of the height survives. The broken edges are irregular. With this was a complete second miniature

vessel, PRN 8123650005, form F102, with plain flaring walls, as well as six sherds from a carinated jar, PRN 8123650004, form F62. In addition to these vessels there were 77 other sherds, including 56 small scraps. The association of two miniature vessels, one of which was complete, may be of significance, though this is far from certain. Material associated with the pottery included daub, triangular 'loomweights' and burnt flint.

A fourth miniature cup, form F102, comprising two joining sherds, weighing 179g, with 70 per cent of the rim and 75 per cent of the base surviving (PRN 8082280001), was recovered from Pit 8229 (CP1). The remains of this pit contained only one fill (8228), and in addition to the cup were 24 sherds, weighing 554g, with variable wear, as well as animal bone, daub, worked flint and burnt flint.

Recuts within the pit fills

Five pits were identified as having contained recuts. It is noticeable that two of these stopped at the point where there was a scatter of sherds, identified above as possibly appearing to have been placed deliberately. The first, recut 14271, was cut into pit 14276, through fill 14272 which comprised loose silt with infrequent burnt flints and 58 sherds from about 4 pots, down onto the edge of the spread of sherds, 14274, at the top of level 14275. The spread existed under fill 14272 up to the edge of the recut and then vanished. Whether it originally reached further is unknown, but there is at least a possibility that the recut represents an attempt to retrieve something from that level of the pit. The fill of the recut contained 29 sherds weighing 382g.

The second, recut 12643, was dug at the edge of pit 12646; through fill 12644, which comprised clayey silt with flint, animal bone and pot (29 sherds, 649g), into fill 12645 which comprised sandy silt with occasional bone and burnt flint and a considerable quantity of pottery (465 sherds, 5993g), including the possibly placed spread identified above. Again, the appearance is of an attempted access to that fill of the pit. In this instance the recut itself contained no artefacts, possibly because what was buried merely left no visible trace, but possibly also because its sole purpose was retrieval.

At the top of pit 3724, cut 3722, identified as a recut, only partially penetrated fill 3721, which itself contained 167 sherds weighing 4.9kg. This small recut was itself filled with 56 sherds weighing 1268g. Perhaps enough was retrieved without having to dig further; or perhaps it was dug to enable additional burial.

Recuts certainly could have been dug for many reasons. If a hole needed to be dug, it probably would have been easier to do so in the fill of a pre-existing pit rather than through the solid chalk which formed the bedrock on the site. Other examples were found and it is at least possible that some signify attempts to retrieve items that had previously been buried; implying a conscious act of burial and memory of the original act of deposition.

Detailed understanding and interpretation of the deposition on the site of course requires consideration of all the contents of fills, and particularly the soils and environmental data; but the pottery has an important role to play. Pottery has frequently been used to identify 'special'/'deliberate' deposition as if in contrast to 'normal' deposition. The examples of deliberate deposits in pits, selected in this report have been based on observation of the excavated data and have been supported with reasons for the selection. They may serve to build a picture for comparison with deposition on other sites, but they are anecdotal and subjective.

The use of objective measures which can enable inter- and intra-site comparison is particularly valuable. The number of sherds, their weight and wear has enabled the identification of different characteristics of deposition between the fills of pits, ditches and postholes, and between the burial of human remains in graves and pits, providing informative patterns in the data. Mean Sherd Weight has been used in many studies of deposition and has enabled valuable insights into the nature of fills of features (e.g. Hill 1995), but this data is available for very few Kentish sites. In 2011 when Champion was discussing deposition of later prehistoric pottery on Kentish sites, apart from a few specific examples from CTRL excavations, he could only offer inter-site comparisons using the MSW for whole site assemblages (Champion 2011, 229–231). It is to be hoped that presentation of this data from Thanet Earth will enable at least high level comparisons with other sites, perhaps leading eventually to a fuller understanding of processes and human practices across regions.

Affinities

Throughout the Iron Age settlement, the pottery reflects varying degrees of influence from neighbouring settlements in southern Britain and on the Continent. The long use of some forms with traits dating back to the Late Bronze Age or earliest Iron Age and continuing into the Early Iron Age is recognized in East Kent — where similarities have been identified with examples from Runneymede Bridge (Longley 1980; Needham 1991), Petters Sports Field (O'Connell 1986) and Potterne (Gingell and Morris 2000) and Northern France (Bardel *et al* 2013, fig. 10). Some forms, such as the bowl (F110) and jar (F111) with horizontally projecting rims, are rare in southern England and demonstrate specific cross-Channel connections. They are found in the lower Rhine valley associated with urnfield burials (Desittere 1968, fig.1, 8 and 20.8) and settlements, such as Oss-Ussen where they are dated *c.* 800–625 BC (Van den Broeke 2012, 52, fig. 3.7, 8, form type 12a). In France they are most common south of the river Oise (Brun 1986, pl. 66–69, étapes 1–3). In Belgium a similar form of rim from the Kemmelberg probably dates to the sixth or fifth century BC (Van Doorselaer *et al* 1987, 147, fig. 61, 318). North of the Oise, where assemblages present a mixture of PDR and 'urnfield' (Rhin-Suisse-France orientale) characteristics (Buchez and Talon 2005; Buchez 2011a, figs. 4 and 7) they are rare (Henton and Buchez 2017, fig. 15.6, 1).

Rustication has now been recognized in Kent from the 10th century BC (Leivers 2014, 152) and was probably present throughout most of the first millennium BC. On current evidence, this early appearance indicates links with the Lower Rhine region where it may have begun in the Middle Bronze Age (Van den Broeke 2012, 273, n.473; Verwers 1966, figs. 6–9). This surface treatment is known from Ha A2–B burials in Desittere's Neuweidbekken urnfield group (Desittere 1968). In northern Belgium its presence in the ninth century is confirmed by a radiocarbon date from Wijnegem/Blikstraat, near Anvers (Pede *et al* 2014, 45; fig. 6, 2). At Oss-Ussen in the Netherlands during the eighth century it appeared on 12 per cent of the sherds and gradually increased in popularity to 60 per cent during the sixth century; fluctuating between 40–60 per cent until *c.* 250 BC, then dropped, reaching 10 per cent by the first quarter of the first century AD (Van den Broeke 2012, fig. 3.39). The same variation is broadly followed in the Dutch south-western groups between the Maas (Meuse) and Scheldt estuaries where there is very little rustication after *c.* 200 BC (Heeringen 1989b, Area B). In East Kent, while the number of sites with a sufficiently large sample is very small, it is possible that this general pattern is reflected at a reduced level: at Thanet Earth most of the pottery-bearing features produced some sherds with rusticated surfaces: 14 per cent during CP1, 9 per cent during CPs 2 and 3, falling to 3.7 per cent in CP4. This is broadly in line with 18 per cent during Period 3B at Highstead (Couldrey 2007, 166, table 9), contemporary with our CP1; and between 6 per cent and 10 per cent from pits 16 and 26 at Church Whitfield Crossroads (Couldrey 2014, table 39) contemporary with CP2. Appearances in the LIA are rare (Jones 2009, fig. 1.12, 5). Precise figures are not yet available for sites in Picardie, but in a review of a growing body of evidence, its appearance noticeably increased during *c.* 600–475 BC (Bardel *et al* 2013, 189). As in Kent, the technique is rare in the late Iron Age (e.g. Blancquaert 2001, 94). Thus the early first millennium BC appearance of rustication in East Kent may reflect influence from the southern Netherlands, via the Rhine-Meuse-Scheldt delta; but by the start of CP1, its appearance in France ensures that identifying strands of cross-Channel influence is more complex.

Ceramic Phase 1

In the discussion of the chronology references have been made to typological parallels with recently excavated sites in East Kent, in particular White Horse Stone (Morris 2006a) and the A2 Pepperhill to Cobham Road Scheme (Brown and Couldrey 2012), and it is within this region that many of the forms find parallels. Apart from general ubiquitous characteristics such as horizontal grooved decoration and flaring rims and carinated shoulders, few individual traits are shared north of the Thames, (for instance at Shoebury (Brown 1995) and Mucking (Brudenell 2016)); but the polychrome decoration and rustication found in East Kent and characteristic of the Highstead-Dollands Moor style (Cunliffe 2005, 98, fig. 5.4) do not appear north of the Thames (Brudenell 2016, 234).

The most popular form in this ceramic phase, and from the site as a whole, was the jar, **F100**, with vertical walls and coarse surfaces which displays close links with 'proto-saucepan' pots from central southern England (Brown 2000, 90 – PA1). In her summary of the ceramics from the CTRL, Morris highlighted the presence of proto-saucepan pots in Kent, as at Saltwood Tunnel (Jones 2006b, pot 68), but they were never common (Morris 2006b, 65). The number of these jars at Thanet Earth has convincingly established their presence in Kent. Elsewhere in the county they are often too fragmentary for certain identification (Brown and Couldrey 2012, 198), though some illustrated vessels may fall within this group (e.g. Couldrey 2007, 138, fig. 72, 202; Hamilton and Seager Thomas 2002, 37; Macpherson-Grant 1980, fig. 6, 22 and fig. 7, 37). Possible antecedents of this rough form are found in PDR assemblages in Southern England (e.g. Longley 1980, fig. 35, 362–364; O'Connell 1986, figs. 47–48, 80–82). Examples of vessels similar these proto-saucepan pots are known from the Netherlands, but they are scarce. One from Grenlo, in Gelderland, is associated with early forms and dated on typological grounds to *c.* 625–550 BC (Drenth *et al* 2012, fig. 5 top left hand corner). Others, contemporary with CP1, may be similar, but it is not always clear from published examples whether they have smooth or rough surfaces. An example from south of Antwerp, north-east Belgium was cited in the discussion of chronology (Van Liefferinge *et al* 2104, 30, fig. 24). In France, parallels for these are hard to find, though vessels from Raillencourt-Sainte-Olle and Lauwin-Planque (Bardel *et al* 2013, fig. 27, RSO-S1, 567-2; fig. 28, LP-ZAC2, 3250-29 and 3250-56), both sites from north of the Escaut, may be similar. While many vertical-walled vessels certainly existed in France, both preceding and contemporary with our CP1, they are altogether different, being fine, smooth and often decorated (Henton and Buchez 2017, fig. 15.7, 200.1, 200.4, 200.10; Demoule 1999, 31, 347, fig. 2, 18; forms 5611 and 5612).

Other forms demonstrate that French influences on the pottery from Thanet Earth are very strong and apply to both coarsewares and finewares (Bardel *et al* 2013, figs. 25–28). However, it is the finewares which are most distinctive, with many parallels cited with the forms, styles and techniques of decoration from Northern France (Hurtrelle *et al* 1990; Buchez 2011a) and specific instances from western Belgium (Van Doorselaer *et al* 1987; Termote 1987). In the Netherlands some of the same forms (bipartite jars and thin-walled tri-partite dishes) appear and are seen as reflecting French influence, often being referred to as "Marnian", but they have virtually no decoration (Heeringen 1989b, 197–199, 209–210; Van den Broeke 2012, 136–139); and it is the presence of decoration on some of the Thanet Earth vessels that confirms the degree of French influence.

By contrast, in the Netherlands, the same 'Marnian' forms can have rusticated surfaces (Van den Broeke 2012, form type 73b). Examples of these have been found at other sites in East Kent, less so at Thanet Earth; but the prevalence of rustication, for example on form **F48** and one instance of **F33** (PRN 8145600001), may represent continued links with the Netherlands during this period.

Ceramic Phase 2

A similar picture is presented during CP2 when jar forms **F67/R16** and **R17** become common. Taken together, 32 out of 40 of these jars from the site fall within this phase. They are clearly French in inspiration (Buchez 2011a, fig. 8). A few examples have been found elsewhere in East Kent (e.g. Iwade; Hamilton and Seager Thomas 2005, 31, fig. 33.11, Deal; Parfitt 1985, 212, fig. 4.15, Church Whitfield Crossroads; Couldrey 2014, fig. 81,14) but they are not common, and the form appears to be virtually unknown further west. Many of the styles of decoration found on them, in particular the variety of impressed decoration below the shoulder, are shared across the Channel.

While there may be some doubt about the interpretation of the small fragment of expanded shoulder (**S4**, PRN 8086260012), if correct, its closest parallel is in France where this trait becomes common after *c.* 300 BC.

Unique among the Thanet Earth vessels, was a locally-made flint-tempered deeply recessed rim on a flaring neck (form **R1**, PRN 8121040001), a type that has a predominantly Belgian distribution, from Thiverny in France, in the south-west, to Ranst, near Antwerp, in the north-east (Dimitrakopoulou *et al* 2014, fig. 1; Palmer 2013, fig. 13). On the continent these distinctive vessels were made in a grog-tempered fabric, frequently referred to as Kemmelware; though it is now evident that they were not produced centrally but manufactured at more than one location (Dimitrakopoulou *et al* 2014). While the Thanet Earth example is flint tempered and clearly not an import, it unmistakably demonstrates continental influence.

Some forms (e.g. **F11**, **F15**, **F27** and **F29**) can be paralleled in both France and the Netherlands, while Dutch influence continues to be felt in the presence of rusticated forms, such as the everted rim jar, **F96**.

As in CP1, many of the forms were similar to examples from other sites in East Kent: such as White Horse Stone (Morris 2006a), the A2 Pepperhill to Cobham Road Scheme (Brown and Couldrey 2012), Highstead (Couldrey 2007), Hawkinge (Seager Thomas and Hamilton 2001; Hamilton and Seager Thomas 2002) and the Church Whitfield Crossroads (Bennett *et al* 2014). During this phase though, form **F101**, a finer version of the rough **F100**, became popular and is equivalent to the smooth 'proto-saucepan' pot, type PA2, from Danebury (Brown 2000, 90), again displaying links with traditions from further west.

CP3 (300–150 BC)

During CP3 more local forms develop both in Kent and across the Channel. As a generalization, angular forms were largely replaced by vessels with more rounded profiles, a process developing in southern England, France, Belgium and the

Netherlands. On the continent the beginning of this process is often placed at *c.* 350 BC (Buchez 2011a, 2011b; Van den Broeke 2012, phase H). At Thanet Earth this was not a totally new departure since angular vessels had been accompanied by rounded forms throughout the EIA; but during this period angular forms virtually ceased to exist.

In the western coastal Netherlands *c.* 375–200BC, there is a decrease in tripartite dishes and bipartite shouldered jars, and a corresponding increase in more curvilinear and S-profiled forms, associated with a rise in the proportion of decorated vessels (up to 50–60 per cent on some sites) at the expense of rustication, and the expansion of the decoration to cover the whole vessel (Heeringen 1989b, 189–204). Other than the general popularity of more rounded forms, often with everted rims, some of which share broad similarities with Thanet Earth forms, and a reduction in the proportion of rusticated sherds, there is no comparable increase in decoration and the specific styles of decoration are not matched at Thanet Earth where decorated sherds account for just 5.4 per cent of the total in this phase (Table 39). Distinguishing forms from small sherds however, is problematic since elements of that decoration (e.g. combed panels, columns or rows of single finger-tip or pairs of finger-tip impressions on the wall below the shoulder), which appeared in the EIA in France and at Thanet Earth on straight profiles, now appear in the western coastal Netherlands on more rounded forms (e.g. Heeringen 1989a, 136, pl. cv, 6; Heeringen 1989b, 202, fig. 68, Broekpolder I style, 11 and Broekpolder II style, 3). In this Dutch group finger-tip impressions are found on 10–20 per cent of the rims, eventually predominantly on the exterior (Heeringen 1989b, 189–204). At Thanet Earth only 3.6 per cent of the rims have this decoration, none on the exterior, and here this is likely to represent a continuation of CP2 styles, or residual material, rather than continued influence from abroad.

Similarly, in France new forms emerge: shouldered jars continue, but the shoulders become less angular, and there is an increase in globular jars with convex profiles and thickened bead rims, globular jars with high rounded shoulders and short concave necks, S-profiled forms, and jars and bowls with accentuated shoulders ('à épaulement') (Hurtrelle *et al* 1990, 214–5; Buchez 2011a, fig. 8 and 9, 145–7; Buchez 2011b, fig. 273-5, figs. 3 and 4). In western Belgium the forms continue to be influenced by French styles, and include bowls 'à épaulement' (e.g. Mariën 1961, 28, fig. 10.4, 15; 30, fig. 11.6; 32, fig. 12.27). It may be significant that at Thanet Earth during this phase, only one possible example was found of such a vessel (**R12**, PRN 8082840009). This, together with the **S4** shoulder attributed to CP2, were the only examples of a trait which was to become very common in France. Its rarity at Thanet Earth could well be indicative of a reduction in French influence on the site's pottery.

The forms and decoration most characteristic of the phase at Thanet Earth are well entrenched in more local traditions particularly in Kent and Essex. These include the group of S-profiled everted-rim jars and bowls, which vary in detail (**F85**, **F86**, **F87**, **F89**, **F90**, **F91**, **F93**, **F95** and **S3**). The finer versions (**F89**, **F91**, **F95**, **S3**) are often associated

with foot-ring bases. While they can be matched in France, they are common in west Kent (e.g. at Oldbury; Ward Perkins 1944, fig. 6; 12.1-14, Greenhithe; Detsicas 1966, figs. 3–4, Caesar's Camp; Keston, Piercy Fox 1969, fig. 5.1-4; 6.10-12, Farningham Hill; Couldrey 1984, fig. 15.14-18, Darenth; Couldrey 1998, form 29, Leybourne, Jones 2009, fig. 1.14.14 and 15, Woolwich, Couldrey 2010, fig. 8.12, 15, 17), and Essex (Chadwell St. Mary; Manning 1962, 134, fig. 4.14; Little Waltham, Drury 1978, 54–56, form F13; Ardale School, Wilkinson 1988, fig. 71.14; fig. 72.22, 36; fig. 73.52, 58, 62), and were clearly well established in East Kent (e.g. at Bigberry, Thompson 1983, fig. 11, 61; Birchington, Macpherson-Grant 1991, 44; Beechbrook Wood, Jones 2006a, form 16; Eyhorne Street, Jones 2006d, pot no.1; Church Whitfield, Thompson 2014, fig. 84.23, 24, 29), at sites where other forms are found matching those from Thanet Earth at this time.

Similarly, the curvilinear scroll decoration, D59, found on the **F91** everted rim jar (PRN 8142130001) is known in France, though usually on more elaborate jars and bowls (e.g. Buchez 2011a, 146, fig. 9; Buchez 2011b, 273, fig. 3); but also apparently more commonly in west Kent where vessels with a similar scroll design, set beneath a horizontal groove, are known from Greenhithe (Detsicas 1966, fig. 4.25, 26), Caesar's Camp, Keston (Piercy Fox 1969, fig. 5, 11) and Oldbury (Thompson 1986, fig. 7, 18), all from MIA contexts. This is just one example of the free-flowing curvilinear style which was also manifest in other designs throughout Kent (e.g. Tutt Hill, Morris 2006b, pot 27a) and Essex, where it forms the defining element in Brown's Mucking-Oldbury style, dated to the MIA (Brown 1991), preceding the more formal curvilinear interlocking arc and stamped designs of the Mucking-Crayford style (Cunliffe 2005, 115, fig. 5.9, A29) which are still relatively rare in East Kent (Margate; Rowe 1925) and absent from Thanet Earth. Several sites across Kent have produced small sherds with short lengths of curvilinear grooves, but without a clear indication of the overall design, and they cannot be assigned to either of the Mucking-Oldbury style or Mucking-Crayford style with certainty.

Thus while there was clearly some contact across the Channel in CP3, represented by forms such as the **F79** beaker, which forms a late example within the EIA tradition, and rounded forms including the rare **D59** curvilinear scroll design, this was at a reduced level. Overwhelmingly, the evidence points to independent development with a considerable reduction in cross-Channel communication during this period, with stronger links with west Kent and, perhaps indirectly, across the Thames to Essex.

Ceramic Phase 4

The few forms indicative of the final phase at Thanet Earth (**F14**, **F19**, **F20**) appeared in Kent (Thompson 1983, fig. 11, 57–58) and in France where the increasing use of internally thickened rims on closed jar forms is found during La Tène D1 (Blancquaert 2001, Buchez 2011b). Its use on everted rims (**R8** and **R9**) and bead rims spread more widely in south-east England during the first century BC and beyond (Thompson 1982, e.g. types C1–4, C3).

This rapid summary of the main influences reflected by the pottery shows that, with the possible exception of a reduction during CP3, when the number of new forms and styles of decoration was reduced anyway, there appears to have been consistent contact across the Channel. Throughout the whole period Thanet Earth shared ceramic traditions, including the use of flint tempering, with the rest of East Kent. These united the region which has been recognized as a unit sharing rusticated surface treatment and fine painted pottery and carinated jars and bowls, the Highstead-Dollands Moor style zone (Cunliffe 2005, 98, fig. 5.4). However, the site also used forms and decoration which were not common throughout the whole of East Kent. In particular, the painted pottery and fine carinated vessels, which so clearly identify French connections during the early La Tène period, are less frequent in inland sites in the west of the region. Occasional fineware vessels do occur but they appear to be less frequent. This observation of course requires proper investigation, and may be a reflection of sample size; but the pottery distribution appears to demonstrate that East Kent was not a unified whole. Sites that were closer to the Channel were more likely to reflect continental practices; inland sites, less so. Each community was influenced by local conditions.

This assemblage from Plateau 8 at Thanet Earth has considerably increased the quantity of pottery from this period in Kent. This report has presented some of the evidence and it is hoped that others will benefit from the valuable database provided by the material.

Later Prehistoric Pottery from Plateaus 1–7

Introduction

This report covers pottery of the first millennium BC recovered from excavations on Plateaus 1–7, comprising 1159 sherds, weighing 7.2 kg. The pottery from Plateau 8 has been reported separately.

In many instances the number of sherds from features was very small and the pottery could not be assigned to a specific phase within the first millennium BC. None of the features on plateaus 2, 4 and 7 contained more than 24 sherds. Only two features (Plateau 1, Pit G1201 and Plateau 6, Pit G6024) contained more than 100 sherds. This contrasts with the pattern of the Early – Middle Iron Age settlement on Plateau 8. This may reflect the shallow depth of the features, the truncation of those features or differing depositional practices. Many of the prehistoric sherds on Plateaus 1-7 were buried either as a result of erosion or were incorporated with fills and levelling activities during later periods.

Tables 235–241 show the distribution of the pottery across these plateaus. These list the number of sherds and their weight for each fabric within context, set and group. Sherd counts refer to non-joining sherds.

Fabrics

Most of the fabric codes are described in the report on the pottery from Plateau 8. Those fabrics not found in the Plateau 8 report are listed below:

Flint in a silty matrix

F1a – Flint, abundant (40 per cent) up to 1mm.
F4a – Flint, moderate (8 per cent) >0.5mm – <2mm.
F9a – Flint, sparse (5 per cent) >0.5mm – <3mm.
F10a – Flint, moderate (15 per cent) >0.5mm – <3mm.
F13a – Flint, common (20 per cent) >0.5mm – <5mm.
F14a – Flint, moderate (10 per cent) >0.5mm – <7mm

Flint in a very fine sandy matrix

F15a – Flint, common, (20 per cent) < 0.5mm, (5 per cent) <1mm.
F17a – Flint, rare (2 per cent) <2mm
F20a – Flint, moderate (7 per cent) >0.5mm – <1mm.
F28a – Flint, abundant (45 per cent), 40 per cent >0.5mm – <2mm, 5 per cent <3mm.
F33a – Flint, moderate 10 per cent >0.5mm – <5mm.
F35a – Flint, common, 35 per cent >2mm – <7mm.

Flint and Iron Oxide in a silty matrix

FI3a – Flint, moderate (12 per cent): rare <0.5mm, moderate >0.5mm – <3mm; Iron oxide, very rare <1mm.
FI5a – Flint, moderate (10 per cent) >0.5mm – <5mm, rare (<1 per cent) 10mm.

Flint and Organic in a silty matrix

FVE3a – Flint, moderate(15 per cent) <2mm; Voids sparse (3 per cent) <1mm.
FVE4a – Flint, common (20 per cent) <1mm, sparse <2mm; Voids sparse (3 per cent) <2mm.
FVE9a – Flint, sparse (4 per cent) >0.5mm – <2mm; Smudges sparse (3 per cent) <1mm.

Grog and Flint in a silty matrix

GF3a – Grog, abundant (40 per cent) >0.5mm – <2mm; Flint, rare (2 per cent) >0.5mm – <2mm.

Chronology

In attempting to establish a chronology use has been made of the few identifiable forms and, to some extent, the fabrics; but even where specific forms can be allocated to a phase within the first millennium BC the sample size is often too small to provide a reliable date for the fill of the feature. The popular use of flint tempering in East Kent varies little throughout the first millennium BC. However, at the extremes of the distribution, coarse flint tempering with inclusions between 2–5mm in size, with none below 0.5mm and only rarely below 1mm, tends to be associated with some Late Bronze Age and Earliest Iron Age pottery; while extremely fine flint tempering, below 0.5mm and occasionally so small as to be referred to as 'star-dust', as at Ellington (Macpherson-Grant 1994, 285), tends to be associated with small thin-walled cups and bowls of the ninth-eighth centuries BC. It is perhaps chronologically significant that several of the fabrics listed above, which are absent from Plateau 8, have no flint inclusions below 0.5mm and that many are in a silty matrix. This may reflect the earlier date range of some of the pottery. All the plateaus are considered together, with pottery allocated to the broad chronological phases presented below.

Late Bronze Age – Earliest Iron Age (1150–500 BC)

Pit G1201 on Plateau 1, produced 143 sherds representing six vessels. One was an incurving hook rim (18g) from a jar (PRN 1006500001) characteristic of the PDR plainware tradition. Its fabric, F34, with a silty matrix tempered with relatively large flints (sparse up to 5mm) and none below 1mm in size, support its attribution to the Late Bronze Age. A comparable example was found at Coldharbour Lane, Gravesend (Barclay 1994, fig. 10, 8). The large number of body sherds in similarly coarse fabrics (F14a and F33a) support a Late Bronze Age date for the fill of this pit.

Ditch G1057 on Plateau 1 produced just one vessel, a plain open bowl with walls 4–5mm thick (PRN 1002650001). Only 2 per cent of the rim survived, but its diameter was likely to have been at least 16cm. The surfaces were worn but traces of burnishing survived on the interior. A local example is known from the ninth century BC at Cliffs End Farm (Leivers 2014, fig. 5.3, 27). Later versions tend to have thicker walls. On the continent this form is known from *c.* 1150–450 BC (Henton 2018, fig 2, 3, 4, 5 and 6, form 20100).

A similar plain open bowl (1 sherd, 12g) (PRN 1100230002) was found in Enclosure Ditch G10006, also on Plateau 1. It was accompanied by fourteen sherds from about five other vessels including one flat base. None of these sherds need be later than *c.* 1150–800 BC, but the small sample size does not rule out a later date in the first half of the first millennium BC.
On Plateau 2, Ditch G2092 provided 12 flint tempered body sherds weighing 47g and representing 4 pots. Two of the pots were in coarse flint tempered fabrics (F13a and F35a). These may be indicative of a Late Bronze Age or Earliest Iron Age date, but the evidence for dating the fill of this ditch is very slight.

Pit G3067 on Plateau 3 contained a moderately worn body sherd (7g) from a flaring dish with internal horizontal rilling (PRN 3032040005). This can be paralleled at Site 5 on the Bridge By-pass (Macpherson-Grant 1980, fig.11, 62) and is common among continental Late Bronze Age forms (e.g. Henton and Buchez 2017, figs. 15.5, 04.4; fig.15.5, 237.2; fig. 15.7, 200.29, 200.30; Henton 2018, figs 2 and 4, type 30102). It was found with 43 other sherds from eleven pots, including a fragment (2g) of a severely worn bead rim, indicative of an Early Iron Age date, and the fill is likely to fall broadly within *c.* 800–500 BC.

Pit G3109 on Plateau 3 contained 48 sherds representing four pots. One of these (PRN 3031040002) was from the rim and shoulder of a fineware bowl of a form paralleled in the ninth–eighth centuries BC at Highstead, Period 2 (Couldrey 2007, fig. 72, 192), at Monkton Court Farm (Macpherson-Grant 1994, fig. 9,24); and at Cliffs End Farm (Leivers 2014, fig. 5.3, 11). Associated with this was the fragment of a shoulder (PRN 3031040003), about 260mm in diameter, from a thin-walled bowl with traces of light horizontal grooves. This combination of form and decoration is found on a range of vessels from small cups to large jars (with shoulder diameters varying from 100–500mm), dated from the ninth–eighth centuries BC, at Highstead (e.g. Couldrey 2007, fig. 69, 172 and 173; fig. 73, 210) and Monkton Court Farm (Macpherson-Grant 1994, fig. 5, 1 and 8; fig. 6, 9; fig. 9, 24 and 28). A closely comparable example, about 240 mm in diameter, was dated to the ninth century at Cliffs End Farm (Leivers 2014, fig. 5.2, 9).

On Plateau 7, thirty-nine sherds, likely to belong to the early first millennium BC, were recovered from the final levelling phase of the ditches around Barrows 2 and 3. In several contexts they were accompanied by early medieval shell-tempered sherds. With the exception of the single body sherd from context 7166, all the sherds were small with a mean sherd weight of 5g.

The final levelling of the ditch around Barrow 2 (G7005) contained two vessels with recognisable forms which can be placed within the Late Bronze Age or Earliest Iron Age (*c.* 900–700 BC). The first (PRN 7076390001) comprises 10 sherds (50g) from the shoulder and possible omphalos base of a vessel with walls 4–9mm thick with a smooth moderately worn external surface and burnished interior. The second (PRN 7076390003) consists of 2 sherds (5g) in fabric F1a, from the slightly convex upper body and very short out-turned rim of a small jar or cup with walls 3–6mm thick, with moderately worn smooth surfaces. The fabric is broadly similar to that used for thin-walled bowls from Highstead Period 2 (Couldrey 2007, 107–108, forms F38–F41) and Monkton Court Farm (Macpherson-Grant 1994, 281–285). A contemporary small vessel with a short everted rim on an almost straight slightly inturned wall (PRN 7074490001), from the final levelling further around the ditch, can also be paralleled at Monkton Court Farm (Macpherson-Grant 1994, fig. 10, 39).

The residual sherds from the burnt deposit in Barrow 3 (G7010), though associated with medieval sherds, could themselves be contemporary with the final levelling of the Barrow 2 ditch. A flat-topped out-turned rim (1 sherd, 1g) with slight internal projection (7072010001) could be contemporary and matched by one from the Late Bronze Age horizon in the fill of the ring ditch at East Northdown, Margate (Smith 1987, fig. 11, P14).

Earliest Iron Age (800 – 500 BC)

Enclosure Ditch G5002, on Plateau 5, produced 18 sherds belonging to the rim, shoulder and upper wall of a coarse jar (PRN 5052490001). Only about 4 per cent of the rim survives, revealing a diameter of approximately 22cm. The sherds do not join, but the form appears to represent a jar with an almost vertical wall and a very slightly concave neck. The wall and rim are 9–10mm thick. Below the neck, the shoulder and wall are covered with coarse rustication with moderate to severe wear. The shoulder appears to have been accentuated by a cordon, though this may be due to the irregular application of the rustication of which it forms a part. No other vessels were found with this pot. Its form is slightly unusual but it is reasonably closely matched in the Netherlands by an example from Phase B at Oss-Ussen, *c.* 725–625 BC (Van den Broeke 2012, 398, Pl.4, 5) and the smaller of the two vessels from grave 239 at Haps (Verwers 1972, 47, Abb. 26). Radiocarbon dating of the cremated remains associated with the Haps burial produced a date of 2530 ± 45 BP (GrA-19564) (Lanting and Van der Plicht 2001/2002, 224 and 250, Fig. 8,24) which calibrates to 802–519 cal BC with a 95.4 per cent probability (OxCal v.4.3.2, Bronk Ramsey 2009a).

Earliest Iron Age to Early Iron Age (*c.* 800–300 BC)

Pit S2302, part of pit group G2112, produced eight sherds (113g) from a shouldered jar with finger-tip impressions on the top of a slightly everted rim (PRN 2023000001), broadly similar to examples from Monkton Court Farm (Macpherson-Grant 1994, fig.6, 14), and the A2 Pepperhill to Cobham road scheme (Brown and Couldrey 2012, fig.3.45, 1200178 and fig 3.47, 1200547) falling within *c.* 900–300 BC.

Early Iron Age (*c.* 600–300 BC)

The pottery from the ditch forming a field boundary, G1003, on plateau 1, included a rim sherd from a proto-saucepan pot (PRN 1011210001) with slipped surfaces which had been wiped smooth. Several of these were found on Plateau 8 (form 101) where they were attributed to ceramic phase 2, *c.* 400–300 BC.

A second proto-saucepan pot (43 sherds, 163g) (PRN 5052170001), with a plain rim and slip on both surfaces, was recovered from Pit 5183 on Plateau 5. This was associated with an out-turned rim (PRN 5052170002) which is less closely dated, but this and the

accompanying 40 body sherds could all be accommodated in the Early Iron Age, *c.* 400–300 BC.

Also from Plateau 5, the upper portion of a severely worn probable saucepan pot (PRN 5052420003) was recovered from post-pit 5242, forming part of Fence G5037. This post-pit contained twenty-five sherds weighing 146g. These included a vessel with a flaring rim in fabric FI7a, with burnished interior and a worn but probably burnished exterior, decorated with a light linear grooved design depicting irregular nested chevrons (PRN 5052420001). This design is found on the continent from the sixth to the fifth centuries BC (e.g. Bardel 2009, pl. 37, décor incise géométrique). Other forms from this post-pit are worn and undiagnostic. Post-hole G5267, which formed part of Fence G5037 and which contained pottery likely to be contemporary with that found in post-pit 5242, also held 1 Roman sherd which is assumed to be a later intrusion.

Early-Middle Iron Age (600–100 BC)

On Plateau 1, Pit S1371 produced twelve severely worn sherds (62g) from the rim and upper shoulder of a jar (PRN 1013700003) similar to Highstead form F47 where it was placed in the fifth century BC (Couldrey 2007, fig. 87, 331). It was found with four other pots, represented by eighteen sherds with a mean sherd weight of 4g.

An open bowl, of the same form as PRN 1002650001 from G1057 assigned to the ninth or eighth century above, but with a thicker wall, 6–9mm (PRN 5056380002) was recovered from Pit G5058 on Plateau 5 which contained 28 sherds (117g) representing eight vessels. It was accompanied by a severely worn everted rim (PRN 5056380001) which may belong to the Early or Middle Iron Age, but is not closely dated. An earlier date, in the first half of the first millennium BC, cannot be ruled out.

Early Late Iron Age (125–80 BC)

Pit S16034, one of a group of pits (G6019) on Plateau 6, contained a severely worn inturned thickened rim probably from a jar, though its angle is uncertain (PRN 6160330001). These rims appear on jars from La Tène D1, 125–80 BC, and later (e.g. Rougier and Blancquaert 2001, fig.12, type 3.1; Gaudefroy 2002, fig. 49). This example was associated with just two other pots represented by 7 sherds, including a severely worn fragment of a bead rim, with an average weight of 2g. In isolation, they do not provide a reliable guide to the chronology of the pit.

Late Iron Age

Field Boundary G1100, on Plateau 1, produced just three flint tempered body sherds, one scrap (2g) (PRN 1011450002) had a rough combed surface of the type commonly

found in the Late Iron Age. This small sample however, does not provide strong evidence for the chronology of the ditch.

Also on Plateau 1, Ditch G1026 produced a slightly expanded flat-topped rim of uncertain angle and diameter (PRN 1013620001) in flint-and grog temper, and a second vessel represented by twelve grog tempered body sherds. Both these pots could date from the Late Iron Age. But, as in the case of Field Boundary G1100, the small quantity of pottery provides scant evidence for dating the feature.

Pit 11057 on Plateau 3 contained four sherds (176g) from the upper part of a globular jar with a flat-topped rim 16cm in diameter (PRN 3110570001) a small version of Thompson type S6 (Thompson 1982), dated from the last quarter of the first century BC and on into the early Roman period. This example comprising four non-fitting sherds (476g), is flint tempered (F20) and of local manufacture. With this pot were four moderately worn body sherds (166g) from a jar (PRN 3110550002) decorated with widely spaced vertical panels of combed grooves, similar to decoration style D33 on Plateau 8; and a rim and upper shoulder from a jar (PRN 3110550012) of form F43 on Plateau 8 and placed in the middle Iron Age. These were accompanied by five sherds (23g) from a flaring rim in fabric FVE3 (PRN 3110550003), more common in the Early Iron Age.

Discussion

Pottery belonging to the first millennium BC from Plateaus 1–7 demonstrates some occupation in the area from the Late Bronze Age to the Late Iron Age, though few features could be reliably dated to phases within the millennium.

The character of deposition differed markedly from that on Plateau 8 where there was a substantial settlement that appears to have been continuously occupied from *c.* 600–100 BC. There the mean sherd weight (MSW) of pottery from the pits varied from 14.9–29.1g across the four ceramic phases. From plateaus 1–7 the MSW of pottery from all the pits was 6.8g. Ignoring features with later disturbance, the pit with the largest MSW of 32g contained just 1 sherd; while pit G6024 on Plateau 6, with the largest number of sherds (151), had a MSW of just 2.5g. The small sample size on Plateaus 1–7 may be partially responsible for the discrepancies between them, whether as a result of truncated features or the sampling strategy during the excavation; but it is most likely that the nature of the use of the land was quite different. Similarly, on Plateaus 1–7 only four post-holes produced pottery, a total of five sherds. This small sample cannot readily be compared with those on Plateau 8. More similar were the fills of ditches. On Plateau 8, three ring ditches produced sherds with a MSW of between 7.96g and 9.98g; while the linear ditches had MSWs between 2g and 14.5g. The overall average for ditches on Plateaus 1–7 was 8.3g, which falls within the range recorded from Plateau 8, possibly reflecting similar causes, namely that the sherds entered the fills as a result of weathering. There were some exceptions, for example: Ditch S16240, part of Droveway

G6037, produced three sherds from a single base weighing 308g, and more particularly, S5250 the terminus of enclosure ditch G5002 on Plateau 5 contained 18 sherds from the single rusticated vessel, referred to above, weighing 367g (PRN 5052490001). It is possible that the burial of this incomplete and worn pot was deliberate. Certainly it was unusual; and that it was the only rusticated vessel from Plateaus 1–7 during the Earliest Iron Age may support a case for its special treatment; but a wider range of evidence needs to be considered to enable better understanding of the deposition practices employed.

While the pottery from Plateaus 1–7 comprised just 1159 sherds, many of which were small, worn and incorporated into fills with later material, it is noteworthy that it has added to our knowledge of the range of forms and decoration from the first millennium BC. Certain sherds provide particular indication of continental influence: the flaring dish with internal rilling from the Late Bronze Age (PRN 3032040005), a rusticated jar (PRN 5052490001) from the Earliest Iron Age and a flaring rim with irregular nested chevron decoration (PRN 5052420001) from the Early Iron Age, confirming a picture of strong cross-Channel links during this period.

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Chapter 16: Roman Pottery

Malcolm Lyne

1. Introduction

The excavation yielded 2930 sherds (88742 g) of Late Iron Age, Roman and Early Saxon pottery from 230 contexts. Of these, 582 sherds (5686 g) came from Plateau 1 (Table 48), 1447 sherds (63701 g) from Plateau 2 (Table 50), 136 sherds (4503 g) from Plateau 3 (Table 52), 58 sherds (469 g) from Plateau 4 (Table 54), 269 sherds (11814 g) from Plateau 5 (Table 55), 7 sherds (149 g) from Plateau 6 (Table 57), 1 sherd (15 g) from Plateau 7 (Table 59) and 430 sherds (2406 g) from Plateau 8 (Table 60). A further 2195 small sherds (1840 g) were retrieved from environmental samples and the contents of cremation vessels (Tables 49, 51, 53, 56, 58 and 61).

Most of the pottery is of Late Iron Age to 2nd *c.* date but there is some 3rd and 4th *c.* material; mainly cremation pots and in Early Saxon features.

2. Methodology

All of the assemblages were quantified by numbers of sherds and their weights per fabric. These fabrics were identified using a x8 magnification lens with built in metric graticule in order to determine the natures, forms, sizes and frequencies of added inclusions: fine fabrics were further examined using a x30 magnification pocket microscope with artificial illumination source. Fabrics were classified using the codings created by Canterbury Archaeological Trust (Macpherson-Grant *et al* 1995) with additions.

3. The Assemblages

3.1. *c.* 25 BC–AD 250

3.1.1. Cremations

Plateau 1

Assemblage 1. Cremation G10012 in fill of Pit 10688 to the north of Trackway 27.

The 11 vessels in this cremation were arranged in two layers.

Primary cremation layer with deposit of cremated bone.

Fig. 270/1. Shattered and incomplete neck-cordoned jar with shoulder cordon in very underfired brown Thanet Dry fabric BER 16 fired polished black. External rim diameter 140 mm. *c.* AD 0–70. *Vessel 10736. SF 1.9000.*

Fig. 270/2. Terra Nigra CAM 56/7 cup with two line stamp TORNOS/VOCARI in base. External rim diameter 135 mm. *c.* AD 10–43/48. *Vessel 10726. SF 1.9001/2*

Fig. 270/3. Cup of Thompson form E1–4 in brown very-fine-grog-tempered fabric B1 fired polished black. External rim diameter 100 mm. *c.* AD 0–50. *Vessel 10738. SF 1.9011*

Fig. 270/4. Terra Nigra CAM 2B platter with faint central and illegible two line stamp. External rim diameter 260 mm. *c.* 20 BC–AD.45. *Vessel 10738. SF 1.9010*

Secondary cremation layer

Fig. 270/5. Lid-seated CAM 114 beaker in cream Gallo-Belgic Whiteware fabric BER 5 with herringbone barbotine on girth and pinkish-orange colourcoat on shoulder and lid-seated rim. External rim diameter 90 mm. *c.* 20 BC–AD.45. *Vessel 10726. SF 1.9001/2. DWG 4*

Fig. 270/6. Small necked beaker of Monaghan type 2I5.2 in grey North Kent Fineware fabric R16. External rim diameter 60 mm. *c.* AD 43–70. *In fill 10727 of Vessel 10726. SF 1.9003. DWG 5*

Fig. 270/7. Terra Nigra CAM 56/7 cup with two line stamp CANICO/S.FNAI in base. External rim diameter 135 mm. *c.* AD 10–43/48. *Vessel 10724. SF 1.9004. DWG 6*

Fig. 270/8. Large butt-beaker of Stead and Rigby (1989) form 2E2 in Gallo-Belgic Whiteware fabric BER 10 with orange patches on rim and surface greying. External rim diameter 140 mm. *c.* AD 30–70. *Vessel 10732, the fill of which contained further fragments from vessels 1.9001 and 1.9007. SF 1.9006 DWG 7*

Fig. 270/9. Butt beaker of Stead and Rigby form 2D4 in similar fabric. External rim diameter 110 mm. *c.* AD 30–70. *Vessel 10730. SF 1.9007 DWG 8*

Fig. 270/10. Butt-beaker of form 2E2 in similar fabric. External rim diameter 120 mm. *c.* AD 30–70. *Vessel 10728. SF 1.9008 DWG 9*

The shattered remains of the following vessel were purposely placed over this secondary cremation layer.

Fig. 270/11. Terra Nigra CAM 2 platter with two radial stamps of IVLIOSAV. External rim diameter 290 mm. *c.* AD 20–45. *Vessel 10723. SF 1.9009*

Date *c.* AD 43–50+

Assemblage 2. Cremation G10013 in Pit 10594.

There is only one pot from this cremation:

Fig. 270/12. Truncated jar in soft black Thanet Dry fabric BER 16 fired grey-brown internally. *c.* AD 40–100. *Vessel 10592. DWG 10*

Plateau 2

Cremation Group 2004 comprised the following four cremations near the western half of Trackway 25.

Assemblage 3. Cremation S2014

The three pots accompanying this cremation are heavily truncated:

(Not illustrated) Shattered remains of cremation urn in soft red-brown Transitional Belgic grog-tempered/Native Coarseware fabric B2/R1 fired smooth black. *Context 2013.*

Fig. 271/13. Lower portion of bag-shaped beaker or flagon in sand-free pink fabric fired cream-buff externally. *c.* AD 70–100. *Context 2009*. DWG 11

Fig. 271/14. Lower part of bag-shaped single-handled flagon in similar fabric. *c.* AD 70–100. *Context 2011. DWG 12*

Date *c.* AD 70–100

Assemblage 4. Cremation S2018

This was contained in the following:

(Not illustrated) Large heavily truncated jar in grey Native Coarse Ware with grog and sand filler and smoothed externally. *c.* AD 150–250/300. *Context 2017.*

Assemblage 5. Cremation S2022

This was contained in the lower half of a truncated Dressel 20 olive-oil amphora (not illustrated) and cannot be dated any more precisely than *c.* AD 43–250.

Assemblage 6. Cremation S2027

Two pots were present

Fig. 271/15. Narrow-necked jar used as cremation urn, in friable underfired grog-tempered 'Belgic' ware fabric B2 fired brown with polished black exterior and combed cordon on its shoulder. External rim diameter 160 mm. *c.* AD 70–200. *Context 2026. DWG 13*

Fig. 271/16. About one quarter of a Central Gaulish Samian Dr. 18/31 or Dr. 31 dish. External rim diameter 190 mm. *c.* AD 120–200. *Context 2029. DWG 14*

Date *c.* AD 120–200

Cremation Group 2018 to the south and east of Sunken-floored Building 1.

Assemblage 7. Cremation S2003

This cremation yielded the following three vessels:

Fig. 271/17. Large necked jar used as cremation urn, in brown-black knife-trimmed Transitional Belgic grog-tempered/Native Coarseware fabric. External rim diameter 220 mm. Paralleled at the Minster villa in an assemblage dated *c.* AD 140–170. (Lyne 2011, fig. 7, 67). *Vessel 2000. SF 2.9000*. DWG 15

Fig. 271/18. Small necked-jar in grey black variant of Canterbury Greyware fabric R5 fired rough brown. External rim diameter 70 mm. *c.* AD 80–175. *Context 2001 fill of jar 2000. SF 2.9001. DWG 16*

Fig. 271/19. Bowl of Monaghan's class 5D2 in BB2 fabric with burnished lattice decoration. External rim diameter 180 mm. *c.* AD 120–180. *Context 2001 fill of jar 2000. DWG 17*

Date *c.* AD 150–175

Assemblage 8. Cremation S2196

There were four vessels and parts of vessels present

(Not illustrated) Large truncated storage-jar with multiple shoulder cordon used as cremation vessel, in polished black Transitional Belgic grog-tempered/Native Coarseware. *c.* AD.70–200. *Context 2198*.

Fig. 271/20. Part of Dr. 31 dish in East Gaulish Samian. External rim diameter 200 mm. *c.* AD 150–230. From fill of cremation vessel. Context *2198 DWG 18*

Fig. 271/21. Part of necked and girth-cordoned jar in grey Thameside fabric LR2.2 with superficial surface reddening. External rim diameter 200 mm. *c.* AD 150–250. Acting as a lid over beaker 2200. *Context 2197. DWG 19*

Fig. 271/22. Indented beaker of Pollard type 153 in grey North Kent Fineware fabric R16 with superficial surface reddening. External rim diameter 75 mm. *c.* AD 150–300+. *Context 2200. DWG 20*

Date *c.* AD 200–250

Assemblage 9. Cremation S2173

This was in the following vessel

Fig. 271/23. Large bead-rim storage-jar with much of the rim missing, in coarse black Native Coarseware fabric with profuse grog and alluvial-flint filler, pink margins and external knife-trimming. External rim diameter 360 mm. *c.* AD.150–250. *Context 2172. DWG 21*

Assemblage 10. Cremation S2365

This was in a shattered and heavily truncated jar in knife-trimmed black Transitional Grog-tempered/Native Coarse Ware with thick brown margins (Not illustrated).

Assemblage 11. Cremation S2122

This was in the truncated lower half of a Dressel 20 olive-oil amphora (Not illustrated) and cannot be dated any more precisely than to *c.* AD 43–250+.

Plateau 4

Assemblage 12. Cremation G4078 in Pit 4131

This ploughed-out cremation had just four fresh fragments from a Central Gaulish Samian Dr. 18/31 dish (*c.* AD 120–150), making up less than 1/5th of the vessel (Not illustrated).

Plateau 5

Cremation Group 5065 forming a cluster west of field boundary ditch G5146.

Assemblage 13. Cremation S5815

This included the fragmentary remains of three pots:

(Not illustrated) Lower part of Dressel 20 amphora including basal spike. *Contexts 5802, 5816 and 5820.*

Fig. 272/24. Necked jar in soft Transitional Belgic grog-tempered/Native Coarse Ware fired pink with polished black exterior decorated with burnished vertical lines on the shoulder and chevrons on the girth. External rim diameter 160 mm. DWG 22. Paralleled at Minster in *c.* AD 170–250 dated assemblage (Lyne 2011, fig. 10, 102). *Context 5821*.

(Not illustrated) Shattered remains of small flagon of uncertain type in sand-free pink fabric with external cream patches. *c.* AD 150–250. *Context 5821*.

Date *c.* AD 150–250

Assemblage 14. Cremation S5824

The fill of the pit yielded 17 fragments from a ?large flagon or amphora in sandfree pink fabric fired cream-buff externally (Not illustrated). *c.* AD 50–250. *Context 5823.*

Plateau 8

Cremation Group 8163 south of Trackway 27

Assemblage 15. Cremation S12315

This yielded 62 fragments from the following truncated pot:

Fig. 273/25. ?Butt beaker in black very-fine 'Belgic' grog-tempered ware fabric B1. *c.* 0–AD 70. *Context 12314. DWG 23*

Assemblage 16. Cremation S12355

Three pots were present:

Fig. 273/26. Butt-beaker of Thompson type G5-5 (1982) in silty pink Thanet Dry fabric BER16 fired polished grey-black and used as cremation urn. External rim diameter 100 mm. *c.* AD 40–70. *Context 12369. DWG 24*

Fig. 273/27. Gallo-Belgic platter copy of Thompson type G1-6 in polished black fine 'Belgic' grog-tempered ware fabric B1. External rim diameter 180 mm. *c.* AD 43–70. *Context 12370. DWG 25*

Fig. 273/28. Small butt-beaker of Thompson type G5-3 in similar fabric with patch of black resin on its side. External rim diameter 80 mm. *c.* AD 30–70. *Context 12371. DWG 26*

Date *c.* AD 43–70

Cremation Group 8162 inside Enclosure 10.

Assemblage 17. Cremation S12749

Two pots were present:

Fig. 273/29. Part of biconical beaker of Monaghan type 2G0.4 in grey North Kent Fineware fabric R16. External rim diameter 90 mm. *c.* AD 70–100. *Context 12746. SF 8.9007. DWG 27*

Fig. 273/30. Complete Dr. 18 dish in South Gaulish Samian with stamp OFSEVERI. External rim diameter 175 mm. *c.* AD 65–95. *Context 12792. DWG 28*

Date *c.* AD 70–100

Assemblage 18. Cremation S12813

The four vessels from this cremation pit are as follows:

Fig. 273/31. Truncated flagon with rim and most of one side missing, in grey black Hoo fabric fired reddish-brown externally with traces of white slip. *c.* AD 43–150. *Context 12833. DWG 29*

Fig. 273/32. Crushed small, thin walled, biconical-beaker in black eggshell ware. Rim diameter uncertain but very small. *c.* AD 60–85. *Context 12833. DWG 30*

Fig. 273/33. Complete Dr. 35 dish in South Gaulish Samian. External rim diameter 130 mm. *c.* AD 70–110. *Context 12833. DWG 31*

Fig. 273/34. Complete Dr. 42 dish in similar fabric. External rim diameter 160 mm. *c.* AD 70–110. *Context 12833. DWG 32*

Date *c.* AD 70–100

Assemblage 19. Cremation S3614

The fill of this pit yielded five sherds from the base of a flagon in a pink Hoo fabric R17 variant with external white slip (*c.* AD 50–150) and the base of a very truncated jar in grey Thanet Dry fabric BER16 fired black externally (*c.* AD 40–70/100).

Date *c.* AD 70–100

Assemblage 20. Cremation G8277 in Pit 14027

This yielded *c.* 127 chips and bodysherds from a jar in combed 'Belgic' grog-tempered ware fabric B2 fired patchy buff/grey/black. *c.* 25 BC–AD.150. Context 14026.

3.1.2. Miscellaneous

Plateau 1

Assemblage 21. From the silt and metalling on Trackway 27 (Contexts 1061 and 1062)

The 11 sherds (50 g) of pottery from these contexts comprise two neck-cordoned jar fragments in silty brown Thanet Dry fabric BER16 fired smooth black (*c.* AD 40–100), four jar fragments in Canterbury Greyware fabric R5 (*c.* AD 80–175), one fragment of South Gaulish Samian (*c.* AD 43–110), two from a Dr. 36 dish in Central Gaulish Samian (*c.* AD 120–200), one chip of North Kent Fineware and one indeterminate pellet. These fragments suggest that the track was in use during the late 1st and 2nd centuries.

Plateau 2

Assemblage 22. From Hearth 2569 in Sunken Floor Building 1. (Contexts 2566 and 2567).

The overwhelming bulk of the 94 sherds (2262 g) of pottery from this feature (72 sherds,1965 g) consists of sherds from at least eight vessels in soft underfired reddish-brown Transitional 'Belgic' Grog-tempered/Native Coarse Ware with all the appearance of pottery kiln or clamp-wasters. These include knife-trimmed jar sherds and the following:

Fig. 274/35. Handmade cavetto-rim jar. *Context 2566. DWG 33*

Fig. 274/36. Hook-rim necked-jar with fine horizontal combing on its body. External rim diameter 120 mm. *Context 2567. DWG 34*

Fig. 274/37. Another example without combing. External rim diameter 200 mm. *Context 2567. DWG 35*

Fig. 274/38. Necked-jar. External rim diameter 220 mm. *Context 2567. DWG 36*

Fig. 274/39. Shallow bowl with everted rim. External rim diameter 140 mm. Several bowls of this type were present in the *c.* AD 140–175 dated well F.7105 at the Minster villa (Lyne 2011). *Context 2567. DWG 37*

Sherds in other fabrics include 10 from a Gauloise 4 amphora, one from a Thameside jar in high-fired fabric LR2.2 with surface reddening (*c.* AD 180–270/300), three in Canterbury Greyware fabric R5 (*c.* AD 80–175) and one in Baetican Dressel 20 fabric.

Other contexts relating to this building yielded a further 151 sherds (928 g) of pottery. Of this, 36 fragments came from Postholes 2322, 2445 and 2587 and include 24 jar sherds in the same pinkish-brown underfired fabric B2/R1 as is present in the assemblage from the hearth. The 113 sherd assemblage from the infill of the building has a predominance of Transitional 'Belgic' grog-tempered/Native Coarseware sherds (70 per cent): there are only four Canterbury Greyware fragments but these include a piece from a necklessjar of Lyne Type 7/3 with quadruple rim top reeding dating from towards the end of the industry (*c.* AD 150–175/200, Lyne forthcoming). Other sherds include fragments from a Central Gaulish Samian Dr. 31 dish (*c.* AD 150–200) and a 'pie-dish' of Monaghan Class 5D in BB2 fabric R14 (*c.* AD 130–180/200).

The ceramic evidence points towards this building being in use during the mid-to-late-2nd century. It was thought that the sunken-floored buildings at the nearby Monckton-Mount Pleasant site had specialised functions; if this were the case here, then that specialised function was probably the manufacture of Transitional 'Belgic' grog-tempered/Native Coarseware pottery, with the sunken floor designed to shield the firing clamp or clamps within from the wind.

3.2. *c.* AD 250–400+

3.2.1. Cremations.

Plateau 3

Cremation Group 3027. A cluster of four Late Roman cremations to the south of Trackway 25, of which three had pots associated;

Assemblage 23. Cremation S3036

This pit contained just one pot:

Fig. 275/40. Necked jar used as a cremation pot in a handmade black silty Thanet Dry type fabric but with both internal and external polish. External rim diameter 200 mm. The normal currency of vessels in Thanet Dry type fabric is *c.* AD 40 to 100: this pot, however, has certain unusual characteristics in that it is polished in and out and is of a form identical to that of some jars in Late Roman Grog-tempered ware. It may be that this is a locally made Late Roman pot making use of the same clays as had the Thanet Dry wares producers. *Context 3035. SF 3.9019. DWG 38*

Assemblage 24. Cremation S3094

This cremation also consisted of just one vessel:

Fig. 275/41. Necked-jar in Late Roman Grog-tempered ware fabric LR1 variant with silt and grog filler, fired black with orange/buff patches. External rim diameter 180 mm. *c.* AD 250/70–420+. *Context 3088. DWG 39*

This pot was accompanied by seven tiny fragments from a beaker in sand-free grey-black fabric fired polished pink externally with ?glass-cut decoration. The seven sherds weighed a mere 3 grams in total. A tiny chip from an Alice Holt/Farnham greyware pot (*c.* AD 270–420) was also retrieved during the sieving of environmental samples.

Assemblage 25. Cremation S3102

This was badly disturbed by earth-moving machinery but fragments from three vessels were retrieved:

Fig. 275/42. Base of truncated jar in soft underfired black fabric with grog and <0.20 mm. quartz-sand filler and polished inside and out. Late Roman or 5th century. *Context 3101. DWG 40*

(Not illustrated) Jar of uncertain type in ?Native Coarse Ware. *c.* AD 170–250/300. *Contexts 3099 and 3101.*

(Not illustrated) Beaded-and-flanged bowl in BB1 fabric. *c.* AD 240–350. *Contexts 3099 and 3101.*

Date *c.* AD 250–300

4. Discussion.

Some unusual cremation practices were noted in the various cemeteries and amongst the single interments. The first of these unusual practices lies in the use of truncated Dressel 20 amphorae as cinerary urns for cremations S2022 and S2122. The use of such vessels for this purpose is very unusual but paralleled in the Ospringe cemetery at Faversham, only 25 kilometres to the west. Twenty-six of the cremations from that cemetery were in Dressel 20 amphorae and three inhumations were covered over by sherds from the same type of vessel; where datable by ancillary vessels and other grave-goods, these cremations were of late 2nd-to-early 3rd *c.* date (Whiting *et al* 1931). The reason for this local use of Dressel 20s as cremation vessels may be that the Roman settlement at Faversham at the head of the Faversham creek was a port of entry for olive oil shipments, leading to a local surplus of empty amphorae.

The second abnormality lies in the presence of the small Late Roman cremation cemetery of late 3rd and 4th *c.* date on Plateau 3 (G3027). The cremation rite in Britain was supplanted by that of inhumation during the 3rd century and only a few cremations can be dated to between AD 300 and the Early Saxon period. Late Roman cremations are, however, also known at Ospringe (Whiting *et al* 1931) and Worth (Stebbing 1937) in East Kent: at both of these sites, the cremation pots are handmade like those in the cemetery at the Thanet Earth site.

It is possible that the resurgence in the use of handmade pottery in East Kent, East Sussex and the Hampshire Basin may have been due to the settlement of Germanic peoples in those areas during the late 3rd and 4th centuries and that the cluster of late Roman cremations in East Kent reflects the funerary rites of these newcomers (Lyne 1994, 522–539). It is noticeable that just about the only other features on the site to produce Late Roman pottery were the Early Saxon Sunken Floored Buildings 2 and 5.

SFB 2 was in the same general area (Plateau 3) as the late cremations. The Early Saxon pottery from this feature was accompanied by nine Late Roman pot fragments including from Oxfordshire Red Colour Coat C81 and C51 bowls (*c.* AD 300–400+ and *c.* AD 240–400+ respectively), a white-slipped Alice Holt/Farnham greyware jar of uncertain type (*c.* AD 270–350) and an everted-rim jar in Late Roman Grog-tempered ware with siltstone grog (*c.* AD 270–420+). The C81 bowl, the Alice Holt/Farnham ware and the Late Roman Grog-tempered ware sherds are fresh, suggesting that some Romano-British pottery may have still been in use when this Early Saxon building was occupied. SFB 5 yielded one sherd each from Oxfordshire Red Colourcoat C68 and C81 bowls (*c.* AD 300–400+): the C68 bowl sherd was freshly broken. The Early Saxon pottery from these SFBs is, however, dates to the 6th century; it is very difficult to believe that Late Roman pottery was still in circulation more than 100 years after the British provinces had been abandoned.

Chapter 17: Post-Roman Pottery

Luke Barber

Introduction

The excavations recovered 8,665 sherds of post-Roman pottery, weighing a little over 92.2kg, from 701 individually numbered contexts. This total includes sherds from a minimum of 1,760 different vessels. The assemblage was recovered from all eight plateaus by hand collection and from environmental residues though quantities vary considerably between areas (Table 62).

The overall assemblage is of variable condition with a great range of sherd sizes. Although the general trend is toward small sherds (i.e. up to 30mm across) there are also medium to large sherds (i.e. to *c.* 150mm) in a few deposits and a few full profiles are present. Most of the pottery is in reasonably good condition and despite many sherds being small they often exhibit relatively little abrasion. Despite this there is a notable quantity of small relatively abraded sherds, particularly for the High Medieval period, suggesting some material at least has been subjected to repeated reworking prior to becoming incorporated in the deposits in which they were found. In addition some sherds, usually the lower fired examples, have a limey concretion that is not easily removed without damaging the surface of the pot – a phenomenon already noted from the area (Cotter 2008, 328). Overall residuality and intrusiveness appears to be low or non-existent in the majority of contexts though it is not always easy to isolate due to the gradual development of the sandy wares and, more importantly, the small sizes of most context groups. The vast majority of the assemblage is from a range of cut features such as pits, ditches and sunken-featured buildings. Although the largest context group consists of an impressive 469 sherds (context 7296, G7028, associated with Track 31/32) the majority of individual contexts produced under 10 sherds a piece.

The assemblage contains a wide chronological range of material spanning the 6th to 19th centuries though coverage is notably uneven during this range. The assemblage is characterised in Table 63 in order to demonstrate the quantities involved by period. This table is based on the date of the pottery itself, whether intrusive, residual or contemporary rather than the date of the context in which it was found. The divisions are based on the Canterbury Archaeological Trust (CAT) post-Roman fabric types (prefixed EMS – Early to Middle Saxon; MLS/LS – Middle to Late Saxon; EM – Early medieval; M – medieval; LM – Late medieval; PM – post-medieval and LPM – late post-medieval). This gives a fairly accurate breakdown of the assemblage though it should be noted that some fabrics could cross some of the chronological boundaries given.

Early Medieval and High Medieval wares totally dominate the overall assemblage with a chronological range covering *c.* AD 1075 to AD 1325/50. Lesser quantities of Early to

Mid-Saxon, Late Medieval (LM) and Early Post-medieval pottery attest to small-scale localised activity. The Mid/Late Saxon and Late Post-medieval periods produced negligible quantities of pottery suggesting virtually no refuse disposal was occurring at these times.

Methodology

The pottery for each context was initially sorted into different fabrics with the aid of a x20 magnification hand lens. These fabrics were later correlated with the Kent fabric series by close comparison with sample sherds in the reference collection held by CAT. This fabric series is used throughout the current report. The pottery was subsequently quantified by CAT fabric and vessel form using the mediums of sherd count, weight and estimated number of vessels. The latter quantification gives only an approximate guide to the number of vessels as the total was calculated by individual context rather than group or area (the groupings were not available at the time of quantifying the pottery). As such it is quite likely that sherds from the same non-descript coarseware vessels in different contexts may have been counted more than once. However, the estimates are probably reasonably accurate, as the more distinctive vessels within the assemblage do not show a high degree of conjoining between contexts. The quantifications of fabric/form, together with notes on decoration, use wear etc were recorded on pro forma sheets for the archive and used to create an excel database.

Due to the uneven nature of the assemblage, in both chronological period and related context assemblage sizes, a flexible approach has been adopted for this report. A summary of the pottery fabrics/forms for each period is initially given. This only uses short fabric descriptions as significantly more detailed ones of the CAT fabrics have been published elsewhere (MacPherson Grant 1995; Cotter 2001; 2006). Following consideration of fabrics and forms a selection of the best/key groups is given for each period. The latter has had to rely on groupings of contexts in some areas in order to increase number of sherds to a viable level.

With the exception of the Track 31/32 assemblages from Plateau 7, feature sherds are spread thinly across numerous small context groups: there is a lack of larger context groups containing representative ranges of forms/rims for each sub-period. The stratigraphic grouping of contexts has helped this situation to some degree but it has not rectified the situation. For this reason a representative range of forms for each period has been selected from across a wide number of contexts in order to give a visual characterisation of the wares in use at different times. As a result the catalogue is spread throughout the different groups rather than being placed as a single entity at the end of each chronological period. During the recording of the assemblage for archive temporary codes were allocated to the different rim types noted. These were prefixed with R, B, P or J for jars/cooking pots, bowls/dishes, pitchers and jugs respectively though some types were noted on more than one form type. Although these codes are

by no means an attempt to create a form typology they serve for easy reference and archive concordance and as such are referred to in the catalogue.

Early/Mid Saxon: 5th – mid 7th centuries

A small but significant quantity of ceramics from this period is present in the assemblage. By far the majority of this material is from Plateau 3 though a few isolated pieces were noted from other areas (e.g. Plateau 8). Unfortunately most sherds consist of small bodysherds, albeit unabraded, and context groups are never large (all under 20 sherds). The range of fabrics is typical of other assemblages of this date from east Kent (Macpherson-Grant 1995). A quantification of the different fabrics for this period is given in Table 64.

Fabrics

EMS1A – Coarse sandy ware. Dated *c.* AD 450/475–650.
Normally low to medium fired reduced vessels tempered with moderate/abundant medium quartz and, occasionally, with some mica. A few oxidised vessels are also present and most have burnished exteriors. Two notable sherds are present: a fragment from the shoulder of a well burnished jar with oblique grooving [11072] (SFB 2, G3035) and a finely burnished oxidised bodysherd with rosette and cross stamping. A fragment of a cross stamp, this time from a lightly burnished reduced vessel, was also recovered from [11079] (SFB 2, G3034).
Catalogue Nos 1 and 2

EMS1D – Fine sandy ware. Dated AD 450/475–675/700.
A low to medium fired reduced (usually) fabric tempered with moderate to abundant fine quartz. Most vessels have some burnishing on their surfaces. The most notable sherd consists of a body fragment from a bossed buckleurne with incised decoration and fine burnish (context [11071]. G3035, SFB 2) though a small piece of jar was recovered from SFB 4 (G8170).
Cat. No. 3.

EMS1.4 – Fine/medium sandy ware with organic inclusions. Dated *c.* AD 450/475–675/700.
Normally a low to medium fired reduced fabric tempered with moderate/abundant fine to medium quartz and occasional organic inclusions (voids) to 2mm. Most vessels have slight burnishing and a couple show signs of sooting from use. However, with the exception of two jars, from SFB 4 (G8170) and residual in G10110, all other sherds were undiagnostic of form.

EMS2 – Sandy ware with chalk. Dated *c.* AD 450/475–675/700.

Sherds are usually low to medium fired and reduced throughout. Tempering consists of moderate/abundant medium/coarse quartz and moderate chalk to 1mm. Some burnished sherds are represented in the assemblage, the vast majority of which were recovered from SFB 2.

EMS4 – Organic tempered ware. Dated *c.* AD 575–750.
A generally low-fired fabric, usually reduced (though with some oxidised sherds present), tempered with moderate fine quartz and moderate black organic streaks (chaff/grass) to 4mm. The single sherd of this distinctive fabric (from SFB 4) suggests most activity had finished prior to the later 6th century otherwise greater quantities of EMS4 would be expected.

EMS11 – Angular quartz gritted ware. Dated AD 450–600/50.
A medium fired fabric with grey to brown cores and either oxidised or reduced surfaces. The current sherds are tempered with sub-angular to sub-rounded quartz (clear, milky and orange) rather than purely angular quartz with rare iron oxide inclusions to 1mm. The two bodysherds present are burnished and similar to Late Iron Age types.

Discussion

No large context groups are present for the Early Saxon period: by far the largest coming from SFB 2 on Plateau 3 which produced a relatively small but useful group.

The group is dominated by sandy wares although at least two EMS2 vessels with chalk inclusions are also present. The finish of all the vessels is good and most are burnished to some degree. The presence of the buckelurne sherd is interesting as the group is clearly of domestic rather than funerary origin and it can only be assumed this represents a vessel broken before it could be put to its intended use. The stamped vessels are interesting as this form of decoration is not well represented at Canterbury (Macpherson-Grant 1995, 869). The stamped sherds at Canterbury are in both sandy wares and, more commonly, in the later EMS4 organic tempered wares. This would suggest the current sherds to be of perhaps the late 5th to mid 6th- century. If the deposit was of the later 6th or 7th century one may expect to see some EMS4 sherds within the assemblage as this is when these wares apparently became common (Blackmore 1988, 249). The 6th century appears to be the period when stamping became a relatively common decorative technique both in Kent and elsewhere (Welch and Down 1990). Despite the finding of Frankish imported pottery of this period elsewhere on Thanet and indeed in Dover (Mepham 2009a; Keller 2003) no non-local pottery is present in the current assemblage. This could be due to a number of factors, or a combination of them. Frankish wares are mainly ascribed to a mid-6th- to 7th- century date range and the current assemblage was probably deposited prior to these imports becoming significant in the area. Alternatively their absence could be due to limited trade contacts of the occupants or simply the current assemblage being too small a sample.

Catalogue

1. Bodysherd from shoulder of jar reduced black throughout. Oblique tooling and fine exterior burnish. EMS1A. (SFB 2, G3035, context 11072, Fig. 276/1).
2. Oxidised buff brown bodysherd with all over burnish and stamped decoration. The stamps, of two distinct rosette types, are well executed. Similar stamps are known of from Canterbury (McPherson-Grant 1995). EMS1A. (SFB 2, G3035, context 11072, Fig. 276/2).
3. Bodysherd from reduced black buckelurne decorated with elongated bosses and incised and neatly stabbed decoration. All over fine burnish. EMS1D. Bossed decoration is not thought to appear in Kent until after the mid-5th century (McPherson-Grant 1995, 827) and the association of the current sherd with the stamped vessel (Cat No. 2), but no organic tempered wares suggests a probable late 5th- to mid-6th- century date. The vessel's decoration is not dissimilar to Group V buckelurnen as represented by vessels from Sandy in Bedfordshire (Myres 1969, 195, No. 328) (SFB 2, G3035, context [11071], Fig. 276/3).

Mid to late Saxon: Mid-7th – early 11th centuries

Virtually no definite pottery of this period was recovered during the excavations. A few of the sherds included with the Early/Mid Saxon period could extend onto the Middle Saxon period but the associated fabrics suggest this is probably not the case. The few sherds that can be more confidently ascribed to this period consist of isolated sherds of shelly wares that can only roughly be placed in the Mid/late Saxon periods. A quantification of the different fabrics for this period is given in Table 66.

MLS4 – Moderate shell-filled ware. Dated AD 750/775–850/875.
A low fired usually reduced fabric though some vessels have patchy oxidisation. Tempered with no/rare fine sand and moderate shell to 2mm. The four small sherds are from a probable jar (context [2442]: G2020, SFB 11).

MLS4A - Abundant shell-filled ware. Dated AD 750/775–850/875.
A low fired fabric though with patchy oxidised/reduced firing. Tempered with no/rare fine sand and abundant shell to 2mm. The three tiny sherds may well be residual (context 2685: G2123, Enclosure 34).

MLS4D – Shell and organic tempered ware. Dated AD 650–750.
A low fired reduced fabric tempered with no/rare fine sand, moderate shell to 2mm and sparse/common organic inclusions to 2mm. The two tiny bodysherds appear to be from a sooted cooking pot/jar though they are so small their identification is far from certain (context 14808, G8287).

The tiny quantity of pottery that has been allocated to the mid/late Saxon period is tenuous indeed. The sherds may well represent some very limited activity during the later 7th to 9th centuries but all are too small to be absolutely diagnostic and other periods could claim them. As a whole it would appear there was a break in activity around the later 6th to early 7th century.

Although there are a few low-fired EM1, EM2 and EM3 sherds from across the site (e.g. Plateaus 1 and 4) that could be of Late Saxon origin where these occur as feature sherds, or in association with other wares/forms, they suggest a post-Conquest date. All are duly included with the Early Medieval section below. Why some of these sherds should be notably softer is uncertain, however, some in part may be due to the burial environment.

Early Medieval: mid/late 11th – early/mid 13th centuries

This period clearly saw a major resettlement of the area as the site produced a significant assemblage of Early Medieval pottery. On the whole the pottery of this period is quite fresh, even though sherds sizes are often small. Assemblages are

widespread with the majority coming from the northern part of the site (Plateaus 1, 2 and 4 most notably). A range of enclosure ditches along with associated sunken featured buildings and pits produced the majority of sherds but more dispersed features, including quarries/marling pits, trackways and field ditches, produced further pieces. Despite the numerous contexts containing pottery of this period (Table 62) context groups usually consist of under 20 sherds. By far the largest group was from context 1389 (SFB 21, G1235) which produced 232 (1,722g) sherds, however, these are from only four different vessels. Considering the size of the assemblage a relatively small range of fabrics is represented (Table 67).

Fabrics

EM1 – Canterbury-type sandy ware. Dated *c.* AD 1050–1225.
Normally a medium fired fabric with reduced cores and reduced grey or (often later) oxidised brown, grey-brown or bi-tone surfaces. Tempered with moderate/abundant coarse sand. A few vessels are notably low-fired, particularly from Plateau 4. Although these have some characteristics of late Saxon fabric LS1 their oxidised finish and developed rims demonstrates a later date.

A range of vessels is present but the assemblage is totally dominated by cooking pots/jars (2,202/23,246g: ENV 424) that account for 92.8 per cent of the EM1 sherds (94 per cent by ENV). These span the full range of the ware from the earlier reduced lower fired types of the mid-11th to mid-12th century to the (usually) better fired oxidised types of the mid-12th to early 13th century. The 26 different rim types noted include very simple everted or flaring forms with no/little development of a *c.* AD 1050/1075–1125 range (32 examples); more developed types with thickening or external beads of *c.* AD 1080–1150/1175 range (41 examples) and the heavier club rim or squared types of *c.* AD 1150/1175–1225 range (20 examples). All rim forms are well known with the mid-11th- to mid-12th- century types being illustrated from a number of well-dated groups from Canterbury (Frere 1954; Wilson 1982) and the later 12th- century bulbous club types being recorded from both Canterbury and Dover (Cotter 2006, fig. 110). Decoration is both rare and limited in range when it does occur. Four vessels have applied thumbed strips and two have pie-crust rims (from G4052, SFB 41 and G1235, SFB 21, (Cat. No. 19). There is also a sooted bodysherd, probably from a cooking pot, with crude rilling from a pit on Plateau 2 (context [9355], G2042). One vessel also has a suspension hole drilled through its rim (context 4370, G4055).

Dishes/shallow bowls are only represented by 39 sherds (889g) representing just five vessels (though it is almost certain undiagnostic sherds may have been included with the cooking pots/jars). Both reduced grey and oxidised brown vessels are present all with simple or externally beaded rims spanning the mid-11th to mid-12th centuries (Cat. Nos 13–14). In addition there are four sherds from a socketed bowl unstratified on Plateau 2. At least 71 sherds (948g) can be attributed to 11 pitchers/jugs. These normally

have slightly thickened rims, often with a collar/cordon just below with thin, patchy clear/green glaze (Cat. Nos. 15 and 34). Two vessels also have applied thumbed strips. The only other vessel noted was part of a possible roof ventilator/chimney pot from a quarry on Plateau 1 (context 1885, G1161).
Cat. Nos 4, 5, 8–19, 24, 31 and 34

EM1 BCR – Canterbury-type sandy ware (Brittoncourt Farm). Dated *c.* AD 1150–1200/1225.
The fabric is as EM1 but tends to be better sorted and vessels better formed. A sub-group of EM1 that is virtually exclusively composed of pitchers with coarse rouletted decoration. Only two pitchers are represented in the current assemblage (G1155: SFB 11 and G1175: SFB 13).
Cat No. 22

EM2 – Shelly ware. Dated *c.* AD 1050–1225.
A low to medium fired fabric oxidised pale brown to dark grey brown (often patchily). Tempered with moderate/abundant shell to 2mm but no, or rare, fine sand. Probably produced along the coast of north and north-east Kent.

Cooking pots/jars totally dominate the assemblage with some 90 different vessels being represented (323/2,768g). The eleven different rim forms present are mainly of very simple form (four types: six vessels) or slightly developed with external beads (five types: seven vessels) suggesting most vessels are of mid-11th- to mid-12th- century date. Only one more developed club rim of the second half of the 12th century was noted. Two cooking pots/jars have applied thumbed strips and one has a pie-crust rim (ditch fill 13265, G1269. Cat. No. 6). The 10 recognised dish/bowl sherds (345g) represent just three vessels with slightly developed rims, one of which has pie-crust decoration. The only other vessel appears to be from a storage jar with applied thumbed strip (pit fill 9452, G2037).
Cat. Nos 6 and 20

EM3 – Shelly-sandy ware. Dated *c.* AD 1075–1225/1250.
Normally a medium fired oxidised brown to orange fabric with a grey core. Tempered with moderate/abundant fine/medium quartz and shell to 1mm. Probably produced in the same areas as EM2 (Cotter 2002).

Cooking pots/jars once again dominate the assemblage with 223 different vessels being represented (855/12,235g). The 21 different rim forms present include a number of slightly developed types with external beads (seven types: 27 vessels) of late 11th to mid/late 12th- century date (though generally of different form to the contemporary EM1 rims). A significant proportion of the rims are in one of 14 developed rounded or squared club types of the mid-12th to early/mid-13th century (39 vessels). The chronological spread of the forms clearly demonstrates EM3's later date range than that

of EM2. Decoration on these vessels is limited once again to three applied thumbed strips and six vessels with pie-crust rims. A single shallow dish was recovered from Plateau 2 (context 9747, G2150) but in contrast to EM1 and EM2 these are rarer, with deeper bowls being more common. The deeper bowls are represented by 49 sherds (2,284g) from 12 different vessels (though certainly more will have been grouped with the cooking pots). Many of these bowls are externally sooted demonstrating they were commonly used for cooking and one socketed example is present (unstratified on Plateau 2). Decoration is rare again but includes one vessel with incised wavy lines from G2161 and one with stabbing from G2040. A single storage jar, with pie-crust rim was recovered from a quarry fill on Plateau 2 (G2131).

Jugs/pitchers account for eight vessels (10/332g) all with similar thickened/collared rim types to those noted in the EM1 vessels. One vessel has a thumbed base (context 15137, G5084, Enclosure 52) while another has crude incised horizontal lines on its neck and shoulder (context 9328, G2154) but otherwise decoration, including glazing, is absent. The few handles that are present consist of wide strap types with raised thumbed strips down each edge typical of the later 12th to early 13th centuries (Cotter 2006).
Cat. Nos 25–28, 30, 32–33, 35–40, 43–45, 51–52 and 54.

EM3B – Canterbury-type sandy ware with sparse shell. Dated *c.* AD 1175–1250.
A medium fired fabric tempered moderate/abundant medium/coarse sand and sparse to common shell to 1mm throughout. Normally quite thin-walled vessels with developed rims and either oxidised or reduced surfaces and cores. A later development of EM1, closely linked to EM.M1 types.

Sherds from some 65 cooking pots/jars (275/2,722g) are present none of which are decorated. Of the 12 different rim forms represented the earliest types are the bulbous club rims, so typical of later 12th- century EM1, but the majority of rims are of squared club type more typical of the early/mid-13th century (types more in keeping with Tyler Hill M1 vessels e.g. Cat. No. 46). Bowls are represented by 28 sherds (537g) from at least four different vessels. All have squared club rims and no decoration, though one rim is stabbed (ditch fill 16435, G6066, Enclosure 58). At least six jugs are present (17/99g) nearly all of which are oxidised with thin/patchy glazing. Decoration is limited but one has combing under a clear glaze (ditch fill 5436, G5083) and another incised lines under a green glaze (fill 15200, G5092, SFB 54).
Cat. Nos 21 and 46.

EM4 – West Kent type fine sandy ware. Dated *c.* AD 1125/1150–1200/1250.
A mid to dark grey medium/well fired fabric tempered with moderate/abundant fine quartz. Although this fabric has a number of characteristics of a North French/Flemish greyware no match could be found with the multitude of samples of these types in the CAT fabric reference series – all the CAT examples being either too coarse or containing

shell/calcareous inclusions. The few sherds did however, closely match reduced samples of EM4 in the reference collection and on that basis the sherds are tentatively assigned here. However, they cannot be ruled out as an imported fabric variation not yet recorded on the CAT system. Unfortunately the insignificant quantity of material recovered does not provide any diagnostic feature sherds. There is a bodysherd from a probable cooking pot/jar and a further bodysherd, perhaps from a storage jar, has an applied thumbed strip (ditch fill 10419, G10093).

EM22 – North or West Kent fine sandy ware with sparse shell and grits. Dated *c.* AD 1125/1150–1200/1250.
A medium fired fabric tempered with moderate fine/medium quartz and sparse shell and ?flint grits to 1mm. Normally grey cores with oxidised orange surfaces. All sherds appear to be from cooking pots/jars, the only rim being of bulbous club type likely to be of mid/later 12th- to very early 13th- century date (fill 1421, G1175, SFB 13).

EM29 – Fine sandy ware with flint and sparse shell. Dated *c.* AD 1125/1150–1250.
A medium to well-fired fabric tempered with sparse fine/medium quartz and common shell and flint to 1mm. Normally reduced cores with reduced to oxidised brown surfaces. Although possibly from an East Sussex source, a source in the Weald or south Kent coast is also quite possible. A single oxidised cooking pot bodysherd is present in the current assemblage.

EM32 – Flint and shell tempered ware with sparse sand. Dated *c.* AD 1050/1075–1225/1250.
A medium to well-fired fabric tempered with sparse medium quartz and common rounded flint and quartz grits to 1mm and sparse shell to 1mm. Normally reduced cores with reduced to oxidised brown surfaces. The fabric is likely to be from a similar source to EM29. All the current pieces appear to be from reduced or oxidised cooking pots/jars but no feature sherds are present.

EM33 coarse – Flint and shell tempered ware. Dated *c.* AD 1075–1250.
A medium to well-fired fabric tempered with abundant sub-angular multi-coloured flint to 0.5mm and rare/sparse shell/chalk to 0.75mm. Normally reduced cores with oxidised brown/orange surfaces but some reduced examples are present too. Although similar to flinty wares from East Sussex these wares may have also been made along the south-west Kent coast. In East Sussex this fabric could be placed anywhere between 1025/50 and 1125/50. The sherds in the current assemblage are all from cooking pots/jars, and, with one exception, all are from oxidised vessels. A single simple out-turned undeveloped rim of mid-11th- to early 12th-century type is present in ditch fill 10057 (G10095, Enclosure 64?).
Cat. No. 7

EM34 – Coarse sand and sparse shelly ware. Dated *c.* AD 1075–1250.

A low to medium fired fabric tempered with moderate/abundant coarse flint/quartz sand and sparse shell/chalk to 0.5mm. Normally reduced cores with oxidised dull orange/brown surfaces but some of the current sherds have reduced surfaces. Only undecorated cooking pots/jars are present, the only rim being an early externally beaded type of probable early/mid-12th- century date (fill 10429, G10097, Structure 56).

EM.M1 – Shell-dusted Canterbury-type sandy ware. Dated *c.* AD 1150/1175–1250.
An oxidised or reduced medium fired fabric tempered with abundant medium/coarse quartz with a light dusting of shell (to 1mm) on the exterior surface of the vessels only. Thought to be produced at Tyler Hill, to the north of Canterbury (Cotter 2006).

The vast majority of the assemblage is composed of cooking pots/jars (135/2,096g) from at least 41 different vessels. The nine different rim forms noted consist of a few rounded club types of the later 12th to early 13th centuries but most commonly are of well-developed squared club or expanded types of the early/mid-13th century. Decoration is scarce, consisting of two applied thumbed strips, a thumbed rim (chamber fill 9747, G2150) and a stabbed rim. A number of the sherds have spots of accidental glaze on them indicating they were fired alongside jugs. A handled cooking pot was recovered from fill 16447 (G6054, SFB 64) and there are four sherds (341g) from a bowl with expanded rim (fill 15316, G5121, SFB 59). The five jug sherds need only come from one vessel with collard rim and green glaze (fill 15316, G5121, SFB 59).
Cat. Nos 41–42, 50 and 60–61.

EM26 – London-type coarseware. Dated *c.* AD 1125/1150–1200/1250.
A coarse sandy fabric (Pearce, Vince and Jenner 1985) only represented by a single jug with white slip under a green glaze (G2128).

EM27/M5 – London-type ware. Dated *c.* AD 1125/1140–1200/1240.
A fine oxidised or reduced fabric tempered with moderate/abundant fine quartz. (Pearce, Vince and Jenner 1985). Merges into the later dated M5 and is largely divided here based on the date of associated coarsewares. All of the sherds in the current assemblage are from jugs with clear or green glazing. Some sherds have the remains of applied vertical strips (contexts 5750 and 5842, G5075, Enclosure 50) and one has rilling (fill 6171, G6048, Structure 55). The only handle consists of a wide strap handle with raised thumbed edges (ditch fill 5768, G5769, Enclosure 54).
Cat. No. 49

EM13 – Andenne-type pink sandy ware. Dated *c.* AD 1050/1075–1175/1200.
A medium/well fired buff fabric tempered with moderate fine quartz with red iron oxide inclusions to 1mm.
A jug with applied spout and clear (yellow) glaze was recovered from Enclosure 58 (context [16481]).

EM38 – North French fine sandy ware. Dated *c.* AD 1075/1100–1200/1225.
A medium/well fired fabric tempered with moderate fine quartz. Light grey cores and pale buff surfaces.

A sherd from a pitcher in this fabric was found in association with EM1 sherds in context [478] (G1260: SFB 23) and a sherd from [6171] (G6048: Structure 55) has red painted slip decoration.

EM39 – North French (?) 'yellow' type ware. Dated *c.* AD 1050/1075–1200/1225.
A medium/well fired fabric tempered with moderate fine quartz and sparse chalk inclusions to 0.25mm. Buff core and surfaces.

The two sherds from the site consist of a pitcher with applied red clay rouletted band around the neck under a clear (yellow) glaze (G1155: SFB 11) and an unglazed jar fragment from Track 28? (G10091).

The Assemblages

Overall the fabrics and forms are of types already well known, both on Thanet and east Kent in general. However, the current site has produced a number of assemblages that appear to contain no, or very few, residual sherds. These are in marked contrast to sites in Canterbury where residuality is often a severe problem. As such a number of the best groups are presented below. The bulk of contexts producing pottery of this period contain no, or only one or two, feature sherds. The assemblages have been subdivided into earlier (to *c.* AD 1075–1150/1175) and later (*c.* AD 1150/1175–1225/1250) based on forms and fabric ratios within each. Unfortunately, where reliable stratigraphic relationships were present the associated contexts either produced too few sherds or groups with obvious mixing. There is some overlap between the earlier and later Early Medieval assemblages around the middle of the 12th century and indeed with the earliest of the High Medieval groups in the first half of the 13th century (see below).

The earlier assemblages

The earlier period is dominated by EM1 vessels with rims most typical of an AD 1075 to 1150 range. Undoubtedly the majority of this assemblage was recovered from Plateau 1 though smaller assemblages of similar date were noted on some other plateaus (e.g. Plateau 4).

Tracks 28 and 29

Although the trackways running across the site are all thought to be early their continued use in later sub-periods has meant their associated ceramic assemblages are often from the High Medieval period, presumably marking the time they went out of

use (e.g. track 31/32 — see below). However, Tracks 28 and 29, which ran across Plateaus 1/2 and 4 respectively, only produced pottery of this earlier date.

The assemblage from Track 28 (Table 68) shows a complete dominance of EM1 sherds with only a single small fragment of EM2 and a scatter of flinty wares. The absence of EM3 sandy-shelly is notable. The few rims present are of beaded flaring types of the later 11th to early/mid-12th century. The assemblage from Track 28 is more mixed despite its smaller size and clearly contains some later material in the form of the EM3B sherds from a cooking pot with squared rim (G2017 only) and the possibly intrusive abraded sherd of Tyler Hill M1 cooking pot (G1223 only). EM3 constitutes a significant part of this assemblage and includes a cooking pot with triangular profile club rim though it is notable that all sherds were from G2017 suggesting deposition within this area of the track in the second half of the 12th to early 13th centuries. Only one drawable rim sherd was present:

4. Cooking pot. Flaring rim with pronounced bead (R3). Mid grey with orange brown interior surface. EM1. (Track 28?, G10091, context 10034, Fig. 277/4).

Track 29 produced only six associated sherds but these are more in keeping with the earlier group as represented by Track 28?. Four sherds are from two notably low-fired reduced EM1 cooking pots, one with a slightly beaded rim, while the others are from low-fired oxidised EM2 cooking pots.

Enclosures 26 to 32

One small group was located in association with Enclosures 26 to 32: G1269, a ditch fragment (contexts 13261 and 13265). The 22 sherds (527g) are composed of 20 sherds from two EM1 cooking pots and two from an EM2 cooking pot with slight pie-crusting on its everted rim. No EM3 sherds were present in this group and a 1075 to 1125/50 date range is likely.

5. Cooking pot. Flaring rim with rounded bead (R8). Mid grey core with orange brown surfaces. EM1. (Ditch segment, G1269, context 13265, Fig. 277/5).
6. Cooking pot. Everted thickened rim with slight pie-crusting (R19). Mid grey core with dull brown orange surfaces. Rim edge sooted. EM2. (Ditch segment, G1269, context 13265, Fig. 277/6).

Enclosures 63 and 64

Enclosures 63 (G10070) and 64 (G10095) along with various associated features, produced similar assemblages nearly totally composed of EM1 in association with early rim types spanning *c.* AD 1050/1075 to 1125 (Table 69).

The EMS1.4 sherd is clearly residual here but it is interesting to note not only the total dominance of EM1 vessels but they are only found in association with flinty wares (EM33 and EM34) and not the shelly types (EM2 and EM3). This suggests these enclosures are probably amongst the earliest medieval features on the site.

7. Cooking pot. Simple everted rim with slight thickening (R1). Mid grey core with light grey internal and brown orange external surfaces. EM33. (Enclosure 64, G10090, context 10057, Fig. 277/7).
8. Cooking pot. Developed flaring rim (R2). Mid grey core with dull brown internal and brown/light grey external surfaces. Exterior sooted. EM1. (Enclosure 63, G10070, context 10465, Fig. 277/8).
9. Cooking pot. Flaring rim with angled bead (R4). Mid grey core with orange brown surfaces. Exterior sooted. EM1. (Ditch segment, G10110, context 10390, Fig. 277/9).
10. Cooking pot. Flaring rim with slight angled bead (R4). Mid grey core with dull brown orange surfaces. Sooted on interior and lower exterior. EM1. (Pits, G10111, context 10357, Fig. 277/10).

Enclosure 60

The groups associated with Enclosure 60 (Table 70) are similar to those from Enclosures 63 and 64 both in their small average size and their fabric make up. Once again EM1 cooking pots totally dominate the assemblages, the three rims present being of simple or beaded flaring types. The EM4 sherds is unfortunately not diagnostic of form and the EM34 rim is again of beaded type. A later 11th- to early 12th- century date is probable.

11. Cooking pot. Flaring rim with flat-topped bead (R7). Mid grey core with mid to dark grey patchy surfaces. Externally sooted. EM1. (Enclosure 60 pits, G10065, context 10237, Fig. 277/11).
12. Cooking pot with out-turned flat-topped rim (R9). Dark grey core with grey brown surfaces. Externally sooted. EM1. (Enclosure 60 pits, G10065, context 10237, Fig. 277/12).

Other features around Enclosures 60, 63 and 64

Further small context groups were recovered from a number of early features associated with these enclosures, though a number of these at least appear to be stratigraphically later even though the assemblages are similar ceramically (Table 71).

These groups again show the dominance of EM1 with small quantities of flinty wares. The two M1 sherds are certainly intrusive judging by their small size and abraded nature (both were recovered from the upper infills). Rims are again early, with developed flaring types (R2) being the most common with three examples, though flat-topped beaded types (R7) are present too. Interestingly dishes are now represented in

these groups. Virtually all of the pottery was from infilling of the features, with only a single sherd of EM1 being associated with the actual occupation (G10120).

13. Dish with internally bevelled rim with slight external bead (B3). Red brown core with red brown internal and dark grey external faces. EM1. (ditch, G10071, context 10350, Fig. 277/13).
14. Dish with internally bevelled rim (B1). Red brown core with red brown internal and dark grey external faces. EM1. (SFB 77, G10123, context 10231, Fig. 277/14).

Enclosures 13, 14, 18, 19, 20, 21, 22 and 24

The groups associated with these enclosures are again usually small and sometimes there is no pottery associated with the actual enclosure ditches themselves (e.g. Enclosure 22) leaving dating to supposedly associated features within the enclosure area. For example, SFB 8 within Enclosure 22 provided the only dating evidence in the form of two sherds from an EM1 pitcher (G1089). Within Enclosure 14 only G1135 produced dating in the form of a group of EM1 and EM2 wares. The assemblage from Enclosure 24 (G1128) consists of just two sherds (3g) of EM2 while that from a ditch partition in Enclosure 18 (G1045), although larger, is slightly mixed with EM1 and EM2 making up half the sherds and later M1 the other half. Although Enclosures 13 and 20 produced slightly later pottery from their ditches some early groups from associated features suggests origins in the later 11th to early/mid 12th centuries.

The dominance of EM1 remains in all of these groups (Table 72) with typically early rims to those noted above. However, what is notable is the total absence of any flinty wares and their apparent replacement with the shelly fabric EM2. The continued absence of EM3 is also notable. This would hint at these groups being of a different date to those noted for example in Enclosure 60. However, the EM1 forms still suggest a date in the later 11th to early/mid 12th centuries and it is a pity there is not reliable stratigraphic relationships between the two groupings. The presence of three unglazed bodysherds from the North French whiteware (EM38) pitcher in G1260 is an interesting, if rare, occurrence of an imported vessel. The small assemblage from SFB 11 is interesting in that it is stratigraphically later than SFB 21. The infilling (G1155) contained fabrics more typical of the second half of the 12th century or even the early 13th century. The assemblage produced an 8g sherd from a rouletted EM1 BCR pitcher and four sherds (13g) from an EM3B cooking pot. Interestingly the only other sherd was from an EM39 North French whiteware pitcher with applied red clay rouletted band under a clear glaze.

15. Pitcher with club rim. Red brown core with dark grey surfaces (P1). EM1. (SFB 8, G1089, context 471, Fig. 277/15).
16. Cooking pot with flaring rim with rounded bead (R8). Mid grey throughout. Externally sooted. EM1. (Enclosure 14 pits, G1135, context 351, Fig. 277/16).

17. Cooking pot with flaring rim with slight thickening and flat top (R6). Mid grey core with dull brown surfaces. Externally sooted. EM1. (Enclosure 19 ditches, G1222, context 535, Fig. 277/17).
18. Cooking pot with flaring rim with rounded bead (R8). Mid grey throughout but with some dull orange patches on external surface. Rim sooted. EM1. (SFB 21, G1235, context 1389, Fig. 277/18).
19. Cooking pot with flaring rim with rounded bead and pie-crust decoration (R8). Mid grey core with orange brown surfaces. Rim sooted. EM1. (SFB 21, G1235, context 1389, Fig. 278/19).
20. Cooking pot with everted tapering club rim (R20). Dark grey core with patchy dark grey/brown surfaces. EM2 (SFB 21, G1235, context 1389, Fig. 278/20).

Enclosures 45, 46 and 47 and associated features

These enclosures produced further assemblages of early pottery though most sherds are notably low fired in comparison to those from enclosures to the north (Table 73). Despite this the fabric ratios are quite similar to those noted for the central enclosures on Plateau 1 (e.g. Enclosures 14 and 19).

The assemblages from the ditches of Enclosures 45 and 47 are all small with only two rim sherds being present: an everted tapering rim and a flaring rim with bead (R8 type), both from EM1 oxidised vessels. Although the assemblage from SFB 45 is larger its fabric composition is similar and all vessels have out-turned/flaring rims with pronounced external beads. Both reduced and oxidised vessels are represented in this group. A study of the different associated groups for SFB 45 clearly shows fabrics/forms do not differ between those associated with the use of the structure and its backfill. The assemblage from Enclosure 46 is similar but notably contains four sherds from a single cooking pot in the later EM3B. However, all of these sherds were recovered from context 4342 (G4016), a partition ditch within the enclosure, that produced no other fabrics in association.

The assemblage from SFB 44 is somewhat more diverse in fabrics (Table 73) suggesting this may relate to activity in the later 12th century while including some earlier residual material. The EM1 sherds vessels have generally more developed rims, with bulbous club types being present. These are more typical of the mid-12th to early 13th century (Cotter 2006). There is also a notably higher proportion of pitchers in EM1 and there is also a significant quantity of sandy-shelly EM3 including a bowl with pierced suspension hole. The single M1 oxidised jug with green glaze patches would also be in keeping with a later 12th century date.

The later assemblages

SFB 44 demonstrates the changing fabric ratios encountered in the second half of the Early Medieval period that covers the period between *c* AD 1150 and 1225/1250 in the current assemblage. The problem with this period is the danger of residual sherds distorting the fabric ratios and introducing earlier rim forms that were not in contemporaneous use. This is particularly problematic in areas where activity clearly spanned the whole of the 12th century (e.g. Enclosures 13, 19 and 32). Adding to this is the problem of many enclosures producing such small assemblages from their ditches the isolation of residual pieces is impossible (e.g. Enclosures 27, G1268 and 30, G1264 on Plateau 1 produced just three sherds between them). However, a number of assemblages appear to be free of, or nearly free of, residual material and/or contain diagnostic sherds. It is these groups that offer the best chance of demonstrating the pottery in use at this time.

Enclosure 16

The few sherds of pottery associated with this enclosure appear to span the later 12th to mid-13th centuries but the groups are never large. Only 11 sherds (535g) were recovered from deposits associated with the ditches (G1023 and G1027) though to what extent some of these sherds could be residual is uncertain (Table 74) but both

Bulbous club rims and later squared types are present. The single M1 cooking pot from G1289 is of the latter type and quite typical for a date around AD 1225 to 1250 (Cotter 2006). The assemblage from SFB 13 includes few rims but those that are present show a mixture of types including an early simple flaring rim (EM1) and later bulbous clubbed types more typical of the second half of the 12th century. Indeed the M1 sherds in this group are all early, being close to EM1, and a date between AD 1150 and 1200 is probable for the group. Most of the sherd came from the backfill of SFB 13, however, the six sherds associated with the actual occupation (G1174) were of similar types (EM1/M1).

Enclosures 13, 15 and 20 produced tiny assemblages dominated by EM1 types of the second half of the 12th century typified by the bulbous clubbed rims and much higher incidence of better fired oxidised vessels. With the exception of the earlier group from SFB 21 (see Table 72) the assemblages are too small to offer a reliable indicator of fabric ratios.

21. Cooking pot with everted thickened rim (R19). Mid grey core with brown orange surfaces. Some sooting on rim. EM3B (SFB 13, G1175, context 1420, Fig. 278/21).
22. Pitcher with collared rim (P3). Red brown core with mid/dark grey surfaces. EM1 BCR (SFB 13, G1175, context 1421, Fig. 278/22).
23. Cooking pot with squared hooked rim (R17). Mid grey core with brown orange surfaces. Some sooting on rim and lower body. M1 (Enclosure 16 associated ditch, G1289, context 1372, Fig. 278/23).

24. Cooking pot with expanded club rim (R21). Mid grey/dull orange core with brown orange to light grey surfaces. Some sooting on rim. EM1 (Enclosure 13, G1001, context 1864, Fig. 278/24).

Enclosures 33 and 36

The assemblages from the ditches of these two enclosures are very similar in both the fabrics represented (Table 75) and the rim types. The latter are dominated by bulbous, triangular and occasionally rolled over/hooked club rims typical of the AD 1150 to 1200/1225 period. To what extent any of this material is residual is difficult to say as none of the sherds are notably abraded though average sherd sizes are not large.

There is a notable increase in jugs in comparison with the earlier period. These are almost exclusively of local manufacture — the shelly ware examples being typically crude and undecorated and the M1 vessels being sparsely glazed. However, a single green glazed London-type ware vessel is also present.

25. Bowl with downturned rim (B4). Mid grey core with orange brown surfaces. Externally sooted. EM3 (Enclosure 36, G2022, context 9118, Fig. 278/25).

The feature groups within Enclosure 36 display a similar make-up to the group from the enclosure ditches (Table 76). EM3 generally makes up the most significant element of the groups with later EM1 and early M1 also being well represented. The latter typically consist of jugs with clear or green splashed glazes (only a single sherd has decoration in the form of an incised line) but cooking pots/jars are also represented. Few M1 rims are present but there is at least two squared hooked club rims of the first half of the 13th century (SFB 26 and underground chamber G2161 — Cat. No. 29). A number of the EM1 and EM2 sherds may well be residual – certainly the small abraded nature of those in SFB 26 and SFB 29 appear to be so. The sandy-shelly wares (EM3/EM3B) are dominated by cooking pots with triangular and tapering clubbed rims though rolled hooked types are also common. A few bowls are present, including part of a socketed example in EM3B (G2161). The London-type ware (M5) jug has a plain green glaze.

26. Cooking pot/storage jar with lid-seated rim (R34). Mid grey/brown core with brown/mid grey patchy surfaces. Oblique applied thumbed strips. EM3 (Enclosure 36, SFB 26, G2031, context 9537, Fig. 278/26).
27. Cooking pot with triangular club rim (R31). Mid grey core with brown orange surfaces. Externally sooted. EM3 (Enclosure 36, Chamber G2161, context 9352, Fig. 278/27).
28. Bowl with downturned tapering club rim (B4). Mid grey/brown core with brown/mid grey patchy surfaces. Incised wavy line on interior. EM3 (Enclosure 36, Chamber G2161, context 9447, Fig. 278/28).

29. Cooking pot with squared hooked rim (R17). Mid grey core with brown/mid grey patchy surfaces. M1 (Enclosure 36, Chamber G2161, context 9447, Fig. 278/29).
30. Unglazed jug handle with applied thumbed strips down both edges and irregular central stabbing. Mid grey core with brown orange surfaces. EM3 (Enclosure 36, Chamber G2055, context 9487 with conjoining sherd in G2154, context 9749, Fig. 278/30).

A small assemblage that consists of essentially large fresh sherds was recovered from one of the pits in G2145. Overall this group is composed entirely of EM1 (25/624g, CP x3) and EM3 (13/388g, CP x4) with the sherds obviously representing vessels in contemporaneous use. A date between AD 1150 and 1200 is probable.

31. Cooking pot with bulbous club rim (R11). Mid grey core with orange brown surfaces. Externally sooted. EM1 (Pits, G2145, context 2886, Fig. 278/31).
32. Cooking pot with rolled hooked rim with slight thumbing/pie-crust decoration (R25). Dark grey core with dark grey interior and dull brown/grey patchy exterior surfaces. Externally sooted. EM3 (Pits, G2145, context 2886, Fig. 278/32).
33. Cooking pot with out-turned, slightly hooked rim (R26). Dark grey core with dull brown/grey patchy surfaces. Externally sooted. EM3 (Pits, G2145, context 2886, Fig. 279/33).

Although underground chamber G2055 (Table 76) produced only eight sherds an associated context assemblage (G2150, context [9747) contained the best single context assemblage of this period in that not only does it appear to contain no/low residual material, but it produced a high number of drawable rims amongst the 40 sherds (1,107g) (Cat. Nos 34–42). The group contains a single 138g sherd from an EM1 pitcher, 23 sherds (690g) of EM3 (CP x1, J x1 and a dish) and 16 sherds (279g) from at least four EM.M1 cooking pots. Taken as a whole an AD 1175–1200/1225 range is probable.

34. Pitcher with collar and beaded rim (J6). Dark grey core with dull brown/grey patchy surfaces. Oblique applied thumbed strip. EM1 (Chamber G2150, context 9747, Fig. 279/34).
35. Pitcher/jug with collar and slightly beaded rim (J6 type). Dark grey core with dull orange/grey patchy surfaces. EM3 (Chamber G2150, context 9747, Fig. 279/35).
36. Wide-mouthed cooking pot with hooked club rim (R27). Dark grey core with dull brown/grey patchy surfaces. EM3 (Chamber G2150, context 9747, Fig. 279/36).
37. Cooking pot with slightly down-turned club rim (R29). Mid grey core with dull brown orange surfaces. Some sooting on rim. EM3 (Chamber G2150, context 9747, Fig. 279/37).
38. Cooking pot with rolled over hooked rim with thumbing/pie-crust decoration (R25). Dark grey core with mid grey interior and brown/grey patchy exterior surfaces. Sooted rim. EM3 (Chamber G2150, context 9747, Fig. 279/38).

39. Cooking pot with slightly rounded expanded/club rim (R23). Mid grey core with dull brown inner and dark grey outer surfaces Sooted externally. EM3 (Chamber G2150, context 9747, Fig. 279/39).
40. Dish with partial out-turned rim surviving (possibly R29). Mid grey core with dull brown orange surfaces. Sooted externally and on interior base. EM3 (Chamber G2150, context 9747, Fig. 279/40).
41. Cooking pot with slightly squared out-turned slightly hollow-topped rim (R12). Dull orange throughout. EM.M1 (Chamber G2150, context 9747, Fig. 279/41).
42. Cooking pot with tapering rounded club rim (R23). Mid grey core with dull brown orange surfaces. Exterior sooted. EM.M1 (Chamber G2150, context 9747, Fig. 279/42).

Enclosures 34, 37 and 38

The remaining Plateau 2 enclosures and their associated features of this AD 1150–1225/1250 chronological range produced some usually small but useful groups. The best of these are given in Table 77.

On the whole the same pattern of fabrics and forms is apparent, with EM3 always making up a significant proportion of each group. Looking at the fabrics present the absence of EM.M1 and M1 in the ditches at Enclosure 34 would suggest it might predate the other two though this need not be by a significant amount. These fabrics are also absent in G2134 and G2131 despite the ditches of the associated enclosure containing two sherds of M1. As noted before, the only non-Kentish fabric is represented by insignificant quantities of EM27/M5 London-type ware jugs. The example from Enclosure 37 has white slip under a good, if slightly patchy, green glaze.

43. Cooking pot with triangular club rim (R24). Mid grey core with dull brown orange surfaces with mid grey patches. Exterior sooted. EM3 (Enclosure 34 ditches, G2124, context 2681, Fig. 279/43).
44. Cooking pot with hooked club (R27). Mid grey core with brown grey surfaces. Sooted rim exterior. EM3 (Enclosure 38 pit, G2134, context 2920, Fig. 279/44).
45. Storage jar with out-turned rim with finger-tip/pie-crust decoration (R26). Mid grey core with brown grey interior and dull orange/grey patchy exterior surfaces. EM3 (Enclosure 38 quarry, G2131, context 2794, Fig. 279/45).

Enclosures 50 and 55

Further groups of a general AD 1150 to 1225/1250 date range were recovered from Plateaus 5 and 6 although many of the assemblages from these areas are of an AD 1225 to 1300/1325 date range and as such are considered below under the High Medieval period. Some of these enclosures clearly have their origins in the latter years of the Early Medieval period and as such it is not surprising that some contain contexts groups that

predate the bulk of the associated combined assemblages. For example, although most of the assemblages associated with Enclosure 55 can be placed between AD 1225/1250 and 1300 that from a cess pit (G5078) suggests an AD 1200–1225/1250 range (Table 78).

The G5078 assemblage is particularly interesting in that it shows a likely fabric composition for the early 13th century. The essentially sandy with sparse shell EM3B and the Tyler Hill M1 wares dominate the group. It is quite probable the EM1 and EM3 sherds are either residual or from old vessels. The latest types consist of the M1 vessels though these are of a generally early type, often of only medium firing with most vessels being oxidised various shades of brown rather than the better fired orange examples which dominate from about AD 1250 onward. The M1 jugs are rilled with patchy green glaze and mainly appear to be of early type with wide strap handles with raised thumbed strips down each edge (Cat. Nos 47 to 48). The few EM3B and M1 cooking pot rims present are of the more developed squared club types. The similarity of some of these forms strongly suggests the EM3B vessels may derive from the Tyler Hill area or at least be imitating Tyler Hill products.

The assemblage from the ditches of Enclosure 50 is dominated by EM1 and M1 sherds (Table 78). These fabrics are often not easily divided between AD 1200 and 1225/1250, a result of the continual development of EM1 into M1 during this period. As such the group is more homogenous if one considers the EM1 to be late examples and the M1 early examples of their types. Virtually no rims are present for these fabrics – the only example being a tapering club rim in M1. The local jugs, all in M1, are of the early types with strap handles (Cat. No. 48) and patchy green glazing. The London-type ware jug is typically better made with a good clear glaze and applied vertical strip. Enclosure 54 also produced part of the handle from a large squat jug in London-type ware (G5090) of a similar date (Cat. No. 49). This vessel was found in association with only EM3 sherds.

46. Cooking pot with squared hooked rim (R17).Dark grey core with dull orange surfaces. Sooted rim exterior. EM3B (Enclosure 55 cess pit, G5078, context 15098, Fig. 279/46).
47. Jug with thickened rim and strap handle with raised thumbed edges and three irregular rows of stabbing. Patchy green glaze (J11). Quite hard fired with dark grey core and dull orange/mid grey patchy surfaces. EM3B (Enclosure 55 cess pit, G5078, context 15098, Fig. 280/47).
48. Jug with thickened internally beaded rim and strap handle with applied thumbed strips down each edge and random stabbing between. Patchy green glaze (J7). Mid grey core and dull orange surfaces. M1 (Enclosure 50 ditches, G5075, context 5833, Fig. 280/48).
49. Strap handle from large squat jug with applied strips on the edges and centre, the latter being regularly thumbed (*cf* Pearce, Vince & Jenner 1985, 62, Nos 36 & 39). Quite extensive yellow green glaze. Mid grey core with pale brown surfaces. EM26/M5 (Enclosure 54 ditches, G5090, context 5768, Fig. 280/49).

Another 'earlier' assemblage associated with Enclosure 55 consists of a group of pits containing the lower portions of cooking pots/jars (G5079) deliberate set into the ground. The most notable are from Set 15148 that contained the lower sections of an EM1 (74/446g) and EM3 (113/3079g) cooking pot/jar. These vessels, probably old at the time they were set into the floor, had probably been used to store water or more likely as a cool store. Similarly placed vessels have been found on numerous medieval urban sites. The main vessel from Set 15132 consists of an M1 cooking pot/jar (200/1,433g) suggesting either a later date for this feature or the use of a more contemporary pot.

Enclosure 58, Structure 55, (G6048)

The G6048 assemblage (Table 78) has a range of fabrics and forms that suggest a probable deposition date between AD 1200 and 1225 or very shortly after. The EM2 sherds are almost certainly residual and it is possible the EM1 pieces are too. The assemblage is dominated by sandy-shelly wares. Although EM3 is represented by a number of large unabraded sherds from cooking pots with hooked and slightly squared club rims (Cat. Nos 51–52) the assemblage is dominated by the later EM.M1 shell-dusted ware. The few rim sherds present are of more squared hooked types quite typical of Tyler Hill M1 vessels of the early/mid-13th century (Cat. No. 50). These vessels are essentially Tyler Hill products with little surface shell. These sandy wares with sparse shell appear to be quite common around this time in east Kent whether in the form of EM3B (see Table 78, G5078) or EM.M1. Interestingly relatively little true M1 is present in the group and unusually no jugs in this ware were recognised.

50. Cooking pot with internally angled squared hooked rim (R29). Dark grey core with dull orange interior and dull orange/light grey exterior surfaces. EM.M1 (Enclosure 58 Structure 55, G6048, context 6171, Fig. 280/50).
51. Cooking pot with internally beaded hooked club rim (R43). Mid grey core with brown orange surfaces. EM3 (Enclosure 58 Structure 55, G6048, context 6216, Fig. 280/51).
52. Cooking pot with slightly downturned tapering club rim (R29). Mid grey to dull orange core with brown orange surfaces. Exterior sooted. EM3 (Enclosure 58 Structure 55, G6048, context 6234, Fig. 280/52).

Discussion of Early Medieval Assemblage

The Early Medieval assemblage's main value is not in its range of fabric and forms, which are already well known, but in the occurrence of a number of context groups with no/little residuality/intrusiveness. The presence of such groups, widely spread around an agricultural landscape, is similar to the situation noted at Lydd Quarry (Barber 2008). Although Lydd, being on Romney Marsh, is in a markedly different topographic setting, there are interesting parallels in how shifting activity can leave isolated assemblages not affected by earlier refuse. The fabric ratios from select 13th- to 14th-century context groups at Lydd clearly demonstrated that there was a marked variance to similarly dated groups from the adjacent town of New Romney (Jarrett 2009; Barber forthcoming). The urban assemblages appeared to have a much more varied suite of local fabrics when compared with those from Lydd. This in part could be explained by New Romney having been a market, with a wider social range of households contributing to the refuse. However, the same local wares were being used at both places and the extreme mixing at New Romney is more likely to be due to residuality, a result of the significantly more concentrated, and chronologically repeated, use of limited space within the urban setting. Such mixed deposits are common in Canterbury and although the wares, or more correctly their ratios at any particular time, need not have been the same as on Thanet the current site has offered the opportunity to look more closely at the use of these wares in rural east Kent.

Medieval activity at the site appears to have begun in the 11th century. Although there are a few sherds that may be from the early/middle of the century there is no reason why the earliest could not all be placed between AD 1075 and 1100. Certainly where rims are present they can usually be paralleled with assemblages of this period from Canterbury (Frere 1954; Wilson 1982; Macpherson-Grant 1981). However, as many contexts are devoid of feature sherds and a few rims could be of earlier date, a more general AD 1050/1075 date is considered a safer range for the onset of activity. It was during this time that the medieval system of fields and tracks was established along with a few of the earliest enclosures, the earliest of the latter being on Plateau 1 (e.g. Enclosures 60, 63 and 64).

The pottery of this earliest phase is totally dominated by EM1 Canterbury Sandy Ware cooking pots/jars with simple flaring, often slightly developed, rims along with a few shallow dishes. This total dominance of EM1 and absence/virtual absence of shelly wares is repeatedly demonstrated in what are considered to be the earliest assemblages. The group from Track 28 (Table 68) was composed of 92.8 per cent EM1 with 4.4 per cent being composed of flinty wares (EM33 and EM34) but only 1.4 per cent shelly EM2. The assemblages from Enclosure 63 (Table 69) are often solely composed of EM1 with again small quantities of flinty wares but no shelly wares. A similar pattern may be seen at Enclosures 64 and 60 (Tables 69 and 70). Features around these enclosures (Table 71), despite containing a few intrusive M1 sherds, produced assemblages in which EM1

sherds composed between 91.8 per cent and 100 per cent of the total sherds. As such the vast majority of local pottery was being supplied from Canterbury to the west. The flinty ware that often appears alongside the Canterbury Wares has a less certain origin. Although East Sussex produced very similar wares (particularly EM33) a source along the south Kentish coast is perhaps more likely (Cotter 2006). Assemblages containing these flinty wares alongside EM1 vessels of late 11th- to early 12th- century date have also been recovered from Westenhanger Castle and the Saltwood tunnel, both near Hythe (Cotter 2006, 158). The total dominance of EM1 was noted in a single context from a medieval enclosure located during works on the A259 at Monkton. Here, the group from the western boundary ditch produced solely EM1 sherds with slightly developed beaded rims thought to be of late 11th- century date (Cotter 2008).

Enclosures 13, 14, 19, 20 and 21 (Table 72) show a notable change in their associated assemblages. EM1 wares still dominate, making up between 80 and 100 per cent of the groups' assemblages. These vessels are very similar to those noted in the earliest contexts although there is probably a higher incidence in more developed beaded rims of the first half of the 12th century. However, the notable change is in the apparent disappearance of the flinty wares and their replacement with the shelly EM2 wares. A number of the groups from Enclosures 45, 46, 47 and related features show this similar EM1/EM2 division at the expense of all other wares. Unfortunately too few diagnostic sherds of EM2 are present within these groups but the associated EM1 vessels appear to be of the first half of the 12th century. One could suggest the assemblages represent a small chronological window in which we are seeing a resurgence of shelly wares in east Kent as coastal ceramic production spread along the north Kent coast but a larger sample of uncontaminated sizable groups with feature sherds will be needed to test this. The EM2 wares do not appear to have dominated the shelly wares for long. Although they undoubtedly were produced at the same time as the later sandy-shelly ware EM3 this overlap need not have been extensive. The apparently latest group on Table 73 (from SFB 44) shows a group composition of EM1 (71.1 per cent), EM2 (6.1 per cent) and now significant quantities of sandy-shelly EM3 sherds (21.2 per cent).

The EM3 wares probably only make up a significant part of the assemblages from the mid-12th century to the very early 13th centuries. Groups of this period are common on the current site – a result of the expansion of activity with numerous enclosures in use at this time, particularly on Plateaus 2 and 5. Even at a very coarse level, using combined plateau assemblages, it can be seen that there is a notable shift in the proportion of the two dominant local wares at this time between the different areas containing significant Early Medieval assemblages (Table 79).

This change in fabric ratios can more reliably be seen for individual enclosures/groups. The assemblages from Enclosure 36 are a case in point — the largest of which (G2082 and 2034) consists of 30.9 per cent EM1, 13.8 per cent EM2 and 40.9 per cent EM3. Although EM1 is better represented within this group if estimated number of vessels is

used as the quantification medium (40.9 per cent) the average sherd size of 5.6g, as opposed to 9g for the EM3 sherds, suggests some of the EM1 material could be residual. Features within Enclosure 36 (Table 76) show a consistent presence of EM3 of usually between 26.7 and 48.1 per cent. EM2 is occasionally present but usually absent suggesting on the whole it was replaced quite quickly by EM3. Although all the groups associated with Enclosure 36 have quite marked variation between fabrics EM1 and EM3 consistently dominate. The variability could be chronologically significant or, perhaps more likely, a result of the small assemblage sizes. The largest and probably most reliable consists of 127 sherds (from G2161) of which EM1 and EM3 make up 12.6 and 45.7 per cent respectively: EM2 being totally absent. Similar patterns, with and without EM2, can also be seen at Enclosures 34, 37 and 38 (Table 77).

The EM1 vessels of this period are still dominated by cooking pots but there is a notable increase in the number of oxidised vessels. The rims are generally of bulbous club types though toward the end of the period more squared rims appear as the ware merges into early M1 Tyler Hill types. EM1 and EM1 BCR pitchers also become more noticeable in the assemblages. The EM3 vessels also consist mainly of cooking pots (usually with thickened club rims) with a sprinkling of bowls and pitchers/jugs.

As occupation in a number of the enclosures continues into the High Medieval period without a break the division of groups of the first two quarters of the 13th century is often difficult. This is principally due to the appearance of M1 glazed jugs from the late 12th century and the gradual evolution of the late EM1 fabric into M1. These jugs usually have strap handles with raised thumbed edges, typical of the late 12th to early 13th centuries (Cotter 2001; 2006). The appearance of the squared, often hooked, club rims on the cooking pots/jars is a useful chronological marker but with the danger of slightly earlier residual rim forms this is never exact. G5078 from Plateau 5 (Table 78) is perhaps one of the best groups from the end of this period (early 13th century). EM1 comprises 9.9 per cent of the assemblage with early M1 Tyler Hill making up 35.2 per cent. EM3 is only present in negligible quantities (1.4 per cent), apparently being largely replaced by the sand and sparse shelly EM3B (50.7 per cent) and to a lesser extent shell-dusted EM.M1 (2.8 per cent). This is truly the transition to the High Medieval period and the last throws of the shell-tempered tradition in east Kent.

The EM.M1 vessels usually have exactly the same rim types as the M1 vessels and indeed, with the exception of the shell dusting, are of the same fabric. The EM.M1 wares are unsurprisingly also considered to be products of Tyler Hill (Cotter 2006, 145) and may represent that industry deliberately producing these vessels to directly challenge the coastal sand and shelly industry. Conversely the EM3B sherds at the current site could be interpreted as the results of the coastal industry trying to increase the sand to shell ratio in their products in order to compete with the sandy wares from Canterbury. How long EM3B and EM.M1 survived into the 13th century is not completely certain. They are not considered to run later than *c.* AD 1225/1250 in Canterbury and east Kent

though similar types with sparse shell do continue into the late 13th century further south (Barber 2008, Cotter 2006). As such the presence of a large industry producing good quality sandy wares at Tyler Hill appears to have curtailed the shell tempered tradition in east Kent at an earlier date. A similar situation appears to have occurred around the Rye industry in East Sussex (Orton 2004), however, even here the Winchelsea Black tradition continued with rare/sparse shell into the 14th century.

The general period AD 1150 to 1225/1250 is not only the best represented at the current site but it appears to be the most common medieval period on Thanet to date. The small assemblage of 146 sherds from the enclosures at Monkton produced a similar range of local fabrics of mainly mid-12th- century date (Cotter 2008). Two partially excavated enclosures at the Kent International Business Park, Manston have a similar date range to the current site, with low levels of late 11th- to mid-12th- century activity but with a peak between the later 12th and early/mid 13th centuries (Macpherson-Grant 1998). Fabrics from these two enclosures are dominated by EM3 type, EM.M1 and M1 with lesser quantities of EM1. The assemblage from Cottington Hill, on the route of the Weatherlees-Margate-Broadstairs Wastewater Pipeline, also produced a group of 186 sherds consisting of a mixture of predominantly EM1, EM2, EM3A and M1 (Mepham 2009b).

Domestic refuse was discarded in a range of features across a wide area with an absence of large numbers of purposely dug rubbish pits. This is fairly typical in a situation when space is not restricted and indeed domestic refuse, along with animal waste, could be put to good use manuring the land. Excavations at Lydd Quarry also produced assemblages from a few domestic pits (possibly originally dug for another purpose) as well as enclosure ditches. Here however, it was clear that not all enclosures producing pottery were occupation sites. Here a number appeared to be agricultural 'working areas', whether for stock control or dung/midden heap stockpiling, and were apparently fairly common within the landscape (Barber 2008). The lack of structural remains in many of the current enclosures strongly suggests a similar situation existed at the Thanet Earth site.

The Early Medieval assemblage in general is one in keeping with low-status rural agricultural settlement. The vast majority of the Early Medieval pottery is of local Kentish origin (Table 67) with most coming from the Canterbury area and increasing quantities coming from a generic coastal industry. Non-local English pottery constitutes a mere 0.47 per cent of the assemblage and imported wares just 0.15 per cent. Even if the EM4 vessels are considered to be imported (see above) this only takes the total to 0.22 per cent. The regional English wares (EM26 and EM27/M5) are both from London and Thanet would have been easily reached via the Thames. They appear on a number of other Thanet sites but numbers are always very low suggesting they were casual imports rather than the product of specific marketing.

The imported material is all from North France and the Low Countries, an area that Thanet would undoubtedly have had direct contact with. Despite this the quantities are so low that the vessels were obviously arriving on a more casual basis. This is very much in keeping with most of the excavated sites of this period on Thanet to date. Although the Early Medieval assemblage from Cottington Hill included 1.4 per cent imported material (by sherd count) this was from a single Beauvais vessel — the higher percentage really being the result of the small assemblage size (277 sherds) of this period (Mepham 2009b). The assemblages from the enclosures at the Kent International Business Park produced no imports at all in an assemblage of nearly 650 sherds (Macpherson-Grant 1998). The Monkton enclosures on the A253 produced significantly more: 14 per cent by sherd count of the total assemblage of 146 sherds (23 per cent by minimum number of vessels). All were of North French/Flemish grey sandy wares (MNV 20). The remaining assemblage from Monkton consisted of a little London ware and a similar range of local wares to the current site. The high percentage of imports at the Monkton site may be due to the cultural connections of the owner and/or an indicator of higher status: certainly the excavated building was notably more impressive than any structure at the current site. Whatever the case, the low levels of imports at Thanet Earth would appear to be in keeping with the majority of excavated rural sites on Thanet to date. A study of the distribution of the imported wares shows them to be spread over a wide area including Plateaus 1, 5 and 6. However, within these areas Enclosure 58 on Plateau 6 produced the only slight concentration of sherds. This group consists of eight sherds of EM27/M5 London ware (G6048 and G6071) the sherd of EM13 Andenne ware (G6066) and a sherd of EM38 North French ware (G6048). The presence of low quantities of imported material on sites with relatively easy access to the coast is common and cannot be used as an indicator of higher status (Barber 2008). However, despite the current Early Medieval occupation apparently being of low status the presence of the non-local wares clearly demonstrates that Thanet was on an important trading route between the northern Europe and London and such imported goods were available.

High Medieval: early/mid-13th–mid 14th centuries

This period produced a similarly large assemblage to the Early Medieval one noted above (Table 63). However, it was recovered from notably fewer contexts indicating generally larger individual context assemblages. The smaller average sherd size together with the slightly abraded nature of particularly the later pottery in this period suggests at least some may have been redeposited from its primary location. The earlier High Medieval material seamlessly blends with the latest assemblages of the preceding period — an indicator of uninterrupted occupation. These earlier High Medieval assemblages also tend to be smaller, with fresher sherds, though most are not large. Residuality begins to be notable in a number of the groups. Most of these sherds are relatively easily isolated but this is not always so, particularly when one is considering the potential longevity of the EM3B and EM.M1 sherds. High Medieval pottery was found on most of

the Plateaus but the largest concentrations were recovered from the southern part of the site (notably Plateaus 5 to 7). A very limited range of fabrics is represented (Table 80).

Fabrics

M1 – Tyler Hill ware. Dated *c.* AD 1225–1350/1375.
A medium to well fired fabric tempered with moderate/abundant medium/coarse quartz. Normally reduced cores with oxidised dull orange surfaces but some reduced vessels are present too. A denser better fired fabric than EM1, usually from thinner walled vessels (Spillet, Stebbing and Dunning 1942, Cotter 1991).

The coarsewares are dominated by cooking pots/jars of which there are 3,062 sherds (26,916g) from some 398 different vessels. However, the often fragmented nature of the rims, together with the large proportion of bodysherds has meant the identification of bowls to be problematic and not considered reliable. This is particularly the result of bowls and cooking pots/jars frequently having the same rim types (only distinguishable if enough of the neck remains) and the frequency that bowls of this period are sooted from use. As such they have been combined here though very few definite bowls were recognised in the assemblage. The 100 cooking pot rim sherds could be divided into 22 different rim types. These are totally dominated by square flanged club rims, typically with a flat or hollowed tops. The latter type is typical of Tyler Hill products (Cotter 2006, 146) and 17 vessels have this rim type with a further 25 vessels having a similar rim but with a flat top. Decoration is rare but a number of the rims are stabbed, one has slight thumbed decoration and one vessel has horizontal incised lines on the body. There are numerous vessels with applied thumbed strips and unintentional spots of clear or green glaze. However, there are a number of vessels with intentional glaze on their interior bases. These are likely to be bowls but most show signs of external sooting so some at least could be from cooking pots. In addition there is a single sherd from a definite handled cooking pot from fill 6522 (G5098, SFB 63).

Other coarsewares consist of eight sherds (87g) from a single pipkin (context 13115, G1240, Enclosure 25), though sherds of others are almost certainly incorporated with the cooking pots/jars, and frying pans. The latter are surprisingly only represented by four definite sherds from 2 different vessels.

Jugs make up around a quarter of the M1 assemblage by sherd count (1001/10,665g) with 199 vessels being represented. Most appear to have a patchy to more even clear or green glaze on the upper two thirds of their bodies and bases are either plain, or more commonly thumbed. Vessels are usually oxidised but a few reduced examples are present. Of the 41 rim sherds present 14 types can be discerned but the most common (10 examples) have a thickened everted rim with pronounced internal bead (Cat. Nos 53, 56 and 79. Frere 1954, No. 42). Handles consist of wide straps with raised thumbed edges for the earliest types (first half of the 13th century) but most in the current

assemblage are of smaller, neater circular or rectangular-sectioned stabbed or slashed rod handles. Decoration is never elaborate but incorporates one of four main types: white slip (areas or painted on lines), applied strips (occasionally thumbed), rilling and incised lines (wavy, horizontal, vertical, lattice) with two of these sometimes being used in combination. The most complete vessel is from a pear-shaped jug with painted white slip chevrons and patchy green glaze from fill 5843 (G5162, SFB 52).
Cat. Nos 23, 29, 47–48, 53, 55–59, 62–96

M1BL – Blean/Tyler Hill type coarse sandy ware. Dated *c.* AD 1200–1300.
A variation of M1 in which the fabric has a smooth matrix and moderate coarse quartz. With the exception of a single undecorated jug from well fill 2801 (G2139) all identified vessels (x3) are from cooking pots/jars.

M45A – Wealden pink/buff ware with flint and shell/chalk. Dated *c.* AD 1250–1375.
A medium fired fabric tempered with moderate medium quartz and sparse to common flint, shell and/or chalk to 1mm. Normally quite well potted thin walled oxidised vessels. However, the current assemblage produced just one base sherd from a reduced cooking pot (context 7326, G7028, Track 31/32).

M5 – London-type ware. Dated *c.* AD 1175–1350.
A fine oxidised or reduced silty fabric tempered with moderate/abundant fine quartz. (Pearce, Vince and Jenner 1985). Merges into the earlier EM27 and is largely divided here based on the date of associated coarsewares as no sherds are large enough to ascertain jug form. All four jugs represented are glazed. Two have applied clay strips/ribs, with one vessel having just green glaze, the other with a white slip under the glaze (well fill 15192, G5099), over the strips.

M7 – Kingston-type sandy ware. Dated *c.* AD 1240–1400.
A white, cream of buff ware tempered with moderate/abundant medium quartz (often with rose-coloured quartz grains). A fabric fully described elsewhere (Pearce and Vince 1988). A single green glazed jug and the possible base of a small jug are the only two vessels present.

M11A – Scarborough Phase 1 ware. Dated *c.* AD 1135–1225.
A medium fired pale orange/buff fabric tempered with moderate fine quartz (Farmer 1979). Jugs usually with a good thick even green glaze are the most common type. The jug from context 7326 (G7028, Track 31/32) is highly decorated with applied scales and vertical strips while that from fill 16270 (G6071, SFB 70) has no applied decoration and a somewhat thin green glaze.
Cat. No. 97

M14 – Flemish Highly Decorated sandy ware. Dated AD 1250–1375.

An oxidised medium fired fabric tempered with abundant fine/medium quartz, often with occasional fine calcareous inclusions (Cotter 2006). Normally represented by highly decorated jugs with external white slip under a bright green glaze. The two sherds in the current assemblage both have white slip under a good even glaze, however, the vessel represented in fill 6525 (G5097, SFM 63) is also decorated with a star–patterned stamped boss, pushed out from the interior of the vessel.

M19G – North French/Rouen green glazed whiteware. Dated *c.* AD 1170–1350.
A medium fired whiteware tempered with moderate very fine quartz. Both vessels represented are from well-made green glazed jugs. One has an applied vertical strip, the other an applied rouletted vertical strip (pit fill 15248, G5136).

M22G – Saintonge green glazed whiteware. Dated *c.* AD 1250–1350/1375.
A medium/well fired whiteware with virtually no visible quartz tempering and sparse fine iron oxide inclusions. The main products normally consist of finely potted green glazed jugs and the vessel represented in context 16270 (G6071, SFB 70), complete with applied vertical strips, is of this type. The other sherd is from a more unusual form – a green glazed horn, located in 7326 (G7028, Track 31/32).
Cat. No. 98

The High Medieval Assemblages

The assemblages of this period include numerous small context groups as was noted for the Early Medieval period. However, there are several contexts/groups that produced significantly larger assemblages. Most of these contain sherds of a small to medium size (typically up to 60mm across), usually showing slight signs of abrasion. Despite this a number of the groups appear to be uncontaminated, or only negligibly so, with residual and/or intrusive material. These select groups clearly demonstrate the sources of pottery onto Thanet at this time. The earliest material merges with the tail end of the Early Medieval period assemblage between *c.* AD 1200 and 1250, a result of the continual development of ceramics at the Tyler Hill industry. Most of the current High Medieval material can be placed between AD 1225/1250 and 1325/1350. Many of the Plateau 5 enclosures are of this date; most apparently beginning at some point between AD 1200 and 1250 though some in other areas produced notable groups. Those with the best ceramic assemblages are summarised below.

Enclosure 25 and related features

This produced the latest assemblages from Plateau 1 even though it would appear the enclosure had its origins in the late 12th, or more likely, early 13th century (Table 81).

Overall the assemblages from this enclosure suggest activity from the late 12th/early 13th to late 13th/early 14th centuries but most can probably be placed in the 13th century. The

combined assemblage from the ditches (G1239–G1240 and G1242–G1243) is dominated by M1 sherds with only four of EM3. However, all of the EM3 sherds, including a cooking pot with hollow-topped expanded rim of developed type, were recovered from G1240. Although this group also produced 28 sherds of M1 including a pipkin with everted rim and internally glazed base and several jug sherds (one with white slip), it is quite probable this represents slightly earlier disposal than the other groups. In general the M1 cooking pots typically have squared expanded or clubbed rims, sometimes with internal glazing on their bases. The jugs are mainly well fired oxidised types with rod handles and green glaze. One example has an applied thumbed strip while another has patches of white slip.

The assemblages from the erosion hollow (G1280), SFB 18 (G1209) and the well (G1213) are very similar in fabric make-up to the assemblage from the enclosure ditches with M1 dominating but a few EM3 and EM3B vessels still being represented. It is probable the EM2 sherds in these deposits are residual. The range of forms and decoration on the jugs is also very similar in type and plainness. Certainly there is an early 13th- century component to the jug assemblages and at least one strap handle with thumbing down its edges is present. The pottery from the quarry (G1244) forms only a small sample but has a notably higher proportion of shelly wares than the other groups suggesting this may be a little earlier than the bulk of the features here or it may contain significant residuality. However, the few rims present consist solely of bulbous club types of the mid-12th to early 13th centuries. The large assemblage from the pits (G1230) is perhaps one of the latest from this enclosure with a suggested date of between AD 1250 and 1325. All of the 302 sherds are from just seven M1 vessels. The six cooking pots are oxidised with green glazing on their interior bases and exterior sooting. Unfortunately no rims are present suggesting these vessels may have originally been set into the ground for holding water or cool storage of perishables. The only other vessel is represented by a stabbed strap handle, possibly from an unglazed jug.

53. Cooking pot with internally angled slightly hooked club rim (R13). Mid grey core with dull orange surfaces. Exterior sooted. M1 (Enclosure 25 ditch, G1240, context 981, Fig. 281/53).
54. Cooking pot with out-turned slightly squared hollow-topped rim (R12). Mid grey core with dull orange surfaces. Exterior sooted. EM3 (Enclosure 25 ditch, G1240, context 981, Fig. 281/54).
55. Jug with simple thickened rim (J2) and rilled/corrugated neck. Spots of green glaze. Mid grey core with dull orange/light grey patchy surfaces. M1 (Enclosure 25 ditch, G1240, context 571, Fig. 281/55).
56. Jug with internally beaded everted rim (J3). Light/Mid grey throughout. M1 (Enclosure 25 ditch, G1240, context 571, Fig. 281/56).
57. Cooking pot with stabbed out-turned flat-topped rim (R15). Mid grey core with dull orange/light grey patchy surfaces. M1 (Enclosure 25 erosion hollow, G1280, context 970, Fig. 281/57).

58. Handled cooking pot/cauldron with thickened rim (R37) and stabbed 90 degree handle. The latter also has a single thumbed hollow on the top edge impressed prior to the handle being stabbed. Quite hard fired with mid grey core with dull orange surfaces. Exterior sooted. M1 (Enclosure 25, quarry, G1244, context 13066, Fig. 281/58).

Enclosure 55 and related features

Although of similar date to Enclosure 51 (also on Plateau 5 but with only small pottery assemblages – details in archive) much larger quantities of pottery were recovered from Enclosure 55 and its associated features. Taken together the groups suggest activity from *c.* AD 1225/1250 to perhaps AD 1300 or just after (Table 82).

The assemblage from the ditches (which is similar in fabric make up for both G5133 and G5177) includes the late type of sandy-shelly EM3B cooking pots associated with developed squared hooked rim and M1 cooking pots with squared club rims and sometimes green glazed interior bases. Jugs are represented by a single M1 example with patchy clear glaze. SFB 59 produced a similar but larger assemblage. The EM1 and EM3 vessels are probably residual in this feature but the sparse shelly EM.M1 fabric corresponds to the proportion of the EM3B in the enclosure ditches. The M1 cooking pots are dominated by squared hooked types and the bowls by curving downturned type rims. The jugs have a variety of incised line (horizontal, zig-zag and lattice) and rilled decoration, usually under a patchy green glaze. Similarly incised line decorated M1 jugs were recovered from G5118 where one example has a chevron pattern. In contrast all the M1 jugs from the possible well (G5099) have white slip patches under a green glaze and thumbed bases as does the single London-type jug in this group. The pit assemblage (G5122) is wholly composed of M1 vessels. The cooking pots again have squared club or squared hooked rims, one vessel having an applied thumbed strip. The single jug has incised wavy and oblique line decoration under a patchy green glaze.

The assemblages from SFBs 53 and 60 are both dominated by M1 sherds, with the few pieces of EM3 probably being residual. No cooking pot rims are present in SFB 53, however, a number of the vessels have internally glazed bases or applied thumbed strips. The jugs are either decorated with rilling or, more commonly, white slip lines below a patchy green glaze. Further white slip decorated jugs were recovered from SFB 60 though at least one vessel with incised wavy and chevron incised lines is also present. The cooking pots from SFB 60 produced rims from six different vessels – all of squared club and squared hooked types.

59. Bowl with curving downturned rim (B8). Dark grey core with brown orange surfaces. Externally sooted. Low-fired/early M1 (Enclosure 55, SFB 59, G5121, context 15273, Fig. 281/59).

60. Bowl with internally beaded curving downturned stabbed rim (R30). Mid grey core with brown orange surfaces. Externally sooted. EM.M1 (Enclosure 55, SFB 59, G5121, context 15316, Fig. 281/60).
61. Jug with thickened rim (J8). Mid grey core with dull orange surfaces. Spots of green glaze externally. EM. M1 though so little shell it is essentially M1 (Enclosure 55, SFB 59, G5121, context 15316, Fig. 281/61).
62. Cooking pot with out-turned flat topped rim (R15). Mid grey core with dull orange surfaces. M1 (Enclosure 55, ditch by SFB 59, G5118, context 15280, Fig. 281/62).
63. Cooking pot with squared hooked rim (R17). Mid grey core with brown orange surfaces. M1 (Enclosure 55, ditch by SFB 59, G5118, context 15280, Fig. 281/63).
64. Jug with thickened rim and cordon on neck (J9). Mid grey core with orange interior and orange/light grey exterior surfaces. M1 (Enclosure 55, ditch by SFB 59, G5118, context 15280, Fig. 281/64).

Enclosures 52 and related features

This produced three further useful groups from Plateau 5 generally spanning *c.* AD 1250 to 1325/1350 but a little early 13th- century material is still present suggesting some residuality (Table 83).

The small assemblage from the enclosure ditches (G5084) includes a late EM3, unglazed jug with thumbed base that is probably residual. The group is again dominated by M1 sherds, many from cooking pots and bowls with green or clear glaze on their interior bases and either curving down-turned rims or the more developed flat-topped expanded rims. Some 91 per cent of the assemblage from SFB 50 is of M1 with a similar range of coarsewares and decorated jugs to those noted for Enclosure 55. The feature did however produce sherds from a North French green glazed jug with applied vertical strip decoration. SFB 49's assemblage was similar to that from SFB 50 (94 per cent M1 of similar types) but also included part of a probable lid in Kingston-type ware (M7) and a tiny scrap of M14 Flemish Highly Decorated ware jug with white slip under a good even green glaze.

65. Cooking pot with thickened rim (R37). Mid grey core with dull orange surfaces. M1 (Enclosure 52, SFB 49, G5081, context 5537, Fig. 281/65).
66. Bowl with stabbed downturned curving rim (B8). Mid grey core with dull orange brown interior and mid grey exterior surfaces. M1 (Enclosure 52, SFB 49, G5081, context 5537, Fig. 281/66).
67. Jug strap handle with three rows of slight stabbing. Mid grey core with dull orange surfaces. Patches of white slip under patchy green glaze. M1 (Enclosure 52, SFB 49, G5081, context 5537, Fig. 281/67).
68. Cooking pot with squared hooked rim (R17) and horizontal applied thumbed strip around neck. Mid grey core with brown/mid grey patchy surfaces. M1 (Enclosure 52, SFB 50, G5082, context 5575, Fig. 281/68).

69. Cooking pot with out-turned slightly hollowed rim (R32). Mid grey core with dull orange surfaces. M1 (Enclosure 52, SFB 50, G5082, context 5575, Fig. 281/69).

Enclosures 53 and related features

This Plateau 5 enclosure produced three further useful groups of similar date range to those in Enclosure 52 (Table 84).

Unsurprisingly the similarity of date means the fabric ratios are also quite similar and M1 again dominates each group: 83 per cent, 100 per cent and 97 per cent respectively (Table 84). The M1 vessels are of similar types both in the rim form of the coarsewares and the decorative repertoire of the jugs. The latter is particularly well represented by a near complete example with white slip chevron decoration from SFB 52 (Cat. No. 70). Also of note is the presence of the stabbed oxidised strap handle from a cooking pot/cauldron and another small fragment from an M14 Flemish jug with similar white slip under green glaze finish (both from SFB 63.

70. Near complete (though fragmentary) pear-shaped jug with inturned rim (J10), stabbed rod handle and thumbed base. Mid grey to dull orange core with dull orange surfaces. Decorated with three horizontal incised lines on the widest part of the neck above a narrow horizontal cordon. Two further groups of two horizontal incised lines are on the shoulder and body. Crude white slip painted chevrons under a patchy olive green glaze — the glaze extending only as far as the jugs widest girth. M1 (Enclosure 53, SFB 52, G5162, context 5843, Fig. 282/70).

Enclosure 58 and related features

This enclosure, situated on Plateau 6, is undoubtedly of mid-12th- to early 13th- century origin (see above — Structure 55) but it contained a few later groups of the early/mid to late 13th century (Table 85) indicating activity continuing until the late 13th century. Due to this apparent longevity it is not surprising many deposits have some residual pieces.

Of the two groups selected for publication that from the ditches (G6047, 6066 and 6069) appears to be the earliest and perhaps the most mixed. If divided off into individual groups it is apparent that Set 6176 (context 6174 in G6066) contains solely EM1, EM2 and EM3 sherds and, with a single EM3 cooking pot with expanded rim, a mid-/later 12th-century date is likely. Set 6164 (context 6163, G6069) contained just two sherd of EM3 cooking pot with applied thumbed strip also suggesting an early date. Set 16438 (context 16433, G6066) contained a mix of EM3B (24 sherds from bowls, one of which at least has a developed squared rim) and two M1 jugs. The latter are green glazed, with incised decoration and at least one thumbed base is represented. It is notable that in general the majority of M1 vessels from the ditches are from jugs, usually with just patchy green glazing (though one with white slipped lines is present). These vessels probably mainly

represent early M1 jugs in use from the late 12th to mid-13th century and in contemporaneous use with the EM1 and EM3 wares. Of particular interest is the sherd of EM13 Andenne jug with clear and green glazed patches – a rare early import at the site albeit probably residual in this deposit.

The assemblage from SFB 70 also displays a slightly mixed fabric range. However, judging by the proportion of M1 present (82.6 per cent) many of the earlier fabrics probably represent residual pieces. The squared club rims of the cooking pots and white slipped/green glazed decoration of the jugs suggest a date between 1225 and 1275. The mid to later 13th- century would also be in keeping with the probable Saintonge jug with applied vertical strips under an even green glaze.

71. Cooking pot with thickened rounded club rim (R33). A relatively low fired vessel with mid grey core and orange brown surfaces. Externally sooted. Early M1, very close to EM1 (Enclosure 58, SFB 70, G6071, context 16270, Fig. 282/71).
72. Cooking pot with stabbed internally angled squared hooked rim (R39). Mid grey core with dull orange interior and light grey exterior surfaces. M1 (Enclosure 58, SFB 70, G6071, context 16270, Fig. 282/72).
73. Jug with internally beaded everted rim (J3). Mid grey core with dull orange/mid grey patchy surfaces. M1 (Enclosure 58, SFB 70, G6071, context 16270, Fig. 282/73).
74. Jug with thickened rim (J11) and horizontal grooving on the neck. Dark grey core with dull orange surfaces. Patchy white slip and dull green glaze. M1 (Enclosure 58, SFB 70, G6071, context 16270, Fig. 282/74).

Track 31/32

The combined assemblage associated with these trackways is by far the largest from the site though by far the majority of sherds were recovered from G7028 (Table 86).

The smaller assemblage from G7027 is considered to be the stratigraphically earlier of the two groups and it certainly contains a less diverse assemblage of fabrics. M1 makes up 99 per cent of the pottery with cooking pots dominating. Although a few of these have tapering or triangular clubbed rims most are of squared clubbed type, sometimes with a slight hook underneath. The jugs from G7027 are decorated with spots/patches of green glaze, sometimes with patches of white slip or incised line decoration below. Only a single handle is present – a strap handle with raised edges of late 12th- to mid-13th- century type. The London-type ware jug, decorated with patchy green glaze only, is the only other fabric present. All in all the collective G7027 assemblage can best be placed between *c.* AD 1225 and 1275.

Although the large group from G7028 is stratigraphically later there are at least two M1 cooking pots with conjoining sherds with G7027 suggesting a similar date for the dumping of material in both tracks or, perhaps more likely, some later post-depositional

mixing. The G7028 assemblage has a much more diverse fabric make-up though M1 still totally dominates the group, accounting for 95 per cent by sherd count. The EM3 and EM.M1 sherds are almost certainly residual and the only sherd of M45A, from the reduced base of a cooking pot, is not closely datable. The M1 cooking pots are mainly in similar squared clubbed rim types to those noted in G7027 though there are less of triangular profile and a scatter of rims that can be seen as more developed types of the later 13th to early 14th centuries. A number of the cooking pots have applied thumbed strips and four have intentional clear/green glaze on their interior base (though some of these sooted bases could also be from bowls) while a further example has unintentional spots of glaze on its exterior. The bowls, which make up just over 20 per cent of the vessels from G7028, mainly have flat-topped expanded rims, sometimes with underlying hook and frequently stabbed but only one frying pan was recognised. The jugs have a wider decorative repertoire than noted in G7027. Although this could in part be due to the larger sample involved it is likely to be the result of a slightly later date as all the encountered handles are of more developed stabbed rod type, bases are virtually always thumbed and the clear/green glazes are better/more extensive. White slipped patches, usually below patchy green glaze, are common as is incised decoration, the latter frequently consisting of wavy/zig-zag lines. Rilling and applied strips is also present but are much less common.

The non-local High Medieval pottery is rare but of some interest. Although the Kingston and London-type jugs are plain green glazed vessels the Scarborough jug is decorated with applied vertical strips and scales (Cat. No. 97). The Saintonge horn fragment is of particular note (Cat. No. 98). The group also produced a significant quantity of Late Medieval pottery, the only notable assemblage from the site. The quantity of LM1 involved strongly suggests some material was still being deposited in the 15th century even though the bulk of the assemblage is best placed between *c.* AD 1275 and 1350. Most contexts produced so few they could easily be intrusive but 22 of the LM1 sherds and 16 of the LM2 sherds were recovered from context 7326 where they make up 16.4 per cent of that context's pottery strongly suggesting some 15th- century activity here.

75. Cooking pot with tapering rounded club rim (R23). Mid grey core with dull orange surfaces. Externally sooted. M1 (Tracks 31/32, G7027, context 7328, Fig. 282/75).
76. Cooking pot with squared slightly hooked rim (R17). Mid grey core with dull orange surfaces. Neck and rim externally sooted. M1 (Tracks 31/32, G7027, context 7328, Fig. 282/76).
77. Cooking pot with out-turned flat-topped rim (R15). Mid grey core with dull orange interior and light/mid grey exterior surfaces. Externally sooted. M1 (Tracks 31/32, G7027, context 7328, Fig. 282/77).
78. Pipkin with concave everted simple rim (J4). Mid grey core with dull orange/grey patchy surfaces. Internal dull green glaze. M1 (Tracks 31/32, G7027, context 7328, Fig. 282/78).

79. Jug with internally beaded everted thickened rim (J3) and remains of stabbed strap handle with raised edges. Mid grey core with dull orange grey interior and light/mid grey exterior surfaces. Rare spots of green glaze (Tracks 31/32, G7027, context 7328, Fig. 282/79).
80. Cooking pot with everted flat-topped rim (R46). Mid grey core with dull orange surfaces. M1 (Tracks 31/32, G7028, context 7296, Fig. 282/80).
81. Cooking pot with internally angled club rim (R41). Mid grey core with dull orange/light grey patchy surfaces. M1 (Tracks 31/32, G7028, context 7296, Fig. 282/81).
82. Cooking pot with squared hooked rim with slightly hollowed top and internal bead (R39). Mid grey core with dull brown orange surfaces. M1 (Tracks 31/32, G7028, context 7296, Fig. 282/82).
83. Cooking pot with lid-seated rim (R45). Brown red core with mid grey surfaces. Late M1, probably of the 14th century (Tracks 31/32, G7028, context 7296, Fig. 282/83).
84. Cooking pot with squared club rim and pronounced internal bead (R48). Mid grey core with dull orange surfaces. External rim sooted. M1 (Tracks 31/32, G7028, context 7327, Fig. 282/84).
85. Bowl with double stabbed curving downturned rim. (B8). Mid grey core with dull orange surfaces. Spots of pale green glaze on rim. Exterior sooted. M1 (Tracks 31/32, G7028, context 7327, Fig. 282/85).
86. Bowl with stabbed wide expanded flat-topped rim (B5). Mid grey core with dull orange surfaces. Spots of pale green glaze on underside of rim and slight horizontal incised line. Exterior sooted. M1 (Tracks 31/32, G7028, context 7296, Fig. 283/86).
87. Bowl with expanded rim with slight thickening (B12). Mid grey core with dull orange surfaces. Exterior sooted. M1 (Tracks 31/32, G7028, context 7296, Fig. 283/87).
88. Bowl with stabbed wide expanded flat-topped hooked rim (B9). Brown grey core with dull orange surfaces. Exterior sooted. M1 (Tracks 31/32, G7028, context 7296, Fig. 283/88).
89. Bowl with wide expanded flat-topped hooked rim with internal bead (B10). Mid grey core with dull orange to grey brown patchy surfaces. Exterior sooted and sooting on interior base. M1 (Tracks 31/32, G7028, context 7327, Fig. 283/89).
90. Frying pan handle with raised edges and two crude rows of central stabbing. Dull orange brown throughout. Underside sooted. M1 (Tracks 31/32, G7028, context 7326, Fig. 283/90).
91. Jug with thickened rim (J15). Dark grey core with dull orange surfaces. Thin oblique white painted slip lines under dull green glaze. M1 (Tracks 31/32, G7028, context 7327, Fig. 283/91).
92. Jug rod handle (unstabbed) with deep finger impression at junction with body. Mid grey core with brown orange surfaces. Two wide white slip lines down either side of handle with overlying patchy pale green glaze. M1 (Tracks 31/32, G7028, context 7327, Fig. 283/92).

93. Jug with squared rim (J12). Mid grey core, brick red margins and mid grey surfaces. Spots dark green glaze. Late M1 of 14th- century date (Tracks 31/32, G7028, context 7296, Fig. 283/93).
94. Jug narrow strap handle with random stabbing. Mid grey core with brown grey surfaces. Two white slip lines down either side of handle with overlying patchy pale green glaze. M1 (Tracks 31/32, G7028, context 7296, Fig. 283/94).
95. Jug decorated bodysherd. Mid grey throughout. Applied vertical short strips/scales with dull green glaze. M1 (Tracks 31/32, G7028, context 7326, Fig. 283/95).
96. Jug decorated bodysherd. Dark grey core with dull orange exterior and mid grey interior surfaces. Horizontal rows of incised zig-zag lines below an even dull green glaze. M1 (Tracks 31/32, G7028, context 7326, Fig. 283/96).
97. Jug decorated bodysherd. Pale orange throughout. Applied vertical strip with adjacent scales glazed green with a good clear glaze over the rest of the body. M11A (Tracks 31/32, G7028, context 7326, Fig. 283/97).
98. Pierced lug from a horn. Off-white throughout with good bright green exterior glaze. M22G (Tracks 31/32, G7028, context 7326, Fig. 283/98).

Discussion of High Medieval Assemblage

Activity at some enclosures obviously continued seamlessly into this period creating a slight blurring of the assemblages. This is notable for example on Plateau 1 where a number of features contain assemblages with notable quantities of sandy-shelly wares (mainly EM3, EM3B and EM.M1). For example the quarry (G1244) (Table 81) shows an even mix with EM3 and EM3B making up 38.9 per cent and 11.1 per cent of the assemblage respectively and M1 41.7 per cent. The ditches of Enclosure 55 (Table 82) and 58 (Table 85) show a not dissimilar make up. The Enclosure 55 ditches produced only 22 sherds, of which 63.6 per cent were M1 and the remainder EM3B, however, the larger group of 98 sherds from the ditches of Enclosure 58 included 29.6 per cent M1 sherds, 5.1 per cent EM3 and 25.5 per cent EM3B sherds. The extent to which the sandy-shelly wares are residual is uncertain as most contexts of this general mix also contain very low quantities of obviously residual EM1 and EM2 sherds. It would however appear likely that these mixed groups may relate to a transitional period, perhaps between AD 1225 and 1250, when the M1 Tyler hill wares were rapidly replacing the last of the shelly wares.

The vast majority of the assemblages of the High Medieval period are totally dominated by sherds of M1. At Enclosure 55 (Table 82) the four best feature groups contained between 92.9 per cent and 100 per cent M1 sherds. A similar pattern can be seen at the best groups from Enclosure 52 (Table 83) where M1 makes up between 91.3 per cent and 94.2 per cent and indeed on Track 31/32 (Table 86) where M1 constitutes between 95.2 per cent and 99 per cent of the two group assemblages. It would therefore appear that by the mid-13th century the potters at Canterbury had regained their virtual complete

dominance of the Thanet market they had enjoyed in the later 11th to early 12th centuries. Virtually no other local wares are present with other types, always in low numbers, deriving from a few English regional or Continental sources. The M1 Tyler Hill products between AD 1250 and 1325/1350 consist of well potted, usually oxidised cooking pots and bowls with squared club or expanded rims, sometimes with internally glazed bases, and a range of jugs. The latter, are now quite common in the assemblages although, as they are more distinctive, their estimated number of vessels is probably disproportionally higher than the less distinctive coarsewares. The jugs typically have round-sectioned rod handles with patchy clear or green glazing and a limited repertoire of white slipped or incised line decoration.

The fact the majority of the assemblage of this period was recovered from the more southerly plateaus certainly suggests that there was a general shift in concentrated activity to this area by the mid/late 13th century. The exact date the activity ended is more difficult to assess. There is a general lack in the harder fired M1 types with wider flat-topped rims suggesting in most cases activity may not have continued at the same intensity right up until the mid-14th century. Potentially the latest High Medieval sherds were recovered from context 16483 (G6066) in Enclosure 58. This produced four sherds from the thumbed base of a well/hard-fired reduced M1 jug which, unless it is an earlier overfired piece, is unlikely to be earlier than AD 1350. As such activity may have either seriously reduced in intensity, or indeed ceased by about AD 1325 and certainly did not extend beyond AD 1350. Track 31/32 produced the only notable quantity of medieval sherds that post-date 1350, however, these probably relate to the continued use of the track. Certainly none of the enclosures produced any of this late medieval pottery.

Relatively few earlier excavations have produced 'clean' large High Medieval groups from Thanet. The best of these are from Enclosure 18 at the Kent International Business Park at Manston (Macpherson-Grant 1998) where the combined assemblage consisted of 89.6 per cent M1 sherds with much smaller quantities of sandy-shelly wares. Interestingly the High Medieval pottery from this site also showed signs of being slightly weathered, strongly suggesting that much may have originally been deposited in unsealed dumps for a period prior to it being buried. This hints at a change in the treatment of at least some refuse during this period, perhaps as a result in a change in manuring practises.

Non-local pottery is present in comparable low quantities to the early medieval period. Non-local English wares constitute a mere 0.26 per cent of the overall High Medieval assemblage by sherd count (1.16 per cent by estimated number of vessels). London-type ware is the most common (0.12 per cent) with Kingston-type ware and Scarborough ware each forming 0.07 per cent of the High Medieval assemblage. The London and Kingston wares demonstrate a continuation of casual supply via the Thames but it is likely that the Scarborough material may be connected with the local fishing fleet's summer exploitation of the North Sea herring: an explanation put forward for the

presence of such vessels on the south Kent and Sussex coast (Barber 2008; 2011). The Continental imports account for 0.41 per cent of the assemblage (0.87 per cent by estimated number of vessels) — an increase on the 0.15 per cent seen for the Early Medieval assemblage. Continued contact with the Low Countries is represented by the paltry 0.05 per cent (0.29 per cent by ENV) Flemish sherds with the remainder being of North French/Rouen (0.24 per cent by sherd count and 0.29 per cent by ENV) or later SW French/Saintonge (0.12 per cent by sherd count, 0.29 per cent by ENV) jugs. As such there is no obvious indicators to suggest that the social status of the occupants was any greater than it had been during the Early Medieval period – the slight increase in imports probably being the result of a general increase in contact with the Continent during this period. Quantities are so small that distribution patterns are not really reliable, however, Enclosure 52 produced the most non-local material consisting of most of the Kingston ware (two sherds), one of the Flemish sherds and all of the North French sherds (from two vessels). The only other slight concentration is in the group from Track 31/32 but as the source of this assemblage is uncertain it could relate to occupation outside the excavated area. The Saintonge horn from Track 31/32 is an interesting find from the site. The tradition of ceramic horns is a long established one in France and the presence of ceramic horns is well known in medieval contexts (Thompson and Brown 1991, 75). Such horns could have been put to a number of uses. For example, the horn found at the Ropetackle site, Shoreham-by-Sea (Barber 2011, No. 101) could easily have been used by mariners. The horn from the current excavations tends to suggest they may also have been put to use controlling livestock.

Late Medieval: Mid 14th to early 16th centuries

As noted above, a number of the better fired M1 Tyler Hill sherds may run as late as the mid-14th century but there are very few hard-fired vessels that can be definitely identified as belonging to the Late Tyler Hill industry (LM1) of the later 14th to 15th centuries. Nonetheless a little pottery of this period is certainly present though only three local fabrics are represented (Table 87).

LM1 – Late Tyler Hill ware. Dated *c.* AD 1375–1525.
A hard-fired fabric tempered with moderate to abundant medium/coarse quartz developing from M1. Most sherds are reduced, though often with a brick red core or margins. The sherds in the current assemblage derive from three cooking pots/jars and two jugs/pitchers, one with a heavily thumbed base. Most sherds were recovered from Track 31/32.

LM2 – Canterbury-type fine earthenware. Dated *c.* AD 1475–1525/1550.
A well fired silty earthenware with varying quantities of fine quartz. Usually oxidised a pale orange brown but some reduced vessels too. The two vessels represented (both from Track 31/32) consist of an oxidised jar with clear internal glaze and thumbed

handle and a bowl with wide flat-topped horizontal handle and spots of clear glaze on its exterior.

LM4 – Wealden buff sandy ware. Dated *c.* AD 1450/1475–1550.
A well fired cream or buff fabric tempered with abundant coarse quartz. A sherd from a jar with green internal glaze was recovered from Track 31/32.

With the exception of three possibly intrusive sherds in two pits on Plateaus 1 and 5 all of the Late Medieval assemblage from the site was recovered from Tracks 31/32 (Table 86, G7028). This would confirm that no actual occupation was occurring within the excavated area at this time but people were passing through the landscape, apparently using the existing but largely abandoned droveway. All of the pottery of this period is of local origin suggesting low status activity, however, the assemblage is too small to draw firm conclusions from.

Early Post-medieval: Mid-16th to mid-18th centuries

Surprisingly little early post-medieval pottery was recovered from the site and that which is present is virtually all from Plateau 6. Although some of the fabrics could easily be of the mid-16th century there is nothing that need be earlier than the 17th century. As such it would appear that the lack of settlement noted in the later 14th to 15th centuries continued through the 16th century, probably with the land being used for pastoralism. This would explain the lack of a background scatter of ceramics from manuring arable fields, however, much of this is likely to have been removed during the mechanical removal of the topsoil from the site. Even the 17th- to mid-18th- century assemblage from Plateau 6 is not related to agricultural settlement demonstrating the continuance of an unsettled pastoral landscape throughout the early post-medieval period. Despite the small pottery assemblage a relatively wide range of fabrics are represented (Table 88).

Fabrics

PM1 – (glazed) Post-medieval red earthenware. Dated *c.* AD 1550–1750/1775.
A generally oxidised and medium fired fabric tempered with sparse to moderate fine quartz, usually with a clear internal glaze. The only forms recognised consist of bowls (x4) and dishes (x5) with clear internal glazes.

PM1 (unglazed) – Post-medieval red earthenware. Dated *c.* AD 1550–1700.
As PM1 (glazed) but vessels deliberately left unglazed. Where vessel form is discernable all are from oxidised jars. The only feature sherd is from a collard rim (layer 16071, G6083, Structure 59).

PM9 – Tin-glazed ware. Dated *c.* AD 1575–1775/1800.
A single tiny chip was found intrusive in ditch fill 6394 (G6008, Barrow 4).

PM10.1 – Surrey/Hampshire Border ware (green glazed). Dated *c.* AD 1550–1700) (Pearce 1992). With the exception of a single intrusive sherd the remainder of the assemblage was recovered from contexts associated with Structures 58 and 59. Only two forms were recognised – an externally glazed jug and an internally glazed pipkin (both Structure 58).

PM10.2 – Surrey/Hampshire Border ware (yellow glazed). Dated *c.* AD 1550–1700. (Pearce 1992). The single sherd, from Structure 58, is not diagnostic of form.

PM10.3 – Surrey/Hampshire Border ware (brown glazed). Dated *c.* AD 1550–1700. (Pearce 1992). The single sherd, from Structure 59, is not diagnostic of form.

PM25 – London stoneware. Dated *c.* AD 1675–1775/1800.
The three vessels associated with Structure 59 (G6083 and 6079) include a mug and tankard and the vessel associated with Structure 59 (G6081) a further tankard with a WR ale mark below the rim.

PM26 – Staffordshire-type white salt-glazed stoneware. Dated *c.* AD 1725–1780.
The only diagnostic sherd present is from the base of a tea bowl (G6079, Structure 58).

PM54 – Jackfield-type Ware. Dated *c.* AD 1730–1780/1800.
A fine oxidised red earthenware with good thick very dark brown/black glaze. A number of production centres made this ware including examples in the Midlands and Essex. However, it is suspected that potters of the south-east also produced them. The only sherd is from the base of a vessel in Structure 59 (G6083).

PM5 – Frechen stoneware. Dated *c.* AD 1550–1700.
A grey salt-glazed fabric produced at Frechen, near Cologne in the Rhineland. Both Structures 58 (G6079) and 59 (G6083) produced single sherds from bottles.

PM15 – North Holland trailed slipware. Dated *c.* AD 1550–1725.
An oxidised medium fired fabric, tempered with moderate fine quartz, with trailed white slip decoration under a clear rich glaze. A single trailed white slipped cockerel bowl with horizontal handle was recovered from ditch fill (G6079) associated with Structure 58.

The overall assemblage of early post-medieval pottery is virtually exclusively derived from deposits associated with the windmill/seamark (Structure 58) and the later seamark (Structure 59) on Plateau 6. Both groups of pottery are somewhat mixed and it is certain that activity associated with Structure 59 has contaminated the group from Structure 58. The pottery from the latter (G6079) includes sherds from at least two local PM1 unglazed jars and a glazed bowl and dish. There are also small sherds from a

pipkin, jug and an unidentified vessel in PM10 Border ware. The other vessel, represented in at least two different contexts within the group, consists of a PM15 Dutch handled bowl with slipped decoration. The only other import consists of a bodysherd from a German Frechen stoneware (PM5) bottle. All the above sherds could be placed anywhere between the mid/late 16th and mid/late 17th century. Despite this, there is no reason why a number of these vessels could not still have been in use in the early 18th century. The group did produced seven sherds from PM25 London stoneware drinking vessels (a mug and tankard) likely to be of the early/mid-18th century and a 5g sherd from a Staffordshire-type white salt-glazed stoneware of similar date. It is probable these sherds are intrusive from Structure 59.

Structure 59 produced an equally mixed group (G6083 and G6081) with a similar range of unglazed and glazed local PM1 earthenwares (including two jars) as well as two unidentified PM10 Border ware vessels and another piece of PM5 Frechen bottle. Later vessels again include a PM25 London stoneware tankard (with WR ale mark) and a 6g sherd of PM54 Jackfield-type earthenware. As this group is stratigraphically later than Structure 58 it must belong to the first half of the 18th century but contain a significant late 16th- to 17th- century residual element derived from the earlier structure.

Late Post-medieval: Mid 18th- to mid 20th centuries

Virtually no late post-medieval pottery was recovered from the site. Material of this date is usually a relatively frequent find in the topsoil as a result of manuring during this period. Its absence at the current site may again be due to the mechanical stripping of the overburden rather than an actual absence of manuring. The few intrusive small sherds noted in features are likely to have been intruded during ploughing, itself suggesting many more pieces may have been in the topsoil. However, the area clearly remained unoccupied.

LPM1 – (glazed) Post-medieval red earthenware. Dated *c.* AD 1750/1775–1900.
A single bodysherd is present from a jar or bowl.

LPM2 – (unglazed) Post-medieval red earthenware. Dated *c.* AD 1750/1775–1900.
A sherd from a flower pot with partial stamped name (EY…) below the rim was intrusive into ditch fill 7331 (Barrow 3).

LPM12 – Pearlware. Dated *c.* AD 1780–1830.
The single sherd of pearlware is from a plate with blue shell-edged decoration, intrusive in fill 14936 (G8084).

Chapter 18: Ceramic Building Material

Louise Harrison

Introduction

The majority of the ceramic building material recovered from the various plateaus consisted of mostly daub with smaller quantities of other various building materials including Roman, medieval and Post-medieval brick and roof tile.

The building material was largely unwashed and has been recorded by plateau, context, form, quantity and weight. All other visible and recordable features were also noted and recorded.

The assemblage

The totals of each type of building material recovered from the individual plateaus over the entire site is presented in Table 89.

The Daub

The daub was the largest and most significant category of ceramic building material (representing approximately 76 per cent by weight). Daub with recordable features has therefore been recorded in detail and has been broken down by plateau as follows:

Fabric Descriptions

The daub fell into two fabric categories which are described below.

Fabric 1

This is pale orange to beige in colour. It has a fine sandy texture with large quantities of rounded chalk inclusions measuring from 1mm–20mm in diameter (similar to daub found at Townwall Street; Harrison 2006).

Fabric 3

This is pale orange in colour and is a fine sandy fabric with no visible inclusions.

Daub by Plateau

Plateau 1

The total quantity of daub recovered from plateau 1 consisted of 736 fragments weighing 6265 kg. It was recorded by feature and daub with features can be broken down as follows:

Significant contexts or observations

Plateau 1 consisted of both fabrics 1 and 3.

Most of the assemblage had flat surfaces and a number of fragments had rough, rounded surfaces, however these were quite worn and abraded.

One context (10398), thought to be part of a medieval oven floor/hearth from within SFB 77 produced 436 pieces of daub weighing approximately 3,670 kg (89.76 per cent by weight). A large quantity of this daub had flat surfaces but only a few pieces showed signs of burning, indicating that although the daub probably formed part of an oven floor or hearth, the lack of evidence of exposure to heat, it probably formed an area away from the source of heat, i.e. positioned at the edge or outside, rather than the centre of the fire/hearth.

Plateau 2

The total quantity of daub from Plateau 2 consisted of 224 fragments weighing 2,118 kg, the material with features can be broken down as follows:

Significant contexts and observations

A large quantity of the daub consisted of fabric *. (add per cent per cent)

A significant quantity also had flat surfaces; a small number of pieces also showed evidence of being burnt. However, the daub was distributed between a large number of different contexts and therefore no further information can be gleaned from this assemblage.

Plateau 3

The total quantity of daub from this plateau consisted of 195 fragments weighing 4,188kgs, the daub with features can be broken down as follows:

Significant contexts and observations

As Table 92 indicates, the majority of the daub from Plateau 3 bore flat surfaces, and was mainly retrieved from context 11070, the upper fill of SFB 3033 (52.19 per cent by weight.

It is highly likely that the daub with the flat surfaces was used to form part of the walls of the sunken featured building.

Plateau 4

The total quantity of daub from Plateau 4 consisted of only 13 fragments weighing 662gms; none of which bore any recordable features.

Plateau 5

The total quantity of daub from Plateau 5 consisted of 468 fragments weighing 8,734 kg, the daub bearing features can be broken down as follows:

Significant contexts and observations

As Table 93 indicates, a large quantity of the daub consisted of fragments with flat surfaces (15.34 per cent by weight).

Context (5127) thought to be part of a Bronze Age pit produced approximately 187 large lumps of daub weighing approximately 5,176 kg (59.26 per cent by weight). Although this is a large quantity of daub, the majority of it consisted of shapeless lumps that did not bear any substantial recordable features and has therefore not been included here, but is present on the daub catalogue.

Plateau 6

The total quantity of daub from Plateau 6 consisted of 111 fragments weighing 1,467 kg, the daub bearing features can be broken down as follows;

Significant contexts and observations

Table 94 shows that the majority of the daub from Plateau 6 bore flat surfaces. However, it is of such a small quantity that nothing of significance can be said about this group of daub.

Plateau 7

The total quantity of daub from Plateau 7 consisted of 16 fragments weighing a total of 127 g, it consisted of mainly chalk flecked fragments and one possible hearth lining fragment. Again, this group of daub is of a small quantity and can therefore not add anything of significance to the knowledge of the site.

Plateau 8

A total quantity of 3347 fragments weighing a total of 64,940 kg was recovered from Plateau 8 and the material bearing features can be broken down as shown in Table 95.

Significant contexts and observations

Plateau 8 produced the most interesting assemblage, both in terms of quantity and features.

It consisted of both fabric 1 and 3 and a large proportion (96.82 per cent by weight) had flat surfaces and wattle impressions.

A number of contexts thought to be related to Iron Age storage pits (3548), (3647), (3645), (3646) and (8620) produced large quantities of daub which had recordable features.

The daub from just these contexts produced 904 fragments weighing 21, 260 kg (32.73 per cent by weight), much of which bore both flat surfaces and wattle impressions.

Conclusion

The large quantity of daub retrieved from the entire Thanet Earth site was generally fair in terms of its general condition, quality and presence of features.

Two clay types were identified, one red/orange faintly sandy soft fabric (fabric 3) and the other, a pale orange fabric with chalk fleck inclusions (fabric 1) similar to a fabric found at Townwall Street Dover (Harrison 2006).

When studied by plateau, a number of corpuses (from plateaus 1, 5 and 8) produced the largest quantities of daub within the total assemblage and consisted of fragments that had characteristics including flat and rounded surfaces and wattle impressions. These were often yielded from interesting features such as medieval ovens, Bronze Age and Iron Age pits.

However, due to the fragmentary nature of the material and its wide distribution across so many contexts and features, no meaningful statements can be made about whether individual groups of daub were related to particular buildings or structures.

The presence of the daub indicates that wattle and daub lined structures were present on the various plateaus at Thanet Earth, but the relatively small assemblages and the lack of any large quantities of good quality material from secure contexts and features means that no further understanding of the nature of these structures can be ascertained.

Chapter 19: Human Remains

Claire Barrett, Chris Deter, Sarah Geary, Patrick Mahoney and Jake Weekes

Introduction

A total of 155 skeleton numbers were allocated at point of excavation, of which 129 skeletal remains were available for analysis (47 articulated individuals, 50 cremation deposits and 32 disarticulated/disturbed deposits). The assemblage primarily spans from the Neolithic to the Roman (97 per cent) with 3 per cent of the assemblage recorded in contexts dated to the eleventh to fourteenth century and Medieval to Post-Modern periods. It is believed that the human remains from these deposits have been translocated from earlier contexts. The remains represent adult males and females from young adult (18 years) to mature adult (46+ years) and juveniles ranging from perinate (<birth) to adolescent (<17 years).

Osteological Methodology

Inhumations and cremation deposits were analysed in accordance with BABAO/IFA guidelines (Brickley and McKinley 2004) and demographic data collected using guidelines set out by Buikstra and Ublelaker (1994). Identification of human skeletal elements was aided by Scheuer and Black (2000) and White and Folkens (2005). Tooth identification was aided by van Beek (1983) and Hillson (1996; 2005). Initial data from Kent Osteological Research and Analysis (KORA) was summarised in a report and the reanalysis carried out in 2014 was entered onto a Microsoft Excel spreadsheet. Each phase was treated as an individual micro assemblage and for demographic data cremation deposits and skeletal remains were combined into individual phases. Out of the 129 skeletal remains, 51 individuals could be assigned to a defined age category and 33 individuals had features that allowed assessment of biological sex.

Skeletal Inventory, condition and completeness

Due to lack of information regarding the presence and absence of elements in the initial KORA report and the requirements of the re-analysis in 2014 a detailed presence and absence of skeletal material was not undertaken. Therefore, the calculation of true prevalence rates (TPR) could not be considered, but crude prevalence rates (CPR) could be calculated. Condition of the bone was scored using McKinley (2004b, 16) grading system where 0 means excellent surface preservation and 5+ means extensive erosion. Completeness of skeletal remains were assigned to one of four categories from >75 per cent, 50–75 per cent, 25–50 per cent and <25 per cent.

Assessment for biological profile

Juvenile age was primarily estimated on stages of dental development (AlQahtahni *et al* 2010; Moorrees *et al* 1963a; 1963b; Smith 1991; Ubelaker 1989), diaphyseal lengths (Maresh 1970) and epiphyseal fusion (Scheuer and Black 2000). A combination of methods was used to estimate age at death for adult individuals ascertained from late fusing epiphyses (Brooks and Suchey 1990), auricular surface (Lovejoy *et al* 1985; Buckberry and Chamberlain 2002), and dental wear (Brothwell 1981; Miles 1963). Juvenile ageing methods are often more reliable and accurate compared to adult age ranges which tend to be broad. Therefore, age categories (Table 98) are used to best define individuals, and allows the data to be comparable. Where an individual could not be given a specific age, three categories were used based on observations: adult (>18 years), juvenile (<17 years) and unknown.

Sex assessment was undertaken for all adults using the criteria outlined in Buikstra and Ubelaker (1994) and in Brickley and McKinley (2004). Individuals were assigned to an appropriate category as listed in Table 99, and for analytical purposes possible males were treated as males and possible females treated as females, ambiguous cases were called indeterminate, those where sex could not be assessed were labelled unknown. Due to fragmentation of the assemblage all sexual dimorphic features from pelvis and cranial methodologies were considered. Sex assessment was not undertaken on the juvenile remains as the methods are regarded as inaccurate (Brickley 2004, 23), but was attempted on adolescents individuals where possible.

Where possible standard cranial and post-cranial measurements were taken as illustrated in Buikstra and Ubelaker (1994), Bräuer (1988) and Bass (2005). Spreading and sliding calipers were used for these measurements; an osteometric board was engaged to take long bone lengths and a soft tape measure to measure circumference of long bones. Due to the fragmentation of bone both left and right side measurements were taken where possible. Where preservation allowed adult skeletons were examined from non-metric traits using guidelines set out by Berry and Berry (1967), Finnegan (1978), Buikstra and Ubelaker (1994) and Hillson (1996). Non-metric traits are attributed to both genetic and mechanical factors (Hauser and De Stefano 1989; Mays 1998; Tyrrell 2000) as it is often difficult to separate the two factors.

Adult stature was estimated using the formulae derived from Trotter and Gleser and modified by Trotter (1970). Attempts to gain stature for juveniles and young adolescents (≤15 years) were carried out using Telkkä *et al* (1962) and Trotter (1970). Due to the fragmentary nature of the remains from the Thanet Earth assemblage both lower and upper limbs were considered for stature analysis. Standard anthropological cranial and post-cranial measurements (Buikstra and Ubelaker 1994) were taken where appropriate, as consideration of poor cortical surface preservation and bone fragmentation was taken into account. Therefore, no cranial measurements could be accurately measured due to fragmentation of crania. The dentition, femora and tibiae were often better preserved

and provided metrical assessments. All individuals were examined macroscopically for evidence of pathology.

Palaeopathology

All individuals were examined macroscopically for evidence of pathological lesions, which were recorded using standard guidelines and clinical literature (Roberts and Connell 2004, 34). All pathological lesions were recorded and placed into 10 separate categories for common pathologies: Developmental/Congenital, Trauma/Enthesopathy, Non-specific Infection, Specific Infection, Dental, Metabolic, Circulatory, Joint Disease, Neoplastic and Miscellaneous, following a similar categorization by Roberts and Cox (2003), and other observations were noted and are mentioned in the relevant sections. A crude prevalence rate (CPR) measured as a percentage, provides a summary of disease within an assemblage or phase. It is calculated by the number of individuals with the disease, divided by the total population, multiplied by 100. Due to problems with the initial report and the requirements of the data it was not possible to provide a true prevalence rate (TPR) which is calculated using the number of observed elements rather than individuals. The small sample size and large number of those of unknown age and sex in each category prevented statistical analysis within and between phases.

Cremated Deposits

Cremation deposits often include both human and animal remains and can be difficult to distinguish between the two due to fragmentation and sample size. The quantity of bone recovered in relatively undisturbed contexts may provide valuable information about funerary practices prior to, during and after a cremation event. Studies of modern cremations provide an expected cremation weight for archaeological adult sample to ranges from 1001.5g to 2422.5g, with a mean weight of 1625.9g (McKinley 1993). Differences in weight of cremation deposits have been recorded. Bronze Age adult cremation deposits varied between 50–2500g (McKinley 2001), for a late Iron Age site (Westhampnett) weight varied between 30.9–999.2g (McKinley 1997), whilst Whal (1988) found that Roman and Migration period cremation deposits from Suderbrarup (Germany) had a mean weight for males of 744.1g, for females of 472.2g and for children of 224.4g. Colour of cremation deposits are important to study the oxidation effects from temperature, atmosphere and duration of heat from a fire to bone and tissue (Symes *et al* 2008, 8). Bone colour and structural integrity follows a general pattern: At <300°C bone colour can be brown/orange with little change to structural integrity of bone; at 300°C to *c.* 600°C colour is black through to blue/grey; it is between 300–500°C that water is removed from the non-mineralized portion of bone; at *c.* >600–800°C bone becomes completely oxidized as the organic carbon from bone is removed, and water is removed from apatite crystals and shrinkage (up to 30 percent) occurs with recrystallization and crystal fusion (McKinley 2004a, 11, Symes *et al* 2008: 137).

Cremation deposits were analysed to guidelines provided by BABAO/IFA (Brickley and McKinley 2004), and due to the increased fragmentation of calcined bone considerations into the methods employed by Gejvall (1963) were made. Thompson (2009, 296) argues that Van Vark's (1974; 1975) methods for studying cremations often cannot be applied to archaeological studies as sample sizes are often too small and only proportional measures can be used with the assumption of uniform shrinkage, but it is clear that this is not the case in cremated remains. Therefore, it was omitted from the methodology. Material was sorted into three fractions (10mm, 5mm and 2mm) using a mesh test sieve and then into skeletal elements where possible. Average and largest size fragments were measured against a scale rule to the nearest mm. The material was weighed using calibrated digital scales to an accuracy of 0.1g.

Results

Minimum number of Individuals, Preservation and Completeness

Preservation for 77 individuals was assessed following McKinley (2004b, 16) with a range from Grade 2 to Grade 5+ recorded (Table 3), with 80 per cent in the Grade 4/5 category indicating bone surface is significantly affected by erosive action at a moderate to significant level. Skeletal completeness was low with 63 per cent of the individuals recorded as less than 25 per cent complete and 9 per cent of the individuals recorded as more than 75 per cent complete (Table 100).

Cremations

Overall, bone preservation from cremated deposits was poor and 13 known cremation deposits sampled from the assemblage are currently missing. From the cremated deposits that were analysed many features used for biological sex could not be observed due to fragmentation. However, none of the material showed signs of weathering to the cortical surface. Little of the trabecular bone structure was present throughout the assemblage, but enough to distinguish between human and animal, adult and juvenile was present for the majority. Overall a total of 4074.2g of cremated bone were analysed (Table 101), with 72.5 per cent of the cremated deposits found in Late Iron Age to Roman contexts, 19.5 per cent from the Mid- to Late Bronze Age/Early Iron Age contexts, 6 per cent from contexts attributed to the Latest Neolithic/Early Bronze Age, 1.8 per cent found in Iron Age contexts, 0.1 per cent from a context from the 11th to 14th century and 0.1 per cent from the Neolithic phase of the assemblage. A total of 1.7g (0.04 per cent) of the assemblage was recorded as faunal cremated bone, which could not be identified to species. The deposits range in weight from 0.6g (SK8.66) to 1009.0g (SK5.1) with the predominant colour of white on internal and external surfaces of bone from cremation deposits. These results indicate that the majority of the cremated deposits for all phases were of a sufficient temperature (>600°c) to produced complete oxidization of

bone. Flecks of blue-grey and black fleck were present in the material. In total 2706g of cremated bone could be identified and put into six different categories representing sections of the body (Table 102). Long bone fragments (51.0 per cent) and skull fragments (27.2 per cent) were the most identifiable. The least recorded were dental (0.4 per cent) and hand/foot fragments (0.6 per cent), rib and vertebra (11.9 per cent) and pectoral/pelvic fragments (8.8 per cent) also represented in small quantities. This reflects the degree of fragmentation and small samples of the cremation deposits within this assemblage.

Biological Age and Sex

The assemblage comprised of 74 adults (65.5 per cent), 25 juveniles and children (22.1 per cent) and 14 individuals (12.4 per cent) of unknown age (Table 103). Individual skeletal remains were greatest in the Late Iron Age cemetery (38.9 per cent) with the smallest recovered from the Neolithic (3.5 per cent) and *c.* 11th to 14th century (2.7 per cent) phases. Overall the assemblage yielded age-at-death greatest between 35–45 years (12/74, 16 per cent) followed by 18–25 years (8/74, 11 per cent) and 26–35 years (7/74, 9 per cent). In the juvenile group adolescents aged 13–17 years (9/25, 36 per cent) were recorded as the highest range for age-at-death followed by early and late childhood.

Metrics

Measurements from inhumations were used to calculate stature, platymeric and platycnemic indices presented below. However, statistical analysis based on these few individuals could not be used to make comparisons within and between phases. It was possible to calculate stature from six individuals (Table 104) including three males, two females and one of unknown sex. Three individuals provided measurements from the femur which is deemed the most accurate element for stature and three from the humerus deemed the least accurate. One old middle adult male, dated to the latest Neolithic to the Early Bronze Age had a stature of 176cm (5'9''). Four individuals from the Iron Age phase provided an average male stature of 170.5 cm (5'7'') (both are humeral measurements), a female stature of 151 cm (4'11'') and an adolescent of unknown sex with a mean stature of 147.5cm (4'10''). Stature could not be obtained for the Neolithic, mid- to late Bronze Age to Early Iron Age, for the Late Iron Age Cemetery, Phases 13–16 or for Phases 17–18.

The platymeric index reflects the shape of the femur, the anteroposterior flattening in the subtrochanteric region and the platycnemic index is a reflection of the transverse flattening of tibiae at the nutrient foramen (Brothwell 1989, 89). As many of the individuals were too fragmentary within each phase the mean was calculated for the indices and a brief note as to the phases is made here (Table 105) as the dynamics of these indices and their expression cannot be fully understood on limited population data (see Tyrrell 2000, 301).

Palaeopathology

Pathologies were places in to 10 pathological categories, of which four (Specific Infection, Endocrine, Circulatory and Neoplastic) were not present in this assemblage. In total 46/113 individuals showed signs of pathological conditions, representing 38.9 per cent of the overall assemblage (Table 106). No pathological lesions were recorded in the Neolithic, Mid to Late Bronze Age/Early Iron Age and Phases 13–18. A prevalence bias towards the Iron Age phase and Late Iron Age Cemetery is present, where the greatest preservation and completeness, along with a small sample size was reported. 15 pathological lesions (from 11 individuals) were recorded from the Iron Age phase which represented the highest pathological prevalence for any phases from the assemblage at 13 per cent, with the Late Iron Age Cemetery with 12 per cent (13/113), Late Iron Age/Roman phases of the site at 7.9 per cent (9/113). The smallest pathological prevalence was recorded for the Late Neolithic/Early Bronze Age at 6.2 per cent (7/113).

Dental disease had the greatest crude prevalence rate (CPR 12.8 per cent, 17/113) for the assemblage, followed by joint disease (8/113, CPR 7.1 per cent) and non-specific infection (6/113, CPR5.3 per cent). Miscellaneous conditions and traumatic lesions both had a CPR of 4.4 per cent (5/113). Metabolic conditions had a CPR of 2.7 per cent each (3/113). Due to the small number of pathological conditions, a brief pathological description, along with the percentage in the phase and CPR for the pathological categories are provided in each section, with an overview for the assemblage provided here.

Within the dental disease category, calculus (mineralized plaque) had the greatest prevalence (7/17, 41.2 per cent; CPR 6.2 per cent), followed by ante-mortem tooth loss and dental caries (5/17, 29.4 per cent; CPR 4.4 per cent), periodontal disease (3/17, 17.6 per cent; CPR 29.2 per cent) and the lowest prevalence was for abscesses reported for two individuals (11.7 per cent, CPR 1.8 per cent). Joint disease comprised of degenerative changes to the hip in three individuals (36.5 per cent, CPR 2.7 per cent), osteoarthritis had a prevalence of three (36.5 per cent, CPR 2.7 per cent) and degenerative changes of the spine was reported in two individuals (28.5 per cent, CPR 1.8 per cent). All traumatic lesions were of soft tissue origin two were possible avulsion/stress to muscle insertion sites one to the pelvic bone and another of the femur (CPR 1.8 per cent), three others had significant enthesophyte formation to the Achilles tendon insertion on the calcaneus (CPR 2.7 per cent) and another was a possible periosteal reaction from soft tissue trauma to the mandible (CPR 0.9 per cent). For the non-specific infection category, maxillary sinusitis and periosteal lesions in the lower limbs were recorded in two individuals (33.3 per cent, CPR 1.8 per cent); with periosteal lesions recorded in two separate individuals for the upper limb and on the mandible (16.7 per cent, CPR 0.9 per cent). Developmental/congenital conditions were

characterised by sacralization (1/2, 50 per cent; CPR 0.9 per cent), non-union of the neural arch of the first sacral vertebra (1/2, 50 per cent; CPR 0.9 per cent) and congenital absence of the second premolar with retention of the deciduous second molar was recorded in one individual (50 per cent, CPR 0.9 per cent). All those assigned to the metabolic category exhibited cribra orbitalia (3/3, CPR 2.7 per cent), which is traditionally associated with anaemic conditions and vitamin deficiency (Brickley and Ives 2008).

Neolithic

This phase contained at most 4 individuals which is 3 per cent of the total assemblage. SK1.9 (radius and ulna fragments) was found to be an adult of unknown sex. SK1.19, SK3.11 and SK8.65 were cremation deposits. SK1.19 found to be an adult of unknown sex; SK3.11 and SK8.65 were of unknown age and sex (Table 107). It is possible that SK1.9 is unburnt bone from the same individual as the cremation deposit SK1.19 as these were from the same group [10001]. The cremated deposits from this phase totalled 5.2g (Table 107) and represented 75 per cent of the human bone from the Neolithic phase. The trabecular structure indicated that all the cremated material were all human, of which only 2.2g (41 per cent) of the material was skeletally identifiable; skull fragments (0.1g, 8.3 per cent) and rib/vertebral fragments (1.1g, 71.9 per cent). A total of 3.1g (59 per cent) was unidentifiable to skeletal element or group. The mean average size fragment was 7mm for this phase and the weights ranged from 1.0g to 2.9g for this phase. These figures reflect the low number of unidentifiable fragments. Within the Neolithic cremation deposits 92 per cent of the identifiable fragments were from the skull and 8 per cent from the long bone. However, over half of the cremation deposits could not be identified skeletally. The cremated material for SK1.19 and SK8.65 was white indicating bone was completely oxidized and SK3.11 was black in colour, indicative of charring and removal of water from the organic portion of bone. No pathologies were noted,

Latest Neolithic/Early Bronze Age

The phase comprised of 20 adults (83.3 per cent), four juveniles (16.6 per cent) and five unknown individuals (20.8 per cent). Adult deaths were greatest for 35–45 years (5/20, 25.0 per cent), followed by those aged between 18–25 years (3/20, 15.0 per cent) and 26–35 years (2/20, 10.0 per cent). There were no adults recorded in the mature adult category (46+ years). Juvenile deaths were highest for 2–5 years (2/4, 50.0 per cent), followed by 12–17 years (1/4, 25 per cent) and a juvenile of unknown age (1/4, 25 per cent). Five females (25.0 per cent), four males (20.0 per cent) and 11 adult individuals of unknown sex (55.0 per cent) were present in this phase. There were more females with age-at-death 36–45 years (3/5; 60.0 per cent) compared to males (1/5, 20.0 per cent). Sex was equally distributed in the 18–25 year category, with the exception of the indeterminate individual. In the 26–35 year category a single female and an individual

of unknown sex was represented. Two males (2/4, 50.0 per cent) were recorded in the unknown age category.

Cremated deposits (SK6.12, SK6.13, SK7.10, and SK7.11) totalled 245.2g representing 14 per cent of the human bone from this phase with no faunal remains were recorded (Table 108). SK6.13, SK7.10 and SK7.11 were probable adults of unknown sex. SK6.12 could not be assigned to an age category or sex. The cremation deposits ranged in weight from 1.2g to 209.0g, and the largest deposit SK7.10 had a mean average size fragment of 30mm and largest fragment size >50mm. From the 245.2g that were studied 49 per cent of the fragments were identifiable with 51 per cent unidentifiable. Greatest weight of identifiable cremated remains from this phase were long bone fragments (71g, 58.6 per cent), followed by pelvic/pectoral fragments (30.3g, 25.0 per cent), skull (10.0g, 8.3 per cent), rib/vertebral fragments (8.6g, 7.1 per cent), with the dental (0.4g, 0.3 per cent) and hand fragments (0.8g, 0.7 per cent) representing 1 per cent of the deposit. SK6.11 and SK6.12 were completely white in colour indicating complete oxidation, with SK7.10 and SK7.11 recorded as predominantly white with black flecks (Table 107), suggesting mixed levels of oxidation to bone.

Nine of the twenty four individuals, 38 per cent of the individuals from this phase had pathological lesions (Table 109). Dental disease had the greatest crude prevalence (CPR) of 12.5 per cent (3/24), of which calculus was recorded on buccal and lingual surface of the mandibular teeth of SK7.1 (1/3, 33.3 per cent), ante-mortem tooth loss was recorded for SK6.1 (1/3, 33.3 per cent) and a carious lesion on the occlusal surface of the maxillary right third molar was recorded for SK1.2 (1/3, 33.3 per cent).

Developmental/Congenital conditions (1/24, CPR 4.2 per cent) were recorded for SK6.1. SK6.1 exhibited partial sacralization of the fifth lumbar vertebrae on the left side. The individual also had a bilateral congenital absence of the second premolar, with the right deciduous molar retained of the mandible. Joint disease was recorded in SK2.1 (1/24, CPR 4.2 per cent), characterised by marginal osteophytes, contour changes and porosity of the thoracic and lumbar vertebral bodies, superior and inferior articular facet of the vertebral column and porosity to the femoral head, indicating that this individual probably had osteoarthritis (Waldron 1995). The only individual in this phase with a probable metabolic condition (CPR 4.2 per cent) was SK7.4 with a localised, mild active bone formation and perforations to the right orbit measuring <0.5cm of the surface, indicative of cribra orbitalia. However, the orbit was fragmented so caution to true diagnosis should be given. Bilateral enthesopathy (CPR 4.2 per cent) of the Achilles tendon was recorded in SK6.1. Non-specific infection (CPR 4.2 per cent) was also recorded in SK6.1 as a localized lesion of periosteal reaction (porous woven bone) measuring 102mm x 80mm was present at the distal end of the right fibula. A possible avulsion trauma (CPR 4.2 per cent) was recorded in SK3.2, a localised lesion of compact bone at the proximal end of the mid-shaft of the femur located just below the

subtrocheric region, could be indicative of traumatic stress to the *m. adductor brevis*, which adducts the thigh and assists in flexion and medial rotation of the femur limb.

Mid- to Late Bronze Age/Early Iron Age

The phase comprised of two juveniles (15.3 per cent), seven adults (53.8 per cent) and four individuals of unknown age (30.8 per cent). Adults (>18 years) had the highest frequency recorded (9/1; 81.8 per cent), with 31.1 per cent (4/13) of the phase of unknown age. Juveniles (2/13) represented 15.4 per cent of the phase, with one identified as a late adolescent (SK1.1) the other of an unknown age. This phase contained more adult males (2/11, 18.2 per cent) to females (1/11; 9.1 per cent). The unidentified head, believed to be that of SK1.26 is represented as such here as a single adult male. No pathological lesions were recorded for this phase; however this does not indicate that disease was not present in the group during life or at death.

The cremated deposits make up 69 per cent of the human remains from this phase (Table 110) which comprised of five adults (55.6 per cent) and one juvenile (11.1 per cent) of unknown sex, and three cremation deposits of unknown age and sex (33.3 per cent). Weights of the cremation deposits ranged from 0.7g to 554.0g, with mean average size of the fragments at 15mm, the largest recorded at <60mm (SK.1.15). In total, cremation deposits weighed 797.6g, of which 327.5g (41 per cent) were identified as human with 0.3g (<0.1 per cent) of unidentifiable animal bone. From the 327.5g of identifiable human bone the greatest accumulation belonged to long bone fragments at 48.6 per cent (159.0g), followed by skull fragments at 24.5 per cent (80.2g), rib/vertebral fragments at 14.2 per cent (46.7g), pectoral/pelvic fragments at 12.5 per cent (40.8g) with the smallest percentage recorded for hand and foot fragments at 0.3 per cent. No dental fragments were recorded.

Iron Age

The phase comprised of five adults (45.4 per cent), six juveniles (54.5 per cent) and one individual (9.1 per cent) of unknown age. Juveniles included one perinate (SK8.12) and one infant (SK8.55) represented by a right clavicle which is thought to be the same individual as the perinate, one juvenile of 6–12 year old (9.1 per cent) and two 13–17 year old adolescents (18.2 per cent). Each adult age category was represented by at least one individual, except for the mature adult category. The phase consisted of three females, two adults where age was known to be between 36–45 years (2/5, 40.0 per cent, excluding one 14–17 year), two males aged 18–35 years (2/5, 40.0 per cent), and adult of unknown sex (20.0 per cent) and a total of six individuals of unknown age and sex (50.0 per cent).

A single cremation deposit was found in the Iron Age contexts (SK6.14). The total cremation weight of this deposit was 75.0g, with a mean average fragment size of 3mm

and largest fragment recorded at <25mm (Table 111). From the 75.0g, 61.3 per cent (46.0g) were identifiable human bone fragments and 38.7 per cent (29.0g) of the deposit was unidentifiable human bone fragments. The deposit was predominantly skull (45.7 per cent, 21.0g), closely followed by long bone fragments (32.6 per cent, 15.0g), pectoral/pelvic fragments represented 13.0 per cent (6g) and axial fragments 8.7 per cent (4g) of the deposit.

Pathological lesions (see Table 112) were present in five of the 11 individuals, 45.5 per cent of individuals recorded for this phase. Dental diseases had the greatest crude prevalence rate (CPR) at 23.8 per cent (5/21) followed by joint disease (3/21, 14.3 per cent). In the individuals with dental disease, calculus was recorded on buccal and lingual surfaces of SK.8.4, SK8.6, SK8.11 and SK8.46 (4/5, 80.0 per cent); a carious lesion (1/5, 20.0 per cent) was recorded on a permanent right maxillary first molar of SK8.47 and mild periodontal disease (alveolar margin remodelling) to the mandible and maxilla of SK8.47 was recorded (1/5, 20.0 per cent). Degenerative joint disease was recorded for SK8.11, SK8.46 and SK8.47, where porosity, contour changes and marginal osteophytes were recorded in the thoracic and lumbar spine, and for SK8.47 all three of these changes were present and is indicative of osteoarthritis (Waldron 1995). Developmental/congenital conditions (1/21, CPR 4.8 per cent) were present in SK8.46 this individual had congenital absence of the third molars and a non-union of the neural arch of the first sacral vertebra. Non-specific infection (1/21, CPR 4.8 per cent) was recorded in SK8.11; the maxillary sinuses exhibited porous compact bone with a plaque like formation, more visible on the right side and is indicative of repetitive sinusitis. SK8.11 individual exhibited an area of porous compact bone (indicative of healing process) situated at the mental eminence of the mandible. The left mandibular ramus also shows porous compact bone along the medial edge. This individual (1?/3) exhibited possible trauma to the left mandibular ramus causing the inflammation at the mental eminence and to the left mandibular ramus. Cribra orbitalia, associated with metabolic conditions (1/21, CPR 4.8 per cent) was recorded on the right orbit of SK8.4 (Image). Enthesopathy (2/3, CPR 18.2 per cent) was recorded in SK8.46 and SK8.47 with both showing extensive enthesopathy to the Achilles' tendon insertion to the calcaneus. Also in this phase, buccal chipping of premolars and molars occurs in SK8.4 and SK8.47 was recorded.

Mid to late Iron Age Cemetery

Eighteen adults (75.0 per cent), five juveniles (20.8 per cent) and one individual (4.2 per cent) of unknown age were represented in this phase. Within the adult group, age-at-death was greatest, equally for 18–25 years (4/18, 22.2 per cent) and those for 36–45 years (4/18, 22.2 per cent). Individuals within the 26–35 years group represented 16.7 per cent (3/18 adults). In the juvenile group, age-at-death was highest between ages 6–12 years (2/5; 40 per cent) and 13–17 years (2/5; 40 per cent) with one juvenile recorded for 2–5 years (20 per cent). This phase consisted of nine females (47.4 per cent, including

one adolescent), three males (16.7 per cent, two aged 36–45 years), three adults of unknown age (16.7 per cent) and 37.5 per cent of unknown sex and age. In the 36–45 year category, the ratio between males and females were equal (1:1). There were more females and juveniles overall in this sample.

Pathological lesions were recorded in nine individuals (Table 113), with dental disease having the greatest crude prevalence rate (5/24, CPR 20.8 per cent). Ante-mortem tooth loss (2/5, 40.0 per cent) was recorded for the right mandibular third molar and mandibular molars on the left side of SK8.18. SK8.30 had lost the right premolar of the mandible. Periodontal disease (1/5, 20.0 per cent) was present in SK8.18, the alveolar bone on the maxilla and particularly the mandible showed severe porosity, with remodelling to the crypts and therefore from the teeth present it is unclear as to whether the lower premolars were lost close ante-mortem or post-mortem. Caries lesions (2.5, 40.0 per cent) were recorded at the cement-enamel junction to the upper right first premolar on the interproximal surfaces, with a corresponding lesion on the right second premolar of SK8.30. SK8.37 exhibited a carious lesion to the upper left first molar on the medial interproximal surface at the cement-enamel junction. SK8.7 exhibited an abscess (1/5, 20.0 per cent), characterised by a circular perforation with smooth/round margins to the alveolar bone for the right maxillary first molar which was still present. Looking from the maxillary sinus above the site of the abscess is a round perforation into the sinus cavity (oro-antral fistula); the tooth root does not protrude into the sinus. Non-specific infection (2/24, CPR 8.3 per cent) was exhibited in SK8.18 as patches of porous and striated compact bone along the mid-shaft of the right fibula and as severe periosteal reaction to the femora and tibiae, however cortical surface had been damaged by erosive action from the burial environment. Joint disease was recorded in SK8.7 and SK8.26/32 (2/13, CPR 8.3 per cent). SK8.7 exhibited extensive osteophytic activity to the inferior and posterior aspect of the vertebral body of the fifth lumbar vertebrae, suggesting degenerative changes in the spine. A bony protrusion (height of 10mm) on the right ilium was present near the right auricular surface, which could be caused by avulsion of the anterior sacro-iliac ligament or fusion of the sacro-iliac joint but the right sacral ala is damaged, thus a conclusive diagnosis is difficult. SK8.26/32 exhibited porous new bone and cystic formation in the acetabulum (Image?) and porosity to the femoral heads, indicative of degenerative joint disease to the hip. SK8.3 exhibited porous new bone formation to the right orbit, possible cribra orbitalia (1/24, Metabolic CPR 4.2 per cent). Two miscellaneous pathologies were noted SK.8.7 had chipping to the buccal surfaces of the maxillary molars, SK8.20 exhibits a slight s-shaped right femur with some anterior bowing of the diaphysis, and the left side is very fragmented. The cause is unknown due to the damage to the bone cortex.

Late Iron Age–Roman (100 BC to *c.* AD 400)

This phase consisted of 20 adults (60.6 per cent), 10 juveniles (30.3 per cent) and three individuals (9.1 per cent) where age could not be established. From the juvenile group,

three individuals were given an age-at-death between 13–17 years (3/10; 30 per cent), 70 per cent were juveniles of no specific age. In the adult group five individuals (5/20, 25 per cent) could be assigned to an age category, from which age-at-death was highest between 35–45 years (2/20, 10 per cent). However, 75 per cent of the adults could not be assessed for age. One individual was represented in the 18–25 years range and 46+ years range. There were three females (3/20, 15 per cent), two males (2/20, 10 per cent) and 29 individuals (87.9 per cent) where sex could not be assessed (30.3 per cent are juvenile remains). Of the females 33.3 per cent (1/3) had an age-at-death between 18–25 years and another between 36–45 years. The two males (2/2; 100 per cent) had an age at death between 36–45 years.

Cremation deposits represented 66.7 per cent (22/33) of the individuals in this phase (Table 113) comprised of 11 adults (50.0 per cent), four probable adults (18.2 per cent), four juveniles (18.2 per cent), one possible juvenile (4.5 per cent) and two deposits (9.1 per cent) where age or sex could not be established. Only one deposit, SK5.1 (thought to be female) could be assessed for sex. Total weight of cremation deposits ranged from 0.6g to1009.0g with a mean of 141g. The mean average size fragment was 18mm, with the largest fragment recorded at >105mm (SK5.1) for this assemblage. Total cremation deposits weighed 2956.1g, of which 2210.6g (74.8 per cent) were identifiable human remains, 1.1g (<0.0g) of unidentifiable animal bone, 739.7g (25.0 per cent) of unidentifiable fragments and 35.4g (1.2 per cent) of unburnt bone. From the identifiable human bone the greatest weight, 1125.6g (51.4 per cent) was found to be long bone fragments, followed by skull fragments with 624.3g (28.2 per cent), axial fragment weighing 261.9g (11.8 per cent), with the dentition and hand and foot bone fragments representing 1.2 per cent (13g and 13.1g respectively) of the cremation deposits. Colour is white (12/22, 54.5 per cent), with white, grey/blue (9/22, 40.9 per cent).

Four individuals (12.1 per cent) out of the 33 present for the phase exhibited pathological lesions (Table 115), comprising of dental (4/33, CPR 12.1 per cent), non-specific infection (2/33, CPR 6.1 per cent) and joint disease (2/33, CPR 6.1 per cent). Calculus (3/4, CPR 9.1 per cent) on the buccal surfaces of maxillary teeth was present in SK8.2, SK8.5 and SK8.17 and on the lingual surface of maxillary and mandibular teeth of SK8.17 at the cemento-enamel junction. Ante-mortem tooth loss (2/4, CPR 6.1 per cent) was present in SK8.13/14 and SK8.17. In the case of SK8.13/14 the left side of the mandible was edentulous with porous compact bone visible where the crypts would have been, however the left mandibular molar was present and must have remained in the soft tissue of the gingiva. Carious lesions (2/4, CPR 6.1 per cent) were present in SK8.1 on the medial interproximal surface of the left maxillary first molar and in SK.8.17 on the interproximal edge of the left maxillary first molar. Periodontal disease (1/4, CPR 3.0 per cent) with resorption of the alveolar margins of the maxilla and mandible, with a possible abscess in formation is noted in the maxilla of SK8.5 above the right third molar. The crypt shows signs of remodelling and plaque like compact bone formation, with the lingual margin being smooth with a rounded ridge. Non-specific infection was

reported in SK8.13/14 and SK8.17. The right fibula of SK8.13/14 exhibits some porosity to the cortical surface of the bone and appears to be expanded and could be a sign of an infection. However, the condition of the bone was poor and it could also be part of the individual's biomechanical characteristics in bone. The non-specific infection recorded in SK8.5 with increased porosity to palatine bones and porous compact bone within the maxillary sinus, indicative of sinusitis and oral hygiene. SK8.17 was exhibited by a localized area of porous woven (approximately 10x5mm) at the distal end of the radius stemming from the distal joint surface, but not affecting the articular surface. Degenerative joint disease (2/33, CPR 6.1 per cent) was recorded in the left acetabulum of SK8.13/14, characterized by cystic activity and porous compact formation on the lunate surface. SK8.17 had osteophytic activity, porosity to superior and inferior facets and vertebral bodies throughout the spine, particularly to fourth to fifth cervical articulation. This individual also showed porosity to the articular surface of the distal interphalangeal joint of the third ray. The intermediate phalanx also exhibits an osteophyte lateral edge of the palmer surface of the distal joint surface, corresponding with the porosity and marginal changes to the distal phalanx on the proximal articular surface. This individual is likely to have had osteoarthritis of the spine and had, with a non-specific infection at the wrist. Chipping to the buccal surface of the teeth occurred in SK8.5 particularly to the premolars and molars of the mandible.

Phase 13–16 *c.* 11th to 14th Centuries and Phase 17–18 Medieval – Post-Modern

It is believed that the disarticulated human bone deposits found in phases 13–18 were originally from older contexts, but are shown in this section to represent the complete assemblage. From the *c.* 11th–14th century context two juveniles (SK1.12 and SK7.8), two adults (SK1.10 and SK1.24) and one cremation deposit (SK1.24). Five fragments of pectoral girdle (SK6.9) were recovered from a Medieval to Post-Modern context (16285) of unknown probable adult. The cremation deposit SK1.24, weighed a total of 2.5g of identified human bone, the average fragments size was 2–5mm, the largest fragment was recorded at >10mm, the predominant colour was white with some black flecks, with <0.01g of unburnt bone (Table 116). The cremation deposit could not be given a sex or age. Due to the fragmentation and poor preservation of the bone in these phases no metrical analyses, non-metrics

Burials and human remains catalogue

Phase 1: Neolithic

Pit G10001, Plateau 1
SK 1.9: Disarticulated bone; radius and ulna shaft fragments
C10449; S10454; G1001; Plateau 1

Demography
MNI: 1
Age: Adult
Sex: Unknown

Ritual:
Modification: excarnation?

Pit G10001, Plateau 1
SK 1.19: Small quantity of cremated human bones
C10452; S10454; G10001; Plateau 1

Ritual:
Initial rites: fuel procurement, etc.
Modification: cremation
Weight (g): 1.3
Colour and fragmentation: Predominantly black with white flecks. Average fragment size: 0.5mm–10 mm; Largest fragment size: >2cm

Pit G8004, Plateau 8
SK 8.65: Possibly human cremated bone
C3840; S3941; G8004; Plateau 8

Ritual
Initial rites: fuel procurement, etc.
Modification: cremation
Weight (g): 0.6
Colour and fragmentation: White. Average fragment size: 02–0.5mm; Largest fragment size: >5mm

Pit S3068, Plateau 3
SK 3.11: Possibly human cremated bone
C3069; S3068; G3014; Plateau 3

Ritual

Initial rites: fuel procurement, etc.
Modification: cremation
Weight (g): 3.1
Colour and fragmentation: Black. Average fragment size: 0.9–10mm; Largest fragment size: <20 mm

Phase 2: Latest Neolithic/early Bronze Age

Barrow 1; Plateau 6

Central burial G6004, Plateau 6
SK 6.10: Small fragmented human bones from sample.
C6033; S6022; G6004; Plateau 6

Demography
MNI: 1
Age Category: Probable Adult
Sex: Unknown
Notes: Redeposited (residual) in primary fill of backfilled grave. Age inferred from the larger sizes of the 3.11g of predominantly pelvic girdle fragments.

Ritual
Initial rites:
Orientation:
Commemoration:

Central burial G6004, Plateau 6
SK 6.1: Articulated inhumation; moderately preserved (Grade 3) with over 75 per cent of the individual present.
C6025; S6026; G6004; Plateau 6

Demography
MNI: 1
Age: 30–44 years
Age Category: Old Middle Adult
Sex: Male
Stature: 171–187 cm
Pathological Categories: Congenital/Developmental, Dental and Enthesopathy/MSM's.
Pathological Description: Exaggerated musculoskeletal attachment sites throughout the long bones, probably from stress at these areas. The L5 was also partly fused to S1. Dental calculus is present on buccal and lingual of almost all teeth surfaces as a ridge at the cement enamel junction. Retained deciduous right incisor and bilateral congenital absence of the second premolar.

Ritual
? Initial rites: stone wrist guard beside the left arm may well have been worn; a spacious sub-rectangular grave cut (2.57m by 2.06m with stepped sides becoming steep to vertical to flat base, 0.84m deep), centrally located within ring ditch.
Orientation: N–S

Posture: crouched position on the left side, with the head to the N facing E; left arm contracted with hand near mouth. Probably set within timber coffin/grave lining.
Grave goods: a copper dagger (SF 6.33) underneath the right scapula; a stone wrist guard (SF 6.34) beside the left arm, and a beaker pot (SF 6.9000) at the feet; a large gap between the skeleton and the edge of the grave to the south.
Commemoration: double ditched barrow monument.

Central burial G6003, Plateau 6
SK 6.3: Disarticulated, heavily disturbed and fragmented skull of a juvenile recovered from just below the surface. The individual is poorly preserved (Grade 5) and is <25 per cent complete. Individual is represented by skull, dentition and upper torso.
C6022; S6026; G6003; Plateau 6

Demography
MNI: 1
Age: 4–6 years
Age Category: Early Childhood
Sex: Unidentifiable

Ritual
? Initial rites: original grave cut centrally located within ring ditch?
Commemoration: attempted reburial?/barrow monument
Notes: in upper backfill of central burial

Outer ring-ditch upper fills G6087
SK 6.5: A small fragment of possible human bone from the upper fills.
C6078/C6079; S6078; G6087; Plateau 6

Demography
MNI: 1
Age: Adult
Sex: Unknown
Pathology:
Notes: Femur fragments. Recovered from colluvial infilling.

Ritual
Commemoration: barrow focus?

Barrow 2 (Plateau 7)

Grave S7151, Plateau 7
SK 7.9: Disturbed burial; very small quantity of bone located amongst small finds and recovered from sample 2304.

C7150; S7151; G7001; Plateau 7

Demography
MNI: 1
Age: 2.4–2.5+ years
Age Category: Early Childhood
Sex: Unknown
Pathology:
Notes: Permanent left first mandibular molar crown mineralised.

Ritual
? Initial rites: small central oval grave cut (1m by 0.69m, near vertical sides to flat base 0.4m deep); stain of possible shroud or other material?
Orientation: NW–SE
Commemoration: barrow monument; grave partially cut by another grave.

Grave S7143, Plateau 7
SK 7.4: Articulated inhumation; Individual is very poorly preserved (Grade 5) and is <25 per cent complete.
C7142; S7143; G7001; Plateau 7

Demography
MNI: 1
Age: 16–25 years
Age Category: Young Adult
Pathological Category: Dental
Pathological Description: Severe calculus, particularly to incisors and canines of mandible and on lingual and buccal surfaces.

Ritual
? Initial rites: truncated central sub-rectangular grave cut (1.4m by 1m); cuts earlier burial
Orientation: SW–NE
Posture: crouched, head to SW
Commemoration: barrow monument

Grave S7157, Plateau 7
SK 7.5: Articulated inhumation; individual is 25–50 per cent complete, but preservation is poor (Grade 4).
C7160; S7157; G7001; Plateau 7

Demography
MNI: 1

Age: >18 years
Age Category: Adult
Sex: Male

Ritual
? Initial rites: a spacious satellite sub-rectangular grave cut (1.78m by 1.48m and 0.38m deep), about 5m from the inside edge of the barrow ditch; burial in coffin or void?
? Modification: exposure/excarnation?
Orientation: NW–SE
Posture: crouched with the head at the north-west end of the grave, lying on the right side facing right.
Grave goods: space could have been for degradable items
Commemoration: barrow monument

Grave S7573, Plateau 7
SK 7.2: A disarticulated inhumation consisting of skull fragments and a few unidentifiable long-bones: less than 25 per cent of the individual remaining, with extremely poor preservation (Grade 5+).
C7572; S7573; G 7001; Plateau 7

Demography
MNI: 1
Age: >15 years
Age Category: Probable Adult

Ritual
? Initial rites: a satellite ovoid grave cut (1.14m by 0.91m and 0.38m deep) within ring ditch
Orientation: SE–NW
Posture: probably in crouched position with the head at the south-east end, facing west; the femur drawn up in front of the skull.
Grave goods: prehistoric pottery sherds, including a Beaker pottery sherd (SF 7.37).
Commemoration: barrow monument

Grave S7646, Plateau 7
SK 7.7: Sparse remains of a very badly decayed, disarticulated skeleton.
C7645; S7646; G7001; Plateau 7

Ritual
? Initial rites: a truncated satellite grave cut within ring ditch

Barrow 2 ring ditch, Plateau 7

SK 7.3: Upper layers (G7005), individual is <25 per cent complete and represented only by a human skull fragment (right parietal) with moderate preservation (Grade 3).
C7559; S7547; G7005; Plateau 7

Demography
MNI: 1
Age Category: Adult

Ritual
Commemoration: barrow focus?

Barrow 3 (Plateau 7)
Grave G7007, Plateau 7
SK 7.6: An articulated inhumation; poorly preserved; long bone fragments.
C7085; S7086; G7007; Plateau 7

Demography
MNI: 1
Age: Adult
Sex: Unknown
Pathology:
Notes: Radiocarbon dated to 1873–1687 cal BC (at 95 per cent probability; Table 6, UBA-12627).

Ritual
Orientation: NW–SE
Posture: lower flexed legs, from which it is postulated that the missing head would have been at the north-western end
Commemoration: barrow monument

Cremation burial group G7012

Pit S7088, Plateau 7
No bone recovered, but carbon rich fill [C7092]
C7092; S7088; G7012; Plateau 7

Pit S7089, Plateau 7
SK 7.10: cremated human bone
C7089; S7089; G7012; Plateau 7

Demography
MNI: 1
Age Category: Probable Adult

Ritual
Initial rites: fuel procurement, etc.
Modification: cremation
Weight (g): 209
Colour and fragmentation: White, with brown, black and grey flecks. Average fragment size: 20–40mm; Largest fragment size: >50mm

Pit S7090, Plateau 7
SK 7.11: cremated human bone
C7094; S7090; G7012; Plateau 7

Demography
MNI: 1
Age: Unknown
Sex: Unknown

Ritual
Initial rites: fuel procurement, etc.
Modification: cremation
Weight (g): 30
Colour and fragmentation: White, black flecks. Average fragment size: 2–5mm; Largest fragment size: 10mm
Commemoration: adjacent to barrow monument.

Barrow 3 ring ditch S7240, Plateau 7
SK 7.1: Disarticulated remains of inhumation from ditch fill comprised a human skull, pelvis and long bone fragments; individual is <25 per cent complete and is moderately preserved (Grade 4).
C7224; S7240; G7008

Demography
MNI: 1 (also animal bone)
Age: >18 years
Age Category: Adult
Sex: Male
Pathology: Metabolic (porotic new woven bone to right supra-orbital plate).

Ritual
Modification: disturbed/excarnation?
Commemoration: barrow focus?

Barrow 4 (Plateau 6)

Grave G6007, Plateau 6
SK 6.2: An articulated adult inhumation; 50–75 per cent complete with poor preservation (Grade 4).
C6245; S6246; G6007; Plateau 6

Demography
MNI: 1
Age: 16–21 years
Age Category: Young Adult
Sex: Male
Stature: calculated from ulna measurement.

Ritual
? Initial rites: a sub-rectangular grave cut (1.27m by 0.7m, near vertical sides to flat base 0.33m deep); staining near the remains may have derived from clothing or another substance
Orientation: N–S
Posture: crouched on left side, facing south-east with the head to the north
Grave goods: staining near the remains may represent grave goods
Commemoration: Barrow monument
Notes: Radiocarbon dated to 1732–1537 cal BC (at 95 per cent probability; Table 6, UBA-12626)

Human bone cluster G6009, Plateau 6
SK 6.6: fifteen small fragments of human bone possibly represent burial location
C6419; S6419; G6009; Plateau 6

Demography
MNI: Probably 1
Age: Probable Adult
Sex: Unknown
Notes: All fragments are the same colour and exhibit the same taphanomic changes to the cortical surface, so it could be deduced that it is from one individual.

Human bone cluster G6009, Plateau 6
SK 6.8: ten small fragments of human bone possibly represent burial location.
C6422; S6422; G6009; Plateau 6

Demography
MNI: 1
Age: Probable Adult
Sex: Unknown

Notes: Fibula fragments. All fragments are the same colour and exhibit the same taphonomic changes to the cortical surface, so it could be deduced that they are from one individual.

Barrow 5 (Plateau 3)

Grave S3264, Plateau 3
SK 3.1: An articulated adult: 25–50 per cent complete and poorly preserved (Grade 4).
C3263; S3264; G3002; Plateau 3

Demography
MNI: 1
Age: 36–44 years
Age Category: Old Middle Adult
Sex: Male

Ritual
? Initial rites: spacious sub-rectangular grave cut (1.66 by 0.96m, moderately inclined sides and a flat base 0.44m deep); slightly north of centre adjacent to another grave, vacant space to the west of body
Orientation: NW–SE
Posture: crouched, probably on left side facing east
Grave goods: vacant space may have once held perishable offerings
Commemoration: Barrow monument

Grave S3267, Plateau 3
SK 3.5: Articulated inhumation; badly preserved, with just fragmentary leg and arm bones recorded.
C3266; S3267; G3002; Plateau 3

Demography
MNI: 1
Age: Adult
Notes: Fragments of long bones (probable ulna, femur and tibia shafts)

Ritual
? Initial rites: spacious sub-rectangular grave cut (2m by 1.06m, moderately inclined sides to a flat base 0.54m deep) slightly N of centre adjacent to another grave, remains at S end of grave; beaker in space at N end; copper alloy pin (SF38) located near the femur and pelvis, from clothing?
Orientation: SSW–NNE
Posture: crouched, head to the SSW

Grave goods: a crushed ceramic Beaker (SF 3.242) located at the north end beneath the lower legs; copper alloy pin (SF 3.38) located near the femur and pelvis. The large space at the north end of the grave suggests further unpreserved offerings
Commemoration: Barrow monument.

Isolated burials

Grave G2000, Plateau 2
SK 2.1: Articulated inhumation, 25–50 per cent complete. Individual is poorly preserved (Grade 5).
C2083; S2084; G2000; Plateau 2

Demography
MNI: 1
Age: 36–45years
Age Category: Old Middle Adult
Sex: Probably Female
Pathological Category: Joint Disease
Pathological Description: Lumbar spine Grade II articular surface changes, with porosity on articular surfaces and marginal change.

Ritual
? Initial rites: sub-rectangular grave cut (1.1m by 0.47m, steep, concave sides and a flattish base); a copper alloy pin (SF 2.3) situated near to the skull: dress accessory?
Orientation: N–S
Posture: crouched on its right side with the head positioned at the north end of the grave facing south-west.
Grave goods: a copper alloy pin (SF 2.3) situated near to the skull
Commemoration: Two intercutting postholes immediately adjacent to the burial on the north-east (G2147): grave markers?

Grave G3004, Plateau 3
SK 3.2: Articulated inhumation; well represented with 50–75 per cent of the skeleton remaining, although bones very fragile (Grade 5).
C3015; S3012; G3004; Plateau 3

Demography
MNI: 1
Age: 28–38years
Age Category: Young Middle Adult
Sex: Female

Notes: Radiocarbon dated to 2195–1977 cal BC (at 95 per cent probability; Table 6, UBA-12624); ULM2 and long bone shaft removed for isotope sample; URI1 and LLM1 selected for DNA sample.

Ritual
? Initial rites: a sub-rectangular grave cut (1.28 by 0.91m, vertically inclined sides to flat base 0.44m deep).
Orientation: S–N
Posture: crouched with the head at the south end of the grave facing east.
Grave goods: a ceramic beaker (SF 3.241) in the south-west corner of the grave above the shoulder of the inhumation.

Grave G4043, Plateau 4
SK 4.1: Articulated inhumation; very poorly preserved (Grade 5), with less than 25 per cent remaining.
C4621; S4622; G4043; Plateau 4

Demography
MNI: 1
Age: 36–45 years
Age Category: Old Middle Adult
Notes: radiocarbon dated to 2108–1895 cal BC (at 95 per cent probability; Table 6, UBA-12630).

Ritual
? Initial rites: a spacious sub-rectangular grave cut (2.40m by 1.4m long with steep sides and a flat base 0.30m deep).
Orientation: SW–NE
Posture: crouched, on right side facing SE with the head at the SW end; the arms appeared placed across the chest.
Grave goods: a decorated long necked beaker (SF 4.37) was placed at the south-west end of the grave adjacent to the skull.

Grave G10003, Plateau 1
SK 1.2: Articulated inhumation; less than 25 per cent recovered, with bone preservation poor (Grade 4).
C10236; S10199; G10003; Plateau 1

Demography
MNI: 1
Age: 28–34years
Age Category: Young Middle Adult
Sex: Possible Female

Pathological Categories: Dental
Pathological Description: Dental caries on the upper right M3.

Ritual
? Initial rites: sub-circular grave cut may have been left open for some time before being backfilled with clay silt (C10234) and abundant charcoal, the latter concentrated around the skeleton (also scorching to the grave cut); prehistoric pottery, animal bone and worked flint also recovered from the fill could suggest funerary feasting, partial burning of the body, other material, or perhaps an associated building prior to burial.
Modification: partial burning?
Orientation: W–E
Posture: crouched, facing S with the head at the W end, on right side with legs flexed and the lower right arm on the chest area: the lower left arm missing
Grave goods: two Beaker vessels; one placed by the front of the head (SF 1. 78) and the other in front of the skeleton by the elbow (SF 1.79).

Grave Group G10002 (Plateau 1)

Grave S10824, Plateau 1
SK 1.7: Articulated inhumation; preservation poor (Grade 5) with 25–50 per cent recovered.
C10823; S10824; G10002; Plateau 1

Demography
MNI: 1
Age: 12–16 years
Age Category: Adolescent
Sex: Unknown
Pathology:
Notes:

Ritual
? Initial rites: a narrow extended grave cut (2.2m by 0.6m with steeply inclined sides and a flat base long and 0.13m deep; more suited to supine: wrong shape for elected posture?) in a spatial focus for burial.
Orientation: NW–SE
Posture: crouched, facing SW with the head to NW, lying on right side with legs flexed. The left arm positioned across the chest area with the right arm stretched down towards the legs
Grave goods: A small and fragmented Beaker pot (SF 1.9018) placed immediately SW of the skull; a possible worked flint (SF 1.9031) in the feet area
Commemoration: grouped with other burials.

Grave S10843, Plateau 1
SK 1.4: Articulated inhumation; preservation poor (Grade 4) with 25–50 per cent of the individual recovered.
C10842; S10843; G10002; Plateau 1

Demography
MNI: 1
Age: 39–46 years
Age Category: Old Middle Adult
Sex: Male
Notes: radiocarbon dated to 2019–1829 cal BC (at 95 per cent probability; Table 6, UBA-12622)

Ritual
? Initial rites: sub-rectangular/extended grave cut (0.72m wide, 1.74m by 0.72m with steeply inclined sides and a flat base 0.41m deep: more suited to extended burial).
Orientation: NW–SE
Posture: semi-crouched, on right side, with legs flexed, facing SW with the head to the NW end. The left arm was flexed and lay across the torso area, the right arm missing
Grave goods: a large beaker pot (SF 1.9015) lying on its side at the foot of the skeleton; four amber beads (SF 1.169–1.172) located around the neckline.
Commemoration: grouped with other burials

Grave S10838, Plateau 1
SK 1.3: Articulated inhumation; preservation moderate (Grade 3) and 50–75 per cent complete.
C10837; S10838; G10002; Plateau 1

Demography
MNI: 2
Age: 18–26 years, Left deciduous mandibular central incisor and canine with a root formation of ¾ (9.4–9.9 years).
Age Category: Young Adult and Late Childhood
Sex: Probable female
Notes: radiocarbon dated to 2198–1923 cal BC (at 95 per cent probability; Table 6, UBA-21276).

Ritual
? Initial rites: bound? Circular grave cut (1m in diameter and steeply inclined sides and a wide, flat base 0.30m deep), in burial area.
Orientation: SE–NW
Posture: Contracted, the head at the south-east end, the skeleton facing south-west, partially supine, on left side with legs tightly flexed and drawn-up close to the chest

(beneath the left arm), suggestive of the use of binding material. Both arms flexed with the lower arms raised across the chest and the hands resting on the clavicle bones.
Commemoration: grouped with other burials.

Possible grave S10833, Plateau 1
No human bone recovered. Possible cenotaph?
C10832; S10833; G10002; Plateau 1

Ritual
? Initial rites: oval to sub-rectangular grave-like cut in burial area
Orientation: NW–SE
Grave goods: fragmented Beaker pot (SF 1.9017) on the edge of the base near the NW end.
Commemoration: grouped with other burials

Enclosure 3 (Plateau 1)

Pit/post-hole S10758, Plateau 1
SK 1.23: Un-urned cremation burial. Calcined bone of probable human origin.
C10757; S10758; G10035; Plateau 1

Ritual
? Initial rites: fuel procurement, etc., a sub-circular burial cut
Modification: cremation
Weight (g): 0.6
Colour and fragmentation: White. Average fragment size: 0.01–0.03mm; Largest fragment size: >0.5mm.
Container: un-urned
Commemoration: barrow monument.

Other features

Pit G1121, Plateau 1
SK 1.8: 62g of fragmented unidentifiable human bone (<25 per cent present, grade 5+).
C1214; S1201; G1121; Plateau 1

Phases 3 to 5: Mid to late Bronze/early Iron Age

Inhumation burials G1173

Inhumation burial S1567, Plateau 1
SK 1.1: An articulated inhumation; poorly preserved (grade 5+) with less than 25 per cent present.
C1573; S1567; G1173; Plateau 1

Demography
MNI: 1
Age: 14–18 years
Age Category: Adolescent
Sex: Probable Female
Notes: radiocarbon dated to 1490–1414 cal BC (at 95 per cent probability; Table 6, UBA-12620).

Ritual
? Initial rites: a sub-rectangular grave cut (0.96m by 0.49m and 0.1m deep); bound?
Orientation: NW–SE
Posture: contracted facing south with the head to the NW.
Commemoration: in group.

Inhumation burial S1597, Plateau 1
SK 1.5: Articulated inhumation with less than 25 per cent of the individual recovered and poorly preserved (Grade 5).
C1596; S1597; G1173; Plateau 1

Demography
MNI: 1
Age: 24–30 years
Age Categories: Young Middle Adult
Sex: Probably Male

Ritual
? Initial rites: a sub-rectangular grave cut (0.9m by 0.56m wide and 0.08m deep), with steeply inclined sides and a flat base; bound?
Orientation: NW–SE
Posture: contracted facing south with the head to the NW
Commemoration: in group

Barrow 7 (Plateau 2)

Pit S2855, Plateau 2
SK 2.5: un-urned cremation burial; small quantity of calcined human bone.
C2854; S2855; G2052; Plateau 2

Notes: Missing at time of osteological analysis.

Ritual
? Initial rites: fuel procurement, etc. A sub-circular burial cut just SE of centre of ring ditch
Modification: cremation
Weight (g): very fine fragments observed
Colour and fragmentation:
Container: un-urned
Commemoration: 1.5m to the east a small sub-circular pit or posthole may represent a marker; barrow monument.

Cremation burials G10008 and G10048 (Plateau 1)

Pit G10008, Plateau 1
SK1.13: cremated human bone
C10201; S10202; G10008; Plateau 1

Demography
MNI: 1
Age: Adult
Sex: Unknown

Ritual
? Initial rites: fuel procurement, etc. Small pit
Modification: cremation
Weight (g): 554
Colour and fragmentation: White, Blue flecks. Cracking, Fissuring, warping of long bones. Average fragment size: 30–50mm; Largest fragment size: >50mm.
Pyre material: carbon rich matrix
Container: un-urned

Pit/post-hole S1016, Plateau 1
SK 1.20: cremated human bone
C1015; S1016; G10048; Plateau 1

Demography
MNI: 1
Age: Adult

Sex: Unknown
Notes: rib fragments only

Ritual
? Initial rites: fuel procurement, etc. Small pit
Modification: cremation
Weight (g): 0.66
Colour and fragmentation: White, Average fragment size: 3–5mm; Largest fragment size: 6mm.
Pyre material: carbon rich matrix
Container: un-urned
Notes: "token"?

Cremation burials G1118 and G1112 (Plateau 1)

Pit S1063, Plateau 1
SK 1.15: cremated human bone
C1065; S1063; G1118; Plateau 1

Demography
MNI: 1 (small amount of probable animal included)
Age: Adult
Sex: Unknown

Ritual
? Initial rites: fuel procurement, etc., small pit.
Modification: cremation
Weight (g): 45 (0.3g of probable animal bone)
Colour and fragmentation: White, Black, Grey. Average size of fragment 10–20mm; Largest fragment size: <60mm.
Pyre material: carbon rich matrix
Container: un-urned; arrangement in section suggesting confinement within a perishable container
Notes: "token"?

Pit S1371, Plateau 1
SK 1. 21: cremated human bone
C1370; S1371; G1112; Plateau 1

Demography
MNI: 1
Age: Unknown
Sex: Unknown

Ritual
? Initial rites: fuel procurement, etc. Small pit.
Modification: cremation
Weight (g): 0.8
Colour and fragmentation: White. Average fragment size: 4-8mm; Largest fragment size: 10mm
Pyre material: carbon rich matrix.
Container: un-urned
Grave goods: potsherds dated 800–100 BC and Neolithic polished axe fragments (SF 1.4)
Notes: "token"?

Pit S1601, Plateau 1
SK 1.16: cremated human bone
C1600; S1601; G1112; Plateau 1

Demography
MNI: 1
Age: Adult
Sex: Unknown

Ritual
? Initial rites: fuel procurement, etc. Small pit.
Modification: cremation
Weight (g): 103
Colour and fragmentation: White, Average fragment size: 1mm–5mm; Largest fragment size: >10mm
Pyre material: carbon rich matrix
Container: un-urned
Notes: "token"?

Cremation burials (Plateau 3)

Pit S3043, Plateau 1
SK 3.4: Fill of cremation vessel
C3042; S3043; G3017; Plateau 3

Demography
MNI: 1
Age: Juvenile
Notes: Age inferred from thickness of skull fragments.

Ritual

? Initial rites: fuel procurement, etc., small pit
Modification: cremation
Weight (g): 36
Colour and fragmentation: white and off-white; average 20–50mm, largest > 50mm, fissuring and cracking
Pyre material: carbon rich matrix
Container: remnant vessel

Scattered pits and possible cremation burials (Plateau 6)

Pit G6034, Plateau 6
SK 6.11: possible un-urned cremation burial
C16027; S16028; G6034; Plateau 6

Demography
MNI: 1
Age: Adult
Sex: Unknown

Ritual
? Initial rites: fuel procurement etc, small pit
Modification: cremation
Weight (g): 56
Colour and fragmentation: White/Black, Average size of fragment: 20–30 mm; Largest fragment size: >40mm
Pyre material: carbon rich matrix
Notes: Flint flake

Pits (Plateau 1)

Pit G1201, Plateau 1
SK 1.25: articulated inhumation. Missing at time of osteological analysis.
C650; S651; G1201; Plateau 1

Demography
MNI: 1
Age: Unknown
Sex: Unknown

Phases 6–8: Iron Age

Pits with human burials (Plateau 8)

Pit G8136, Plateau 8
SK 8.4: Articulated inhumation; very poorly preserved (Grade 5) with about <25 per cent recovered.
C3414; S8934; G8136; Plateau 8

Demography
MNI: 1
Age: 9–12 years
Age Category: Late Childhood
Pathology – Metabolic (Porotic new bone formation on the left supra orbital plate).

Ritual
Orientation: W–E
Posture: Crouched on right side facing S, head to W
Notes: a storage pit was later backfilled with domestic rubbish with the burial placed relatively close to the base.

Pit G8137, Plateau 8
SK 8.6: Articulated inhumation with more than 75 per cent of recovered with good preservation (Grade 2)
C8832; S8833; G8237; Plateau 8

Demography
MNI: 2 (juvenile animal phalanges and ribs)
Age: 13–16 years
Age Category: Adolescent
Sex: Probably Female
Stature: Approximately 145cm
Pathological Category: Congenital/Developmental (Sacralisation of the fifth lumbar vertebra).

Ritual
Orientation: E–W
Posture: flexed, head to the E facing N, arms by sides, the left straight, the R flexed
Notes: a storage pit was later backfilled with domestic rubbish with the burial placed relatively approximately 0.8m for the base.

Disarticulated bone in pits (Plateau 8)

Pit S12821, Plateau 8
SK 8.57: A small quantity of human remains in a storage pit subsequently used for refuse.
C12817; S12821; G8092; Plateau 8

Ritual
Modification: excarnation?
Notes: 0.53g of unidentifiable bone flakes.

Post-hole S8048, Plateau 8
SK 8.56: human bone in backfill of post-hole 8048.

Demography
MNI: 1
Age Category: Juvenile
Sex: Unknown
Notes: Age inferred from the size and shape of rib fragments present (1.91g)

Ritual
Modification: excarnation?

Pit S3724, Plateau 8
SK 8.50: Human femur in backfill of pit. Missing at the time of osteological analysis.
C3726; S3274; G8133; Plateau 8

Pit S14488, Plateau 8
SK 8.54: Disarticulated left human proximal femur in backfill of pit.
C14483; S14488; G8130; Plateau 8

Demography
MNI: 1
Age: Adult
Sex: Possible female
Notes: Sex ascertained from femoral head measurement (Bass 2005) as cortical surface was deemed satisfactory.

Ritual
Modification: excarnation?

Pit G8123, Plateau 8
SK 8.33: A disarticulated jaw bone. Missing at the time of osteological analysis.
C8624; S8722; G8123; Plateau 8

Ritual
Modification: excarnation?

Pit S8642, Plateau 8
SK 8.34: A small human skull fragment. Missing at time of osteological analysis.
C12069; S8642; G8140; Plateau 8

Barrow 9 (Plateau 8)

Double burial G8172; Plateau 8
SK 8.46: Articulated inhumation; poorly preserved (Grade 4) with more than 75 per cent present
C14029; S14031; G8173; Plateau 8

Demography
MNI: 1
Age: 26–38 years
Age Category: Young Middle Adult
Sex: Male
Stature: 171–177cm
Pathology: Enthesopathy, Joint Disease
Pathological Description: Enthesopathy of Achilles tendons on the calcanei, osteoarthritis in the inferior and superior vertebral bodies of the eleventh and twelfth thoracic vertebrae
Notes: radiocarbon dated to 353–112 cal BC (at 95 per cent probability; Table 6, UBA-12619); "bad" death?

Ritual
? Initial rites: a sub-rectangular grave cut (1.9m by 0.9m with vertical sides and a flat base 0.20m deep) for two adults; arrangement during flaccidity?
Orientation: SE–NW, W side of grave
Posture: slightly flexed on the left side with the head to the E facing S towards the second burial (SK 8.47); the left arm contracted with the hand by the face and at the right shoulder of SK 8.47, the right flexed with the hand lying on the sternum of SK 8.47
Commemoration: a ring ditch and probable mound (Nb. burial off-centre)

Double burial G8172; Plateau 8
SK 8.47: Articulated poorly preserved (Grade 4) inhumation with more than 75 per cent present.
C14030; S14031; G8173; Plateau 8

Demography
MNI: 1

Age: 22–35 years
Age Categories: Young Adult
Sex: Male
Stature 166–174cm
Pathology: Joint Disease, Dental
Pathological Description: osteoarthritis in the inferior and superior vertebral bodies of the eleventh and twelfth thoracic vertebrae, gingivitis and some alveolar remodelling to the canine to M1 area bilaterally of the mandible.
Notes: "bad" death?

Ritual
? Initial rites: a sub-rectangular grave cut (1.9m by 0.9m with vertical sides and a flat base 0.20m deep) for two adults; arrangement during flaccidity? Twisting of head and fallen mandible possibly indicate decomposition in a void?
Orientation: SE–NW, W side of grave
Posture: Flexed, although more supine upper half with flexed legs to the left; head slightly to the left (away from Sk 8.46, although note Taphonomy) the right arm slightly flexed with the hand on the left thigh; the right arm extended beneath the arms (and right hip?) of SK 8.46?
Commemoration: a ring ditch and probable mound (Nb. burial off-centre; mound raised later?).

Grave G8310, Plateau 8
SK 8.11: Articulated inhumation, preservation is moderate (Grade 3) with more than 75 per cent of the individual recovered.
C12967; S12969; G8310; Plateau 8

Demography
MNI: 1
Age: 12–19 years
Age Category: Adolescent
Sex: Possible Female
Stature: 115–166cm
Pathological Categories: Congenital/Developmental; Non-Specific Infection; Possible Trauma;
Pathological Description: Partial hiatus of first sacral vertebrae, porous compact bone localised to the mandibular eminence and right mandibular ramus, also possible fracture to the right mandibular ramus due to some remodelling along edge of flake. Cortical bone preservation prevents conclusive result.
Notes: death in childbirth; "bad" death?

Ritual

? Initial rites: narrow sub-rectangular grave cut (2m by 0.5m and 0.75m deep), located 1.2m to the north-east of ring-ditch; carefully arranged, possibly prior to rigor mortis
Modification: breech birth perinate still lodged in situ (i.e. not removed)
Orientation: SW–NE
Posture: head to the SW, facing SE (right), the left arm resting on the pelvis positioning the hand in the genital area, the right arm slightly flexed and by the side, the legs extended
Grave goods: a flint flake (SF 8.250) directly adjacent to the right hand
Commemoration: adjacent to burial mound?

Grave G8310, Plateau 8
SK 8.12: Articulated inhumation, moderate preservation (Grade 3) with 50–75 per cent of the individual recovered.
C12968; S12969; G8310; Plateau 8

Demography
MNI: 1
Age: 38–40 weeks
Age Category: perinate
Notes: head and shoulders lodged within the pelvis area of the mother; "bad" death?

Ritual
? Initial rites: narrow sub-rectangular grave cut (2m by 0.5m and 0.75m deep), located 1.2m to the north-east of ring-ditch; carefully arranged, possibly prior to rigor mortis
Orientation: SW–NE
Posture: legs extended
Commemoration: adjacent to burial mound?

The late Iron Age cemetery (Plateau 8)

Grave S12931, Plateau 8
SK 8.43: Poorly preserved inhumation, with less than 25 per cent recovered.
C12930; S12931; G8084

Demography
Age: 18–24years
Age Category: Young Adult
Notes: three deciduous teeth from a child of 8–9 years were also found in this context.

Ritual
? Initial rites: narrow irregular and narrow grave cut (1.74m by 0.38m and 0.24m deep: constraining?) with rounded ends
Orientation: NE–SW
Posture: head to NE facing left (SE), body (partly constrained by grave cut?) extended and supine
Commemoration: in cemetery

Grave S12972, Plateau 8
SK 8.18; **SK 8.36**: Poorly preserved inhumation with less than 25 per cent recovered.
C12970/C12971; S12972; G8084; Plateau 8

Demography
MNI: 1?
Age: Probable Adolescent
Notes: based on size of grave cut and skeleton, heavily fragmented and bone is too severely degraded to gather data.

Ritual
? Initial rites: extended grave cut (1.9m by 0.5m and 0.1m deep); crossed legs and brooch could indicate shroud (or binding)?
Orientation: NE–SW
Posture: supine extended, head to NE, legs crossed with the right over the left
Grave goods: an iron brooch (SF 8.249), located by the feet.
Commemoration: in cemetery

Grave S12975, Plateau 8
SK 8.24: Articulated inhumation with 25–50 per cent of the inhumation recovered but poorly preservation (Grade 4).
C12974; S12975; G8084; Plateau 8

Demography

MNI: 1
Age: 34–52years
Age Category: Old Middle Adult
Sex: Male
Notes: "bad" death?

Ritual
? Initial rites: extended, rough and narrow grave cut (1.9m by 0.42 and 0.22m deep; slightly anthropomorphic at head end?); space next to the feet; the lower left leg over the right (feet crossed): binding and/or shroud?
Orientation: NE–SW
Posture: prone and extended, head to NE, arms flexed by the sides, legs crossed with the left over the right
Commemoration: in cemetery

Grave S12978, Plateau 8
SK 8.19; SK 8.37: Articulated inhumation, very poorly preserved (Grade 5) with 25–50 per cent recovered.
C12977/C12976; S12978; G8084; Plateau 8

Demography
MNI: 1
Age: 24–34 years
Age Category: Young Middle Adult
Sex: Unknown
Pathology: Non- Specific Infection. Periosteal reaction of both femora and tibiae, predating the anterolateral borders of the lower long bones.

Ritual
? Initial rites: a quite long, narrow extended grave cut (2.26m by 0.68m and 0.3m deep); posture arranged or disturbed?
Orientation: NE–SW
Posture: extended supine, with the head to the NE facing SE; the right arm by the side of the body with the left lying over the pelvis
Commemoration: in cemetery

Grave S12981, Plateau 8
SK 8.51: Articulated inhumation. Missing at time of osteological analysis.
C12979/C12980; S 12981; G8084; Plateau 8

Demography
MNI: 1
Age: Unknown

Age Category: Probable Adult
Sex: Unknown
Notes: age inferred from grave size and skeletal fragments.

Ritual
? Initial rites: extended grave cut (1.6m by 0.8m and 0.3m deep)
Orientation: SW-NE
Posture: extended supine position with the head to the SW facing NW, the right arm by the side of the body
Commemoration: in cemetery

Grave S14019, Plateau 8
SK 8.26; **SK 8.32**: Articulated inhumation; 25–50 per cent of the remains recovered, poorly preserved (Grade 5).
C14018; S14019; G8084; Plateau 8

Demography
MNI: 1
Age: >18 years
Age Category: Adult
Sex: Female
Pathological Category: Joint disease
Pathological description: Porotic compact bone on the lunate surface of the right lunate surface and acetabular notch.
Notes: age inferred from size of skeleton and grave

Ritual
? Initial rites: extended, rough and markedly narrow grave cut (1.9m by 0.3m and 0.17m deep) constraining the body (see left arm), the iron brooch (SF 251) located by the right shoulder perhaps used to secure a shroud or placed within one; head facing SE could be taphonomic and therefore perhaps decomposed in void
Orientation: NE–SW
Posture: extended supine with the head to NE facing SE; the right arm the side of the body with the left over the pelvis, legs slightly flexed
Grave goods: iron brooch (SF 8.251) near right shoulder
Commemoration: in cemetery

Grave S14022, Plateau 8
SK 8.30: Articulated inhumation, 25–50 per cent of the skeletal material surviving with poor preservation (Grade 4).
C14021; S14022; G8084; Plateau 8

Demography

MNI: 1
Age: 20–26 years
Age Category: Young Adult
Sex: Female
Pathology: Dental
Pathological Descriptions: interproximal caries and ante mortem tooth loss.

Ritual
? Initial rites: extended grave cut (1.75m by 0.6m and 0.25m deep), posture suggests shroud or binding; but also possible disturbance of laying out posture (r arm by side, l over pelvis) and taphonomic head twist?
Orientation: NE–SW
Posture: extended supine with the head to the NE facing SE, the right arm by the side and the left arm over the pelvis; the feet if they had been present, may have been crossed
Commemoration: in cemetery

Grave S14929, Plateau 8
SK 8.52: Probably articulated inhumation represented only by skull fragments lying at the NE end of the grave. Missing at time of osteological analysis.
C14928; S14929; G8084; Plateau 8

Demography
Age: adult?
Sex:
Pathology:
Notes: age inferred from grave size

Ritual
? Initial rites: extended grave cut (1.44m long by 0.63 and 0.15m deep); copper alloy brooch (SF 8.463) found in the upper centre right part of the grave was perhaps in situ in the chest area of the degraded skeleton
Orientation: NE–SW
Posture: unknown: possibly extended supine
Grave goods: A late La Tène copper alloy brooch (SF 8.463)
Commemoration: in cemetery

Grave S14932, Plateau 8
SK 8.31: Articulated inhumation with less than 25 per cent of the bone remaining with very poor preservation (Grade 5).
C14931; S14932; G8084; Plateau 8

Demography
MNI: 1

Age: 25–33 years
Age Category: Young Middle Adult
Sex: Unknown

Ritual
? Initial rites: narrow, roughly cut extended grave cut (1.52m by 0.38m and 0.15m deep), with space at feet end
Orientation: N–S
Posture: flexed on left side with the head to the N; right leg more contracted and resting on left
Grave goods: space at southern end of grave could have contained perishables
Commemoration: in cemetery

Grave S14935, Plateau 8
SK 8.49: Articulated inhumation with 25–50 per cent recovered with poor preservation (Grade 4).
C14934; S14935; G8084

Demography
MNI: 1
Age: >18 years
Age Category: Adult
Sex: Probable Female
Notes: age inferred from size of skeleton and grave cut.

Ritual
? Initial rites: short, quite narrow and irregular extended grave cut (1.56m by 0.48m and 0.16m deep: constraining); buried during flaccidity?
Orientation: N–S
Posture: flexed on right side, head to the S facing E, the right arm extended beside the body, the right flexed into the groin area; the legs flexed/slightly contracted to fit within the cut (knees press against the western edge)
Commemoration: in cemetery

Possible grave S14938. Plateau 8
Probably articulated inhumation. Poorly preserved bone; not recovered.
C14937; S14938; G8084; Plateau 8

Demography
Age: Adult
Notes: Age inferred from grave cut.

Ritual

? Initial rites: extended/sub-rectangular grave cut 0.55m wide, 1.28m by 0.55m and 0.12m deep
Orientation: N–S
Posture: traces of poorly preserved human remains with the skull probably lying at the north end
Commemoration: in cemetery

Possible grave S12944, Plateau 8
Possible articulated inhumation. Poorly preserved bone; not recovered.
C12945; S12944; G8278; Plateau 8

Ritual
? Initial rites: probable grave cut 1.08m by 0.48m and 0.1m deep
Commemoration: in cemetery

Grave S12952, Plateau 8
SK 8.15; **SK 8.35**: Articulated inhumation; very poorly preserved with less than 25 per cent recovered.
C12951; S12952; G8278; Plateau 8

Demography
MNI: 1
Age: >18 years
Age Category: Adult
Sex: Possible Female
Notes: Originally noted as juvenile or late teens inferred from grave cut and bone size, this individual is not a juvenile, although late adolescence cannot be ruled out as epiphysis and fragmentation of diaphysis do not allow such analyses.

Ritual
? Initial rites: quite narrow extended grave cut (1.99m by 0.53m and 0.32m deep)
Orientation: NE–SW
Posture: supine extended with the head to NE
Commemoration: in cemetery

Grave S12987, Plateau 8
SK 8.29; **SK 8.38**: Articulated inhumation with 25–50 per cent of the skeleton preserved.
C12986/C12987; S12987; G8278; Plateau 8

Demography
MNI: 1
Age: >18 years
Age Category: Adult

Sex: Male
Notes: Radiocarbon dated to 390–200 cal BC; age inferred from size of bones and burial cut.

Ritual
? Initial rites: quite short extended irregular grave cut (1.74m by 0.45m and 0.18m deep, constraining at head end especially); head twisted to the right suggests decomposition in void; arrangement in grave during flaccidity?
Orientation: SW–NE
Posture: slightly flexed on the right hand side with the head to the SW end facing SE. The right arm at the side with the left arm over the pelvis; the right leg straight with the left leg flexed over it
Commemoration: in cemetery

Grave S12990, Plateau 8
SK 8.21: Articulated inhumation with less than 25 per cent recovered.
C12989; S14016; G8278; Plateau 8

Demography
MNI: 1
Age: Adult
Sex: Probable female
Notes: age inferred from grave and bone size

Ritual
? Initial rites: short, rough and extended/sub-rectangular grave cut (1.5m by 0.64m and 0.18m deep: constraining?); burial during flaccidity?
Orientation: ?
Posture: probably slightly flexed supine, the left arm over the pelvis
Commemoration: in cemetery

Grave S14016, Plateau 8
SK 8.16: Articulated inhumation: less than 25 per cent recovered.
C140; S140; G8278; Plateau 8

Demography
MNI: 1
Age: >10 years +
Age Category: Probable adult
Sex: Unknown
Notes: Fragmentary skeletal remains with complete mandibular right incisor lateral incisor (10+ years) so age was inferred from grave cut.

Ritual
? Initial rites: extended grave cut (1.72m by 0.46m wide and 0.16m deep)
Orientation: NE–SW
Posture: extended supine with the head originally positioned at the NE; the left arm positioned over the chest
Commemoration: in cemetery

Grave S14024, Plateau 8
SK 8.39: Small fragment of human bone. Missing at time of osteological analysis.
C14024; S14024; G8278; Plateau 8

Ritual
? Initial rites: recorded as grave cut (1.22m by 0.24m and 0.8m deep).

Possible Grave S12948, Plateau 8
No human bone recovered.
C12948/C12949; S12948; G8279; Plateau 8

Demography
Notes: no bone

Ritual
? Initial rites: grave cut?

Grave S12962, Plateau 8
SK 8.22: Disarticulated human bone. Few skull fragments and long bone recorded. Missing at time of osteological analysis.
C12961; S12962; G8279; Plateau 8

Demography
Notes: no bone

Ritual
? Initial rites: grave cut?

Grave S12965, Plateau 8
SK 8.23: Articulated inhumation with less than 25 per cent recovered.
C12964; S12965; G8297; Plateau 8

Demography
MNI: 1
Age: 18–25 years
Age Category: Young Adult

Sex: Female
Notes: inferred from bone size and grave cut

Ritual
? Initial rites: extended grave cut (1.87m by 0.7m wide and 0.1m deep)
Orientation: N–S
Posture: extended supine with the head positioned at the north
Commemoration: in cemetery

Grave S12984, Plateau 8
SK 8.20; **SK 8.25**: Articulated inhumation with 25–50 per cent of the bone recovered.
C12983; S12984; G8279

Demography
MNI: 1
Age: 18–25
Age Category: Young Adult
Sex: Female

Ritual
? Initial rites: irregular and quite broad sub-rectangular grave cut 1.6m by 0.84m and 0.3m deep); posture could suggest binding?
Orientation: N–S
Posture: flexed on right side with the head to the N facing SE, the arms flexed in front of the body, legs flexed and ankles close together
Commemoration: in cemetery intercutting with another burial

Grave S8896, Plateau 8
SK 8.3: Articulated inhumation with 25–50 per cent of the bone recovered.
C8895; S8896; G8309; Plateau 8

Demography
MNI: 1 (with animal tooth)
Age: 36–45 years
Age Category: Middle Adult
Sex: Female

Ritual
? Initial rites: short but quite wide sub-rectangular/extended grave cut (1.46m by 0.75m and 0.3m deep); posture suggests placement while flaccid in quickly dug pit?
Orientation: E–W

Posture: supine with the skull in an upright position to the E with chin on chest; the left arm lay flexed over the torso with the right to the side of the body; the right leg flexed with the ankle area over the left and the left extended
Grave goods: two pottery vessels adjacent to the left leg
Commemoration: in enclosure ditch

Grave S8912, Plateau 8
SK 8.1: Articulated inhumation with less than 25 per cent recovered.
C8912; S8912; G8309; Plateau 8

Demography
MNI: 1
Age: 16–18 years
Age Category: Adolescent
Sex: Probable Female
Note: Heavy wear to 1st molars hence later age estimate. With flint flake.

Ritual
? Initial rites: heavily truncated with no clear grave cut evident, in ditch; posture could suggest binding or shroud; head position due to decomposition in void?
Orientation: W–E
Posture: supine and extended with the skull to the W facing S; the right arm at the side and the left flexed across the torso; legs extended with knees and ankles close together
Commemoration: in enclosure ditch

Cremation deposits in Plateau 8 pits

Pit S12374, Plateau 8
SK 8.53: Cremated human bone, probably residual. Missing at time of osteological analysis
C12373; S12374; G8182; Plateau 8

Phases 10–11: Late Iron Age–Roman (100BC–c. AD400)

Late Iron Age cremation burials associated with Trackway 27

Cremation burial S10594, Plateau 1
SK 1.14: cremation burial
C10593; S10594; G10013; Plateau 1

Demography
MNI: 1
Age: Adult
Sex: Unknown
Notes: MNI derived from weight, colour, size, shape and texture of bone.

Ritual
? Initial rites: burial pit, fuel procurement, etc.
Modification: cremation
Weight (g): 21 (token)
Colour and fragmentation: White, Blue, Black, Grey, Unburnt. Fissuring of long bones. Average size fragment = 5–10mm, Largest size fragment = >20mm
Container: jar?
Commemoration: in group north of trackway
Notes: heavily truncated

Cremation burial S10688, Plateau 1
SK 1.18: cremation burial
C10722; S10688; G10012; Plateau 1

Demography
MNI: 1
Age: Adult
Sex: Unknown
Notes: MNI derived from weight, colour, size, shape and texture of bone.

Ritual
? Initial rites: burial pit: sub-rectangular, 0.91m long by 0.17m wide and 0.21 m deep, on a north-east to south-west axis; fuel procurement, etc.; container and grave goods selection
Modification: cremation
Weight (g): 76
Colour and fragmentation: White, Grey. Average fragment size = 0.5–10mm, Largest fragment size=>20.5mm

Container: un-urned
Grave goods: nine vessels, fifteen amber beads (SF 1.43–1.157), three copper alloy brooches (SF 1.112–1.114), two copper alloy brooch pins (SF 1.159–1.160) and a lead spindlewhorl (SF 1.158); intentionally arranged in layers: a) a primary layer comprising three vessels (C10734, C10736, C10738) b) an interspersed deposit of cremated human bone (C10722; SK 18) c) five vessels (C10724, C10726, C10728, C10730, C10732). A fragmented plate, (C10723), seemed to be purposefully dispersed throughout; upper backfill contained pottery sherds and further calcined and unburnt bone fragments, the latter from a defined area where the copper alloy brooches had been recovered.
Commemoration: in group north of trackway; bone and brooches in upper layer?

Inhumation burial, Plateau 1

Grave S20008, Plateau 1
SK 1.26: An articulated inhumation with 60 per cent recovered.
C20007; S20008; G10133; Plateau 1

Demography
MNI: 1
Age: 26+ years
Age Category: Adult
Notes: radiocarbon dated to 44 BC–AD 73 cal BC (at 95 per cent probability; UBA-22934)

Ritual
? Initial rites: A sub-rectangular grave (S20008) 0.95m wide, 2.06m long and 0.17m deep; three ?coffin nails (SF 1e1–1e3)
Orientation: SW–NE
Posture: supine with the arms positioned along the sides of the. Pathology observed in the lower right tibia, possibly representing a healed break. Skull not in anatomically correct position. Demonstrated that the top part of the cranium lay on its right side above the sternum with the upper jaw therefore facing the south end of the grave cut. The lower jaw was twisted out of position by approximately 90 degrees anti-clockwise and faced the side of the grave.
Commemoration: in corner of field IA4

Cremation and inhumation burial, Plateau 8

Cremation burial S12315, Plateau 8
SK 8.42: Cremation burial
C12314; S12315; G8163; Plateau 8

Demography
MNI: 1

Age: Probable Adult
Sex: Unknown
Notes: MNI derived from weight, colour, size, shape and texture of bone.

Ritual
? Initial rites: small burial pit; fuel procurement, etc; container selection.
Modification: cremation
Weight (g): 52
Colour and fragmentation: White, black flecks. Average fragment size = 10–20mm, Largest fragment size=>30mm
Container: Butt beaker
Commemoration: in loose group in the eastern part of field R1

Cremation burial S12355, Plateau 8
SK 8.41: Cremation burial
C12369; S12355; G8163; Plateau 8

Demography
MNI: 1
Age: Adult
Sex: Unknown
Notes: MNI derived from weight, colour, size, shape and texture of bone.

Ritual
? Initial rites: Small 0.4m square grave cut with vertical sides and a flat base 0.38m deep; fuel procurement etc; container and grave goods selection
Modification: cremation
Weight (g): 533
Colour and fragmentation: White/Blue. Average size fragment 20–40mm; largest size fragment >70mm.
Pyre goods: brooches?
Container: vessel
Grave goods: remains of two Iron Age brooches (SF 8.9022), a small Butt beaker (dated *c.* AD 40–70) and a Gallo-Belgic platter (dated *c.* AD 43–70).
Commemoration: in loose group in the eastern part of field R1

Inhumation burial S12312, Plateau 8
SK 8.9: An articulated inhumation with 25 per cent recovered
C12311; S12312; G8041; Plateau 8

Demography
MNI: 1
Age: 2–5 years

Age Category: Early Childhood
Notes: "bad" death?

Ritual
? Initial rites: a sub-rectangular grave cut (1.18m by 0.34m, 0.25m deep); notable head twist; posture suggests shroud or binding (perhaps originally with brooch)?
Orientation: S–N
Posture: supine extended with the head to the S facing W (notably twisted), arms slightly flexed and crossed to the pelvis, the legs apparently extended
Grave goods: copper alloy bow brooch (SF 8.155, dated to the earlier part of the 1st century BC and not the later).
Commemoration: brooch from backfill in situ or disturbed grave good?

Inhumation burial S12386, Plateau 8
SK 8.7: An articulated inhumation with 75 per cent of the individual recovered.
C12385; S12386; G8040; Plateau 8

Demography
MNI: 1 (animal sheep humerus +teeth?)
Age: 45+ years
Age Category: Old Adult
Sex: Probable Male
Pathology: Degenerative Joint Disease, possible as progressive as Osteoarthritisis, dental disease, sacro-iliac joint joint disease. (Marginal changes to the right auricular surface, with some osteophytic, A 10mm osteophytic protrusion on right sacro-iliac region indicated that there is an extension or partial/beginnings of ankylosis of the sacroiliac region. A large osteophyte is also present on L5 but not on the sacrum. Above the right maxillary M1 an abscess has turned into an oro-antro fistula, perforating into the maxillary sinus.
Notes: "bad" death?

Ritual
? Initial rites: a sub-rectangular grave cut (1.7m b7 0.6 and 0.65m deep)
Orientation: S–N
Posture: prone with the head to the S, facing E
Commemoration: grouped with other burials

Inhumation burial S12337, Plateau 8
SK 8.10: An articulated inhumation with 50–75 per cent recovered.
C12336; S12337; G8040; Plateau 8

Demography
MNI: 1

Age: 6–12 years
Age Category: Late childhood
Notes: "bad" death?

Ritual
? Initial rites: long sub-rectangular grave cut for juvenile (1.7m by 0.6m and 0.65m deep); head twist notable (decomposition in void?) and posture could suggest shroud or binding
Orientation: S–N
Posture: supine and slightly flexed with the head to the S, markedly facing W; arms by the sides
Commemoration: grouped with other burials

Cremation burials, Plateau 8

Possible cremation burial S3614, Plateau 8
A cremation burial? No human bone recovered.
C3614; S3614; G8262; Plateau 8

Demography
Notes: no bone

Ritual
? Initial rites: a circular grave cut (0.38 m by 0.36 m and 0.04 m)
Modification: cremation burial type can be inferred although could be cenotaph or other feature
Grave goods: truncated jar and five sherds from an ancillary flagon placed in the approximate centre of the cut.
Commemoration: within mortuary enclosure

Cremation burial S12749, Plateau 8
SK 8.60; SK 8.62; SK 8.67: Cremation burial

SK 8.60; C12747; S12749; G 8162; Plateau 8
SK 8.62; C12748; S12749; G 8162; Plateau 8
SK 8.67; C12746; S12749; G 8162; Plateau 8

Demography
MNI: 2? (and unidentified animal)
Age: Possible juvenile (SK 8.60/8.62), Adult (SK 8.67)
Sex: Unknown
Notes: 0.18g of unburnt fragments, At least 0.4g of animal bone (identifiable through texture). MNI derived from weight, colour, size, shape and texture of bone.

Ritual
? Initial rites: a sub-rectangular grave cut, nearly 1m across but only surviving to a depth of 0.16m, with vertical sides and a flat base; fuel procurement etc; container and grave goods selection
Modification: cremation
Weight (g): 67
Colour and fragmentation: white grey, brown; average fragment size: 20–40mm; Largest fragment size: >50mm.
Pyre material: carbon some mixed with bone
Pyre goods: iridescent shell fragment
Container: un-urned, possibly originally held in a bag; a carbon rich layer surrounded other finds perhaps remains of a box held together with a number of iron nails (SF 8.221–8.234) found throughout the deposit
Grave goods: Samian dish (SF 8.9008) and four copper alloy rings (SF 8.235, 8.236, 8.252 & 8.9058). These could make the 'box' a 'casket'.
Commemoration: within mortuary enclosure
Notes: pottery, flint flakes. MNI derived from weight, colour, size, shape and texture of bone.

Cremation burial S12813, Plateau 8
SK 8.58; **SK 8.59**; **SK 8.63**; **SK 8.64**: Possible *Brandschüttungsgrab*?

SK 8.58; C12835; S 12813; G 8162; Plateau 8
SK 8.59; C12831; S 12813; G 8162; Plateau 8
SK 8.63; C12833; S 12813; G 8162; Plateau 8
SK 8.64; C12835; S 12813; G 8162; Plateau 8

Demography
MNI: 1 (SK 8.58/8.59/8.63/8.64)
Age: Adult
Sex: Unknown
Notes: MNI derived from weight, colour, size, shape and texture of bone.

Ritual
? Initial rites: sub-rectangular grave cut, nearly 1m across surviving to a depth of 0.2m, with vertical sides and a flat base; fuel procurement, etc.; container and grave goods selection
Modification: cremation
Weight (g): 150
Colour and fragmentation: White, Blue, Black, Brown. Average 20–40mm, Largest=>45mm
Pyre material: deposits in primary layers and in backfill

Pyre goods: glass mixed with pyre material?
Container: un-urned within a badly degraded, carbonised box (C12835) on the base of the cut
Grave goods: an iron tool (SF 8.260), a Samian cup with a pedestal base (SF 8.261), a Samian dish (SF 8.262), a crushed ceramic vessel (SF 8.263), a small ceramic jar (SF 8.265), a ceramic flagon (SF 8.9011), the charred remains of an unidentified wooden item (SF 8.9003), and the remains of two hobnail boots (SF 8.9004–8.9005)
Commemoration: within mortuary enclosure
Notes: MNI derived from weight, colour, size, shape and texture of bone.

Cremation burials associated with Trackway 25, Plateau 2

Cremation burial S2014, Plateau 2
SK 2.3; **SK 2.18**: cremated human bone
C2007/C2013; S2014; G2004; Plateau 2

Demography
MNI: 1
Age: Juvenile

Ritual
? Initial rites: fuel procurement, etc.; container and grave goods selection
Modification: cremation
Weight (g): 291
Colour and fragmentation: all white; average size 20–50mm, largest >50mm
Container: vessel
Grave goods: two ancillary vessels (*c.* AD 70–100)
Notes: in group near trackway. MNI derived from weight, colour, size, shape and texture of bone.

Cremation burial S2018, Plateau 2
SK 2.6; **SK 2.17**: Cremation burial
C2016/C2015; S2018; G2004; Plateau 2

Demography
MNI: 1
Age: Adult

Ritual
? Initial rites: fuel procurement, etc.; container selection.
Modification: cremation
Weight (g): 94g

Colour and fragmentation: White and black flecks. Average fragment size: 10–20mm; largest size fragment: 50mm
Container: Dressel 20 olive oil amphora (*c.* AD 43–250)
Commemoration: in group near trackway
Notes: MNI derived from weight, colour, size, shape and texture of bone. Flint flake.

Cremation burial S2022, Plateau 2
SK 2.15; **SK 2.19**: Cremation burial
C2019/C2020; S2022; G2004; Plateau 2

Demography
MNI: 1
Age: Adult
Notes: MNI derived from weight, colour, size, shape and texture of bone.

Ritual
? Initial rites: fuel procurement, etc.; container selection.
Modification: cremation
Weight (g): 21
Colour and fragmentation: white and black, average fragment 10–50 mm largest fragment 120mm
Container: amphora in fragmented condition
Commemoration: in group near trackway; access to amphora?

Cremation burial S2027, Plateau 2
SK 2.2; **SK 2.14**: Possible *Brandschüttungsgrab*?
C2025/2024; S2027; G2004; Plateau 2

Demography
MNI: 1 (also possible animal jaw)
Age: Adolescent
Notes: frequent carbon in deposit within container (C2026; SK 2.2) and without (SK 2.14)

Ritual
? Initial rites: fuel procurement, etc.; container selection
Modification: cremation
Weight (g): 151
Colour and fragmentation: all white; average 20–50mm, largest >100mm
Pyre material: as separate deposits in grave
Container: a narrow necked jar (*c.* AD 70–200), associated with fragment of Central Gaulish Samian dish (*c.* AD 120–200)
Grave goods: flint flake
Commemoration: in group near trackway

Notes: MNI derived from weight, colour, size, shape and texture of bone.

G2018: dispersed cremation burials near trackway

Cremation burial S2122, Plateau 2
SK 2.7; **SK 2.8**; **SK 2.13**
C2146/2147/2148; S2122; G2018; Plateau 2

Demography
MNI: 1
Age: Adult

Ritual
? Initial rites: a sub-rectangular grave cut (0.94m by 0.81m and 0.33m deep), with steep, straight sides and a flat base; fuel procurement, etc.; container selection
Modification: cremation
Weight (g): 52
Colour and fragmentation: White, blue, grey. Average fragment size: 0.5–10mm; Largest fragment size: <20mm
Pyre material: charcoal in bone deposits
Pyre goods: Flint flake
Container: Dressel 20 olive oil amphora (*c.* AD 43–250+)
Commemoration: south of trackway; access to amphora?
Notes: at least two deposits of cremated bone (SK7, SK 8, SK 13) and charcoal mixed with a silty clay

Cremation burial S2173, Plateau 2
SK 2.12; **SK 2.16**
C2171/2201; S2173; G2018; Plateau 2

Demography
MNI: 1
Age: Probable Adult
Notes: MNI and age derived from weight, colour, size, shape and texture of bone.

Ritual
? Initial rites: fuel procurement etc; container selection
Modification: cremation
Weight (g): 161
Colour and fragmentation: White, black and unburnt (33g). Average 10–30mm, Largest= >40mm
Container: a large storage jar (*c.* AD 150–250)
Commemoration: south of trackway

Cremation burial S2196, Plateau 2
SK 2.11: Missing at time of osteological analysis.
C2199; S2196; G2018; Plateau 2

Demography
MNI: ?
Age: ?
Sex: ?
Pathology: ?
Notes: ?

Ritual
? Initial rites: larger sub-rectangular grave cut (0.92m by 0.71m and 0.4m deep); more regularly cut; fuel procurement etc; container and grave goods selection
Modification: cremation
Weight (g): ?
Colour and fragmentation: ?
Pyre material:?
Pyre goods: ?
Container: large storage jar
Grave goods: part of an East Gaulish Samian dish (*c.* AD 150–230). An ancillary vessel, an indented beaker of Pollard type 153 (*c.* AD 150–300+) with part of a necked and girth-cordoned jar (*c.* AD 150–250) acting as a lid
Commemoration: south of trackway

Cremation burial S2365, Plateau 2
SK 2.9; **SK 2.10**: Missing at time of osteological analysis.
C2366/2368; S2365; G2018; Plateau 2

Demography
MNI: ?
Age: ?
Sex: ?
Pathology: ?
Notes: ?

Ritual
? Initial rites: fuel procurement etc; container and grave goods selection
Modification: cremation
Weight (g): ?
Colour and fragmentation: ?
Pyre material:?

Pyre goods: ?
Container: Jar
Commemoration: North of trackway
Notes: disturbed by metal detectorist?

Cremation burial S2003, Plateau 2
SK 2.4: Missing at time of osteological analysis.
C2001; S2003; G2018; Plateau 2

Demography
MNI: ?
Age: ?
Sex: ?
Pathology: ?
Notes: ?

Ritual
? Initial rites: small burial pit; fuel procurement etc; container and grave goods selection
Modification: cremation
Weight (g): ?
Colour and fragmentation: ?
Pyre material:?
Pyre goods: ?
Container: a complete large necked jar (*c.* AD 140–170)
Grave goods: a small necked jar (*c.* AD 80–175). A smaller ancillary bowl of Monaghan's class 5D2 (*c.* AD 120–180)
Commemoration: north of trackway

G5065: Cremation burials associated with field boundary ditch G5146 (Plateaus 4 and 5)

Cremation burial S5815, Plateau 5
SK 5.3
C5816; S5815; G5065; Plateau 5

Demography
MNI: 1
Age: Possible Juvenile
Sex: Unknown
Notes: Skull frags indicative of juvenile age. MNI derived from weight, colour, size, shape and texture of bone.

Ritual

? Initial rites: small burial pit; fuel procurement etc;
Modification: cremation
Weight (g): 68
Colour and fragmentation: white black grey. Average fragment size: 2–10mm; Largest fragment size: 20mm
Pyre material: charcoal and burnt flint with bone
Container: Dressel 20 amphora
Commemoration: in group west of field boundary ditch
Notes: truncated

Cremation burial S5824, Plateau 5
SK 5.1
C5823; S5824; G5065; Plateau 5

Demography
MNI: 1
Age: >19 years
Sex: Possible Female.
Notes: Second premolar two root is closed at apex indicating >19 years. MNI derived from weight, colour, size, shape and texture of bone.

Ritual
? Initial rites: small burial pit; fuel procurement etc; container selection
Modification: cremation
Weight (g): 634
Colour and fragmentation: some blue/black but mostly white, with some flecks of orange; average bone length 30–50mm, the largest >105mm
Pyre goods: animal bone, worked flint, copper alloy?
Container: a large flagon or amphora (*c.* AD 50–250)
Grave goods: copper alloy?
Commemoration: in group west of field boundary ditch

Possible Cremation burial S5848, Plateau 5
SK 5.4
C5847; S5848; G5065; Plateau 5

Demography
MNI: 1
Age: Probable Adult
Notes: MNI derived from weight, colour, size, shape and texture of bone.

Ritual
? Initial rites: small burial pit; fuel procurement etc

Modification: cremation
Weight (g): 13.5
Colour and fragmentation: White. Average size fragment: 0.5–5mm; Largest size fragment >1.5mm.
Pyre material: charcoal, daub and burnt flint
Container: un-urned
Commemoration: in group west of field boundary ditch

Disturbed Cremation deposit S5821, Plateau 5
SK 5.2: Missing at time of osteological analysis.
C5821; S5821; G5065; Plateau 5

Ritual
? Initial rites: fuel procurement etc; small pit?
Modification: cremation
Commemoration: in group west of field boundary ditch
Notes: a jumbled smear of orange grey clay silt with fragmented Roman pottery, charcoal, calcined human bone (SK 5.2), burnt flint and iron nail fragments

Possible Cremation burial S4131, Plateau 4
Bone recorded, but not recovered
C4130; S4131; G4078; Plateau 4

Demography
Notes: no bone

Ritual
Notes: extremely shallow (0.08m) feature containing remnants of a samian vessel, that may have been a ploughed out cremation burial

G8263: Inhumation burials associated with Enclosure 5 (Plateau 8)

Grave S3649, Plateau 8
SK 8.2: Articulated inhumation with less than 25 per cent of the individual recovered
C8890; S3469; G8263; Plateau 8

Demography
Age: 36–45 years
Sex: probable male

Ritual
? Initial rites: use of pre-existing enclosure ditch; an extended grave cut (1.20m by 0.70m and 0.50m deep) while the ditch was only partially backfilled; posture may suggest

shroud or binding (arm locations, feet together); head twist suggests decomposition in void?
Orientation: E–W
Posture: supine, head to the E facing N; the right arm folded to the chest with the left arm lying across it; ankles close together
Commemoration: settlement enclosure ditch

Grave S3513, Plateau 8
SK 8.17: Articulated inhumation with more than 75 per cent present
C3512; S3513; G8263; Plateau 8

Demography
MNI: 1
Age: 45+ years
Age Category: Old Adult
Sex: Female
Pathology: Non-specific infection, Dental, Degenerative Joint Disease. (periostitis in the distal end of the right radius, degenerative joint disease between C4–5 articulation and LM1 carious lesion)
Notes: Radiocarbon dated to AD 132–311 (at 95 per cent probability; Table 6, UBA-12616).

Ritual
? Initial rites: reasonably spacious sub-rectangular grave cut (1.60m by 0.70m and 0.40m deep) focussed on enclosure boundary ditch; buried during flaccidity?
Orientation: E–W
Posture: flexed with the head at the E end facing S, the upper arms close to either side of the torso with the hands positioned on the pelvis; legs flexed to the left, the left knee slightly overlapping the right against the side of the grave
Commemoration: focus on enclosure ditch

Grave S8930, Plateau 8
SK 8.8: Articulated inhumation; less than 25 per cent recovered
C8920; S8930; G8263; Plateau 8

Demography
MNI: 1
Age: 17–25years
Age Category: Young Adult
Sex: Unknown

Ritual

? Initial rites: small sub-rectangular grave cut (0.90m by 0.66m and 0.40m. deep) focussed within enclosure ditch
Orientation: E–W
Posture: crouched/contracted on left side with the head to the E; one arm by side with hand in pelvis area, the other upper arm pointing across the chest; one leg drawn up and tightly contracted above the more complete arm, the other less drawn up
Commemoration: focus on enclosure ditch

Grave S12161, Plateau 8
SK 8.5: Articulated inhumation; less than 25 per cent recovered
C12160; S12161; G8263; Plateau 8

Demography
MNI: 1
Age: 35–45 years
Age Category: Middle Adult
Sex: Male

Ritual
? Initial rites: grave cut (1.8 m by 0.65m and 0.29 m deep)
Orientation: W–E
Posture: crouched with the head to the W facing S; the left arm positioned over the pelvis, the right arm pulled up towards the shoulder
Commemoration: focus on enclosure ditch

Possible Grave S12009, Plateau 8
SK 8.13; **SK 8.14**: Articulated inhumation with less than 25 per cent of the remains recovered
C12009/1210; S12009; G8263; Plateau 8

Demography
Age: 17–25years
Sex: female

Ritual
? Initial rites: burial did not appear to be in a grave though possible that the cut was not identified
Orientation: E–W
Posture: extended/slightly flexed on left side with the head to the E end facing S; one arm tightly flexed in front of the chest
Commemoration: in enclosure ditch

Late Romano-British cremation burials on Plateau 3

G3027: cluster of cremation burials to the south of Trackway 25

In the corner of a Roman field or plot, bounded to the north by Trackway 25 and, 6m to the east, by ditch G3028.

Cremation burial S3086, Plateau 3
SK 3.8: Missing at time of osteological analysis.
C3085; S3086; G3027; Plateau 3

Demography
MNI: ?
Age: ?
Sex: ?
Pathology: ?
Notes: ?

Ritual
? Initial rites: pit; fuel procurement etc
Weight (g): ?
Colour and fragmentation: ?
Pyre material: ?
Pyre goods: ?
Container: un-urned
Commemoration: in group near trackway and field boundary.

Cremation burial S3037, Plateau 3
SK 3.6: Missing at time of osteological analysis.
C3035; S3037; G3027; Plateau 3

Demography
MNI: ?
Age: ?
Sex: ?
Pathology: ?
Notes: ?

Ritual
? Initial rites: pit; fuel procurement etc
Weight (g): ?
Colour and fragmentation: ?
Pyre material: ?
Pyre goods: ?

Container: un-urned
Commemoration: in group near trackway and field boundary.

Cremation burial S3094, Plateau 3
SK 3.9; **SK 3.10**
C3087/3088; S3094; G3027; Plateau 3

Demography
MNI: 1
Age: Probably adult
Sex: Unknown
Pathology: Unknown
Notes: Fissuring of long bones

Ritual
? Initial rites: fuel procurement etc; container selection
Modification: cremation
Weight (g): 9.5
Colour and fragmentation: White, grey. Average Fragment 2–10mm, largest fragment = 30mm
Container: vessel
Commemoration: in group near trackway and field boundary.
Notes: flint flake

Cremation burial S3102, Plateau 3
SK 3.7: Missing at time of osteological analysis.
C3098; S3102; G3027; Plateau 3

Ritual
? Initial rites: small burial pit; fuel procurement etc; container and grave goods selection
Modification: cremation
Weight (g):
Colour and fragmentation:
Pyre material:
Pyre goods:
Container: vessel and nails suggesting wooden box or lid
Grave goods: vessel
Commemoration: in group near trackway and field boundary; access to wooden box or lid?
Notes:

Other human remains

Disarticulated bone S6065, Plateau 6
SK 6.4: disarticulated bone in large quarry pit cut into southern orbit of Barrow 1
C6064; S6065; G6044; Plateau 6

Demography
MNI: Unknown
Age: Unknown
Sex: Unknown
Notes: Bone fragments are generally <5mm (only long bone fragments remain)

G8176: Disarticulated and cremated human bone, Plateau 8
SK 8.45: Disarticulated and cremated human bone.
C14138; S14140; G8176; Plateau 8

Demography
MNI: Unknown
Age: Unknown
Sex: Unknown
Notes: 3g of white cremated bone associated with a late fourth century coin.

Unstratified and residual human bone

S10261: Disarticulated bone, Plateau 1
SK 1.11: Disarticulated bone
C10381; S10261; G10103; Plateau 1

Demography
MNI: 1
Age Category: Juvenile
Sex: Unknown
Notes: Recovered from medieval ditch fill.

S10664; Disarticulated bone, Plateau 1
SK 1.12: Disarticulated bone
C10663; S10664; G10104; Plateau 1

Demography
MNI: 1
Age Category: Juvenile
Sex: Unknown
Notes: Recovered from medieval ditch fill. Juvenile finger phalanx epiphysis.

S7182: Bone fragments, Medieval Trackway 32, Plateau 7

SK 7.8: A group of bone fragments, human and animal. All individuals are <25 per cent complete. Deciduous lower right molar, juvenile fibula, animal molar (sheep?) and fragment of adult human long bone.
C7180; S7182; G7028; Plateau 7

Demography
MNI: 3–4
Age: Juvenile and Adult
Ritual
Modification: excarnation?
Commemoration: barrow focus?

S486: Bone fragments, medieval pit, Plateau 1
SK 1.10: bone fragments
C487; S486; G1285; Plateau 1

Demography
MNI: 1
Age: Adult
Notes: Upper Left M3 and 53g of bone fragments.

Cremation deposit S1068, Plateau 1
SK 1.22: Missing at time of osteological analysis.
C1068; S1068; G10050; Plateau 1

Cremated bone S10678, Plateau 1
SK 1.24: Missing at time of osteological analysis.
C10678; S10678; G10074; Plateau 1

Disarticulated bone S16285
SK 6.9: Disarticulated bone
C16285; S16285; G6075; Plateau 6

Demography
MNI: 1
Age: Adult
Sex: Unknown
Notes: From fill of Pit G6075. Pectoral girdle fragments x5 (1.91g)

Multi-isotope analysis of Beaker period burials from the Thanet Earth excavations

Mandy Jay, Janet Montgomery, Maura Pellegrini & Olaf Nehlich

Four individuals from the Thanet Earth excavations were analysed for a suite of isotope ratio data for the Beaker People Project (BPP, see acknowledgements for details). Strontium ($^{87}Sr/^{86}Sr$) and oxygen ($\delta^{18}O_{phosphate}$) were analysed from tooth enamel, and carbon, nitrogen and sulphur ($\delta^{13}C$, $\delta^{15}N$ and $\delta^{34}S$) were analysed from the collagen extracted from both bone and bulk root dentine samples.

Techniques

Detailed coverage of the techniques, the background chemistry and the complicating factors involved in interpretation will not be covered here, but for the interested reader excellent summaries can be found in Lee Thorp (2008), Hedges (2009), Montgomery, Evans & Cooper (2007), Bentley (2006), Montgomery (2010) and Nehlich *et al* (2011). Further primary referencing can be found in those sources.

Strontium and oxygen isotope ratios from tooth enamel are usually considered as mobility indicators, whilst carbon and nitrogen stable isotope analyses are generally undertaken in order to consider diet by investigating trophic level and the consumption levels of aquatic (marine and freshwater) resources. Sulphur isotope analysis is a more recent technique which is still being developed, but it is thought to be an indicator of both regional mobility and diet, particularly aquatic diet, when used in combination with the carbon and nitrogen data. These are the generally accepted uses of the individual data sets, but it is simplistic to suggest that they reflect only one issue, such as diet or mobility. They are all affected by different environmental factors, such as climate, geology, precipitation patterns, atmospheric conditions and deforestation. These and other variables can affect one, some or all of the different isotope ratios being considered.

Skeletal tissues are ultimately made up of the biological 'building blocks' obtained from ingested food and drink. The strontium isotope ratios found in tooth enamel are controlled by the local geology where the plants at the base of the food chain have grown, and also by atmospheric inputs such as rainfall for which the source is mainly seawater. For the oxygen isotope ratios found in tooth enamel phosphate, the main origin is drinking water, but this is also affected by factors such as climate, altitude and distance from the coast. The collagen data (carbon, nitrogen and sulphur isotope ratios) are mainly derived from protein and the dietary components being reflected are therefore often weighted more heavily towards the consumption of animal products where the protein levels are higher. Atmospheric conditions affecting the plants are important in the carbon system, whilst soil composition and trophic level are important in relation to the nitrogen system. None of these involve straightforward processes and

an understanding of the affecting variables is essential for interpretation, particularly when combining multi-isotopic data sets.

Tooth enamel is the best fraction for strontium and oxygen isotope analysis because it is better suited to resist diagenetic alteration and contamination than the inorganic components of bone or dentine. For carbon, nitrogen and sulphur the fraction used is the organic collagen extracted from bone and dentine. This survives well in the burial environment and the analysis provides quality indicators which allow any possibly poor results to be discarded.

Teeth form during childhood, the precise age range depending on the tooth chosen. This means that analysis of tooth enamel or dentine provides data which have been 'set' during that timeframe, with very little remodelling occurring during later life. Bone, on the other hand, undergoes biomolecular change over an entire lifetime, with a decreasing rate of collagen turnover as an individual ages. A bone collagen sample from an adult will therefore reflect an averaged lifetime diet, with a tendency to be weighted towards adolescence in cortical long bone (Hedges *et al.* 2007).

Methods

Collagen was extracted and analysis undertaken in the biomolecular chemistry preparation laboratories at the Max Planck Institute for Evolutionary Anthropology in Leipzig. Methods employed can be found in the Appendix in Jay (2008) and in Nehlich *et al* (2011). Two replicates are routinely run for each sample and the results averaged. The skeletal material was fragmentary and very poorly preserved, which is the reason for the missing $\delta^{34}S$ data for some of the samples shown in Table 118. Sulphur analysis requires a much larger collagen sample than is needed for carbon and nitrogen, and the poor quality of the bone and dentine samples meant that there was not sufficient high quality collagen available for this to be done in all cases. Two of the five samples for which sulphur isotope ratio data are available were not replicated for this reason. However, all collagen data shown in the Table are associated with satisfactory collagen quality data (van Klinken 1999; Nehlich and Richards 2009).

Strontium isotope analysis methods are detailed in Montgomery, Evans and Cooper (2007) and were undertaken at the NERC Isotope Geosciences Laboratory (NIGL) in Nottingham. Preparation of the samples for oxygen isotope analysis took place at the Max Planck Institute for Evolutionary Anthropology in Leipzig following an adaptation of the technique described in Dettmann *et al* (2001). Analysis took place in the stable isotope facility laboratories of the Archaeology Department at the University of Bradford. Oxygen data are presented as measured phosphate values relative to SMOW, rather than as conversions to drinking water values, in order to avoid the error issues discussed in Pollard, Pellegrini and Lee-Thorp (2011).

Complete details of methods, analytical standards used, calibration issues and other technical detail will be found in the BPP publication (Parker Pearson *et al* 2019).

Results and discussion

Table 117 gives details of the burials investigated and the results are shown in Table 118.

Strontium isotope ratios are primarily affected by the geology on which plants at the base of the food chain are grown. When compared with the expected values for the region in which a burial is located, an interpretation can be undertaken based on whether the values match (in which case mobility is not suggested, although it is still possible) or do not match (in which case mobility is likely). The data from tooth enamel reflect the diet of an individual during childhood, so if the enamel ratio does not match the expected local geology ratio, then the individual is likely to have spent their childhood in another region.

In this case, there are three individuals for whom mobility is suggested from the strontium isotope ratios: SK 236, 238 and 239. Individuals subsisting entirely on food sourced from a Cretaceous Chalk substrate, plus an input from rainwater, are expected to have ratios that fall between ~0.7075 to ~0.7092 (Montgomery, Evans & Cooper 2007). Only SK 237 (the primary Beaker burial from a barrow) falls into that expected range.

Whilst it is possible to suggest that the strontium isotope ratios indicate movement between regions, it is not possible to be definitive about possible origins. The values obtained from SK 236, 239 and 238, are indicative of silicate sedimentary terrains such as sandstones, mudstones and shales rather than chalk and other limestones. Some overlying sands and gravels such as loess and glacial till may also provide such values. In their study of early medieval burials from Ringlemere in Kent, Brettell *et al* (2012) estimate the strontium isotope ratios available in the wider region from the silts, clays and gravels that overlie the Chalk in this region ranges between 0.7075 and 0.7105, which could account for SK239. Within Britain, geologies which would support the values seen in SK 236 and 238 are present in the Palaeozoic rocks of central, northern and western England and further afield in Wales and Scotland Evans *et al*. 2012). It should also be borne in mind that although SK 237 has a value which matches that expected for the Chalk, it is still possible that this individual spent their childhood elsewhere in an area where the geology was similar. For all three individuals, origins outside Britain cannot be excluded based on the strontium isotope ratios.

Oxygen isotope ratios are also usually used to consider the issue of mobility and are primarily affected by drinking water values. Expected values for regions in Britain are less easy to define and there are problems inherent in the interpretation, but it can be said with confidence that all of these values could have originated in Britain. The three with non-local strontium isotope values have consistent $\delta^{18}O$ values ranging from 17.3

to 17.5‰, which might put them in the 'lower rainfall' zone discussed by Evans *et al.* (2012) (17.2 ± 1.3‰, 2sd). SK 237, who has a strontium isotope ratio consistent with the locality, has a $\delta^{18}O$ value of 18.6‰ which is considerably higher than the other three and puts this individual in the 'higher rainfall' zone (18.2 ± 1‰, 2sd). Whilst Evans *et al.* define the 'higher rainfall' zone using mostly Scottish island samples, the BPP has a dataset for Kent of 17 samples (including these Thanet Earth individuals) which can be used for comparison. If the three 'incomers' here are removed and two other individuals interpreted as being incomers are also taken out, the average for the remaining 11 individuals is 18.3 ± 0.3‰ (1sd). SK 237 comfortably fits into that range, whilst SK 236, 238 and 239 all seem lower than is generally being seen for the region, again indicating that they may well be incomers from elsewhere in Britain.

Recent work by Andrew Millard on Late Bronze Age and Iron Age material from Cliff's End Farm, Ramsgate, Kent indicated a range of migrants who might not be from Britain, but if those individuals are removed from his data set, he has a value of 18.1 ± 1.0‰ (1sd) for 11 individuals (Millard 2014). It is important to be careful when comparing data between different laboratories and also between different time periods, but this gives an indication that the $\delta^{18}O$ value for SK 237 may fit well with what appears to be the local value for archaeological material.

The bone and dentine collagen data (carbon, nitrogen and sulphur) can reflect local environmental conditions as well as being indicative of dietary composition. Sulphur isotope ratio data in particular can be useful for considering mobility, since they can be affected by geology and by marine sulphates in sea spray in coastal areas. The BPP bone and dentine $\delta^{34}S$ values, excluding the Thanet Earth individuals and the two other individuals who may well be incomers to the area, average 13.7 ± 1.5‰ (1sd). SK 237 has bone and dentine values of 15.1 and 15.0‰ respectively, which fit comfortably into the upper end of that range. The bone data for SK 236 and SK 238 are also not out of place, but the dentine data for SK 239 (8.6‰) is much lower than would be expected for the region.

The dentine data are reflecting a childhood value, whilst the bone data are reflecting a lifetime average of dietary consumption. The bone date for SK 236 and 238, therefore, could well be reflecting the diet obtained in Kent after moving into the region after childhood. Unfortunately, the poor quality of the skeletal material means that we do not have dentine values for these individuals. However, the childhood value for SK 239 would support that this individual was a migrant from elsewhere. In very general terms, based on the overall dataset for the BPP (Parker Pearson 2019), this low value may be indicative of a central English location well away from the coast.

The $\delta^{13}C$ and $\delta^{15}N$ values are consistent with other data for this period in time from across Britain (BPP, ~ 300 individuals) which do not appreciably differ according to region, so that the values fit well with the British data group as a whole, but cannot be

differentiated for a regional comparison. They reflect a diet which does not include a very significant level of marine or freshwater resources (such as fish) and is probably relatively high in animal protein. The $\delta^{13}C$ values are consistent with this period in time (Late Neolithic and Early Bronze Age), there being a shift towards more positive values in the British Iron Age (Jay *et al* 2012).

Conclusion

In conclusion, the data suggest that SK 237 (the primary burial in a barrow with a Beaker) may well have been local to the region, whilst the other three are likely to have spent their childhoods elsewhere. The data are consistent with that being in Britain, probably further west, with SK 239 at least spending that time probably in an area well away from the coast. A possible area which would support the isotope data as a suite would be the region of central England where carboniferous outcrops occur, such as Leicestershire, or perhaps a little north of there or west into the Welsh Borders area. Moving too far west or north (where the 'higher rainfall zone' occurs) would not match the oxygen data, whilst the $\delta^{34}S$ is likely to indicate a central region and the strontium data requires an area of older geology.

In dietary terms the data are consistent with what is known about later prehistoric diet in Britain generally. After the Mesolithic-Neolithic transition people were not generally consuming significant levels of aquatic foods until the Roman period and were generally consuming a high level of animal protein in their diet.

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Chapter 20: Animal bone

Susan Jones

Introduction

This report details the results of osteological analysis undertaken on the faunal remains recovered during archaeological works at Thanet Earth between 2007 and 2008. The faunal remains examined derived from hand recovered and sieved assemblages that derived from 8 areas of excavation, plateau sites 1–8.

Methodology

All animal bones were identified to species and element with the aid of a comparative osteological reference collection and a number of reference publications (Amorosi, 1989; Bosseneck, 1969; Hillson, 1992; Payne, 1985; Prummel and Frisch, 1986; Schmid, 1972, France 2009). Where species could not be identified, bone was placed into size categories such as medium mammal, (sheep size) or large mammal (cattle sized). Where possible the state of epiphyseal fusion was recorded for all species. Mandibular toothwear or eruption state was recorded for cattle, pig, sheep/goat according to the criteria set out in Grant (1982). Tooth crown height for equid teeth was recorded according to Levine (1982). These results were then utilised to calculate the estimated age at death for individuals according to (Halstead 1985, Payne 1985, Hambleton 1999, Silver 1969, Reitz and Wing 1999). Where possible, metrics were taken using the criteria laid out in Von den Driesch (1976) unless otherwise stated. Each bone was scanned for signs of pathological change or taphonomic alteration. Each bone was recorded according to a zoning system (Dobney and Rielley 1988) to enable the calculation of the minimum numbers of individuals (MNI) in the assemblage. All data was recorded onto an electronic database.

The faunal remains from the bulk sieved samples were weighed and recorded in the same manner as the hand recovered assemblage. Small mammal bones and amphibians were identified using a reference collection and publications. (Armitage *et al* 1984; Baker 1982; Bailon 1999; Bohme 1977; Cleveden Brown and Twigg, 1969; Gleed-Owen 1998; Hillson 1992; Lawrence and Brown 1967; Yalden and Morris 1990).

Results

The excavations produced a total of 22,230 fragments of animal bone that derived from 825 contexts from the hand recovered assemblage and a total of 12,939 fragments from the bulk samples with a weight of 8.7 kg. 16,713 or 75 per cent of the bone specimens from the hand-recovered remains comprised of disarticulated, fragmented and

comingled material whilst the other 25 per cent of the total derived from articulating bone groups (Table 119).

All the plateau excavation sites produced disarticulated mammal bone. Only 86 of the contexts from the hand recovered assemblage produced bone deposits containing more than 50 fragments. The majority of these derived from Plateau 8 which produced by far the greatest volume of bone. This site provided over 72 per cent of the assemblage whilst plateau 4 produced the least, forming less than 2 per cent of the total deposit.

Preservation

Overall preservation across the site was mixed. Articulated deposits were well preserved with some from more recent deposits being in excellent condition. However the condition of most of the disarticulated material was poor. Many of these remains were badly eroded and had become crumbly within the burial environment. Intense fracturing and loss of the surface layer on many bone specimens meant that species identification was difficult. Sixty-six per cent of the disarticulated remains were unable to be identified to species. Finds from plateaus 3, 4 and 7, demonstrated higher levels of bone degradation than the other sites, with over 50 per cent of the remains displaying extremely poor levels of preservation (Behrensmeyer stages 4 and 5). Bone from plateau sites 8, 5, 6 and 1 however displayed slightly better levels of preservation and this was reflected in greater proportions of bone being identified to species (Table 120).

Neolithic

In total the Neolithic phase produced 17 fragments of disarticulated animal bone from a single pit context (3069) on plateau 3. All bone was in a poor state of preservation and had degraded within the burial environment. Bones were unable to be identified to species; however they all derived from limb bones that were from larger mammals, cattle sized or above. Remains may represent a deposit of food waste.

Late Neolithic/Early Bronze Age (Beaker)

Seven contexts dated to the Late Neolithic/Early Bronze Age produced a total of 380 fragments of disarticulated bone or 2 per cent of the total assemblage. These were located on plateaus 1, 2, and 7. Plateau 7 produced the greatest volume of animal bone providing 37 per cent and 45 per cent of the assemblage, whilst plateaus 1 and 2 together produced less than 20 per cent. Features that contained animal bone included burials (plateaus 1, 2 and 7) and layers relating to the construction of round barrows 2 and 3 (plateau 7).

Overall preservation was poor. Remains had suffered within the burial environment becoming friable and displaying high levels of surface erosion, splitting and

fragmentation. As a result, 82 per cent of the assemblage could not be identified to species. Those that were identified included cattle, sheep/goat, horse and red deer. Cattle formed 79 per cent of the identifiable assemblage, sheep/goat 15 per cent and horse and deer 3 per cent each. In total a minimum number of 7 animals were represented by the remains, 3 cattle, 2 sheep/goat, 1 horse and 1 deer.

Burial features produced 26 per cent of the faunal assemblage. Three burial contexts were identified that produced animal bone; an inhumation (10234, G1003), a crouched burial (2083, G2000) and a grave within the central area of barrow 2 (7160, G7001). These features all contained low quantities of highly degraded bone. As a result almost all bone was unable to be identified to species or element. The only identifiable deposit was a single cattle humerus fragment that was contained within grave context 7160, (S7157, G7001). The cattle fragment displayed signs that it had been broken open whilst fresh presumably to extract marrow and may represent a deposit of food waste. No burnt bone was identified in these contexts

Construction layers from Barrows 2 and 3 produced 27 per cent of the bone. Bone was slightly better preserved within the barrow contexts showing moderate signs of erosion and fragmentation. Barrow deposits contained remains from both wild and domesticated animals including, cattle, sheep/goat and red deer. Barrow 2 only contained large mammal/cattle fragments whilst barrow 3 contained all species. A minimum number of two cattle were contained in barrow 2. The element distribution was selective. Cranial/mandibular fragments dominated the deposits in Barrow 2 suggesting that cattle skulls were deposited within the barrows. A number of ribs, vertebra and a handful of small long bone fragments including a cattle femur were also present. All teeth and elements that could be sided reflected the right side only. Whilst the sample is small, it is possible that this side held significance within the deposition ritual. Toothwear data from two cattle mandibles suggested a sub adult (18–40 months) and an old adult (>40 months) were present in the assemblage.

Barrow 3 contained remains from a minimum number of one cattle, 1 sheep/goat and 1 red deer. In opposition to Barrow 2 cranial/mandibular fragments were rare, limited to a single cattle tooth. Remains predominantly reflected post cranial elements for all species with large mammal remains dominating over smaller sized animal deposits. Red deer elements consisted of a pelvic fragment and a metatarsal that had been smashed open whilst cattle bones included a cattle tooth, metacarpal, scapula and vertebral fragment. In alignment with finds from Barrow 2 all the elements from large mammals that could be sided were right elements only. Sheep/goat was represented by a humerus, metacarpal and a scapula that were all left elements. No fusion data was available from the assemblage.

No metrical or pathological data was available from the specimens.

Bronze Age

Bronze Age faunal deposits were sparse. 5 contexts produced 107 fragments of animal bone from across plateaus 3, 5 and 8.

Bone producing features included two pits, one on plateau 5 (5271) and another on plateau 3 (11055), and on plateau 8 a drove way (14228), a field boundary (8052) and a field boundary ditch terminus (12861). Bone in all contexts displayed moderate signs of weathering suggesting that bone may have been exposed prior to becoming incorporated into the burial environment. Drove way specimens were all highly eroded and as such none could be identified to species. The field boundary including the ditch terminal produced a highly fragmented assemblage with most fragments not identified to species. The majority of unidentified bone related to large mammal long bone fragments that frequently displayed smooth helical fractures and impact scars. These fragments may represent a deposit of bone that was smashed up into small fragments to extract marrow or boiled up to form stocks or stews. Species within the assemblage included cattle, sheep/goat and horse. A minimum number of one animal per species was represented in the assemblage. Cattle fragments contained a mixture of meat bearing bones, foot bones, and loose teeth, horse was represented by a metapodial whilst sheep/goat was represented by a scapula and loose tooth.

An enclosure ditch terminal on plateau 5 (5249, G5002) also produced faunal remains. Cattle, horse and sheep/goat were all represented in this feature with a minimum number of 3 animals, one of each species reflected in the deposit. Remains mainly consisted of sheep/goat and cattle cranial or teeth fragments and may represent a highly degraded deposit of cattle and sheep/goat crania within the terminal section of the ditch. A deposit of heads or teeth may reflect primary butchery waste where heads were removed close to where animals were slaughtered. It is possible that heads were deliberately placed within the terminal section of the ditch as a votive offering. Horse was represented by a small number of foot bones that articulated with each other and may have been fleshed at the time of burial. A small proportion of fragmented long bone in the deposit that may suggest a number of limb bones may have also been present.

Toothwear data from a cattle mandible suggested that one animal aged between 18 and 40 months at the time of death was within the ditch assemblage. A heavily worn third molar from a sheep/goat suggested that an elderly animal (6–10 years) had also contributed to this assemblage.

The only metrical data available was from an astragalus which falls within an average range for this age period. No Ageing or pathological data was available from the deposit.

Iron Age

Iron Age contexts produced the greatest volume of animal bone on the site; 440 contexts produced 10,813 fragments of bone. 9,796 fragments derived from disarticulated remains whilst 1,017 were associated with articulating bone groups (Table 123).

Overall, Iron Age animal bone was in a moderate state of preservation, showing less damage from the burial environment than specimens from earlier phases. Bone was highly fragmented with many long bone fragments displaying smooth helical fractures and impact scars that may represent deliberate breakage possibly to extract marrow or to utilise in stews or for stock. Overall each bone was on average only 12 per cent complete. As a reflection of this high level of fragmentation, 61 per cent of the remains could not be identified to species. Less than 1 per cent of fragments showed signs of canid gnawing whilst none demonstrated signs of rodent damage.

Burnt remains were very sparse; almost all the heated bone was singed, black, grey or tan in colour. These colour changes are caused by incomplete combustion and can indicate exposure to temperatures under 800 degrees Celsius (Shipman *et al* 1984) or for short duration of exposure to higher temperatures as would be expected in domestic activities like cooking. Waste disposed of in domestic fires tends to reflect different colours as temperatures are not consistent throughout the fire site and pieces may be exposed to different temperatures for different durations of time. Only 5 per cent of the heated remains were fully calcined or white in colour suggesting that they had been exposed to temperatures over 800 degrees Celsius or kept in a heated environment for prolonged periods of time. Deposits that contain only calcined remains do not usually reflect typical domestic activities but rather activities where intense temperatures have been reached and maintained like for example on a pyre site. To ensure bone completely combusts like in human cremations, pyres must be kept tended and bone moved around on the pyre site to ensure complete combustion. It is possible that the deposits of calcined bone on the site may reflect different burning situations to deposits containing a broad range of colours.

Many of the partially burnt fragments demonstrated distinct lines of colour differentiation on the bone. These markers may indicate that bone was fleshed at the time of heating, bone becoming marked by the heat as flesh shrinks back from the bone (Symes *et al* 2008). This pattern of markings may have been created through cooking or roasting. Some long bones demonstrated slight singe marks around helical fracture lines which may suggest bone may have been broken open and the end heated to help extract the marrow inside. Heating the end can liquefy the marrow making it easier to extract.

A number of different features produced faunal remains. These included storage/refuse pits, burial pits, post holes, boundary/enclosure ditches, drove ways, graves, levelling layers, quarries, the secondary phase of barrow 3 and a ring ditch.

Pit contexts overall produced the greatest volume of bone and were by far the most numerate bone producing feature as would be expected from Iron Age (Table 123). Ditch contexts produced the second greatest volume of bone, whilst quarry features and barrow 3 produced the least. Articulated remains were all located in a pit burial (8940: S8833: G8137) and in storage/refuse pit features in phase 8 (3764: S3767: G8114, 8795: S8799: G8124, 3600: S3602: G8115, 14328: S14331: G8130).

Burnt remains were identified in 47 contexts. 42 contexts related to pit features, 3 to post holes, 1 to Barrow 3 and 1 to a pit burial. Pits produced the greatest volume of burnt bone which was all incompletely burnt. Three post holes produced burnt bone, two of which produced deposits of incompletely burnt bone, one with a range of colours indicative of general domestic waste (8618, G8070) and one of just black bone that may have been created as a result of burning bone that has been defleshed, for example in pot boiling (14875, G8063). The only deposits of fully calcined or white bone were identified in post hole context 14534 (G8020) or in Barrow 3, pit context 7691 (G7009). It is of note that no fully calcined bone was observed in pit contexts perhaps supporting the idea that pit deposits may have represented general domestic or food waste. Calcined deposits consisted only of calcined remains and may have reflected a different type of burning activity. Some animals or parts of animals may have been deliberately burnt and care taken to ensure that bone was completely burnt prior to disposal. Deposits were very small and may have represented a token deposit from a pyre or fire site. Deposits of calcined bone although small, may tentatively have had a ritual connotation.

Gnawed bone was concentrated in pits with ditches producing only 5 per cent of the deposit (Table 121). This may suggest that whilst dogs had access to animal remains, effort was made to dispose of gnawed waste in a controlled way with other domestic refuse. It may be of note that gnawed bone in ditch contexts derived exclusively from large mammals including horse and cattle.

Throughout the Iron Age the predominant species represented were those of domesticated animals. Wild fauna formed less than three per cent of the assemblage. Overall species representation for the period included cattle, sheep/goat, sheep, goat, pig, horse, dog, red deer, roe deer, hare, fox, bank vole, field vole, wood mouse, house mouse, rat, common frog and common toad.

To explore husbandry patterns the relative proportions of just the three main domesticated species, cattle, sheep/goat (including sheep and goat) and pig were compared (Table 141). Out of the three species, cattle contributed greatest to the assemblage, closely followed by sheep/goat. The relative proportion of pig fragments was significantly lower than either cattle or sheep/goat. Although pig bones tend to survive burial conditions less well than other species, this low level of abundance

suggests pig contributed little to the diet. Low proportions of pig compared to other domesticates is a common appearance within Iron Age assemblages.

Allowing for ageing data, body part representation and metrical data, the minimum number of animals represented in the total Iron Age assemblage was 145, 28 cattle, 9 sheep, 5 goat, 51 sheep/goat, 8 pig, 8 horse, 14 dog, 1 fox, 3 hare, 2 red deer, 1 roe deer, 2 house mouse, 1 wood mouse, 1 bank vole, 3 field vole, 1 rat, 3 common frog and 4 common toad (Table 122).

The relative abundance of cattle based upon fragment counts seems to have been over-inflated compared to the figures suggested by the minimum numbers of animals. This may reflect differentiation in processing methods. Larger carcasses are by the nature of their size, divided into a greater number of sections during the processing or butchery phase, creating higher numbers of fragments per animal than with smaller animals. This discrepancy between the dominance of cattle fragments based upon fragment count over the relative abundance based upon minimum numbers of animals represented may in reality reflect more intense processing levels of cattle carcasses over sheep/goat.

Wild animals seem to form a minimal contribution to the assemblage. However it may be worth noting that the evidence seen in the archaeological record is based upon a pattern of disposal strategies that may favour domesticated species. It is possible that wild animals may have been associated with a different set of cultural ideologies' and beliefs than domesticated animals. These may have led to differences in how and where wild animal remains may have been utilised and disposed of, practices that may now not be evident from the archaeological record.

Cattle

A total number of 2457 fragments of bone were identified as cattle, of which 492 fragments belonged to a cattle skull in storage pit context 14328 (S14331 G8130) on plateau 8. Overall 242 contexts produced cattle remains, in a range of features that included pits, ditches, a ring ditch, a burial pit, graves, droveways and post holes (Table 131). The only features not to include cattle were levelling layers. Overall pits produced the greatest volume of bone. In total 209 pit contexts produced 95 per cent of the cattle assemblage. 12 ditch contexts, 7 post holes, 1 quarry, 4 droveway contexts and 1 grave, together only produced 1 per cent of the cattle assemblage. These contexts tended to contain isolated deposits of one or two fragments of bone. Such low proportions of bone, particularly in ditch contexts is unusual and may suggest that slaughtering of large mammals was not preferentially undertaken at liminal locations like ditches or quarries. Cattle waste was preferentially deposited in pits rather than being pushed into other open features like ditches.

Data from the fusion state of major bones and mandibular toothwear stages was utilised to investigate the age at death profile for the cattle deposit. In total 42 mandibular tooth rows were able to provide estimates for age at death based upon methodology according to Grant (1982). This indicates that animals were culled at particular stages in their life, possibly on a seasonal basis. No neonates were represented in the toothwear assemblage, although a proportion of animals seem to have been culled between toothwear stages 8 and 12 which may represent juvenile animals around a year old (Table 167; Fig. 297). Small proportions were culled between stages 23 and 31 and 35–39, possibly reflecting yearly culls of sub adult animals around 2 to 2.5 and 3–3.5 years old. The majority of mandibles demonstrated heavy wear on the teeth, stages 42 to 49, and are likely to have been adults or old adults aged over 40 months old. Ageing from toothwear is imprecise especially as the animal reaches older age but the clear clustering demonstrated on the chart suggests that animals were culled in groups, where animals were at a similar stage of life. It is likely that strategies reflected a cull between a year–18 months; possibly excess males were used to supply veal and a meat market whilst others were kept on into maturity, a few weaker ones may have been slaughtered or died of natural causes in the second year of life although most seem to have been culled in their third year or above. This strategy reflects the pattern that would be expected for a predominantly dairy herd where cattle are likely to have been kept into older age to be utilised for traction, milk, manure and breeding, with excess males culled off at in the first or second year to provide meat.

Fusion data indicates that low proportions of early fusing bones were unfused, indicative of animals culled before 18 months (Table 162). The data also suggests that almost 2/3 of late fusing bones were fused implying that a good proportion of those animals represented in the assemblage were over 36 months. This pattern supports the data suggested from the toothwear state, of a culling strategy that targeted those under 18 months and over 36 months old.

A minimum number of 2 neonates were observed in the assemblage (Table 165). Neonatal representation was sparse with deposits consisting of only one or two bones. Although neonatal remains are more fragile than adult ones, and may not survive burial conditions well, it is possible that deposits did not represent whole carcasses but parts selected for deposition.

Metrical data from the cattle assemblage indicates 10 bones were able to provide estimates for withers heights, calculated using correction figures by Foch (1966) (Tables 153 and 156). The lowest was 94.8 cm and the highest 115.8 cm with a mean of 106.44. These shoulder height estimates fall within the average range for this period although 94.8 is on the low side.

A small number of cattle bones displayed pathological alteration.

One cattle cranium displayed smooth edged perforations to the occipital region. These perforations have been observed on cattle skulls at other sites (Dobney *et al* 1996, 36). Whilst it has been suggested that the holes may be related to yoking (Ryder 1970) this has not been proved and other aetiologies of genetic or developmental origin as well as parasitic infestation have been suggested (Dobney *et al* 1996, 36).

A number of cattle bones displayed characteristics of osteoarthritis. Evidence of osteoarthritis or degenerative joint disease can be characterised by the presence of two or more of the following articular conditions; osteophytes, porosity, joint contour remodelling or the single presence of eburnation (a polished area of bone; Rogers and Waldron 1995, 44). Cattle remains displayed osteoarthritis in a pelvis where the acetabulum was affected, two metatarsals, a thoracic vertebra and on a small number of phalanges suggesting that some animals had been older adults at the time of death.

Osteoarthritis in a thoracic vertebra was identified which may indicate that an animal had been exploited for traction activity. The extra strains induced through traction related activities can exacerbate or induce the effects of degenerative disease.

Articulated burials

Context 14328, a storage pit from plateau 8, contained many fragments that belonged to a single cattle skull which had suffered from degradation under burial conditions. The presence of many horncore fragments alongside cranial ones, suggest that these may have been attached at the time of burial. The absence of mandibular teeth and the presence of only maxillary tooth fragments suggest that the mandibles may have been absent from this deposit.

Sheep/goat

1157 fragments derived from Sheep/goat (Table 133), of which 41 belonged to an articulating bone group (3600: S3602 G8115). Overall slightly more contexts produced sheep/goat remains than cattle. Pit contexts produced the greatest volume of bone.

Ageing data was evident from both the fusion state of major bones and mandibular toothwear. In total 76 mandibular tooth rows were able to provide estimates for age at death following Grant (1982). As for cattle, so few mandibles provided ageing data in phases 6 and 7, that it would not have been viable to consider them independently. To prevent bias all mandibles were examined together to explore general patterns across the Iron Age (Table 168). Clustering occurred around certain toothwear stages, particularly evident around early wear stages although data demonstrates that there was a broad spread of mandibles occurring from stage 25 upwards.

Toothwear data indicates that a number of neonates were amongst the assemblage. This suggests that breeding was taking place in the area with deposition occurring probably in the spring. These neonatal deposits may reflect natural deaths, although they may also have been culled deliberately and used as offerings to be placed as votive deposits within different features. It is possible that some neonates could have been used in connection with fertility rites or abundance rites connected with the land in the spring.

A peak in the toothwear data at stages 3–5 and another between stages 8 and 12 suggests that some animals died between 1 to 6 months, around 6–9 months old. These deaths may reflect a demand for lamb within local populations, with the later peak possibly implying that a late autumn/early winter cull of animals was undertaken. Surplus animals would have been fattened up in the autumn and culled before winter set in to save the effort of housing and feeding stock over the winter months.

The next cluster in the toothwear data falls between stages 17 and 21 which may reflect animals culled between 12 and 18 months, perhaps in the late spring or summer months. From stage 25 upwards, there are a number of toothwear stages represented in the sample, appearing to be spread out rather than clearly clustered together. This may reflect variation in toothwear across animals, possibly grazing in different areas causing teeth to wear at different rates, or it may reflect a less strategic cull pattern than with cattle, where small numbers of sheep/goat were slaughtered throughout the year. There are peaks however within this spread.

One peak occurs around stages 30 and 36 and another appears between 40 and 44. The first peak may represent animals aged between 2 and 4 years with the majority of those probably in their third year. The second peak may reflect a small proportion of animals that seem were kept into old age, culled between stages 40 and 44 which may represent animals aged between 4 and 10 years old.

The overall pattern suggested by the teeth may reflect a mixed husbandry regime, breeding sheep/goat for meat and for wool. Some younger animals may have been culled to supply a demand for lamb, under 9 months whilst others were reviewed for culling a year later between 12 to 18 months. The majority of animals are likely to have been exploited for breeding, wool, milk and manure and culled after reaching their third year of life for meat whilst still in the prime stages of their lives.

Fusion data supports this evidence with a proportion of the early fusing bones being unfused (Table 163). This supports the premise that a number of animals were under 18 months at the time of death. The assemblage suggests that over half the late fusing bones were fused in each assemblage indicating that a proportion of the animals represented were over 36 months old when they died. This is also in line with suppositions formed from the toothwear data of a main cull over 3 years of age.

Estimates of withers heights were made from twelve complete bones (Tables 153–154). The lowest height in the range was 56.7cm whilst the highest was 68.4 cm with a mean of 61.5cm. These ranges fall within averages for this period.

Only two horncores were available to provide evidence of sex, these were both male, deposited in pit context 3591.

Articulated Sheep burial

One pit context from plateau 8 contained sheep articulated remains. Context 3600 contained the head and metapodials from a sheep. The metapodials all matched in length suggesting they were from the same animal. The presence of these elements together may suggest that the deposit was primary butchery waste or attached to a fleece. The presence of head and feet occurring together in deposits can reflect the early butchery stages where the head and feet are removed.

The animal's metapodials were just fusing making the animal between 18 and 24 months of age. All the metapodials presented with bony longitudinally, orientated ridges on the anterior proximal surfaces of the shafts. Similar pathological lesions have been observed at Lincoln (Dobney *et al* 1996, 43), St Andrewgate, York (Carrott *et al* 1993a), Selby (Carrott *et al* 1993b) and Coppergate (O'Connor 1989). The aetiology of this condition is uncertain although Dobney *et al* suggested the possibility that the condition may be caused by a change in posture caused by foot rot or as a result of hilly, marshy or uneven terrain (1996, 43).

Pig

Two hundred and seventy-seven fragments were from pig; a minimum number of 8 pigs were identified in the assemblage.

Pig was identified in 62 contexts that included ditch features, pits, post holes, a quarry, a ring ditch and pit burials (Table 135). No graves, droveway or levelling layers produced pig remains. Pits produced the vast preponderance of the pig bone assemblage, with only isolated bones in a single ditch, a posthole, a quarry feature, a ring ditch and in pit burials. This distribution suggests that perhaps less casual deposits of pig may have been made, none along trackways and hardly any in ditches. This may support the idea of pig being viewed more as a status food, utilised and disposed of with greater care.

Toothwear data was sparse for pig as was fusion data (Tables 164 and 169). Toothwear data was available from 4 mandibles. These suggest that one juvenile under 14 months, probably under 6 months was present, 1 subadult 15–26 months and two young adults aged between 27 and 36 months were amongst the pig assemblage. No older adults were observed in the assemblage suggesting that the animals in the assemblage were

primarily bred for their meat and culled before reaching full adult status. Fusion data supports this, with no late fusing bones appearing as fused in the assemblage, suggesting all animals were under 42 months of age. Both assemblages from phases 7 and 8 suggest that a proportion of the early fusing bones were unfused suggesting that animals under 12 months were also in the assemblage.

A minimum number of 3 neonatal pigs were identified in the assemblage from 4 contexts, 3 burial pit contexts (8937, 8939 and 8940) and 1 from a pit (8414). The appearance of neonatal pigs indicates pig breeding was taking place close by throughout these phases. Whilst deposits may have reflected natural deaths their occurrence in a burial pit with other neonatal remains may suggest they formed a special deposit. Suckling pig has been viewed as a delicacy through many periods of history. It is possible that the neonatal pig remains may have marked a meal or offering of status food within this feature. The neonatal remains were all found with meat bearing elements from more mature animals and may form part of a deposit of food waste as a result of possible feasting or deposition of food offerings within a votive context.

Male and female canine teeth from mandibular and maxillary regions were identified in the assemblage. Five pit contexts (14482, 3556, 3726, 3688, 3732) contained male teeth and 3 (3903, 3811, 8421, 3732) contained female teeth. Despite these teeth deriving from a minimum of 3 pigs it is likely that in reality they may have derived from more given their dispersal across a number of pits.

Metrical data was minimal for pig, though two third molar lengths and breadths fell within the average range for domesticated pig rather than those for wild boar (Table 153).

Horse

A total of 130 horse fragments derived from Iron Age contexts, 2 from phase 6, 3 from phase 7 and 125 from phase 8. Horse formed 4 per cent of the total identifiable deposit in phase 6, 1 per cent in phase 7 and 4 per cent in phase 8. Overall a minimum number of 8 horses were identified in the assemblage, 1 from phases 6 and 7 and 6 from phase 8. In total horse was identified in 59 contexts that included ditch features, pits, postholes a ring ditch, levelling layers and a burial pit (Table 139). 46 contexts from pit deposits contributed to 72 per cent of the overall horse deposit.12 per cent of horse fragments derived from ditches and 8 per cent from a levelling layer. A greater proportion of bone seems to have been deposited in ditches than comparative figures for domesticated species. This may suggest that horse was subjected to slightly different disposal strategies than the other domesticates, being more likely to be placed in liminal features where other domesticates were less commonly disposed of. Ring ditch features produced 4 per cent of the deposit whilst post holes and burial pit contexts produced 2

per cent each. Phase six horse remains were from a pit, all phase 7 remains derived from 1 burial pit context whilst in phase 8 they were identified in 6 ditches, 45 pits, 2 postholes, 2 ring ditch contexts and 1 levelling layer. Of interest is that horse was only identified in burial pit contexts in phase 7 suggesting it may have been added as a special deposit. Horse was not identified in graves or droveways. The low level of horse remains and differences in disposal strategies may indicate that horse was not utilised extensively to contribute towards diet. On average horse remains were more complete than those of other domesticates suggesting that remains were not as intensively processed as the other main species.

Ageing data for horse derived from tooth crown heights following Levine (1982) and fusion data. All bones noted in the assemblage were fused. Based upon fusion times by Silver (1969), this may suggest that all animals were skeletally mature over 36 months old. Crown heights and estimated ages are given in Table 166. Data suggests that a horse aged 8.25 to 10 years old contributed to the phase 6 assemblage, one of 6.5 to 8 years was within the phase 7 assemblage whilst 6 horses aged between 6.5 to 17+ were in the phase 8 deposit (6.5–7.5 years, 7.5–9.75 years, 8.75–10.75 years, 9.75–11.75 years, 11–13.75 years and 17+ years) There is no evidence of horses being bred close to the site. All horses seem to have been kept into old age, presumably being exploited for traction or riding. This may suggest levels of care were afforded to horses, perhaps creating structures within the landscape for stabling and corralling.

One male horse was identified through the presence canine teeth in context 14218.

Three second mandibular premolars, one from phase 6 (8532) and two from phase 8 (contexts 8681 and 14218) demonstrated bevelled facets on their anterior edges, alongside flattened occlusal surfaces in which the enamel ridges were worn down to the same level as the dentine. These characteristics may suggest that horses had been bitted, for riding or traction purposes as suggested by Bendrey (2007, 98). Evidence of bitting was also supported by the presence of a ridge of enthesophytes running along the superior surfaces of a diastema evident in context 14218 that may have developed as a reaction to harnessing and bitting (Bendrey 2007).

Metrical data from the horse assemblage is recorded in Table 153. Withers heights can be estimated using correction factors by Kiesewalter (1888) from 1 horse in phase 6 and 3 from phase 8, interestingly the phase 6 bone suggested a taller height than those in the later Iron Age phases (Table 158). Phase 6 remains suggested a shoulder height of 132.7 cm, whilst phase 8 bones suggested shoulder heights of 115.8 cm, 125.7 cm and 127 cm. All these fall within the average range for Iron Age horses.

Dog

A total of 975 fragments were identified as dog, from which 749 belonged to articulated or associated bone groups. Dogs were not identified in phase 6 although their presence was noted through the presence of gnawed bone.17 disarticulated bones derived from phase 7 and 207 from phase 8. Overall a minimum number of 14 dogs were identified in the assemblage, 3 from phase 7 and 11 from phase 8. Dog was identified in 33 contexts 4 from phase 7 and 29 from phase 8. Features containing dog included pits, a post hole, a ring ditch and pit burials. Dog was not found in ditches, drove ways, levelling layers, quarries or graves (Table 137). In a similar way to pig, dog seems to have been disposed of in specific features rather than being casually buried in open liminal features. Pits produced the majority of remains with 27 contexts producing 91 per cent of the disarticulated remains and 97 per cent of the overall articulated remains. The majority of these remains came from phase 8 where 26 pit contexts produced 98 per cent of the phase 8 deposit and all of the articulated burials for this phase. The remaining 2 per cent of phase 8 dog remains were identified in a post hole and a ring ditch context. Phase 7 deposits were focussed on pit burials which produced 82 per cent of the phase 7 deposits and an articulated burial whilst the remaining 18 per cent derived from a single pit feature.

Fusion data from the dog assemblage suggests that all dogs except one were from skeletally mature animals, mandibles contained worn adult teeth and bones were all fused.

A complete burial in context 3674 did not produce a baculum and may tentatively suggest that these remains may be female.

Metrical data was available from a number of bones both from articulated bone groups and disarticulated material which is presented in Table 153. A number of limb bones and metapodials were complete enough to calculate estimated shoulder heights of dogs. These results are given in Table 160. Where a number of bones were found in one context that could contribute towards withers height estimates, the average of all results was utilised. Eight different estimates of withers heights were calculated. The lowest was 42. 8 cm and the highest was 55.6 cm with the average height being around 49.35 cm. These shoulder height ranges are in alignment with other data collated from Iron Age assemblages that suggest the average shoulder height from the period was between 40–60 cm (Clarke 1995; Harcourt 1974). To help visualise these heights as animals it is possible to consider some of some of the dogs that are within these ranges today. These include for example Spaniels, Bull terriers, Alsatians and Labradors.

Articulated dog burials

A number of pits contained articulated dog burials. 1 from phase 7 and 2 from phase 8.

Phase seven, pit burial context 8940, on plateau 8 contained the partial remains of a single adult dog. Only a head, mandible, radius and rear foot were observed in the pit. Of interest was that all elements were right sided. It is unclear whether the crania represented in the pit was from the same dog as the foot and the radius. The foot, the major tarsals and metapodials articulated with each other and the mandible matched the cranium. No pathological alteration was observed on the bone. Metrical data suggested it had an estimated withers height based upon metapodial lengths of around 45 cm (Table 160) of similar height to a spaniel today.

Post hole context 8212 (S8212 G8074) from phase 8 plateau 8 contained the remains of a single dog paw. The metapodials were badly eroded with some of the distal ends damaged, however the upper 2/3 of four metapodials were better preserved. The bones suggested articulated together forming a single right foot. Bones were fused suggesting the animal was over 20 weeks old.

Pit 3764 (S3767 G8114) from phase 8 plateau 8 contained the remains of a single dog. The burial was almost complete with only a few vertebrae and small foot bones from the left rear foot missing. All bones were fused and teeth demonstrated adult dentition that was worn. No baculum was found, which, given how well preserved and complete the rest of the skeleton was may infer the dog may have been female. Metrical data from the long bones suggested that the dog had an estimated shoulder height of between 42.5 and 43.3 cm (Table 160). This would put the dog in the shoulder height range of around a bull terrier today. Other metrical data is given in Table 153.

The skeleton demonstrated evidence of a non-united fracture on two right ribs. 2 ribs showed transverse fractures to the lateral mid shaft area. The fractures had started to heal suggesting the dog died a few weeks after the injury had occurred. New bone growth had started to form a callus around the fracture site with bone arching over towards the non-united part. Fusion between the two areas of bone had not completed at the time of death There was no sign of infection around the wound that may have killed the dog. This type of transverse fracture is caused by direct force and may have been created from a kick or being hit by a moving object.

Other species of animal found in the same context included cattle, hare, horse, sheep and sheep/goat.

Pit 8795 (S8799, G8124) from phase 8, plateau 8, contained the remains of the front section of a single dog, the rear legs and most of the front foot bones being totally absent. Metrical data from the long bones suggested that the animal was around 54 cm in shoulder height (Table 160). This range places the dog in the height category of between a Labrador and Alsatian. Metrical data for reference is given in Table 153. All bones were fused, and dentition was permanent. Worn joint surfaces, porosity and remodelling on the mandibular condyles as well as on the cervical and lumbar vertebrae

suggest that the animal was an older adult beginning to suffer from osteoarthritis at the time of death.

The skeleton demonstrated pathological alteration distinctive of trauma affecting the left lower front leg and 2 left ribs. The distal left radius and ulna demonstrated an oblique fracture that had healed causing slight rotation and angulation to the lower foot. Despite the angulation there was no foreshortening or fusion between the radius and ulna. This may suggest that the dog may have had help with a splint or binding to help align the limb. Bones showed that smooth lamellar bone had formed, uniting the break areas both on the radius and distal ulna suggesting that the injury occurred a good few weeks possibly months prior to death. However there was also evidence of long standing infection around the fracture site. Infection of both the cortical and periosteal layers of bone was apparent demonstrated by areas of pitting, porosity, thickened and striated new bone tracting up the bone shaft on both the ulna and radius. This was accompanied by plaque like deposits of new woven bone overlaying earlier deposits of lamellar bone. This evidence suggests that the infection was longstanding and active at the time of death. It is possible that infection was associated with long standing soft tissue damage or ulceration above the injury.

Two healed rib fractures were observed on the left side of the body. Fractures had completely reunited with smooth bone formed over the break. No signs of infection were associated with these fractures suggesting that they had been older injuries that had completely healed at the time of death.

Evidence from this skeleton suggests that a level of care had been shown towards the animal whilst alive. Care must have been administered whilst rib injuries healed, with the animal possibly given a splint whilst the leg injury healed. The oblique fracturing in the leg suggests the break was caused from indirect force possibly from a fall. Despite treatment it is likely that the soft tissue above the injury site may have ulcerated and infection spread to the outer and cortical layers of the bone. Infection may have spread haemotogenously to other parts of the body, although there was no evidence of this on the skeletal remains present.

No other species of animal was found in this pit.

Wild Animals

Wild animals identified in the assemblage included red deer, roe deer, fox and hare. In total 34 fragments were identified, 9 per cent red deer,6 per cent roe, 82 per cent hare and 3 per cent fox. In total 2 red deer, 2 roe deer, 3 hare and 1 fox were identified in the assemblage. Wild animal deposits consisted of isolated bone fragments. Phase six deposits only contained 1 red deer fragment, whilst phase seven contained 1 hare bone. Phase eight produced 1 fox specimen, 2 roe deer fragments, 2 red deer bones and 27

hare bones. All bones except for two hare scapulae were found in pit contexts, whilst the two hare bones were found in separate contexts within the ring ditch in phase 8 (3777,3732). Red deer was found in pit context 8291 in phase 7, in 8348 and 14483 in phase 8. Roe deer was found in pit 8357, whist fox was in pit 3857. Hare was identified in 8 contexts 1 from phase 7 (3591) and 7 from phase 8 (3600, 3764, 14494, 3765, 3777, 3732, 12872). In all cases between one and three bones were identified in each context. Bones were all very well preserved suggesting they had not sat on the surface for long periods of time whilst none displayed signs of weathering or scavaging marks that may be expected on remains from natural deaths. Their presence in pits may indicate that they were deliberately placed within these contexts.

Wild animals may have been exploited for meat, skins or fur and for antler from deer. Deer bones in particular may have been exploited to make tools or artefacts. However there is little evidence of any of this within the assemblage. It is probable that wild animals may have been processed elsewhere, or subjected to differing views and social beliefs that may have created conditions around how, whom and where these animals were used or disposed of. Similarly the need to exploit wild animals may have been small, increased domestication reducing the dependence on foraging or hunting to sustain lifestyles.

No juvenile remains were observed. All elements were fused and teeth were all adult dentition. A fox mandible showed evidence of worn teeth suggesting it was an older adult. Metrical data was only available from a red deer scapula. Data is given in Table 153.

One bone showed evidence of pathological change. A fox mandible showed evidence of ante mortem tooth loss. The third premolar was absent and the tooth crypt or alveolus had almost completely healed over at the time of death through remodelling of mandibular bone. It was unclear whether any of the root remained in the mandible. Although there was evidence of slight porosity and pitting around the molars and premolars indicative of periodontal disease or slight gum infection, there was no obvious signs of any major infection associated with the tooth loss that may have led to the death of the animal. Tooth loss may be a product of ageing or commonly caused from damage incurred from chewing sticks or scavenging situations.

Small Mammals

A number of small mammals were observed in the assemblage from phase 8. These shall be discussed in detail further in the text. Overall minimum numbers of 1 house mouse, 1 rat, 3 field vole, 1 wood mouse, 1 bank vole, 3 common frog and 4 common toad were identified in the hand recovered assemblage. The features that produced small mammal remains were 10 pits (14806, 12208, 14495, 8414, 3764, 8516, 3586, 3692, 12068, 3729) and a single post hole (12868).

It is of note that no small mammals or amphibians were found in ditch contexts. Almost all were identified in pits. The only other feature, a post-hole context contained amphibian remains. This may suggest that some of the pit features may have remained open for periods of time attracting small animals or amphibians towards them. Animals may have fallen into pits if they were left open for any length of time and been unable to get out.

Small mammals all derived from plateau 8 contexts.

Element Distribution

The range of elements present in the assemblage for each of the main species is given in Tables 142, 145, and 147, Figs. 284, 288 and 291. These show that based upon the minimum numbers of animals represented in all phases the majority of the expected skeletal remains for all species are missing. Whilst some of this may be the result of preservation factors or loss during the recovery process it is likely that element selection and processing methods contributed to the distribution pattern evident on the site.

Horncores from both cattle and sheep/goat were extremely sparse in all phases. It is possible horns were removed from the main animal carcass to be processed elsewhere. Lower foot bones from all of the domesticated species were also either absent or very low in numbers throughout all phases. Whilst these smaller elements may be overlooked during the recovery process, it is possible that their overall absence may suggest that they may have been utilised or disposed of in a different way to other carcass parts, perhaps to boil up for glue.

Cattle fragments suggest that for all phases most regions of the skeleton were represented. Head, foot and the main meat bearing bones were all well represented throughout all phases. This may suggest that all butchery processes including primary slaughter, primary and secondary trimming of the carcass, food processing and consumption may be represented by these deposits. Front limb bones were consistently better represented than rear elements. Whilst it is acknowledged that the humerus is a very robust part of the skeleton and may preferentially survive better in the ground than other bones it is also possible that some areas of the carcass were consumed or processed elsewhere. Prime cuts from the rump and rear of the animal may have been traded or reserved for specific sections of the community.

Cranial fragments particularly from the occipital or temporal regions and mandibles/maxillae/teeth were the most common elements identified particularly in phase 8. Teeth tend to survive well in burial conditions and preferential preservation may have biased their appearance in the archaeological record. However they are also the least utilised part of the skeleton and may have accumulated as a product of

butchery waste, the maxillary and mandibular areas of the skull removed as a primary part of the processing activity. Very few incisors and premolars were observed in the assemblage. These teeth tend to be the first to drop out from the mouth during the decaying process. Their almost total absence in the assemblage may infer that crania were not in the primary place of deposition but were moved in a partially decayed state from elsewhere.

One hundred and fifty-seven cattle remains and large mammal bone fragments showed evidence of exposure to heat. None of these were completely burnt but displayed slight charring with colours showing a mix of tan, black and grey. These deposits probably reflect cooking or general domestic refuse. Burnt bone was largely observed in pits except for two post hole contexts (14534, 14875) from phase 8 and a pit burial context in phase 7 (8941). The type of elements represented were long bone, ribs, mandibles, maxillary teeth, radii, horncores, ulnae and humeri. Long bone fragments tended to display singe marks around fracture lines suggesting that they may have been heated in this area possibly to extract marrow.

The element distribution pattern for sheep/goat fragments suggested slight differences in deposits. Each phase demonstrated that head, teeth and metapodials were the most common. In contrast to cattle, premolars and incisors were reasonably well represented amongst the teeth collection suggesting that the heads may be in the primary position of deposition. Head and foot bones are commonly found together as a product of primary butchery waste where animals are slaughtered and these low value sections of the carcass removed. It is likely that these primary butchery stages were occurring close to the areas of deposition.

Meat bearing parts of the carcass had a low presence in all phases. Unlike cattle, the rear meat elements were a more common find than front areas of the carcass. This may indicate that the front region of the skeleton, like the rear for cattle was traded, processed or consumed elsewhere. The shoulder joints perhaps seen as prime meat again reserved for specific sections of society.

Sheep, goat and sheep/goat remains showed evidence of being exposed to heat. Goat and sheep/goat crania had been partially blackened in pit (8255). Other pits showed partial heating on mandibles, tibiae, radii, metapodials and pelves. 8 contexts from phase 8 and 1 from phase 7 (8643) produced 24 fragments of partially burnt bone. Whilst this may represent some evidence of domestic refuse from cooking, it is clear that more must have been produced and as such this deposit is likely to form a severe underrepresentation in the archaeological record. Burnt remains and hearth waste may have been used as fertiliser on fields or disposed of in open features where friable partially burnt bone may have eroded and suffered as a result of weathering.

Pig remains show a different pattern; almost no metapodials or lower foot bones were present in all phases suggesting that metapodials as well as lower foot bones were removed with the feet to be processed elsewhere. In contrast to cattle and sheep/goat, meat bearing bones were the most common elements observed in both phases. Both the front and rear parts of the carcass were represented. This discrepancy from the other species may suggest that pig deposits largely represented food deposits or prime sections of the animal. Perhaps pig slaughtering occurred in a different area to the other domesticates and dressed portions or joints were utilised for consumption and deposition. Deposits of limb bones may suggest they may have been food waste.

The low frequency of deposits may possibly suggest pig consumption may have been reserved for special occasions perhaps in respect of ceremony, celebration, honouring, remembrance, or marking sacred dates or events. Sides seem to have been an important consideration within the deposition process. In phases 7 and 8 almost all contexts containing more than one pig element contained remains from one side of the body only either right or left sided element. Only three contexts out of 27 contained representation of both sides of the body. Neonatal remains seem to have been a mixture of right and left sides except for pit (8939) where only left sided neonatal remains were observed. No pig bone showed signs of having being exposed to heat.

The element distribution for horse is shown in Table 150 and Fig. 294. In phase 6 deposits were isolated units found in a pit and a post hole, only a metapodial and loose tooth was identified, both of which were left sided elements, in phase 7 a maxilla, radius and astragalus all of which were also left sides were deposited together in a burial pit (8937, S8833, G8137). Whilst the level of interpretation from such a small sample can only be tentative, it is possible that the presence of all lefts during these early phases may suggest that side was significant within the deposition process. Within the deposit for phase 8 the most popular part identified was from the head, mandible or loose teeth. Feet and major limb bones were less common. Ditch and levelling contexts contained a mix of teeth, axial fragments and foot bones whilst all other contexts tended to contain small deposits of one to three fragments. Most finds were just teeth although, where other elements were included, representation tended to contain combinations of single element s from 2 or three regions of the body, the head, axial region, a limb bone or feet. Teeth were commonly placed with either a foot bone or a limb bone. No horse bone showed signs of being exposed to heat.

The element distribution pattern for dog is shown in Table 152 and Fig. 296. In phases seven and eight the head, feet and front region of the body are better represented than other areas. Disarticulated remains largely consisted of crania and mandibles on their own or crania/mandibles or loose teeth placed with limb bones. Foot bones tended to be deposited without any other body parts. 27 contexts produced disarticulated remains, out of those 13 contained just right elements,6 contained just left elements, 4 were just crania, 3 contained mixed right and lefts and 2 contained unsided elements. It is likely

that the deposition of dogs within pits may have reflected votive offerings either as whole burials or as token parts. It seems that side and elements chosen may have been significant factors within the deposition rite, right and lefts rarely being placed together within disarticulated contexts. 6 contexts contained articulated burials that contained either complete animals or partially articulating groups of bones. Partially articulated burials were found in the pit burial from phase 7 (8940), a paw was in a post hole in phase 8 (8213) and whole/partial skeletons were found in pit contexts from phase 8 (8785, 3764).

No dog bones showed any signs of being exposed to heat.

Wild fauna were represented by deposits of one or two bones. Red deer in phase 6 was represented by a metatarsal that had been deliberately broken open. This bone was found in context 8291, with other fragments of large mammal, horse and cattle. Many of these bones represented head or foot parts and may have reflected selected deposition of primary butchery waste. Only a small number of cortical bone fragments showed evidence of being smashed open deliberately presumably to extract marrow. Horse was also a rare find in the phase 6 assemblage so its presence with horse may hold some significance.

In phase 8 red deer was represented by part of a mandible and a scapula in two different contexts. It is of note that no antler was observed in the assemblage. All deposits of red deer in phase 6 and 8 were right sided, again perhaps tentatively suggesting that side was important within the deposition process.

Roe deer was observed only in phase 7. Two tibiae were identified within the same context. Both were fused and both showed evidence of fresh breakage presumably to extract marrow. Both of these were left elements.

Hare was identified in 8 contexts, elements represented included foot bones, pelvic fragments and scapulae. No major limb bones were observed whilst pelvic bones were the most common. Many of the contexts hare appeared in, also contained deposits of dog or horse possibly intimating that these contexts were a focus of special deposits. The ring ditch contexts only contained scapulae, appearing in different contexts. Deposits were mixed between lefts and right sided elements. The only element of fox that was observed was a fox mandible.

No wild animal remains showed any signs of exposure to heat.

Butchery

Overall 95 fragments displayed evidence of butchery within the Iron Age Assemblage.64 chop marks and 31 cut marks suggest that a range of butchery processes

including disarticulation, portioning, skinning, evisceration and filleting took place at the site. Broad chop marks suggested that heavy bladed instruments were used to break open and divide bones whilst finer ones were used for disarticulation, filleting and skinning.

Phase 6 produced 7 counts of butchery, phase 7 produced 34, and phase 8 produced 56. All butchered marks were found on plateau 8. Pit contexts from all phases and a pit burial context from phase 7 produced butchered remains. Pits produced the greatest proportion of marked fragments with only a single fragment deriving from the pit burial.

Marks were observed on cattle, sheep/goat, goat, deer and medium/large mammal fragments. Cattle and large mammal produced 75 per cent of the marks, whilst sheep/goat (inclusive of goat) produced 24 per cent and a single deer fragment 1 per cent.

A number of chop marks were observed on cattle, and medium/large mammal rib fragments that suggested meat had been divided up into portions. Chops were observed through the, neck of the ilium on the pelvis (2) scapula neck (2) and glenoid (1), the distal radius (2) and the olecranon process (4) on the ulna which suggests that divisions were made around the joint areas. Chops were also noted dividing thoracic and cervical vertebrae either sagittally or transversely. Sagittal chops through the vertebrae may have been made in the initial stages of dividing the carcass into halves. Divisions through the centre of the spine are a common way to initially halve the carcass into sides. This can be done by hanging the animal from its back legs and splicing through the central axis of the body. Transverse divisions may have suggested that an alternative process may have been employed dividing the main carcass into sections transversely rather than a primary axial division. This may have divided off the neck or cervical area and the lower back or lumbar region. This variation in processing techniques may infer that no standardised butchery processes were in place and that it is likely that different people were responsible for butchering animals on the site.

Rib fragments from large and medium sized mammals were found displaying divisions through the neck, and through the shafts creating segments of between 6 – 11 cm. Presumably ribs were divided into manageable lengths for pot boiling, adding to stews, making stock and consumption. A large deposit of these, were found in pit contexts 3591 and 3592 in phase 7.

Chop marks to cattle, a deer and sheep/goat mandibles across the ramus suggest that mandibles were removed during the disarticulation phase. Chops seem to have been made either transversely or vertically through the ramus. This may have been done to access and remove the tongue.

Cut marks in the visceral surface of a number of ribs may relate to the evisceration process whilst small finer cuts at ligament attachment sites and joint surfaces may have been made during the disarticulation stage. Cuts indicative of disarticulation were observed on the distal femur, distal radius, pelvis, scapula and a metapodial from cattle and on a radius and pelvic fragment from cattle.2 cattle scapula blades showed evidence of being trimmed along the spine, where the spine edge was removed. This may have happened during the filleting process.

Fine cuts on the lateral edges of a cattle astragalus and the lateral edge of a distal sheep humerus suggested that animals were being skinned. These regions are common places for initial incisions to start the skinning process. Two crania one from a sheep and one from a goat had fine cuts around the base of the horncore which were probably made whilst removing the outer horn.

A number of bevelled edge cranial fragments on cattle and sheep/goat suggest that crania were smashed open while the bone was still fresh presumably to extract the brain. One cattle cranium had a circular incision in the bucranial region with radiating fractures leading away from it suggesting that a round pole or stake was driven through the bucranium presumably to kill the animal.

A small number of cattle and large mammal long bones in the assemblage had been split open axially. In addition 36 per cent of cattle long bone fragments, 17 per cent of large mammal long bone and 5 per cent of medium mammal long bone fragments had been smashed open whilst fresh. This was demonstrated by fresh smooth helical fractures, and the presence of a number of impact scars on the shafts presumably made to extract marrow or break bone up into smaller parts to add to stews or stock.

Feature overview

In phase 6 all faunal remains were located on plateau 8. Cattle and sheep/goat were predominantly found together in pit contexts with isolated fragments identified in post holes. Cattle deposits in pits contained a mixture of cranial, foot and meat bearing bones suggesting that deposits reflected a mixture of primary and secondary processing waste. Sheep/goat pit assemblages were different in that they tended to contain either primary butchery waste, cranial, neck and/or foot bones or food waste that consisted mainly of meat bearing bones. Only one pit context in phase 6 contained meat bearing bones (8291, S8293, G8100) that may represent the remains of food waste. Other species represented in phase 6 were horse and red deer. Horse was represented in a pit and post hole by a loose tooth and a metapodial whilst red deer was represented by just a metapodial. Interestingly both metapodials were found in pit contexts within the same group as the sheep/goat food waste, S8293, G8100 (contexts 8291, 8292). This context contained all species and may represent a special deposit.

Phase 7 faunal remains derived from plateaus 6 and 8. Plateau 6 produced faunal remains from two refuse pit contexts that may subsequently have been used for votive offerings. Tooth fragments from cattle and pig were the only elements identified, each species in a separate context (16013, S16014, 16033; 16034, G0169). Teeth are usually robust, surviving burial conditions better than most other skeletal elements, however in this case fragments were highly eroded with dentine suffering within the burial environment. It is possible other animal bone may have been present in these pits but may not have survived the burial environment.

Plateau eight produced faunal deposits from 16 contexts, 11 of which were storage pits whilst 5 were from a pit burial (8937, 8939, 8940, 8941, 8943). Only the first three contexts from the pit burial contained identifiable material that included cattle, sheep/goat, sheep, pig, horse and dog.

Cattle was found in 3 pit burial contexts, two of these contained primary butchery waste, a head in 8397 and head and foot bones in 8939. It is possible that the head and foot bones from 8939 may have been attached to a hide. The other context (8940) mainly contained elements from the front sections of the animal, limb bones, shoulder blades, metapodials, cervical vertebrae and cranial fragments/teeth. Many bones showed signs of deliberate breakage or butchery suggesting elements had been portioned and utilised to extract marrow or grease.

Sheep goat was found in three pit burial contexts. Sheep was positively identified however no goat was observed intimating that the sheep/goat remains were likely to be sheep. In contrast to the cattle remains all contexts largely contained head and foot fragments, suggesting that sheep may have been slaughtered close by with waste products disposed of in the pit. Neonatal remains were observed in 8937 and 8939.

Pig remains were also present in three pit burial contexts. A minimum of 3 individuals were represented two of which were neonates. Contexts contained main limb bones, the only fragment not conforming to that trend was a neonatal mandible. Neonatal remains were observed in 8937 and 8940. It is likely that pigs were not slaughtered here but brought in as dressed pieces. The pit burial contexts seem to have provided a focus for neonatal remains from sheep and pig. It is possible that a period of deposition may have therefore occurred in the spring when young animals are likely to have been born.

Horse was identified in pit burial context 8937, only 3 horse remains were identified, an astragalus a loose tooth and a smashed open fragment of radius. Of interest was that all these elements were left sided.

Dog was identified in all three pit burial contexts although a minimum number of 1 animal was represented. Deposits all contained mixes of teeth, axial, foot and isolated front limb bones. No wild animal was represented in the pit burial contexts.

A number of completely black long bone fragments were deposited in pit burial context, 8941. The even black colour suggests that they were heated after flesh had been removed, perhaps in a domestic fire or through heating in a pot.

Eleven contexts from storage pits in phase 7 produced faunal remains. Cattle, sheep/goat, sheep, pig, hare and dog were represented. Cattle deposits were found in 9 pit contexts. 6 deposits reflected primary butchery waste with the head, neck and feet represented (3590, 3592, 3595, 3645, 8643, 8644) whilst 3 predominantly contained food waste (3591, 8800, 3886).

Sheep/goat was identified in 7 contexts. Most pits contained predominantly head neck and foot bones with few meat bearing bones. Two pits stood out, 3591 and 8800.

Pit 3591 contained elements from all areas of the skeleton, including horncores, suggesting a minimum of three sheep were represented including 2 males. It may be significant that rams were chosen for deposition. It is unusual to find horn cores, their presence may have held meaning within the symbolism of deposition.

Pit 3591 also contained the only representation of pig, hare and dog within pit contexts. Dog elements were all right sided cranial and mandibular fragments whilst pig and hare were pelvic fragments.

Pit 8800 contained largely meat bearing elements and a freshly broken metapodial. Interestingly this pit only contained prime areas of meat from both sheep/goat and cattle with femurs present for both species. A number of medium mammal long bones in this context had been partially blackened with exposure to heat suggesting that they may have been food waste from roasted meat.

Phase 8 produced faunal remains from plateaus 1, 2, 6, 7 and 8. Plateau 1 finds derived from a single pit context containing severely eroded bone that was unidentifiable. Plateau 2 deposits derived from a single pit (8460; S8460, G8142) that contained dog, cattle and horse. Horse remains were both right rear limb bones and may have represented part of a single right back leg. Dog remains were all right loose teeth that were probably from a single mandible, whilst cattle was represented by loose teeth and metapodials which were all lefts. It may be possible that deposition of these remains may have reflected deliberate selection of sides, species and elements.

Plateau 6 remains derived from 7 pits and 1 inhumation. The inhumation (C12385, S12386, G8408) contained highly fragmented medium sized mammal cranial fragments that were probably from the same animal possibly dog. An animal skull may have been placed within the grave context with significance for the afterlife. Bone was very eroded and had suffered within the burial environment. No teeth were identified suggesting

that just the vault region may have been present. The absence of teeth may suggest that the cranium had been moved from another site where teeth may have fallen out during the primary decay process.

The 7 pits contained sheep/goat, sheep, pig and cattle remains that were cranial, teeth and foot fragments. Pig was identified in one context that only contained a pig mandible whilst cattle was found mixed with sheep/goat remains. All remains reflected primary butchery processes where the head and feet were disposed of. Animals were probably slaughtered close to the pits and may have been brought to this site for that purpose.

Plateau 7 produced few faunal remains. Those that were present were found in the secondary phase of Barrow 3 (7691). All fragments were fully calcined having been either exposed to high temperatures or left exposed to heat for lengthy periods of time. All were unidentifiable to species but are likely to have belonged to medium sized mammals. Fragment sizes were small and may form a token deposit from a pyre site elsewhere. It is possible that these remains may have been offered as a votive deposit tied into ideologies associated with the barrow itself.

Plateau 8 produced the greatest volume of phase 8 faunal remains deriving from a broad range of features including ditches, pits, inhumations post holes, quarries, levelling layers, and a ring ditch.

Ditch contexts included boundary and enclosure ditches. Ditch features included cattle, sheep/goat, pig and horse as well as deposits of unidentifiable long bone. Within these contexts the predominant elements for all species were teeth. The contexts contained small groups of between 1 and four bones or teeth. One context contained a number of cranial fragments and articulating maxillary and mandibular horse teeth which may have derived from a single head placed within a boundary ditch (3431). Identifiable meat bearing bones were rare finds from ditches. Finds in the enclosure ditch relating to G8044 contained the same range of species as other ditch contexts with deposits largely containing butchery waste from the head or feet. The only representation of pig in the ditch was a limb bone, a humerus.

Droveway contexts contained isolated bones that were from cattle and sheep/goat. Cattle remains tended to be meat bearing bones, perhaps the remains of roadside meals whereas sheep remains tended to reflect the head and feet, or primary butchery waste.

Five grave contexts (12159, 12010, 12966, 8911 and 12385) produced animal bone on plateau 8. Almost all bone was unidentifiable due to the poor state of preservation, however those species that were recognised were cattle and sheep/goat. It is possible other species were represented and not recognised amongst the poorly preserved bone. Those bones within grave contexts include a sheep/goat pelvis (12159) and a cattle

mandible and femur (12966). Interestingly despite being in different contexts these were all right sided elements.

Only one context identified as a levelling layer produced animal bone (8688). This was context 8688. This deposit contained horse and sheep/goat. Two sheep/goat mandibles and feet and teeth from a horse derived from these contexts, reflecting butchery waste.

Twenty-six post holes contained animal bone. Species represented included cattle, dog, toad, horse sheep/goat and pig. A dog paw was found in context 8213 and the remains of a toad in 12868. The presence of a toad may suggest that perhaps ground was not tightly packed around the base when the toad found its way in. Post hole, context number 3984, contained a number of cattle bones that were limb bones and may form a deposit of food waste. Bones in this deposit were also right sided. Postholes 14534, 8618 and 14875 contained burnt bone. 14534 and 8618 contained incompletely burnt remains, 8618 contained bones of mixed colours grey, black and tan suggesting this may be general domestic waste from cooking or domestic fires However 14354 contained a deposit of 75 evenly coloured black and shiny large mammal bones that indicate they had been heated at low temperatures once flesh was removed. 14875 contained a small number of calcined fragments. Calcined deposits were rare on the site and may have been part of a deliberate pyre where remains were allowed to completely burn at temperatures over 800 degrees Celsius or were exposed to heat for lengthy periods of time. The overall appearance of burnt bone was rare across the site so these deposits may have held significance. Token burnt deposits may have been placed in post holes as a votive deposit.

Five contexts that produced faunal remains on plateau 8 were from a ring ditch. Species identified within these deposits included cattle, dog, horse, hare, sheep/goat, sheep and pig. Deposits for cattle were in all 5 contexts and represented remains from at least three animals. Elements represented, largely reflected primary butchery waste with a few limb bones mixed invite seems that animals may have been slaughtered here and the primary waste placed into the ditch along with some secondary processing or consumption waste. Sheep/goat remains were in 4 contexts. These contained teeth and limb bones. This may suggest that maybe the deposit reflected a mixture of butchery and consumption waste. Foot bones and the upper cranium may have been removed with fleeces. A minimum number of three animals were represented. A neonatal sheep was identified in the assemblage that may indicate the site was in use during the spring for one period of deposition. No evidence of goat was noted although a number of sheep remains were identified suggesting the sheep/goat assemblage may largely have been sheep. Pig remains were sparse appearing in two contexts and consisted largely of loose teeth and a single humerus. A male and female pig were represented within the same context identified by the presence of canine teeth. Horse, dog and hare were also present in low proportions. Hare was represented in two contexts by two scapulae that may have come from the same animal. These bones were perfectly preserved despite

scapulae tending to be fragile bones. It may be that these were deliberately placed in the ditch rather than being resultant from a natural death, where other bones would have been more likely to survive. It is possible that scapulae were removed from a skinned or processed hare. The only evidence of dog was a toe bone, whilst horse was represented by teeth, a pelvis and a scapula. There was no evidence of deliberate deposition of particular sides within any of these deposits.

Pit contexts contained the majority of bone from this phase. Species represented included, cattle, sheep, goat, sheep/goat, pig, dog, horse, roe deer, red deer, fox, hare, house mouse, bank vole, field vole, wood mouse, common toad and common frog

The cattle deposit consisted of 2204 fragments that derived from 189 contexts. Most pits contained small deposits of cattle containing a mixture of primary and secondary butchery waste with crania, teeth and/or feet appearing with a small number of meat bearing fragments. 8 pits only contained head and foot bones whilst 37 just contained teeth/crania and 14 contained just foot bones. 6 pits contained purely limb bones, indicative of food waste. 4 pits (3726, 14813, 14483 and 8255) contained cattle remains where most regions of the body were represented. This may suggest that whole carcasses were processed closeby with animals slaughtered, fully butchered and consumed close to these pit sites. Of interest is two of these contexts also contained human remains (3726, 14483) and may have represented special deposits. A cattle skull was identified in context 14328. Neonatal remains were observed in pits 12108, 8636, 3696 and 8241. Two of these deposits contained quernstones, one loom weights and another slag possibly reflecting votive deposits associated with domestic activity. The low level of juvenile remains in the assemblage may suggest veal was not in great demand. Cattle were commonly deposited in the same pit features as other species in particular sheep/goat.

The sheep/goat assemblage suggests that more deposits reflected just primary waste that consisted of cranial, teeth and/or foot deposits. Sheep/goat was noted in more pit contexts than cattle remains suggesting they were more commonly used across the site. Sheep/goat appeared in 201 pit contexts during phase 8.91 contexts contained only products of primary butchery waste: 64 contexts contained just teeth, 1 a cranium only, 11 just foot bones and 15 head and foot bones.31 contexts contained only meat bearing elements. Context 8589 contained all elements except for horncores suggesting that an animal was slaughtered, processed and consumed at the site (8589). Neonatal remains were observed in 19 pit contexts. Whist these may represent natural deaths it is possible that they were deliberately deposited amongst other objects within the ground. The range of objects included in the associated finds with neonatal sheep/goat are worked or burnt flint (10) metal working residue or slag (6) pottery (16) quernstones (1), loomweights (2) worked bone/antler (2) and building ceramic (8).

Sheep was identified in almost three times the number of contexts that goat was in, suggesting that sheep were more abundant than goat. The appearance of goat was limited and may possibly suggest that its deposition may have held a different meaning to those communities. Goat was deposited in 5 contexts (8402, 14484, 3726, 8555, 8580) of which most contexts were associated with pots whilst 3726 contained a range of objects including human remains. Goat remains identified were horncores or crania. No limb bones or juvenile mandibles were observed.

Sheep head and foot bones in context 3600 were associated with metal working, slag and pottery. This may have represented a fleece within the pit context.

Pig was found in 49 contexts. Most deposits were either loose teeth or limb bones with limb bones forming the majority of the deposit.1 pit context produced neonatal remains (8414) which was found in association with worked and burnt flint. It is possible that pig was processed and consumed in a different way to other species leaving less obvious markers in the archaeological record. It was likely that dressed portions of pig were brought into the area for consumption perhaps as dried meat or hams.

Horse was found in 44 pit contexts. Bones found were often sparse assemblages containing teeth deposited with or without other token bones. Although some horse bones seem to have been deliberately smashed open, many were not and it does not seem likely from the archaeological record that horse was utilised much within the diet.

Dog remains were found in 22 pits, 3 of which contained articulated burials. The dogs in these tended to have suffered from trauma, both past injuries and injuries sustained close to the time of death. Burials in 8667 and 8795 were found in contexts that contained other objects including quern stones. Dogs may have held special significance in their deposition. It seems that the side of elements deposited within the disarticulated material may have held significance within the ritual arena. Often, parts of dogs were deposited, heads, teeth and front sections being the most common.

Wild animals were found in 11 contexts. Overall single bones were found that represented red deer, roe deer, fox and hare. No wild animals were found together in the same pits although horse and deer were found together. Context 14483 containing red deer also contained human remains amongst other objects. Other finds associated with animal remains were pottery, worked flint and metal working residue. It may be that adding a token element representing the wild may have held meaning within the deposition process for communities within the Iron Age. Wild animals are likely to have been exploited more than their ephemeral appearance in the archaeological record demonstrates, however their occasional appearance within deposits hints at a deeper purpose attached to their deposition, and possible differentiation in how they were utilised and disposed of.

Phase 9: Unidentified Prehistoric

Phase 9 produced a total of 341 fragments of bone from 26 contexts (Table 119). Bones were identified on plateaus 1, 6, 7 and 8.35 per cent of fragments derived from plateau 1, 32 per cent from plateau 6, 7 per cent from plateau 7 and 25 per cent from plateau 8. Preservation was good on plateau 1 although other areas displayed moderate to high signs of weathering. Bones overall displayed a high degree of fragmentation with bones being on average only 11 per cent complete. This level of fragmentation is close to Iron Age deposits which displayed an average of being 12 per cent complete. Fifty-five per cent of the assemblage was not identified to species reflecting the poor preservation for some areas and high levels of fragmentation. No bone showed evidence of either carnivore or rodent gnawing. 4 per cent of the assemblage was burnt. All burnt bone was fully calcined suggesting bone had been exposed to temperatures of over 800 degrees Celsius or exposed to heat for prolonged periods of time. Burnt deposits were found in the barrow features and cremation pits.

The range of features represented is shown on Table 124. These included, 3 ditch contexts, a trackway, 2 cremation pits, 2 barrow 4 middle layers and 2 upper layers, 2 Barrow 1 middle layers and 2 post holes. Overall the trackway produced most bone contributing towards 26 per cent of the deposit, pits produced 21 per cent, ditches 13 per cent, Barrow 1 mid layer 10 per cent, barrow 4upper layers 9 per cent, barrow 4 middle layers 8 per cent, post holes 7 per cent and cremation pits 6 per cent.

The species represented in the assemblage were cattle, horse, sheep/goat and sheep. Out of the identifiable material cattle formed 31 per cent of the deposit, sheep/goat 66 per cent, sheep 1 per cent, pig 1 per cent and horse 1 per cent. Out of the main three domesticates; cattle, sheep/goat and pig cattle formed 31 per cent, sheep/goat (including sheep) formed 68 per cent and pig 1 per cent of the assemblage. The dominance of sheep/goat fragments reflects the pattern found in later Iron Age deposits, whilst the range of species represented also reflects those of the Iron Age.

A minimum number of 9 animals were represented in the deposit, 3 cattle, 1 sheep/goat, 1 sheep, 1 pig, 1 horse and 1 dog. Cattle clearly are the most abundant animal from these deposits, forming 50 per cent of the main domesticate deposit. Sheep/goat formed 33 per cent and pig 17 per cent. The presence of a small data set and unclear phasing for all features limits the level of interpretation that can be made on overall husbandry strategy and practice relative to species abundance.

Forty-seven fragments belonged to cattle. Overall a minimum number of 3 cattle were observed in the assemblage. 11 contexts produced cattle bone; 2 on plateau 1, 4 on plateau 6 and 8 on plateau 8. Plateau 1 produced 15 cattle fragments that derived from a mandible in a boundary ditch (10090) and a single humerus in a pit (677). The mandible

was highly fragmented and no toothwear data was available. Interestingly both deposits on plateau 1 were left sided.

Plateau 6 produced 24 fragments of cattle bone from the upper layers of barrow 4 and the middle layer from barrow 1. Barrow 1 produced cranial, maxillary and mandibular teeth that matched, suggesting they had come from the same animal. It is likely that the cranium was complete at the time of burial. Toothwear data (Table 171) suggested a mandibular wear stage of 44 suggesting the animal was an older adult over 40 months in age. Deposits from Barrow 4 contained loose teeth and elements from the two left front limb bones Bone was very eroded and had suffered within the burial environment so no metrical data was available.

Plateau 8 produced 8 fragments of bone from 4 pit contexts. Deposits contained mainly meat bearing elements of which many had been deliberately smashed open presumably to extract marrow.

The head and front limbs were best represented across the deposit. Almost no rear limb bones were observed in the assemblage. Humeri were the best represented element whilst foot bones and horncores were rare or absent suggesting that they may have been processed elsewhere or not chosen for deposition in these sites. No metrical or pathological data was available from the assemblage.

Sheep/goat was identified in 7 contexts, 2 cremations, 1 trackway, 1 field boundary and 2 pits. Overall 103 fragments were identified 102 of sheep/goat and one sheep. Plateau 1 produced 96 fragments from 3 contexts, a cremation, a field boundary and a trackway. The cremation (1748) produced 4 fragmented tooth fragments whilst the field boundary produced 3 loose teeth. The trackway produced 89 fragments of bone. The deposit contained the remains of a single sheep. The elements left were all head and front feet remains. The deposit was well preserved and even smaller foot bones survived. The absence of back feet may suggest that these had been left on a fleece. All the main torso, limb bones and vertebrae of the animal had gone, presumably removed to be processed, butchered and consumed elsewhere. This was clearly a deposit of primary butchery waste where the head and feet were discarded. Mandibular teeth suggest a wear stage of 31, which implies the animal was a young adult aged between 2 and 4 at the age of death. The metacarpals suggested an estimated shoulder height of around 68 cm which falls within upper section of the range of shoulder heights suggested by the Iron Age deposit.

Plateau 6 produced an isolated tooth from cremation deposit 16319 whilst 3 pit contexts on plateau 8 produced 6 fragments that were loose teeth, a metacarpal, metatarsal and a single tibia. No metrical data was available from these deposits. Bones had been smashed open and consisted largely of shaft fragments that may have been opened to extract marrow or add flavour to stews and stocks.

Pig was represented by a single fragmented left femur in a pit context from plateau 8 (14457). Horse was represented by a single left tooth from a pit context in plateau 8 (14462). The crown height on the tooth suggested the horse was around 4.5 to 6.5 at the age of death (following Levine 1982).

Phase 10: Late Iron Age Early Roman 100BC–50AD

The Late Iron Age early Roman period produced a total of 709 fragments of bone. 349 fragments were from disarticulated remains whilst 360 derived from articulated burials. Finds were distributed across 20 contexts and 2 plateaus. Plateau 1 produced 1 per cent of the assemblage whilst plateau 8 produced 99 per cent. Pits produced the greatest volume of bone (94 per cent) whilst cremation contexts produced 5 per cent and a field boundary from plateau one, 1 per cent (Table 125). A number of articulated or partially articulated dog skeletons were observed in pit contexts.

The overall state of preservation was mixed. The articulated burials were in a good state of preservation however many of the disarticulated remains were highly fragmented and displayed signs of erosion and surface cracking. This may mean that some of the bone may have been exposed to the elements prior to becoming buried within the ground. One per cent of the assemblage displayed signs of canid gnawing and no fragments showed signs of exposure to heat.

Only 32 per cent of the remains could be identified to species. This reflects the high levels of fragmentation and poor state of preservation displayed on the bone. Species identified were all from domesticated species, including cattle, pig, sheep/goat, dog and horse. No wild animal was observed in the assemblage.

Out of the fragments identified 48 per cent were cattle, 15 per cent pig, 24 per cent sheep/goat, 5 per cent horse and 7 per cent dog. The absolute minimum number of animals represented by the body parts present in the assemblage was 14, including 3 sheep/goat, 1 pig, 4 cattle, 4 dog and 2 horse. Cattle is the most abundant species from both the fragment count and minimum numbers of individual animals. This may suggest that cattle formed the greatest contribution to diet whilst pig seemed to form the lowest contribution to diet. The proportion of dogs was high in the assemblage although this number reflected a number of animals deposited within the same pit and may have been a special deposit.

Cattle were observed in 13 contexts. 53 fragments derived from 13 contexts on plateau 8 and 1 from plateau 1. Pits produced 96 per cent of the cattle assemblage, whilst a cremation (12354) and a field boundary (plateau 1) produced 2 per cent each. A minimum number of 4 cattle were reflected by the bone assemblage.

No toothwear data was available from the assemblage so age profile estimates were based upon fusion data which was also limited (Table 162). Fusion data suggested that no later fusing elements were fused indicating that there was no evidence of animals being over 36 months old. However a number of middle fusing elements were fused suggesting that these individuals were over 24 months in age. 1 neonate was observed in the assemblage in a storage pit (8610). The presence of a neonate may suggest breeding was taking place close to the site.

Metrical data was sparse from the cattle assemblage although one metatarsal provided data that could be used to estimate a shoulder height (Table 157). This was estimated at 107.4 cm. This withers height falls within the range calculated from earlier Iron Age deposits. No pathological conditions were observed in the assemblage.

The range of elements that were present for cattle in this phase is given in Table 143 and expressed graphically as a proportionate representation of the numbers of elements that would be expected for a minimum number of 4 animals (Fig. 285). Overall the assemblage was characterised by small deposits of bone with no context producing more than 10 cattle bones. This may suggest that deposition related to a number of small dispersed events rather than being centred around specific contexts. Often remains consisted of a few limb bone fragments or one or two fragments deposited with the odd tooth or fragment from a metapodial.

The charts clearly demonstrate that the horncores and upper cranial vaults are absent amongst the deposits. It is possible that the upper vault was removed either with a hide or with the horncores for processing elsewhere. Cranial fragments were rare amongst the unidentifiable material also supporting this supposition. Lower foot bones are sparsely represented, and may have been overlooked during the recovery process. However it is possible that lower foot bones may have been processed elsewhere. Small bone and hooves have been used by past communities to boil up for glue or to grind up for fertiliser. The most common elements were scapulae and metatarsals. Front metapodials were not identified, the only one present belonged to a neonatal animal. It may be possible that front metapodials may have been left attached to skins to ease handling or utilised for bone working. Meat bearing elements in the deposit reflect food waste. No clear deposits of primary butchery waste were noted where head and crania appeared together, teeth were often loose and mixed in with food waste. Metapodials that were found were mainly smashed open. The marrow may have been used in cooking processes.

The limb bones represented are largely from the shoulder and lower limbs. This may reflect some of the cheaper cuts of beef and may tentatively infer that more expensive cuts may have been consumed elsewhere. The presence of a neonatal femur suggests that veal was possibly consumed. Two scapulae fragments demonstrated that they had been butchered. Division through the neck suggests that a bladed instrument like a

cleaver may have been used to portion a carcass, dividing the scapulae joint through the neck. The spine of the blade had been trimmed with a finer bladed instrument presumably during the process of filleting meat off the bone.

The sheep/goat assemblage consisted of 27 fragments that derived from 7 contexts. All contexts were storage pits from plateau 8. A minimum number of 3 sheep/goat were observed in the assemblage. No fragments were positively identified as either sheep or goat. Most elements represented were highly fragmented, many deliberately broken presumably to extract marrow. As a result no fusion data or teeth were available from which to assess mortality profiles. 1 neonate was observed in the deposit in context 8662. This may suggest lambing took place close by and that a period of deposition took place around the spring. No metrical data was available from the assemblage.

The range of elements present for sheep/goat are a mixture of cranial, foot and meat bearing elements (Table 146). No horn cores were observed and may suggest these were removed and utilised elsewhere. Like the cattle assemblage, lower foot bones were also absent and may have been utilised elsewhere. Most other parts of the body are represented suggesting that a whole range of processes are represented by the deposits. Slaughtering must have occurred close by, animals were butchered, prepared for eating and consumed close to the site. Most deposits contained a mix of butchery and consumption waste. In contrast to the cattle assemblage no scapulae appear in the deposit. This may imply that this area was treated in a different way, perhaps being cured, salted or smoked.

Pig was represented by 17 fragments that were located in three storage pit contexts from plateau 8. A minimum number of 1 pig was observed in the deposit. A mandible suggested that the pig was a subadult between 15 and 25 months at the age of death. No fusion data was observed in the assemblage. One male canine was identified in the deposit. The pig remains provided no metrical data.

Pig deposits were highly fragmented. One deposit represented a male cranium and mandible, (8666). Other deposits consisted of loose teeth, a metapodial, a scapula, ulna and a humerus indicative of a mixture of butchery and consumption waste. All the pig elements were left sided despite being found in different contexts (8661, 8615). The only right element was a loose tooth.

Six fragments of horse were identified that derived from 5 contexts. A mandibular tooth was found in a cremation (14045) whilst storage pits produced isolated broken fragments from 2 femurs and a pelvis. The tooth provided an estimate of age at death from its crown height (Levine 1982) of over 13 years (Table 166). All horse elements were also left sided despite being found in different contexts.

Dog was identified in 5 contexts, 8611, 8662, 8667, 8668 and 8680. All contexts are from the same set and group, a storage pit (S8670, G8148). Three contexts produced articulating remains (8611, 8667 and 8680) whilst the other two contexts produced a few fragments that may have related to the other deposits. Overall the element representation suggests that a minimum number of 3 adult male dogs and a neonate were amongst the assemblage.

In total the pit contained 8 disarticulated fragments and 360 articulating bones. The two contexts that contained disarticulated material were 8662 and 8668. 8662 contained radial fragments and a scapula whilst 8668 contained a deposit of front teeth and maxillary fragments. These seem to match the cranium found in context 8611. Context 8611contained a fragmented dog cranium and articulating left and right mandibles. Metrical data from the mandibles is given in Table 153.

Context 8680 contained the back portion of a dog from the lumbar vertebrae to the back paws. A second dog was evidenced by extra left metapodials. The front limbs and head were missing. A baculum was present in the assemblage suggesting a male was present in the assemblage. The left tibia showed gross pathological alteration. The distal end had rotated laterally causing foreshortening on the leg and indicating that the leg had been badly fractured. The area around the fracture had remodelled with smooth bone suggesting that the injury had happened over a month before death. However profuse and defined layers of newly deposited woven bone that was 3 mm thick had developed on the distal posterior section of the bone. A cloaca or drainage hole for pus suggested that the bone was infected at all levels from the outer layer to the inner cavity (Osteomyelitis). Five left metatarsals were also covered in a diffuse layer of woven bone indicative of periostitis, or infection of the outer layer of the bone. The thickness of the new bone suggests that the infection must have been active for a while before death. The healed fracture suggests that the dog may have been given care whilst it was healing and had clearly died a number of weeks after sustaining the injury. It is likely that this dog matches dog 1 in context 8667.

Estimations of shoulder height from metapodials that were not pathologically altered suggested one dog was on average 43.2 cm and the other 51.1 cm (Table 161). Compared to data from Clarke (1995) these heights fall in the range of a bull terrier and a Labrador.

Pit context 8667 contained the well preserved remains of three dogs. Two adults and a neonatal dog were represented within the comingled assemblage. Dog one consisted of a head, axial sections and front legs of a dog whilst dog two was complete except for its feet, only three metatarsals were present and a front left paw. The neonatal dog was represented by two matching humeri and radii (left and a right). Two baculum bones were observed suggesting both of the adult dogs were male.

Dog 1 consisted of the front section of a dog, its rear legs were missing from the assemblage. The dog was male, evident from the presence of a baculum. Metrical data suggested that the dog was between 47 and 51 cm at its shoulder height (Table 161). This would be comparable to a Labrador in height. Other metrical data is shown in Table 153.

The dog had clearly suffered from traumatic injury during its life time displaying evidence of trauma to the head/, tail and left leg with evidence of infection apparent on both front legs, the scapula and head. The cranium displayed two smooth depressed areas on the outer vault surface, one on the left superior section of the frontal bone, above the eye orbit and another on the right rear parietal close to the junction with the occipital bone. These depressions are likely to have been caused by trauma to the skull caused from a kick or a blow to the head with a blunt instrument. These injuries were completely healed over suggesting that the injury was long standing at the time of death. This may infer that care had been administered to the dog allowing for good recovery without long term infection arising from these injuries.

Two caudal vertebrae presented with gross pathological change around matching vertebral body surfaces. Massive bones spicular like projections protruded out from the vertebral surfaces almost linking the two bodies together. Evidence of sub chondral cysts on the joint surfaces was provided by the appearance of macro porosity on the joint surface. These prolific alterations to the bone are unlikely to be the result of old age as other areas do not display such dramatic change but are likely to have occurred in response to traumatic injury to the tail.

The left humerus showed evidence of a spiral fracture on the distal humeral shaft that had healed causing slight inward rotation of the distal humerus, Smooth lamellar bone was evident across the break suggesting that healing had been long standing, however striated, pitted bone along with a thickened appearance to the shaft suggested that the bone was infected. The presence of a cloaca or drainage hole on the humeral shaft, through which pus would be expelled from the inner bone cavity suggested that the medullary cavity was infected. This condition is called osteomyelitis, or infection affecting all layers of the bone including the medullary cavity, the compact cortical bone and periosteal or outer surface of bone. Infection can be the result of pyogenic bacteria entering the cavity via an open wound following fractures, by direct transmission from infected adjacent soft tissue and by haematogenous spread from remote septic foci (Ortner 2003, 181). Osteomyelitis is life threatening as pyogenic bacteria can be rapidly spread through the body via the blood stream once the inner part of the bone is affected.

The articulating left ulna also demonstrated evidence of a fracture through the olecranon process. Unlike the humerus the two parts had not united and the upper part had started to die with bone tissue reducing as blood supply was diminished. Evidence that infection had also tracted along the line of muscle attachments was suggested by

the presence of thick plaque like deposits of woven bone spreading down the muscle attachment sites of the radius and ulna.

The left foot metapodials were also covered in thick deposits of woven bone on the anterior surface of the shafts suggesting infection had spread along the periosteum or surface layer of the bone to the feet. In some places deposits of woven bone were up to 4 mm thick.

The right front foot also displayed chronic deposits of woven bone indicative of infection. These deposits were not as thick as those on the left side but were still diffuse over the foot bones. The right scapula also presented with a diffuse spread of woven bone. This broad pattern of new bone growth may suggest infection was spreading throughout the body at the time of death either haemotogenously or along the lines of muscle attachments.

Of interest is that the baculum bone had chronic spicular growth at the end. The aetiology of this pathological change is uncertain although it may be degenerative with age. The absence of new woven bone suggests the area was not infected.

Dog two was largely complete. Missing elements consisted of the right/rear and front paws and some of the metapodials from the rear left paw. The presence of a second baculum suggested it was also male. Small bones like phalanges were present for all represented paws suggesting that the absence of elements may not be down to preservation alone. Dog two had adult dentition and evidence of slight osteoarthritic degeneration to the front left paw. Metapodials showed worn proximal articular facets and one had developed a bony shelf around the joint edge as well as a polished appearance to the joint surface. Whilst this may have been related to age, the lack of osteoarthritis elsewhere on the skeleton suggests that possibly some previous minor injury may have caused premature onset of osteoarthritis in the joint.

Evidence of mild infection affecting just the periosteal or outer surface of the bone was found on the back of the calcaneus, on the occipital bone and on the right side of the axis bone. The left calcaneus had a raised patch of woven bone on the posterior surface of the tuberosity whilst the posterior left tibial shaft had a small well defined patch of woven bone about 5 mm across on the surface of the bone. It is possible that these small defined areas of infection stemmed from irritation around the ankle joint of the rear left leg. Infection to the periosteum can be caused through bacterial infection entering through a soft tissue injury, through persistent irritation to the surface of the skin above the bone or as indirect transmission from a seat of infection elsewhere but spread haemotogenously. Periostitis may also occur as a secondary complication from other specific diseases (Ortner 2003, 208).

Mild infection was also observed on the axis bone on the right lateral surface of the bone. A small patch of woven bone suggested infection to the outer layers of the bone. A patch of woven bone on the right of the occipital bone may suggest that the area at the rear of the head may have been ulcerated or infected. Whilst this infection may have spread from a seat of infection elsewhere not necessarily visible on the bones, it may have resulted from long term irritation to the skin above the top of the neck. It is possible that rubbing collars, flea infestation, mange or other skin irritations may have caused damage to the skin around the neck resulting in tissue injury and exposure to infection.

The dog mandibles and maxillae showed signs of pitting and loss of bone from the mandible around the tooth margins. This is indicative of moderate gum or periodontal disease. This condition is triggered by accumulations of calculus and bacterial plaque around the teeth and gum and is likely to be a symptom of age. Alveolar resorption had exposed the proximal part of the roots particularly around the first molar, an area that takes the most biomechanical stress within the jaw (Grimm 2008b).

The right mandible had an oval depression in the outer surface of the of the ramus area of the jaw close to the third molar. This smooth linear depression may have resulted from a former depressed fracture to the mandible that had subsequently healed. The bone had remodelled, the bone appearing smooth suggesting that the trauma had been healed for a lengthy time when the dog died. Depressed fractures may have been caused by blunt trauma, for example kicking, hitting with a large stick, or blunt object.

The only other animal remains found in the pit were isolated fragments of cattle and sheep.

Metrical data from this animal suggested the dog was between 46 and 48 cm at shoulder height, a little shorter than a Labrador in height.

Phase 11: Roman

Roman deposits produced a total of 880 fragments that derived from 41 contexts. Plateaus 1, 2, 3, 4, 6 and 8 produced animal bone from features that included ditches, a hearth, hollow way/trackways, pits, metalled surfaces, a quarry and field boundaries (Table 126). Unlike earlier periods ditches contained the greatest volume of bone, 77 per cent of the assemblage. Pits produced 10 per cent and quarries 9 per cent. The hearth, trackways metalled surfaces and the field boundary produced minimal bone providing together only 4 per cent of the assemblage. Plateau 8 provided the majority of finds (79 per cent), plateau 4; 11 per cent and 2; 8 per cent. Plateaus 2 and 3 produced minimal quantities of bone.

The distribution of the finds suggests that plateau 8 remained the main focus of domestic activity into the Roman period. Deposition of animal remains seems to have altered during this period from one centred around pits to one that focussed on ditches for waste disposal more than pits. Quarries also contained greater proportions of bone. It may be that open features around the peripheral areas of settlements became dumping grounds for quantities of waste.

Bone was poorly preserved from this period, perhaps reflecting the greater proportion of finds from ditches or open contexts where remains may have sat on the surface in damp conditions for a period of time before becoming incorporated into the burial matrix. Bone was very fragmented with each bone on average being only 8 per cent complete. Less than 1 per cent of bone was gnawed by carnivores, although surface erosion and split bone may to some extent have masked surface damage from teeth. Gnawed bone was all located in ditch contexts. No burnt bone was observed in the assemblage, even within the hearth feature. Burnt bone may have been disposed of elsewhere perhaps even used as fertiliser on fields. All ditch, field boundary and trackway contexts produced small groups of bone reflecting many small episodes of deposition, however only two contexts created the pit deposits and 4 for the quarry suggesting greater volume of bone was deposited in these features during each episode of use. Quarry deposit (10472) seemed to contain well preserved bone that is likely to have been created by one event.

Eighty per cent of bone was not identifiable to species reflecting the poor state of preservation and fragmented nature of the bone. Species that were identified included cattle, sheep, sheep/goat, pig, horse, dog, hare, red deer and toad. Out of the identified material cattle formed 59 per cent of the identifiable remains, horse formed 18 per cent, sheep and sheep/goat formed 12 per cent, pig 9 per cent, hare 2 per cent, toad 2 per cent and dog 1 per cent. The fragmented deposits seem to predominantly derive from large mammals, suggesting that perhaps the open features exposed during excavation may have been preferentially used to dispose of large mammal remains. A minimum number of 11 animals were observed in the assemblage, 2 cattle, 2 horse, 2 sheep/goat, 1 sheep, 1 pig, 1 hare, 1 red deer and 1 dog. Based upon the minimum numbers of animals sheep/goat (inclusive of sheep) are the most numerate suggesting that perhaps the fragment count over inflated the abundance of cattle relative to the other main domesticated species. Cattle representation can often appear to be over inflated in fragment counts as the larger carcass is often broken down into many more divisions during the butchery process than smaller animals. It is likely that cattle would still have provided most of the meat in the diet due to the greater volume of meat produced by each animal.

Ninety-six cattle fragments were observed in the assemblage that derived from plateaus 3, 6 and 8. Overall cattle was found in 16 different contexts, 14 ditches, 1 quarry, and a hollow way. It is clearly apparent that no cattle fragments were observed in pit contexts

suggesting cattle waste tended to be disposed of in more liminal features. Plateau 3 produced a single fragmented metatarsal from a hollow way that displayed signs of being deliberately smashed open, presumably to extract marrow. Plateau 6 produced 3 teeth from a ditch whilst plateau 8 produced 92 fragments from 13 ditch contexts and 1 quarry.

Overall a minimum number of 2 cattle were reflected in the assemblage. The range of elements present in the assemblage is given in Table 143. It is clear that the majority of expected skeletal remains for two animals are missing from the collection. Whilst some of this may be the result of preservation or loss during the recovery process it is likely that element selection and processing methods contributed to the distribution pattern evident on the site.

The types of elements present were largely cranial, mandibular and feet. Meat bearing elements were represented by 3radii, a humerus and a femur. Meat bearing limbs were found in three boundary ditch contexts, two of which contained only meat bearing limbs (14524, 12854) and may represent food waste. Other deposits all contained cranial, foot and pelvic fragments which are typical of primary butchery waste. Horncores and smaller foot bones were observed in the assemblage although low in number. It is possible that larger animals may have been slaughtered close to boundary ditches with initial trimming of carcasses taking place close to these features. Most of the axial and meat bearing bones were absent from the assemblage. This may tentatively suggest that carcasses may have been initially trimmed, the head and feet removed and the main carcass divided up to be consumed elsewhere. The fragmented appearance of the remaining bones may suggest bone may have been broken up into small pieces perhaps to boil up for stock or to extract marrow prior to being disposed of.

Humeri and femur were sparsely represented and no scapulae or tibiae were present. The radius was the most common meat bearing element found in the assemblage. One of these had filleting marks on the front indicated by clean scrapes made from a bladed instrument on the anterior surface. It may be that radii were filleted during the initial stages of butchery. Other butchery marks on cattle were all chop marks. One cranium had been split open with a cleaver, presumably to remove the brain. Two proximal toe bones or phalanges had the distal ends chopped through suggesting the lower feet were removed from the main carcass.

One mandible provided evidence of age at death, giving a mandibular wear stage of 44 suggesting the animal was over 40 months at the time of death. The surface appearance of two horncores (stage 3: following Armitage 1982) suggested that they had derived from a young adult at the time of death. No fusion data was available from the assemblage that consisted largely of shaft fragments.

Twenty sheep/goat fragments were observed in the assemblage of which one was positively identified as sheep. All fragments derived from plateau 8, from 9 boundary ditch contexts and 1 quarry. The sheep/goat assemblage consisted of small deposits of one or two bones. Mandibles, loose teeth and maxillary fragments formed most of the deposit, suggesting that animals may have been slaughtered and the least utilisable parts discarded into ditches. Meat bearing elements were sparsely represented, radii and tibiae being the only evidence of food waste. No foot bones were observed in the assemblage suggesting selection may have contributed towards the distribution pattern. No upper limbs or axial parts of the body were identified. The presence of lower limb bones may suggest that perhaps lower value cuts were consumed in this area, prime cuts of meat utilised elsewhere. Metapodials may have been left attached to fleeces and lower toe bones utilised perhaps for boiling up for glue. The only horncore found was from a female sheep. No butchery marks were identified in the assemblage. 2 mandibles provided tooth wear stages of 36 and 25 (following Grant 1982) suggesting a subadult of between 15 and 26 months and an adult of between 36 and 41 months were present in the assemblage. No neonatal remains were observed in the assemblage.

Pig remains were sparse and consisted only of loose teeth and a mandible. Finds were located in 2 boundary ditch contexts and a pit. A male canine tooth and a mandibular tooth row indicated that a male with a tooth wear stage of 21 was present in the assemblage. This relates to a sub adult of approximately 15 – 26 months old. Pig remains are clearly indicative of primary butchery waste.

Twenty-nine horse fragments were identified in 4 contexts, a metalled surface and a quarry pit on plateau 1 and 2 pits on plateau 8. A minimum of two horses were identified in the assemblage. Elements that were represented are shown in Table 151. The quarry pit and pit contexts produced most of the bone with a single tooth found in the metalled surface. Bones represented included cranial, mandibular, axial and limb bones. Many large mammal fragments were associated with these deposits. Bones were extremely weathered and were highly fragmented caused from erosion rather than breakage whilst bone was still fresh. The deposits suggest that perhaps parts of horse carcasses were deposited in these liminal features. Pits containing horse remains contained little else, no cattle or sheep/goat remains. The presence of dumped, head, foot and limb bones with no appearance alongside cattle may suggest that horse was not processed in the same way as cattle, tentatively suggesting that its meat may not have contributed to diet or been utilised in the same way as cattle. It is possible horses were taken to liminal features to be culled and disposed of. No lower foot bones, metacarpals or radii were observed in the assemblage. These bones may have been utilised for other things. Foot bones like other species possibly utilised for glue, whilst radii and metacarpals possibly could have been used for bone working. Both elements provide good surfaces for bone working. Horses may have been skinned and metapodials left on the hide.

Toothwear patterns from incisor teeth suggest a horse of more than 12 years old was within the assemblage (following Cornevin and Lesbre 1894). Metrical data was sparse but, data that was collated is shown in Table 153.

Dog was represented in the assemblage by a single canine tooth in a boundary ditch (8078) on plateau 8. Dog was also observed from the low presence of gnawed bone in the assemblage.

Three fragments of hare were found in a boundary ditch on plateau 8 (14599). The remains were all lefts from a front leg that possibly articulated. These may have been from an animal that died in the wild, a leg becoming separated from the rest of the carcass through scavenging. All bone was fragmented and there was no evidence to suggest definitive exploitation from humans.

Red deer was represented by antler in a boundary ditch context on plateau 8 (14779) Fragments of antler suggested that they may have been waste from an episode of antler working.

Toad was found in one boundary ditch context on plateau 8 (14808). A toad may have been attracted to the shaded, damp atmosphere of a ditch. A number of large mammal rib fragments were found also found in this context. If bone deposits were made in open ditches, they would have attracted insects on which a toad would be able to feed.

Phase 12: Anglo-Saxon

A total of 1791 fragments of bone derived from 14 Anglo-Saxon contexts. Bone derived from plateaus 1, 3 and 8. In contrast to earlier deposits plateau 3 produced the greatest volume of animal bone (89 per cent), plateau 1 produced 3 per cent and plateau 8 8 per cent. The types of features that provided bone assemblages included sunken floored buildings, a refuse pit and ditches. Sunken floored buildings were the most popular feature for bone deposition. These features produced 96 per cent of the deposit, whilst ditches provided 3 per cent and a pit 1 per cent (Table 127). This suggests that waste was kept within buildings. This has implications for hygiene, where accumulations of waste may have attracted flies or small mammals. Sunken floored buildings were found on plateaus 1 and 8. Although 4 sunken floored building contexts on plateau 8 produced animal bone the majority derived from context 12439 that provided 108 fragments of bone or 78 per cent of the bone from that plateau. Plateau three produced 2 contexts from the same set and group (contexts 11071, 11072: S11072, G3035). These contexts produced all the bone from plateau 3 or 1601 fragments of bone. The depositional focus on these large deposits suggests this building was the central focus for bone deposition during this phase.

Bone found within the assemblage was highly fragmented, each bone being only 8 per cent complete. The pitted and abraded edges on some of the fragments may suggest some had been trampled on. Almost half the long bone fragments displayed evidence of impact scars and smooth, bevelled helical fractures indicative of breakage whilst the bone was still in a fresh state. This high level of deliberate breakage may suggest bones were routinely divided up, not only for marrow extraction or cooking but possibly to boil up to extract grease to use for candle tallow. One per cent of the assemblage was gnawed with all gnawed bone deriving from sunken floored buildings.

Nine per cent of bone on the site was burnt. The range of colours produced were tan, black and grey. Some bones were charred and many showed distinct lines of colour banding between one colour and another. As discussed for earlier deposits this may suggest bone was exposed to low level temperatures whilst fleshed, with distinctive marks created as flesh retreats from the bone during the heating process. This range of marks may be indicative of roasting meat on the bone. No bone was calcined or white suggesting complete combustion had occurred or that they had been exposed to extreme temperatures of over 800 degrees Celsius (Shipman *et al* 1984). Burnt bone was all identified in the sunken floored buildings.

A large proportion of fragments were not identifiable to species. Overall 79 per cent of remains were not identifiable to species. The unidentified material consisted largely of small cranial or trabecular bone fragments from both large mammal and small mammals (51 per cent). Cortical bone (26 per cent) and ribs (20 per cent) were slightly less well represented. Only small proportions of vertebrae were noted.

Species identified in the assemblage were cattle, sheep, goat, sheep/goat, pig, horse, hare and red deer. Dog was not present in physical remains although evidence of gnawed bone suggests dogs were around the site. Cattle fragments contributed to 61 per cent of the identifiable material, goat less than 1 per cent, sheep 2 per cent, sheep/goat 24 per cent, pig 11 per cent with horse, toad, hare and red deer forming approximately 1 per cent each. A minimum number of 20 animals were represented in the deposit, 5 cattle, 1 goat, 2 sheep, 5 sheep/goat, 2 pig, 1 horse, 2 hare 1 red deer and 1 toad.

Despite cattle forming the greatest contribution to the fragment count, sheep/goat (goat and sheep inclusive) are the most abundant from the minimum numbers of animals. Out of just the three main domesticates sheep/goat formed 54 per cent of the deposit compared to cattle 33 per cent and pig 13 per cent. Although cattle is the most abundant species based upon fragment counts it is not the most numerate species based upon minimum numbers of animals represented in the collection. Cattle representation is often over inflated in fragment counts as the larger carcass is often broken down into many more divisions during the butchery process than smaller animals. Despite cattle not being as numerate as sheep/goat based upon minimum numbers representation,

they are likely to have contributed more towards diet as the volume of meat produced per animal is far greater than on smaller animals.

The higher proportion of sheep/goat over other domesticated species in this period is common on Anglo-Saxon sites and may reflect a high demand for wool in this period. Loom weights, and spindle whorls are common finds on sites from this period supporting the supposition that wool must have been in demand.

Seventy-eight fragments of sheep/goat, 8 sheep and 1 goat were identified in the assemblage. Two per cent of these finds derived from a boundary ditch on plateau 1, 1 per cent derived from a pit on plateau 3, 5 per cent derived from a sunken floored building on plateau 8 and 92 per cent derived from the sunken floored building on plateau 3.81 per cent of the gnawed bone was sheep/goat all found in the same building on plateau 3.

The range of elements represented in the assemblage for sheep/goat is given in Table 146.

The chart (Fig. 289) demonstrates that the majority of bone that would be expected from a minimum of 8 animals are absent from the assemblage. The most common area represented are the teeth, mandibles and maxillae with many crania likely to be represented within the fragmented unidentifiable material. This may suggest that slaughtering took place close by and the heads removed. Although all areas of the body were represented most of the post cranial remains are absent suggesting that they were utilised elsewhere. The only lower foot bones represented in the assemblage were gnawed or burnt within the deposit, suggesting these may have been removed and processed separately. This indicates that a whole range of processes including, slaughter, butchery, food preparation and consumption were undertaken at the site. Waste bone was clearly fragmented to a high level and possibly utilised for stock, grease or tallow. Elements represented in the sunken floored building on plateau 8 suggested the deposit was purely butchery waste with only teeth, cranial fragments and foot bones represented.

Six mandibles provided data that could be utilised for ageing (Table 170). Mandibles showed that 2 animals had been culled at a wear stage of 2–17, around 6–9 months of age, whilst 4 others had been culled at between wear stages 29–37 approximately between 2 and 4 years of age. This may indicate that whilst some animals were culled for lamb, probably in the late autumn, others were culled in the prime stages of adult life between 2 and 4 years of age. This may suggest that animals were bred for their meat and wool, excess male animals were probably culled in the early stages whilst other animals were allowed to reach adult hood, probably used to breed, be exploited for wool and milk before being culled for meat at a time before the body started to degenerate in older years of life. Fusion data supports this supposition, all the late

fusing elements represented in the deposit were fused suggestive of animals aged over 30 months old (Table 163). Unfused remains in the fusion data represented the neonatal individual.

Neonatal remains were found in context (11072). The appearance of neonates suggests that breeding and lambing took place close to the site and that a period of deposition occurred around the spring.

One metatarsal provided an estimated shoulder height of 60.3cm which is within the range for this period (Table 155; ABMAP 1995). Other metrical data was sparse but is given for reference in Table 153.

Butchery marks were observed on 3 sheep/goat fragments. 2 mandibles in context 11071 had been chopped transversely through the ramus. These chops marks are frequently made during the disarticulation phase when removing the tongue. A sheep horncore had been chopped through the base, presumably to remove the horn from the cranium. A number of medium mammal ribs had been divided into sections of around 6–8 cm long indicative of sectioning for pot boiling.

Two hundred and twenty-two fragments of cattle were identified, cattle was identified in 10 contexts. 3 ditch contexts on plateau 8, 2 sunken floored building deposits on plateau 3, 4 sunken floored building contexts and 1 ditch context on plateau 8. The sunken floored building on plateau 3 (11071 and 11072) produced 89 per cent of the deposit whilst the second largest deposit was a sunken building on plateau 8 (12439). Only one cattle fragment was gnawed, found in a ditch context on plateau 8. A total minimum number of 5 animals were represented in the cattle assemblage.

The element distribution for cattle is shown in Table 143 and represented graphically in Fig. 286. The chart shows that many of the elements expected for 5 individuals were missing from the assemblage as would be expected from a combination of natural attrition, processing methods and selection. Cranial and mandibular fragments dominate the assemblage being the most well represented elements. This suggests that the area was a focus for slaughter and primary butchery. However all post cranial parts of the skeleton are represented suggesting that a full range of processes are likely to have occurred close to the site including slaughtering animals, primary butchery, evisceration, removing the head and feet, portioning, trimming, preparation for cooking, consumption and smashing and splitting bones for marrow extraction, boiling up for grease or tallow. The deposit of bone in the sunken floored building on plateau 8 only contained head and foot bones indicative of primary butchery.

Ageing data was available from the toothwear pattern on 6 mandibles (Table 171). These suggest that one animal was culled as a young sub adult around 18 months old with a tooth wear stage of 17, two were between 33 and 36 aged older sub-adults up to 40

months old and 3 were culled over 40 months as adults or old adults with tooth wear patterns of 42 or above. Fusion data supports the above with most bones being fully fused. All late fusing bones were fused indicative of animals aged over 36 months old whist only 21 per cent of early fusing bones were unfused suggesting that some animals were under18 months old at the time of death. These cull patterns may suggest that a small proportion of animals were culled in the first 18 months, maybe males culled at optimum meat weight before reaching maturity. The majority of animals seem to have been kept into their 3rd, fourth or more years culled after being exploited for breeding, traction, milk and, manure for fuel or fertiliser. These cull strategies may support a mixed economy breeding for both meat and dairy purposes.

No neonatal remains were observed in the assemblage. No metrical data was available from which to determine withers heights. Data that was recorded is given in Table 153 for reference purposes.

Thirty-five cattle fragments and 90 large mammal fragments demonstrated evidence of butchery processes that included, portioning, disarticulation and filleting. 28 chop marks were observed indicating that a bladed instrument like an axe or cleaver had been used to make divisions in the bone. 3 mandibles had been divided at the back of the tooth row on the ramus and through the diastema at the start of the cheek tooth row. This must have been done during the disarticulation process, removing the least valuable area of the mouth. The diastema or toothless part of the jawbone may have been divided to boil up with other waste bone to extract grease. This high utilisation of all bones was evidenced by a number of chop marks dividing toe bones, the navicular cuboid, the astragali, and calcanei into small pieces. One astragalus had been split into quarters. This is likely to have been done to aid release of grease and nutritional content when boiled up. Even areas like the acetabulum in the pelvis had been chopped round and then divided centrally presumably for the same reason. Many long bones had been axially divided including metapodials presumably to extract marrow and grease. Evidence of portioning was observed where divisions had been made in joint regions, 5 pelvic fragments illustrated division at the ilium neck, 2 femur showed division through the neck of the caput. A scapula had been divided into sections transversely across the central blade and across the neck. Many large mammal ribs had been divided into sections whist a number of cortical bone segments demonstrated that a blade had been used to fracture bones into smaller pieces by chopping into the sides of the bone.

The spine of a scapula had been removed with a finer bladed instrument suggesting that filleting meat off the bone had occurred. Small nicks and cut marks observed around an acetabulum and a distal femur may have been made during the disarticulation phase using a sharper knife type instrument. Butchery marks were observed on plateau 3 and 8 all in sunken floored building contexts.

One cattle cranium displayed two smooth edged perforations to the occipital area of the cranium. The aetiology of this condition is uncertain although it has been suggested that these manifestations may be linked to nutrition, metabolic and parasitic disorders as well as yoking. Another cattle fragment, displayed these in the phase 8 deposit, where the possible aetiologies were discussed in more detail.

Thirty-eight fragments in the assemblage were pig. Three sunken floored building contexts from plateaus 8 and 3 produced pig remains, although plateau 3 (3942) only produced a single fragment. All other finds derived from contexts 11071 and 11072. A minimum number of 2 pigs were identified in the assemblage. One pig fragment was gnawed, found on plateau 3 in the sunken floored deposit.

The elements represented in the assemblage are shown in Table 148. The relative proportions of those expected to be there for a minimum of two individuals are presented graphically in Fig. 292. It can be seen that most of the expected elements for a minimum of two animals are absent from the assemblage. The head and tooth area were better represented than post cranial fragments although most major regions of the body were represented in the deposit. The majority of the foot bones are absent from the assemblage suggesting that these may have been removed and utilised elsewhere. Evidence of all parts of the body may suggest all forms of butchery processes and consumption occurred close to the sunken floored building on plateau 3. Axial fragments were likely to have been incorporated into the fragmented unidentifiable assemblage. No direct evidence of butchery was observed on any bone fragments.

Ageing data was sparse, no mandibular data was available so estimates of age at death profiles were based upon fusion data (Table 164). All the late fusing bones were unfused suggesting that animals were under 42 months old. Early and middle fusing bones were fused suggesting that a proportion of animals were older than 12 months with at least one older than 24 months old. This suggests that pigs were slaughtered prior to reaching full skeletal maturity. This strategy is common today with pig primarily bred for their meat and culled at optimum weight in the second or third year of life. No data on sex was available from the assemblage. No metrical or pathological data was available.

Horse was identified from 5 fragments on plateau 3, sunken floored building, contexts 11071 and 11072. A minimum number of 1 individual was identified in the assemblage. Horse remains consisted of a number of carpals and a metapodial. The metapodial had a large chop mark across the posterior distal shaft suggesting that the bone had been deliberately removed from the carcass. The metapodial was more complete than other bones and may have been removed to utilise for working into tools. The lower foot was not represented and may have been utilised in a similar manner to cattle and chopped into small pieces for boiling or rendering into grease.

Deer was represented by a small number of antler fragments within the sunken floored building on plateau 3 (context 11072) suggesting that antler was worked within the building. One piece of antler had a chop mark through the burr at the base of the antler. Exploitation of wild animals was further represented in this building by the presence of 4 hare bones, two scapulae, two radii and two femurs. Two hares were represented in the assemblage. It is possible animals were skinned and filleted, bones removed and disposed of with other waste. Remains of a toad were found in the same building, perhaps attracted into the area by flies and small insects brought in by bone waste.

Medieval (11th to 14th Century AD): Phases 13–16

Overall medieval deposits produced 3628 fragments of bone, 2956 fragments consisted of disarticulated material whilst 672 fragments derived from articulated assemblages. Phase 16 provided the majority of the bone deposit contributing to 82 per cent of the deposit. Phase 14 produced 9 per cent phase 15 8 per cent whilst phase 13 only produced 1 per cent of the deposit.

All plateau sites contributed to the medieval animal bone assemblage suggesting that during this phase domestic activity occurred on all plateau sites. The distribution of finds suggest that the main focus for activity moved throughout the period (Table 119).

In phase 13 evidence of domestic activity was sparse. All finds derived from plateau 1 where only a few features produced less than 50 fragments of bone. The Phase 14 deposit suggests that activity in the area increased with bone deposits made on plateaus 4–8. Plateaus 4 and 5 produced the greatest volume of finds for this phase. These plateaus contributed 46 per cent and 35 per cent of the deposit suggesting that activity may have centred in these areas. Plateau 5 also produced the articulated burial from this phase. Phase 15 finds were concentrated on fewer plateau sites with bone located only on plateaus 4, 5 and 6. Plateau 5 continued to be the centre of activity with the deposit from this site forming 63 per cent of the finds from this phase. Plateau 4 produced the least amount of bone from this phase forming only 12 per cent of the deposit.

In phase 16 bone became much more dispersed across the landscape. Bone was located on all excavation plateaus during this phase. This may suggest that at this time the landscape was increasingly utilised for domestic activity and husbandry practices. Plateau 1 produced the greatest volume of finds (55 per cent) from this phase with plateau 2 producing the second highest contribution of 26 per cent. Plateau 5 only produced 1 per cent of the finds. This infers that the main focus of activity during this phase was no longer centred around plateau 5, but had migrated towards plateaus one and two. Four articulated burials derived from plateau 1. Plateau 5 also contained 4 other articulated burials. It is possible that plateau 5 was chosen for deposition of carcasses as it was away from main settlement features.

The range of features that produced faunal remains in this phase diversified over time as domestic activity increased in the area (Tables 128–130). Phase 13 deposits were very limited, deriving only from storage pits. In phase 14 the range of features expanded to include pits, a range of ditches, a cess pit and a secondary fill in barrow 3. Pits continued to be the main focus for deposition forming 59 per cent of the assemblage whilst cess pits formed 25 per cent.

In Phase 15 new features that included sunken floored buildings, wells and post holes became a focus for bone deposition whilst ditches and pits continued to be utilised for animal waste. In phase 15 sunken floored buildings and a well-produced the greatest volume of bone together forming 62 per cent of the assemblage, Ditches contained 20 per cent and pits 15 per cent whilst other smaller features contributed to the remaining deposit. Evidence suggests that communities had moved away from using pits as a preferential place to deposit animal waste. Deposition seemed to be centred around buildings and ditches. Deposition of waste into a well may have had implications for health of local populations. The addition of animal waste into a water supply may have contaminated drinking water possibly causing sickness to those using the well.

In Phase 16 the same range of features from phase 15 continued to produce bone. However the range of bone producing features expanded further to include: droveways, chamber and passage systems, beam-slots, field boundaries, burnt deposits in barrows 2 and 3, sunken hollows, demolition/backfill layers and quarries. Bone deposits were greatest in ditches and demolition layers, together forming 53 per cent of the bone deposit. Bone deposits in barrows 2 and 3, droveways, a quarry, sunken hollows and field boundaries formed another 19 per cent of the assemblage. This may suggest that a lot of the animal waste was disposed of in features that were not lived in, perhaps in liminal locations around the periphery of settlement features. Building features including a chamber passage system and sunken floored buildings only produced15 per cent of the deposit. Pits only contributed 12 per cent of the assemblage whilst wells and cess pits produced the least, together only forming 1 per cent of the deposit. Articulated burials were noted in a sunken floored building, demolition layers, a boundary ditch, a cess pit and in storage/refuse pits.

Overall bone was poorly preserved. Over half the bone was abraded and showed signs of surface erosion indicative of being out in the open for a period of time before burial. Many fragments had suffered in the burial conditions and become degraded and friable causing them to crumble in the recovery process. Bone from all medieval phases was highly fragmented with each bone being on average 10 per cent complete. Gnawed bone was observed in phases 14, 15 and 16 however overall less than 1 per cent of bone showed carnivore damage and none from rodent gnawing. In phase 6 gnawed bone was restricted to plateau 6, phase 15 to plateau 5. In Phase 16 gnawed bone was more dispersed being located on plateaus 1, 2 and 4.

No burnt bone was observed for any phases. Clearly this is underrepresented and may suggest that perhaps ashes or burnt waste was disposed of in a different way perhaps placed onto the fields to act as fertiliser.

Overall 76 per cent of the medieval bone deposit could not be identified to species. This high rate reflects the poor state of preservation and high levels of fragmentation that were observed across the deposits. Species varied across phases, however overall the animals that were identified included, cattle, sheep, sheep/goat, pig, horse, dog, hare, common frog and common toad. Phase 13 contained the least diverse range of animals only containing cattle, sheep/goat and horse. Cattle, horse and sheep/goat were represented in all phases, however sheep was only positively identified in phase 16. No goat was observed in any phases. Pig was represented in phases 14–16 however no pig was observed in phase 13. Dog was also present in phases 14–16, evident from both physical remains and from signs of canid gnawing. Phase 13 contained no evidence at all for the presence of dog. The only representation of wild mammals was hare in phase 14. This absence or low proportion of wild animals is common on medieval sites as laws, following the Norman Conquest restricted the rites to hunt and exploit wild animals to those of aristocratic or noble status. Amphibians were only observed in phases 14 and 16.

Out of the mammal assemblage, cattle fragments were the most numerate forming 35 per cent of the deposit, sheep/goat formed 20 per cent, sheep 1 per cent, pig 19 per cent, horse 15 per cent, dog 9 per cent and hare 1 per cent. Cattle fragments formed a greater contribution to fragment counts in all phases except for phase 15 where sheep goat were more common. The minimum numbers of animals represented in the assemblage was 52. Out of those 47 were mammal and 5 amphibians. The mammals included 11 cattle, 10 horse, 2 sheep, 9 sheep/goat, 5 pig, 9 dog and 1 hare.

To explore husbandry strategies the relative abundance of just cattle, sheep/goat and pig were compared. In all phases the minimum number of sheep/goat and cattle were the same (Table 122), suggesting that perhaps similar proportions of sheep/goat and cattle were utilised throughout this period. In all phases cattle and sheep/goat were important contributors to diet however in reality cattle would have probably formed a greater proportion of the diet as each animal provides more meat due to its size than sheep/goat. The low sample sizes of identifiable material in phases 13 and 14 limit interpretation on the value of pig compared to the other main domesticated species. A minimum number of one of each of the main domesticates were represented in phases 13 and 14, however pig only appeared in single contexts in both phases suggesting that it was perhaps less broadly utilised than the other species. In phases 15 and 16 pig was less well represented than other species. In phase 14 pig represented 20 per cent of the main domesticated assemblage where as in phase 16 pig represented 18 per cent. Cattle and sheep/goat (inclusive of goat) each represented about 41 per cent of the phase 16 deposit.

Horse was well represented in each phase, in phase 14, it was the most abundant species. This abundance of horse is unusual and may reflect an area of deposition that was biased towards slaughtering of horses. When horse is compared to the other main species including the main domesticates and dog, it can be seen that the contribution of horse raises from 8 per cent in phase 15 to 18 per cent in phase 16. This increase may reflect a greater demand for horses as they started to be utilised more for traction related activity both in agriculture, for ploughing or harrowing and for transport pulling carts.

Cattle

Two hundred and sixty-six fragments of bone, from across 81 contexts were identified as cattle. No articulated remains or associated bone groups were observed. Phases 13, 14 and 15 produced low quantities of bone (less than 25 fragments) whilst phase 16 produced 85 per cent of the assemblage. A minimum number of 11 animals were represented in the deposit, 1 from each of phases 13 and 14, 2 from phase 15 and 7 from phase 16.

Remains were identified in a range of features that included storage pits, demolition layers, ditches, drove ways, post holes, chamber systems, wells, quarries, beam slots, cess pits, barrows 2 and 3, field boundaries and sunken floored buildings. Overall ditches produced the greatest proportion of bone. Peripheral features like ditches, a well, demolition layers, droveways, field boundaries, barrow deposits and quarries together provided 75 per cent of the deposit suggesting that features away from areas of living space seem to have been used preferentially to deposit bone waste. Domestic features like storage pits and sunken floored buildings produced 25 per cent of the deposit.

Five cattle mandibles, 1 from phase 15 and 4 from phase 16 suggested that three older subadults aged between 30–40 months and two young adults aged over 40 months were present in the assemblage. Fusion data supported this with the majority of early, mid and late fusing bones appearing as fused. The presence of a minimum number of one juvenile animal, under 18 months and at least 2 over 42 months old was evident from the fusion data. Data from phase 15 demonstrated that at least one animal older than 7 months and less than 36 months was present in the assemblage. All late and mid fusing bones present in the assemblage appeared as unfused. No neonates were observed in the assemblage. The data although sparse tentatively suggests that animals were culled in the later sub adult stages, early adulthood approximately between 2.5 and 4 years of age. No elderly animals were observed in the tooth wear data. These cull strategies may reflect a strategy that focussed on rearing animals for a mixed dairy and meat based economy, culling them at optimum meat weight and in prime years of life after possibly being used for breeding and exploited for milk, traction and manure whilst alive. Some

Juveniles, possibly excessive males may have been culled in the first/early second year of life.

One metacarpal displayed severe splaying of the distal condyles accompanied by the appearance of exostoses around the distal shaft. Whilst these conditions may partially reflect the ageing process, they may also be symptomatic of excessive loading indicative of animals exploited for traction (Bartosiewicz *et al* 1997). Bone may have remodelled, compensating for increased torsion and stress exerted through the skeleton during traction activity.

Metrical data was sparse although 3 metapodials provided metrics that were used to calculate shoulder heights using correction factors by Foch (1966). Withers heights ranged from 101.5 cm to 110.1 cm with an average of 105.4 cm (Table 157). Whilst these figures fall within the average range for shoulder heights of medieval cattle, they fall within the lower quartile range. Other metrical data is shown in Table 153.

It is clear from the quantity of elements identified for cattle that only a fraction of the number of expected elements based upon a minimum number of 11 animals are present in the assemblage. Whilst this low occurrence may partly be the result of recovery bias and natural attrition it is likely that element selection and processing methods also contributed to the distribution pattern evident on the site. The element distribution pattern for cattle is shown in Table 144 and Fig. 287.

It is clear from the bar chart that no horncores were identified in the assemblage despite the presence of cranial fragments. This may suggest that horncores were deliberately removed from the main carcass to be processed elsewhere.

Lower foot bones (phalanges) were extremely sparse or absent from the assemblage. Whilst these smaller bones may have been overlooked in the recovery stage it is also possible that these bones were perhaps also removed to be processed elsewhere perhaps to boil up for glue or resin.

Phase 13 produced isolated cranial and teeth fragments within pit contexts on plateau 1, phase 14 remains included primary butchery waste and lower value meat bearing elements that included the radius and ulna. No prime meat bearing bones were identified in the assemblage. Deposits were identified on plateaus 1, 6, 7 and 8. Plateaus 6, and 8 all contained isolated fragments of teeth or primary butchery waste within pit contexts. Plateaus 5 and 7 were the only areas to produce predominantly meat bearing bones that may represent consumption waste, deposited in ditches on plateau 5 and in barrow three on plateau 7.

Phase 15 deposits included teeth and elements from the rear section of the carcass. No front limb bones were identified in the assemblage. Bones included prime joints

including the upper and lower limbs as well as foot bones. Deposits from phase 15 derived from plateau 5 and 6. Ditch contexts from plateau 5 and 6 contained a few isolated foot bones and a tibia. The main deposit from this phase derived from a well on plateau 5 that contained axial and the rear right and left sections of two cattle aged between 10 and 30 months. No lower foot bones, heads or front sections of carcasses were present and may represent a dump of prime butchered meat.

Phase 16 deposits included a mixture of primary butchery waste that included head and foot bones as well as meat bearing bones from all areas of the skeleton. This broad range of skeletal parts may reflect a whole spectrum of processes that included slaughter, primary butchery processes, removing the head and feet, secondary butchery dividing carcasses into sections, consumption and disposal of waste. Cattle deposits in phase 16 derived from plateaus 1 to 7. Plateaus 1and 2 produced the greatest volume of bone. Other plateaus produced isolated finds predominantly of primary waste including teeth or feet in ditch, pit and well contexts. On plateau 1 all features including field boundaries, quarry pits, pits, ditches, demolition layers and sunken floored buildings contained mixed deposits of meat bearing and primary butchery waste, whilst on plateau 2 ditches and pit contexts (9046, 9048, 9167, 9263, 9427, 9443, 9498) contained primary waste only suggesting these areas may have been used for primary slaughter with the least utilised parts of the carcass disposed of whilst the main section of the carcass was utilised elsewhere. Sunken floored buildings and chamber systems contained predominantly meat bearing bones. No butchery marks were observed on cattle remains from this period. High fragmentation levels may have disguised marks. It is worth noting that good butchers may leave almost no marks during the processes of filleting, disarticulation and skinning. Some long bones displayed smooth helical fractures, axial splits and impact scars suggesting that bones may have been broken open deliberately to extract marrow.

Sheep/goat

A total of 150 fragments were identified as sheep/goat and 8 as sheep. No bone was positively identified as goat suggesting that perhaps the majority of the assemblage consisted of sheep. Two articulating bone groups were identified in phase 16. Overall a total of 62 contexts from across plateaus 1, 2, 5, 6 and 7 produced sheep/goat (including sheep) remains. A minimum number of 11 animals were represented in the deposit, 1 each from phases 13 and 14, 2 from phase 15 and 7 from phase 16, 2 of which were sheep. Two articulating bone groups were also identified in phase 16 deposits (context numbers 15549 and 10253).

Sheep/goat remains derived from a number of features that included pits, demolition layers, ditches, droveways, post holes, chamber systems, wells, cess pits, barrows 2 and 3, field boundaries and sunken floored buildings (Table 134). In contrast to cattle, pits produced the greatest volume of bone forming 37 per cent of the assemblage. Ditches

alone produced 27 per cent of the deposit. Despite pits producing the greatest volume of bone peripheral features including ditches, cess pits, wells, barrows, field boundaries, droveways and demolition layers produced the greatest volume of bone forming 56 per cent of the overall deposit. This may suggest that overall peripheral features were preferentially chosen over sunken floored buildings, chamber systems and pits to deposit bone waste. Pit contexts also contained the associated bone groups.

A total of 14 mandibles, two from phase 15 and 12 from phase 16 provided toothwear data that could be used to assess the age at death profile of the animals represented in the assemblage following methodology by Grant 1982. Data was assessed cumulatively for the period and is presented in Fig. 299 and Table 170. Toothwear stages showed clustering around certain life stages. Toothwear peaks occurred around mandibular wear stage 4, stages 11–13, 33/34 and 37–41. The clustering may reflect culls undertaken on a seasonal basis. Those under stage 13 may represent animals culled in the late summer/autumn between around 6 and 9 months of age. The cluster of tooth wear stages around 33/34, represent animals culled around 2.5 to 3 years of age, possibly another autumn cull. Animals between 37 and 41 may reflect older animals over three and a half years of age in their adult stage of life. No sign of elderly animals over 6 were observed from the toothwear data. The cull pattern may suggest a mixed economy based upon rearing for meat and wool. Animals culled in their first year may represent excessive males culled to produce lamb with females and some males kept for breeding and wool production. Later culls seem to represent animals that have reached optimum meat weight at the later sub adult/adult stages of life culled to provide mutton for the meat market. Animals seem to have been kept until their late second/third year of life before being reviewed for culling. It is likely that animals were kept to rear young and exploited for milk, wool and manure whilst alive.

Fusion data from the assemblage was sparse, evidence being limited to finds from phase 16 only. Elements showed that the majority of bones were fused, all early 80 per cent of mid and 75 per cent of later fusing bones were fused. Unfused elements suggest that a minimum of one animal was under 2 years of age at the time of death. This data supports the toothwear data suggesting that most animals were adults at the time of death. One neonate was observed in the assemblage from a sunken floored building in phase 15 (6523, s 6512, g 5169) confirming that breeding must have taken place close by.

Metrical data was extremely sparse. Those measurements that were taken are presented in Table 153. Only two elements from the associated bone group provided data that could be used to calculate withers heights. Metrical data from a femur and tibia suggested withers heights of 67.7 cm and 65.0 cm giving an average of 66.4 cm (Table 155). This height falls within the average range for medieval sheep (based upon data taken from the animal bone archaeological database; ABMAP 1995).

It is clear from the quantity of elements identified for sheep/goat that only a fraction of the number of expected elements based upon a minimum number of 11 animals are present in the assemblage. Whilst this low occurrence may partly be the result of recovery bias and natural attrition it is likely that element selection and processing methods also contributed to the distribution pattern evident on the site. The element distribution pattern for sheep/goat is shown in Table 146.

In alignment with the cattle distribution pattern, horn cores and lower foot bones were almost totally absent from the assemblage suggesting that they may have been removed to be processed elsewhere. It is of note that the only butchery mark observed on the sheep goat assemblage was a chop mark on a sheep cranium around the base of the horn core supporting the notion that they may have been deliberately removed.

Phase 13 produced isolated pit deposits on plateau 1 that are likely to have represented food waste. Phase 14 remains derived from plateau 5, teeth in a ditch deposit, limb bones and metapodials from a sunken floored building that may represent consumption waste. Metapodials had been smashed open possibly to extract marrow or boil up for stock.

Phase 15 produced remains on plateaus 4, 5 and 6. Demolition deposits on plateau 4, ditch deposits on plateau 5 and pit deposits on plateau 6 all produced primary butchery waste that included head and foot bones whilst a ditch context on plateau 6 and a sunken floored building on plateau 5 produced limb bones, vertebral fragments and metapodials that are likely to represent consumption waste.

Phase 16 produced sheep/got remains from plateaus 1, 2, 5, 6 and 7. Plateau 1 produced the greatest volume of bone. Demolition deposits, cess pits, field boundaries, a sunken floored building, pits and ditches mainly contained loose teeth, cranial, mandibular or foot bones that may represent primary butchery waste. Meat bearing bones were very sparse, often occurring as isolated finds that derived from pit and ditch contexts.

Plateau 2 interestingly contained a majority of meat bearing bones with a few metapodials that may represent food waste. Features included a chamber passage system, sunken floored building and a pit.

Plateau 5 and plateau 6 both produced sheep/goat from pit contexts. An articulated burial derived from a refuse pit on plateau 5 (15549, S15550, G5143). Other pits contained isolated deposits of foot bones or teeth.

Plateau 7 produced the second highest proportion of bone from drove ways and barrows 2 and 3. Deposits were all rich in meat bearing elements suggesting that deposits may largely reflect food waste. Deposits from barrow 3 also contained cranial fragments and may suggest that an animal died/was slaughtered close to the site.

Articulated Burials

Refuse pit context 15549 (S15550, G5143), plateau 5, produced an articulated sheep burial that was truncated by the digger. The skeleton was approximately 60 per cent complete, consisting of post cranial elements including the limbs and axial components. The head had been truncated by a digger and all foot bones were absent from the assemblage. The feet may have been removed prior to burial. No toothwear data was available although all elements were fused suggesting the animal was over 30 months of age. Metrical data is presented in Table 153. An average shoulder height of 66.4 was calculated for the animal. No pathological data was observed on the skeletal remains.

Pit context 10253 (S10256, G10099) on plateau 1 produced matching front and rear metapodials and 4 proximal phalanges from a single animal. No other bones were present in the assemblage. Bones were unfused suggesting that the animal was under 30 months of age. It is possible that these bones were removed with a fleece during the skinning process. They may have been attached to a fleece when deposited in the pit or have been removed from a partially processed fleece away from the main slaughter site. Metapodials were sometimes left attached to fleeces to aid handling and stretching.

Pig

One hundred and forty-six fragments were identified as pig. Bone derived from phases 14, 15 and 16, being found on plateaus 1, 2, 6 and 7. A minimum number of 5 individual animals were represented in the assemblage, 1 from each of phases 14 and 15 and 3 from phase 16.

Pig was identified in a number of features that included pits, demolition layers, ditches, droveways, chamber systems, barrow 2 and a field boundary. The field boundary contained 35 per cent of fragments, although it is likely that pieces belonged to a single cranium that had become highly fragmented. Pits produced 28 per cent of the deposit, ditches 20 per cent, chamber systems 11 per cent, demolition layers 4 per cent, barrow 2, 1 per cent and drove ways 1 per cent.

A total number of three mandibles, 1 from phase 15 and 2 from phase 16 produced toothwear data that could be used to assess age at death (Table 169). In all cases animals represented juvenile pigs culled at mandibular wear stages 8 and 9 following methodology by Grant (1982). Dentition eruption states suggest that the animals may have been around 9 months old at the age of death. It is possible that these animals were culled in the late autumn, if they were born in the early spring. Autumn was commonly a period where surplus animals, that could not be overwintered were culled. Pigs were frequently fed on autumn fruit fall in woods and orchards to fatten them for slaughter. Pigs were frequently chosen for autumn culling as their products were suitable for

preserving in the form of sausage, hams, bacon, dried pork and pickled trotters to last over the winter months.

Fusion data was extremely sparse with the only available data deriving from phases 15 and 16 (Table 164). In phase 15 early fusing bones were unfused confirming the presence of an animal under 12 months of age. No other data was available from the assemblage. Phase 16 data suggested that one animal was under 12 months old and one older than 24 months old. There was no evidence of late fusing elements having reached maturity. Pigs are frequently culled prior to reaching full skeletal maturity as they are bred primarily for meat. No neonates were observed in the assemblage.

Overall 4 males and a female animal were observed in the assemblage, 1 male from phases 14 and 15 and 2 males, 1 female from phase 16. Animals culled in their first year may have been surplus males, with females kept into their second or third year to exploit for breeding.

No metrical or pathological data was observed in the assemblage.

The amount of elements found in the overall assemblage were far fewer than would be expected from a minimum number of five animals. Phase 14 only produced a single tooth from a pit context on plateau 6. Phase 15 produced remains from ditch and pit contexts on plateau 6. The majority of bones from this phase were head, teeth and foot bones with a few isolated meat bearing bones amongst deposits. Whilst these may reflect sites of primary butchery, it is worth noting that during the medieval period pig's heads and trotters were seen as food items served to the table.

Phase 16 produced remains from plateaus 1, 2 and 7. Most deposits contained a mixture of meat bearing, head and foot bones. Plateau one produced the greatest volume of pig bone forming 75 per cent of the assemblage. Features on this plateau producing pig included ditches, demolition layers, a field boundary and pits.

Plateau 2 deposits from a chamber system formed 22 per cent of the phase 16 deposit. This deposit largely contained fragments from heads, with a few limb bones and metapodials. A minimum of two pigs were represented that included a male and female. A small number of cranial, mandibular fragments were charred and may represent remains from roasted heads.

Plateau 7 formed 3 per cent of the deposit with isolated deposits of meat bearing elements that may represent food waste.

Dog

Eighty-two fragments were identified as dog. Appearing in phases 13, 14 and 15 dog was present in assemblages from plateaus 1, 2, 5, 6 and 7, whilst canid gnawing was evident on plateaus 1, 2, 4 and 5. Two articulated bone groups were also identified in phase 16 deposits.

A minimum number of 9 dogs were represented in the assemblage 1 from phase 14, 2 from phase 15 and 6 from phase 16.

Overall 14 contexts contained dog remains. Features represented included ditches, chamber systems, barrow three, a drove way, a quarry, sunken floored buildings and pits (Table 138) Articulated burials were identified in a pit context and a sunken floored building.

All elements that showed fusion status were fused suggesting that animals within the assemblage were mature animals. Metrical data is shown in Table 153. Only data from the two articulated burials in phase 16 provided estimates for shoulder heights. One was 47.7 cm and the other an average of 44.4cm (Table 161). These shoulder heights are comparable to a spaniel and a bull terrier respectively.

No butchery or pathological marks were observed in the assemblage. Many of the expected elements for a minimum number of 7 dogs within the disarticulated assemblage were missing from the collection.

Phase 14 remains derived from 1 context from a quarry ditch (5686, S5688, G5073) on plateau 5. Remains were very eroded and consisted of a head and lower front limbs of an animal. Remains were probably left exposed to the elements for a period of time prior to burial.

Phase 15 contained remains from two dogs, two front limb bones were identified in a sunken floored building on plateau 5 (6525, S6526, G5097) and another in an enclosure ditch (16435, S16438, G6066) on plateau 6. All elements were left sided bones.

Phase 16 remains derived from plateaus 1, 2, 5 and 7. Plateau 1 remains derived from 2 ditch contexts and a sunken floored building. Ditch context 10381 (S10261, G10103) contained head and foot bones whilst 10699 (S10701, G10071) contained the remains of two fragmented heads. An articulated skeleton was also identified in a sunken floored building (866, S867, G1261).

Plateau 2 deposits derived from three contexts, 2 from a chamber passage system contexts 9441 and 9749 (G2150) and 1 from a sunken floored building context 9520 (S9520, G2062). A minimum number of 2 dogs were represented in the chamber system deposits. Fragments represented derived largely from the head and neck with some post

cranial limb, axial and foot bones present. A head was found within the sunken floored building.

Plateau 5 deposits derived from a single pit context (15263, S15188, G5122) that contained a single articulated burial. The skeleton was approximately 70 per cent complete. Plateau 7 produced a single foot bone from a droveway context and a deposit that included the mandibles, axial bones and two limb bones from a single animal in barrow 3.

Articulated Burials

A sunken floored building context 866 (S867, G1261) on plateau 1 contained a female skeleton that was approximately 70 per cent complete. Almost all bones were present except for foot bones. A second animal in the deposit was represented by a radius and a mandible. Metrical data suggested an average shoulder height of 47.7 cm similar to the height of a spaniel today.

A second articulated burial was found in a storage pit context 15263 (S15188, G5122) on plateau 5. This dog was approximately 60 per cent complete with most elements being right sided. The left rear leg and upper front leg was absent from the assemblage as were foot bones. This dog had an estimated withers height of 44.4 cm similar to the height of a bull terrier today.

Horse

Ninety-six disarticulated fragments were identified as horse. 2 articulated burials were also observed in the assemblage, one from phase 14 and one from phase 16. Horse was present in all medieval phases with finds located across plateaus 2, 4, 6 and 8.

A minimum number of 10 horses were represented in the assemblage, 1 from phase 13, 3 from phase 14, 1 from phase 15 and 5 from phase 16.

Twenty-nine contexts contained horse remains. Features represented included pits, cess pits, a well, chamber storage pits, chamber systems, a quarry, sunken floored buildings, demolition/backfill layers, barrow 2, ditches and droveways (Table 140). Out of the disarticulated deposit the chamber systems contained the greatest proportion of bone, forming 45 per cent of the assemblage. Droveways contained 23 per cent, pits 11 per cent, ditches 11 per cent, well 1 per cent, barrow 2 2 per cent, demolition/backfill 4 per cent, chamber storage pit 3 per cent. Articulated burials were observed in a cess pit from phase 14 and a backfill layer to a sunken floored building in phase 16.

Ageing data derived from tooth crown heights (following Levine 1982), suggested that in phase 14 a minimum of one horse was aged between 12 and 17 years, whilst in phase

16 one horse was approximately aged between 3 and 4 years, 1 aged 5.5 to 8 years, 1 aged 9.5 to 12.5 years, 1 between 12 and 20 years and one aged 20+ years.

Metrical data is shown in Table 153. Five long bones provided data that could be used to assess shoulder heights (Table 159). Data provided a range from 123.7 cm to 142.3 cm with an average height of 134.5 cm. These all fall within the average range for the period.

The element distribution pattern for horse is given in Table 151. Disarticulated remains from phases 13, 14 and 15 were isolated axial or limb bones found in pits, a quarry ditch and cess pits. An articulated burial was found in a cess pit on plateau 5 from phase 14 (15091, S15078, G5078). Phase 16 remains derived from plateaus 1, 2, 4 and 7. Plateau 2 produced the greatest volume of phase 16 bone (70 per cent). Whilst isolated bones or teeth derived from most contexts including pits and a sunken floored building, two chambered systems, contexts 9487 and 9747 (G2150) produced over 90 per cent of the deposit. Each context contained predominantly meat bearing bones and metapodials. Only a few loose teeth were observed in the deposits. A number of bones displayed smooth helical fractures suggesting they may have been deliberately broken open to extract marrow and one metapodial had a chop mark from a bladed cleaver type instrument that had been made in the side of the shaft breaking open the bone. One bone displayed canid gnawing marks indicating some horse bone was fed to dogs. It is possible that horse remains were being utilised for meat and marrow.

Plateaus 1, 4 and 7 mainly contained small deposits of teeth or isolated bone fragments mainly from the axial region.

One horse mandible from the phase 16 disarticulated assemblage displayed two premolars which were flattened on the occlusal surface and a canine tooth which appeared to have been filed down. It is possible that the horse was bitted and exploited for traction or riding. The horse was male.

Articulated Burials

A cess pit from phase 14 (15091, S15078, G5078) on plateau 5 produced the remains of a partially articulated male horse skeleton which was approximately 40 per cent complete. Elements present included the horse cranium and mandibles, vertebrae, pelvic bones and limb/foot bones from the right side only. No butchery marks were observed on the skeletal remains. All bones present were fully fused. Toothwear patterns suggested the animal was over 20 at the time of death with teeth worn down to the cemento-enamel junction. Pathological conditions were observed on the mandible, cranium and thoracic vertebrae. A number of thoracic vertebrae had developed enthesophytes on the spinous process, around the attachment sites of the ligaments that run along the vertebral column. 4 vertebrae had fused together as a result of this excessive bone growth. Whilst

age may have contributed to this condition, it is possible that traction related activity could have also been a contributing factor, with bone remodelling in areas of increased stress related to either riding or traction activity.

Mandibles from the horse demonstrated loss of bone from around the alveolar margins of the molar teeth. Bone in this area was pitted with patches of new woven bone on the surface of both the right and left mandibles. On the maxillae thick deposits of new woven bone up to 2 mm thick were present on bone around the premolars. The presence of alveolar bone loss and new woven bone suggests the horse was suffering from severe periodontal disease at the time of death. Periodontal disease or inflammation of the gum is triggered by accumulations of calculus and bacterial plaque around the teeth and gum. On the right external surface of the maxilla was another patch of thick woven bone directly above the premolar area, that was up to 3mm thick spreading with defined boundaries up to the maxillary foramen. The presence of new bone on the external surface suggests that the horse suffered from infection to the periosteal or outer layer of the bone in this region. Infection may have spread up from the tooth area or been the result of infection in the soft tissue overlaying the area. It is likely that the animal experienced discomfort from these conditions during life.

The presence of a bevelled facet on the anterior edge alongside a flattened occlusal surface in which the enamel ridges are worn down to the same level as the dentine on a lower second premolar may suggest the horse was bitted (Bendrey 2007, 98) and may be taken as evidence that the horse was used for riding or traction. Withers height calculated from the horse suggested that the animal was approximately 123.7 cm.

Context 10156 (S10166, G10125), from phase 16, plateau 1, was a backfill layer in a sunken floored building that produced a partially articulated skeleton of a horse. The skeleton was around 70 per cent complete, the cranium, mandibles, vertebrae and rear legs were present. Front legs were missing except for a single right radius. Bones showed surface erosion and the cranium was heavily fragmented. It is possible that the animal was exposed prior to burial and had suffered further damage within the burial environment. The horse was a young animal, late fusing bones had just fused suggesting the animal was between 36 and 42 months of age. The age of between 3 and 4 years was also suggested by the crown height of the teeth (Table 166). No pathological or butchery marks were observed on the remains. Metrical data suggested that the horse was approximately 137.3 cm in height (Table 159).

Hare

Hare was only present in phase 14. One group of articulating hare foot bones was observed in a chamber storage pit, context 6230 (S6236, G6048), plateau 6. The group consisted of articulating metapodials and an astragalus. The metapodials were eroded and had all broken close to the distal end of the shaft. The bones were all left sided.

The presence of articulated hare's foot bones may tentatively suggest that they may have been kept as a charm or talisman.

Amphibians

Overall 60 amphibian bones were observed in the assemblage.98 per cent of them derived from phase 14 and 2 per cent from phase 16. 39 bones were identified to species, 21 common frog (*Rana Temporaria*) bones were observed and 18 common toad (*Bufo Bufo).*

A minimum number of three frogs and two toads were observed in the deposit. 2 frogs and 2 toads derived from phase 14 and 1 frog from phase 16. One cess pit (15077 and 15098, S15078, G5078) on plateau 5 and a storage pit (6170, S6203, G6048) on plateau 6 produced amphibian remains in phase 14. Whilst the storage pit only produced a couple of bones, context 15098 produced over 95 per cent of the amphibian deposit. Remains in this context represented a minimum number of two toads and two frogs. It is likely that these contexts were open, cess pits in particular would have attracted insects and created a good feeding source for amphibians. Context 15098 also contained parts of a horse cranium. Rotting meat would have also attracted amphibians into the environment.

Only frog bones were observed in phase 16, an isolated bone was observed in a boundary ditch deposit (10381, S10261, G10103) from plateau 1.

Phase 17: Post-medieval up to 1900

Phase 17 produced 94 disarticulated fragments and 3405 fragments that belonged to articulated burials. Preservation was good, particularly for the articulated remains which were in an excellent state of preservation. 50 per cent of the disarticulated remains were unable to be identified to species. Species represented in the assemblage were horse, house mouse, rat, pig, dog, cattle, sheep/goat and sheep. A minimum number of 22 animals were represented in the deposit, 2 horse, 1 pig, 1 cattle, 11 sheep, 1 sheep/goat, 2 dogs, 2 rat and 2 house mice. Articulated remains consisted of two partially articulating dog skeletons and 8 sheep.

Finds were located on plateaus 2, 4 and 6. Plateaus two and six contained the articulated burials.

Fifteen horse fragments derived from plateaus 4 and 6. Features on plateau 6 consisted of building backfill (16331, S16297, G6078) and a foundation ditch for a post mill (16084, S16085, G6079) whilst plateau 4 was a quarry pit (4073, S4084, G4103). Contexts on plateau 5 produced 4 bones that were metapodials and a radius. Context 16084

produced two bones a metatarsal that had a chop mark into the lateral shaft breaking the bone and a metapodial that had a circular hole driven through the distal shaft and had been trimmed along the shaft with the posterior edge of the distal articular facets removed creating a flat surface. The quarry produced 11 fragments from a single pelvis. Metrical data is shown in Table 153. All bones were fused.

Three pig fragments derived from 2 contexts on plateau 6 that were both fills from buildings. Elements included a rib, astragalus and an ulna. Metrical data from an astragalus is given in Table 153.

Nine fragments belonged to cattle. Four contexts from plateau 6 provided cattle remains. Features included demolition layers and building fill. Elements included isolated teeth, an axis, phalanges, tibia and ulna. The tibia had a chop mark dividing it mid shaft, evidence of carcass portioning.

Seven sheep/goat fragments one of which was goat were observed in the assemblage. Three fill layers from buildings produced vertebrae and pelvic bones. Two vertebrae were sagittally divided indicative of the carcass being split axially through the spine and a pelvis had been chopped through the neck of the ilium presumably dividing the carcass into portions.

One house mouse mandible was observed in context 16804 (S16085, G6079), a foundation ditch for a post mill on plateau 6.

Twelve rat fragments were identified on plateau 6, Post cranial remains were observed in context 16135 (S16135, G6082), a pit forming part of an 8-pit structure and in context 16806 (S16087, G6079), a foundation ditch for a post mill.

Articulated burials

Thirteen sheep burials were identified on the site, 11 on plateau 8 and 2 on plateau 2 (Table 172). Many consisted of complete animals, one burial on plateau 2 contained two animals. Those that were incomplete are likely to have been truncated at some stage missing front or rear halves. All animals demonstrated the same states of fusion suggesting that they were all around the same age at the time of death. All bones were unfused except for the pelvis and scapulae which were either just fused or in a state of fusing. This may suggest that animals were aged between 7 and ten months old at the time of death. The appearance of so many articulated animals may suggest that deaths may have resulted from either severe weather or an outbreak of disease. Skeletons on plateau 2 showed evidence of slight charring on the cranial and axial fragments suggesting they had been heated, although heat had only started to affect areas of bone closest to the surface. Distinct burn lines demonstrate that the animals were fleshed at the time of heating. If animals were born in the spring then deaths are likely to have

occurred in the autumn/early winter. No evidence of butchery or pathological alteration were evident from the bones.

Two partially articulated dog skeletons were identified in contexts 16343 (S16297, G6078), the upper fill of a building and 16333 (S16314, G6085), a fill of a sunken floored building, the former containing the front half of a young puppy and the latter containing a rear half. All elements were unfused suggesting the animals were under 30 weeks at the time of death (based upon fusion data from Clark 1995). No pathological or butchery was evident on the bones.

Bulk Samples

In total 260 samples from 212 contexts produced 12,939 fragments of bone which weighed 8375g. Table 173 shows the fragment distribution per phase. Phases 8 and 12 produced the greatest volume of bone producing 6564g and 994 g of bone respectively. Phases 1, 6, 7 and 15 all produced less than 10g of bone. Overall preservation was poor, with fragments being eroded and highly abraded in many samples. Exceptions to this were remains from phase 12, plateau 3, which were in a good state of preservation, showing lower levels of erosion and abrasion than other contexts.

Burnt remains were observed in samples from 102 contexts or 48 per cent of the contexts sampled. Burnt remains were observed in phases 1, 7, 8, 9, 10, 12, 14 and 16. In the hand recovered assemblage only 6 per cent of all contexts produced burnt remains. The presence of such a high proportion of burnt remains in the bulk samples may suggest that burnt remains in the hand recovered assemblage may have been underrepresented. It is possible that small fragment size and different, often darker coloration may have influenced recovery rates in the hand recovered process, with burnt fragments being overlooked. The majority of burnt remains (95 per cent) were tan, black or grey suggesting that most of the remains found were incompletely burnt and had been exposed to low temperatures or higher temperatures for short durations of time. 26 per cent of the burnt fragments were partially charred, showing distinct burn lines on the bones, suggesting that these bones were fleshed at the time of heating. These characteristics support the premise that bone may have been affected by heat during the cooking process or on a domestic fire. Less than 2 per cent of contexts contained calcined bone, indicating that few remains were exposed to temperatures over 800 degrees Celsius. Calcined bone rarely occurred in the same contexts as other burnt bone. The data collated from the samples supports prepositions made from burnt bone in the hand recovered assemblage, that most heated bone was probably created in the cooking process, or from disposal in domestic fires. Data from both assemblages also suggests that calcined remains were rare and that their separate appearance to partially combusted bone may suggest that they these bones were exposed to different heating processes perhaps on a pyre.

Less than 1 per cent of the assemblage was gnawed. Gnawed bone appeared on larger fragments in phase 8 and 12 contexts confirming the presence of dogs in these phases. No rodent gnawing was identified in the assemblage.

The distribution of species is shown in Table 174. In total 94 per cent of finds could not be identified to species reflecting the high rates of fragmentation and overall poor preservation. The range of species represented in the samples mainly reflected those represented in the hand recovered assemblage including cattle, sheep/goat, sheep, pig, horse, dog, deer, shrew, hare, field vole, house mouse, brown rat, mole, common toad and common frog. Although goat and sheep were both positively identified in the hand recovered assemblage, no goat was identified in the bulk samples although sheep was. Fox and wood mouse were both present in the hand recovered assemblage but absent from the samples. Extra species identified amongst the small mammal bones from the samples were shrew and mole.

In all phases the three main domesticated species were the most abundant reflecting the fragment distribution pattern of the main assemblage. Out of just the main domesticated species cattle, sheep/goat (inclusive of sheep) and pig sheep/goat fragments were the most abundant forming 53 per cent of the assemblage as opposed to cattle 29 per cent and pig 18 per cent. In comparison the relative abundance of just these three species in the main assemblage was cattle 57 per cent sheep/goat (inclusive of sheep and goat) 33 per cent and pig 10 per cent. This discrepancy may infer that the hand recovered assemblage may have been biased in favour of the larger mammal bones like cattle.

To consider how representative the results of the hand recovered assemblage are, data from the hand recovered assemblage was compared to data from the samples (O'Connor 2003). The number of contexts each species occurred in for both assemblages were calculated and displayed as relative frequencies of the total number of bone producing contexts for each assemblage (Table 175)

Results demonstrate that for the cattle and sheep/goat there were discrepancies between the relative frequencies based upon the samples and the hand recovered assemblages. Cattle appeared in a greater proportion of contexts in the hand recovered assemblage than in the sampled contexts. This may support the idea that the recovery rate of cattle bone may have been greater than smaller mammals like sheep/goat in the hand recovered assemblage. This is supported by a slightly greater proportion of sheep/goat remains appearing in the sampled assemblage than in the hand recovered assemblage. Pig frequencies were similar in both assemblages suggesting that the low proportion of pig in the hand recovered assemblage may not be a result of recovery bias. Pig can often be under represented in assemblages as they are frequently culled prior to being fully skeletally mature, juvenile bones being less likely to survive in burial conditions rather than fully fused mature bones. The increased susceptibility to breakage in the burial environment of immature bones may also make pig more difficult

to identify in a fragmented state. The proportions of dog, hare and red deer were very similar in both assemblages suggesting that recovery bias may not have affected these species.

The range of elements observed in the assemblage consisted mainly of the smaller elements particularly carpals, broken vertebrae, rib fragments, sheep patellae, epiphyses and loose teeth particularly juvenile deciduous teeth, or teeth that were in early stages of development with minimal root formation. These elements were sparse or largely absent from the main assemblage and may reflect bias within the excavation stages where they were overlooked. Surprisingly only a few isolated phalanges or astragali were observed in the sieved remains. This may suggest that there underrepresentation in the hand recovered assemblage was not down to bias but may have reflected selection processes with toe bones being disposed of/utilised elsewhere. In addition almost no horn core fragments were observed, again reinforcing the possibility that they were not utilised on site but were removed to be processed elsewhere. Some of the main meat bearing limbs were observed in the assemblage but in highly fragmented states. Many displayed smooth helical fractures indicative of fresh breakage supporting the premise that they were broken open to utilise in stews, boil up for stock or to extract marrow.

Neonatal remains belonging to cattle, sheep/goat, pig and dog were found in the samples. These species match the range of species that had neonatal remains in the main assemblage. One cattle neonate was observed in context 11082, a sunken floored building from phase 12. Six contexts, 5 pits from phase 8 (8692, 12068, 14482, 8639, 12109) and 1 sunken floored building from phase 12 (11079) produced sheep/goat neonatal remains. One pig neonate from phase 8 in pit context, 12109 and 1 neonatal dog was observed in phase 10, pit context 8612.

Aging data from two sheep/goat mandibles from phase 8 and 12 gave wear stages of 30 and 36 respectively suggesting that animals were around 3.5 and 2 years of age at death. These ages fit in with the cull patterns observed in these phases.

Butchery marks were extremely sparse in the assemblage. A fine cut mark on a dog phalange in phase 8 pit context 8627 raises the possibility that the dog had been skinned whilst a cut mark to a sheep cranium around the base of the horncore from phase 12 supports the idea that these were removed from the main carcass to be processed elsewhere.

Remains from two hares in a sunken floored building, context 11079, phase 12 were affected by heat with many bones partially blackened or tan in colour. Most limb bones were present although there was no head or feet. These may have been removed and the main carcass roasted. A cut mark through a distal tibia may suggest that feet may have been deliberately removed.

Small Mammals

The range of species included in the small mammal/amphibian assemblage included mole, house mouse, field vole, rat, common shrew, common frog and common toad. 91 contexts from across phases 2, 7, 8, 10, 12, 14 and 16 produced small mammal mouse size post cranial bones that could not be identified to species. Phases 8 and 12 produced the greatest number of contexts that produced small mammal remains (49 contexts and 15 contexts respectively). The types of features producing rodent remains were mainly pits, sunken floored buildings and post holes. A cess pit from phase 14, ditch from phase 16 and grave from phase 2 also produced rodent remains. General amphibian remains that were not identified to species were observed in 25 contexts across phases 6, 8, 12 and 16. Phases 12 and 8 produced the greatest number of contexts producing amphibian remains (12 contexts and 9 contexts respectively). Amphibian remains were identified in pits, post holes and sunken floored buildings.

In the hand recovered assemblage bank vole and wood mouse were also identified.

A small number of elements displayed signs of digestive corrosion, indicative of having been deposited in scats or owl pellets.

Common Toad (Bufo bufo)

Common Toad was identified in 10 contexts from phases 8, 11, 12 and 14 in the bulk samples and 10 contexts from phases 8, 11 and 14 from the hand recovered assemblage. Phase 8 produced remains from 8 contexts (3586, 3764, 8516, 8640, 12068, 12868, 14495 and 14806). All contexts derived from plateau 8, all were pits except for one post hole. Phase 11 produced remains from plateau 8 from a boundary ditch. Phase 12 produced remains from contexts 11072, 11073, 11082, 11083, 11098 11103 and 11107 on plateau 3. Feature types represented included post holes, a pit and fills from sunken floored buildings. Phase 14 remains derived from cess pits (15077, 15098) on plateau 5 and a chamber storage pit (6234) on plateau 6. Only a single pit produced toad remains from phase 16 (15317) on plateau 5. One set of toad bones showed signs of digestive corrosion in the chamber storage pit suggesting that an animal may have been eaten, its bones passing through the digestive tract to be deposited within a scat.

The features represented must have all been open at some point. Toads may have been attracted to dark damp areas in search of small insects or food, or to hibernate. Some may have fallen into open pits, and been unable to find a way out. All contexts containing toad remains also contained other mammal bone. Rotting meat or food waste would have attracted insects creating a good food source for toads.

Common Toads are widely distributed throughout Britain. Their preferred habitat is in damp places in areas of woodland, scrub or rough grassland that are near a freshwater

source. Their diet consists of invertebrates such as insects, larvae, spiders, slugs and worms. Toads are nocturnal and can shelter under tree roots, stones and vegetation during the day. They hibernate over winter being commonly found under leaf litter, logs or in burrows or drains.

Common frog (Rana temporaria)

Common frog was identified in 14 different contexts from phases 8, 12 and 14 in the bulk samples and 7 from phases 8, 14 and 16 in the hand recovered remains. Frog was identified in 6 phase 8 contexts on plateau 8 (8639, 8640, 12068, 14495, 3729, 3692). All contexts were pits. 9 contexts in phase 12 produced frog bones (11070, 11072, 11079, 11080, 11083, 11084, 11096, 11107, 11110). All contexts related to fill layers or post holes from sunken floored buildings on plateau 3. Phase 14 produced frog bone in two cess pits from plateau 5 (15077 and 15091) and a pit (6170) on plateau 1. One boundary ditch on plateau 1 produced frog from phase 16 (10381) All contexts represented also included other mammal waste, that may have attracted other insects and flies to these areas, in turn providing a good food supply for frogs. One horse skull found in a cess pit context from phase 14 (15091) contained the remains of a frog within the skull cavity. It is possible the frog climbed in to the space to hibernate or feed. Frogs may have fallen into open pits, whilst damp ditches, or dark damp floors of buildings, particularly those with food waste around may have provided good conditions for finding insects or larvae as well as providing shelter in shaded conditions. One set of frog bones representing a minimum number of two frogs in a sunken floored building from phase 12 were black (11096), suggesting they had been exposed to low temperatures. These animals may have been utilised as a food source or may have accidently become incorporated into a fire amongst logs or waste.

The common frog is widespread in Britain preferring to habituate meadows, gardens and woodland. Frogs need a source of water nearby, preferring areas of shallow water. They breed in freshwater puddles, ponds and lakes. In the winter the species hibernates in areas such as banks, stony piles, grass heaps and log piles. Adult frogs feed entirely on land, whereas younger frogs will also feed in water. Tadpoles are herbivorous and feed on algae but become carnivores when they mature into adult frogs.

Field vole (Microtus agrestis)

Field vole was identified from the mandible. These were identified in 11 contexts from phases 2, 8, 10, 12 and 16 from the bulk samples and in 3 contexts from phase 8 in the hand recovered assemblage. Phase 2, or the Bronze Age produced a single mandible from a grave context (6244) on plateau 6. Iron Age Contexts from Phase 8 produced the most vole bones (8228, 8623, 8414, 8624, 8640, 8721, 12208, 14494, 14495) from plateau 8. Whilst only one vole was represented in most contexts, two pits 8721 and 8640 produced remains from two and three animals respectively. Late Iron-Age/Early Roman context

8661 from phase 10 produced remains from pit context 8661 on plateau 8 whilst phase 12 in the Anglo-Saxon period produced remains from a single context from a sunken floored building (11083) on plateau 3. Two contexts from the medieval phase 16, the backfill to a sunken floored building (10309) and a cess pit (10342) both on plateau 1 produced field vole remains. A number of charred vole bones were observed in pit context 8228 from phase8 suggesting the animal had been caught in a fire, possibly amongst chaff or reeds. It is possible that voles may have dropped into open pits/holes where they got stuck or that they were accidently brought into domestic features with bundles of hay or grain.

Field voles have a widespread distribution across mainland Britain. Their predominant habitat is rough, ungrazed grassland although lower densities are found in marginal habitats like hedgerows and woodlands (Harris *et al* 2009), they tend to build nests above the ground. Field voles were extremely abundant across Britain prior to the turn of the century and at times were documented as causing vole 'plagues' where creatures were known to devastate crops and young trees (Harris *et al* 2009; Ritchie 1920; Elton 1942; Millais 1904–1906).

Bank Vole (Clethrionomys glareolus)

Bank vole was identified from the mandible. They were observed in 1 pit context from the Iron Age hand recovered assemblage, (14495) from phase 8 plateau 8.

Bank voles are a native species that are ubiquitous across Britain. Their preferred habitat is within the shrub layer of mixed deciduous woodland, although they are also commonly found in grassland, young tree plantations or in hedgerows (Alibhai and Gipps 1991). During summer months bank voles may disperse into cultivated areas that have been cropped (Tew and MacDonald 1993). Bank voles tend to make nests amongst tree holes, under logs or underground. Their diet consists of leaves, buds, fruit and some insects.

Common shrew (Sorex araneus)

Common Shrew was identified from four mandibles in Anglo-Saxon contexts 11079, 11086 and 11083, two of which were sunken floored buildings and one a post hole.

Common Shrew is a native species ubiquitous across Britain found in areas with low level vegetation cover. In particular they are most common in areas with thick grass, hedgerows, scrub and deciduous woodland (Harris *et al* 2009, 15). Shrews are active during the day and night and have a diet that is mainly based upon small insects, slugs, spiders, worms, small mice or carrion.

Wood mouse (Apodemus sylvaticus)

Wood mouse was identified in the hand recovered assemblage, from a mandible in an Iron Age pit context (14806) on plateau 8 using metrical criteria according to Miller's data (reproduced in O'Connor 1988, fig. 17). Wood mouse is found throughout Britain and is known to inhabit areas of woodland, arable land, ungrazed grassland and vegetated urban areas providing conditions are not too wet (Flowerdew 1977; 1991).

House mouse (Mus domesticus)

House mouse was identified in bulk samples from mandibles in 26 contexts from phases 8, 12 and 16 and two from 2 contexts in the hand recovered assemblage in phases 8 and 17. Iron Age phase 8 produced the greatest spread of mandibles. 22 contexts produced house mouse (3903, 8276, 8283, 8391, 8435, 8619, 8620, 8623, 8624, 8625, 8627, 8639, 8640, 8721, 8859, 8935, 12068, 12109, 12111, 14483, 14485, 14806). All contexts were pits suggesting that mice were attracted to stores or refuse areas. Mice may have fallen or been attracted into open pits and been unable to find ways out. Phase 12 contexts from plateau 3 produced remains from within 4 contexts from sunken floored buildings (11071, 11079, 11083, 11107). One ditch context in phase 16 (5683) produced house mouse which may suggest that buildings may have been close by. A foundation ditch for a post mill in phase 17 also produced house mouse remains.

House mice are thought to have been introduced to Britain prior to the Iron Age (Corbet 1984, 187–188) and are now broadly distributed throughout the British Isles. The species thrives in areas of human habitation and can be prolific in urban areas. House mouse was recorded in British texts dating to 1006 (Aelfric 'Grammaticus' cited in Lever 2009, 43) and by the late Medieval period large populations were thought to exist in towns throughout much of Britain (Armitage 1985, 67). House mice are omnivorous feeding on insects, cereal, seeds and plant material and frequently target food stores accumulated by man.

House mice can cause problems to food stores by damaging storage containers like sacks, eating edible supplies and contaminating food with urine or faeces. Gnawing can also create problems on artefacts or cables whilst bedding materials can be destroyed for nesting. Their potential to carry fleas and lice make them a vector in disease transmission and they are associated with a number of human conditions including rat bite fever, tularaemia murine typhus, rickettsial pox and leptospirosis amongst others (Lever 2009, 43). They can also be associated with outbreaks of food poisoning and tapeworm (Lever 2009, 43).

Mole (Talpa europaea)

Mole was identified from post cranial elements in 6 contexts from the bulk remains deriving from phase 12 and 14.5 Contexts from the Anglo-Saxon period, 4 from sunken

floored buildings and 1 from a post hole produced mole bones (11072, 11079, 11083, 11090, 11107) whilst they appeared in 1 context from a cess pit in phase 14 (15077).

Moles are native to Britain and are commonly found throughout mainland Britain. They appear in most habitats where soil levels are deep enough to burrow in. Although they are thought to have originally inhabited deciduous woodland they are now also commonly found in agricultural habitats, gardens, hedgerows and pasture land (Stone and Gorman 1991). Moles eat small invertebrates but their extensive burrows can cause problems on newly cultivated ground, damaging roots on young crops.

Rat

Rat was identified from post cranial remains in the bulk samples from three contexts, from the Anglo-Saxon period (11079, 11091, 11083) and 3 contexts from the hand recovered assemblage dating from phase 17, the post-medieval period. Post cranial elements are unable to be identified to either black or brown rat. However, given that brown rat was only introduced to Britain in around AD 1720 (Clutton Brock 1987, 154) and that the estimated stratigraphic date of the Anglo-Saxon context is pre-AD 1700, it is likely that these elements derived from black rat (*Rattus rattus)* which were introduced to Britain during the Roman period (Armitage *et al* 1984). The post-medieval remains may derive from either species.

Black rat flourishes in built up environments, in close association with man and to a large degree are dependent upon the warmth and shelter provided by human habitation (Twigg 1984, 86–88).

Black rat is nocturnal and although it prefers a vegetarian diet feeding on fruit, agricultural crops and grain, it has been known to also consume offal, butchery scraps and small invertebrates (Twigg, 1984, 103, 110–111).

Brown rats (*Rattus norvegicus*) are found throughout most of mainland Britain and are most commonly associated with farms, rubbish dumps, sewers, mills, urban waterways and warehouses (Lever 2009, 46), although they are also known to exist in hedgerows surrounding fields of cereal or root crops (Harris *et al* 2009, 60). Their natural habitat is in areas with dense groundcover that is near water. Unlike black rat, brown rats can exist independently of humans in grassland and in some coastal areas in particular salt marshes (Taylor, Fenn and Macdonald 1991). Similar to black rats they are omnivorous and eat almost anything edible preferring starch or protein rich food and have been known to consume other inedible substances like soap or candle wax (Lever 2009, 46)

Black and brown rats are problematic in that they tend to destroy food sources during feeding and can destroy crops, ruin stored food sources with urine and excrement, and cause damage through gnawing (Nowak 1999). They can also act as disease vectors

transmitting conditions such as typhus, bubonic and pneumonic plague, rabies and food poisoning.

Discussion

Excavations at Thanet Earth produced faunal remains from across a broad range of phases and features representing activity that had taken place in the area from the Neolithic, right through to the Post-medieval period. The animal bone data collated from across all the plateau sites provided a window through which activities undertaken in the past could be viewed. Data has highlighted continuing and changing practices over time relative to how people perceived and interacted with animals as well as highlighting components of how the broader landscape was used over time.

Overall excavations produced 22,330 fragments of bone from the hand recovered assemblage and 12939 from the bulk samples. Phases 1, 3, 4, 5 and 13 produced minimal finds with each phase producing fewer than 100 fragments of bone. Phases 2, 9, 6, 10, 14 and 15 produced between 100 and 500 fragments of bone, phases 7 and 11 produced between 500 and 100 fragments whilst phases 8,12 and 16 were the only periods to produce over 1000 fragments of bone. Although the volume of bone produced in each phase is influenced by preservational factors and the types of activity and depositional practices undertaken by the populations of the time, the number of contexts and levels of bone production provided insights into how intensively the landscape was utilised over time. Fluctuations in the number of bone producing contexts and volume of bone found in each phase, suggested that the landscape around the excavation plateaus went through phases of intensified use and disuse.

All the plateau excavation sites produced mammal bone however the distribution of fragments over the plateau sites relative to time, highlighted how the focal points of domestic activity within the landscape moved over time and emphasised how extensively areas were utilised. The main centres of domestic activity shifted across different plateaus as communities came and went, the landscape being modified and utilised in different ways as technology, perceptions, ideologies and social structuring influenced how people interacted with animals and dictated how the landscape was used by the communities settling there.

The state of bone preservation across the site and phases varied. It was clear soil conditions, type of feature and nature of the deposition affected the state of bone preservation. Periods that contained high volumes of bone deposited in open features like ditches or quarries demonstrated higher levels of poor bone quality when compared to periods that produced most bone from pits or buildings. Almost all periods contained bone assemblages that were highly fragmented with many bones deliberately broken up presumably to maximise nutrient extraction and utility value of the carcass. Bones in all phases except for the post-medieval phase showed signs of fresh fracturing identified

using characteristics suggested by Outram (2001) and impact scars suggesting that bones were smashed open presumably to extract marrow, grease or boil up for stock in stews. Earlier phases, in particular the Iron Age and Anglo-Saxon periods tended to show higher levels of fragmentation than others possibly suggesting that the intensity with which carcasses were processed may have been greater in these periods. The high levels of fragmentation meant that in all phases there were high levels of non-identifiable bone, many fragments being small shaft fragments with no clear markers indicative of particular species.

Burnt bone was exceptionally sparse across the whole deposit. Small deposits from phases 7, 8, 9, 10, 12 and 17 in the hand recovered assemblage were noted. These often reflected incomplete combustion where fragments were mixed colours ranging from black and grey, to orange and tan indicative of bones exposed to low temperatures or for higher temperatures for short durations of time. Partial heating where bones displayed distinct burn lines and instances where the end of a long bone had been held over a flame to quickly heat and release the marrow were also observed in the assemblage. Few burns were calcined, and across all burnt deposits calcined bone was not mixed with other incompletely burnt bone. This may suggest that deposits of calcined bone may have reflected different types of burning activity. Whilst deposits of mixed colour and partially burnt bone may suggest they resulted from exposure to domestic fires in the form of cooking, roasting or casual discard in a fire, deposits of calcined bone may reflect remains exposed to high temperatures with a level of care administered to ensure fragments were completely burnt. These sorts of conditions may be found on pyres or in controlled fires used to heat metals or pottery. Small deposits of calcined bones may represent selected token deposits of burnt remains taken from pyre of intense fire pit and deposited elsewhere. Deposits of calcined bone have been identified in other archaeological assemblages and interpreted as burnt offerings (Jones 2011c; Done 1984; Nicolayson 1994)

Sieved deposits contained a more regular occurrence of burnt remains. This evidence supports the supposition that overall burnt remains were underrepresented in the hand recovered assemblage. Burnt remains in the samples similarly reflected a high level of specimens that were incompletely burnt and almost none that were calcined. Burnt bone in the samples consisted largely of tiny fragments of between 1–2mm in diameter and may suggest burnt remains may have been broken down to a greater degree than the unburnt remains. Fire waste may have been overlooked during excavation or crushed to utilise in different ways for example as fertiliser, temper in pottery or cleaning abrasive.

Overall the range of species represented in the assemblage included those in the main mammal assemblage and a number of amphibians and small mammals. The range of main mammals represented included cattle, sheep, goat, pig, horse, dog, hare, red deer, roe deer and fox. Each phase saw slight variation with the types and proportions of animals represented in the deposits, however within each period deposits were

dominated by the main domesticated species. Cattle and sheep/goat remains formed the majority of all assemblages.

Although data sets are small in the early Neolithic and Bronze Age periods, data derived from deposits, tentatively suggested that cattle were the most abundant species. Early communities may have developed a pastoral lifestyle managing herds of cattle, moving around areas of land with their animal herds. The low levels of bone and small range of features that contained bone during this phase may support this premise. Cattle have been noted to be the predominant species at other sites appertaining to the Neolithic or Early Bronze Age periods (Grimm 2008a; Jones 2009b; Chapman 2005; Davis and Payne 1993; Levitan *et al* 1988; Levitan 1990) where they are also noted to be more abundant in deposits over sheep/goat or pig. Based upon strontium analysis, Towers *et al* (2009) have suggested that cattle in the Late Neolithic/Early Bronze Age travelled long distances with their owners during this period to reach other communities where some cattle may have been exchanged with ones reared by distant communities.

Data collated from the Iron Age deposits suggest that husbandry strategies focussing on larger mammals may have altered as the Iron Age progressed with sheep/goat becoming the dominant species in assemblages from phases 7 and 8. The change in favour of greater numbers of sheep/goat may have reflected an increased demand for wool, possibly to trade and the establishment of a more sedentary lifestyle where fields and structures within the landscape could be established to contain, protect and manage livestock. Iron Age deposits suggest that during phase 8 the numbers of animals utilised in the area increased, the range of species expanded as did the range of features and number of plateaus that produced animal bone. Evidence suggests that a more settled community became established during this phase and communities started to utilise the landscape more extensively. This increase in sheep/goat follows a pattern suggested by Hambleton (1999, 59) for assemblages from Wessex and southern England that tend to show a progressive increase in sheep proportions from the early to later Iron Age rather than those from the east of England and Anglia that show higher levels of cattle.

The trend of higher sheep/goat proportions does not seem to continue into the late Iron Age/Early Romano-British assemblage which reflects higher proportions of cattle over the other domesticates. Whilst this increase may just reflect a bias created from the smaller sample size, Hambleton also notes this trend occurring for other sites within Wessex and the south of England (1999, 59). The increased proportions of cattle may reflect a move toward local communities adopting a more Romanised diet that favoured beef (King 2005, 332; Vigne 1992).

Later Roman deposits indicated that sheep/goat may have once again become more popular over the other domesticates towards the end of the Romano-British phase. This change from cattle dominated deposits to sheep/goat is unusual in Roman deposits.

Whist the low sample size may have presented a biased reflection of relative species abundance it is worth noting that other sites in the area that have produced animal bone from this period suggest that cattle were the most abundant species (Jones 2009c; Jones 2011c; Jones and Cooper 2009; Bendrey 2006) Evidence of higher sheep/goat proportions have been observed on specialised sites like temples (Woodward and Leach 1993), and in a number of excavations around Winchester dating to the Roman period (Maltby 2010, 104).

Anglo-Saxon deposits continued to demonstrate greater abundance of sheep/goat over cattle or pig. This higher level of sheep/goat during the Anglo-Saxon phases is common to many other sites (Jones 2010a; Mulville and Ayers 2004; Done 1993; Crabtree 1989) and may reflect a high demand for wool during this phase.

Medieval deposits all suggest that cattle and sheep/goat were represented in equal numbers for each phase. At other Medieval sites from the area sheep/goat have been the most common species (Jones 2011b; 2011c). The equal presence of cattle and sheep/goat may tentatively suggest that deposits may reflect a meat based economy rather than one that specialised in dairy or wool. The dominance of sheep/goat appears once again in the Post-medieval phases however this may be biased reflecting the unusual number of articulated burials within the deposit.

Pig only appeared in deposits from the Iron Age onwards and was the least well represented out of the main three domesticates in each subsequent phase. The appearance of lower proportions of pig in all periods are common observations in assemblages from many sites relating to different phases (Grimm 2008a; Hambledon 1999; Jones 2009b; 2009c; Jones and Cooper 2009; Bendrey 2002; 2006; Gilchrist 1989; Scott 1996; Jones 2010b; Jones 2011a; 2011b; 2011c; Rushe *et al* 1988) Those that have contained large deposits of pig have often been viewed as specialist sites or in larger populations where pork was probably brought in as portioned sections. In Romano-British contexts town assemblages have been recognised as having higher proportions of pig over sheep/goat than in other types of Romano-British settlements (King 1984).

There are a number of reasons as to why pig is commonly less well represented in the archaeological record than other species. Pigs are not as easy to manage in big numbers as those of the ungulate (cattle and sheep/goat) family that naturally exist in large herds. Rather pigs exist in smaller family units making it more difficult to manage larger groups of animals in a restrained space. Today it is recommended that 2 acres is allowed for a group of two pigs. Large numbers of pigs need space and would require stalls or separate housing for different groups to prevent fighting and illness from spreading. Similarly pigs are sensitive to temperature and are prone to burning in higher temperatures. As such animals require shade from the heat or access to mud to cool themselves. They are bred primarily for meat and as such are not kept into longevity but are culled as soon as they reach optimum meat weight which in modern pigs is between

5 and 11 months. The fact that animals are often skeletally immature means that their juvenile bones are more susceptible to attrition and damage within the burial environment and are less likely to survive in the archaeological record than more mature animals of other species (Hambleton 1999; Maltby 1992; Serjeantson 1996). It is possible that for this reason pig remains may also be underrepresented in the assemblage. Finally pigs heads and trotters, have in history been served as a delicacy, perhaps the fact that these elements are taken and cooked or served in areas away from the area of slaughter may minimise the butchery waste disposed of and ultimately cause an underrepresentation compared to other species in the archaeological record.

Pig has also been associated with status food or feasting in many periods of history. Serjeantson suggests that in prehistory the presence of pigs may have signalled wealth and status to the owner suggesting that iconographic evidence from the 1st millenium BC portrays pig as a status food for feasting (1996, 222).

Sheep and goat were both positively identified in the assemblage however goat appeared in fewer periods and contexts than sheep, suggesting that within all phases sheep may have formed the greater contribution to the sheep/goat assemblage. Whilst sheep appeared in phases 7, 8, 9, 11, 12, 16 and 17 goat only appeared in phases 8 and 12. Goat has been identified on other Iron Age assemblages despite the fact that they are frequently a rare occurrence in Iron Age assemblages (Jones 2011 a; Grant *et al* 1991) In Anglo-Saxon assemblages goat is fairly commonly observed (Jones 2010; Mulville and Ayres 2004; Crabtree 1989; Dobney *et al* 2007). At all sites goat is usually less well represented than sheep, suggesting that sheep were the more commonly kept out of the two.

It is possible that the appearance of goat in the Iron Age deposit may have held a special significance. Goat appeared alongside human remains and was only found in a handful of contexts compared to sheep suggesting that contexts containing goat may have held a special significance. In the Anglo-Saxon assemblage goat appeared in the same contexts as sheep and do not seem to have been singled out for deposition, appearing amongst a large deposit of butchery waste. It is possible that goats may have been associated sacred rites or rituals within the Iron Age. Goats in many ancient cultures have been associated with sacrifice and, divination, frequently culled to take on the sins/prayers of a community. Indeed this is how the word scapegoat derived its name. Goat horned heads have been observed as iconography on La Tène metalwork (Green 1989) whilst the Celtic god Cernunnos is often represented with a goat's head and is associated with the fertility festival Beltane.

Horse and dog were well represented in most phases, reflecting their close relationship with humans over time. Horse was included in the range of animals from the Neolithic onwards whilst dog was represented in assemblages from phase 7 onwards despite being observed indirectly through the presence of gnawing in phase 6. Horse was the

most common species represented in the assemblage from medieval phase 14 and the third most common species in phase 16. Their increased abundance during the medieval phase may reflect the development of technology with changing designs of cart, carriages, and the development of agricultural equipment that could be utilised by horses rather than cattle. It is unclear whether horses were domesticated were wild in early prehistoric deposits. Iron Age deposits of horse at Bury Hill were interpreted as being from semi feral populations that were managed by local communities (Hamilton 2000b).

Dog formed the most abundant species in the Early Roman and Roman assemblages and the third most abundant species in the Iron Age assemblage. This may reflect the increased importance of dog within these periods to help manage animals, and provide protection. Many of the remains were articulated burials placed within pits during the Iron Age and Early Romano-British phases and may reflect social perceptions of dog from this period. Dog may have held a significance within rituals or votive deposits of the time increasing their presence within the archaeological record. Grant (1984) suggests that dogs may have been deliberately killed and included in special deposits from the Iron Age. Dog burials have been observed at many Iron Age sites (Grant 1984; Everton 1988; Clutton Brock 1981; Grimm 2008a; Hamilton 2000a) and associated with ritual shafts, pits, foundation or closing deposits and human burials in both the Iron Age and Roman periods (Smith 2006).

Wild animals were sparsely represented in all assemblages up to the Anglo-Saxon period and almost non-existent in the medieval period. The low proportion of wild fauna in animal bone assemblages from the Neolithic onwards is a common phenomenon and has been recognised at sites throughout England (Coy 1987; Hambleton 1999; Maltby 1985; 1992; 2001; 2002; Jones 2009b; 2009c; 2010; 2011a; 2011b; Jones and Cooper 2009; Sykes 2001; Davis and Payne 1993; Mulville and Ayres 2004; Crabtree 1989; Dobney *et al* 2007; Rushe *et al* 1988; Scott 1995). It is thought that wild animals formed a low contribution towards diet in many periods. Increased domestication of animals and development of permanent settlements would have reduced the need to hunt for provision of meat, sinew, grease and skins. Similarly time free for hunting would have been reduced if crops and animals were to be managed. Laws, restrictions and penalties surrounding the hunting of wild species were introduced in the medieval period, restricting hunting rites to royalty, aristocrats and to those favoured by them. Whilst medieval bone assemblages from high status assemblages may contain greater proportions of wild animal, many other sites contain minimal presence if at all.

It is also possible that during some of these periods wild animals may have been exploited to a greater extent than the archaeological record shows although they may have been deposited in a different way, perhaps not appearing in the archaeological record.

Animals represented in the small mammal assemblage reflected changing environmental conditions over time. The range of species represented included mole, field vole, bank vole, common shrew, wood mouse, house mouse, rat, common frog and common toad. House mouse evident in phases 8, 12 and 16 reflected periods of settlement where small mammals were attracted to the conditions created by mankind in buildings and homes. Rats similarly appearing in the Anglo-Saxon and Post-medieval Assemblages. Rats in the Anglo-Saxon period were probably attracted to slaughter houses and buildings with bone waste littering the floor. Other creatures attracted to the area to feed on insects and larvae drawn to the waste included shrews, frogs and toads.

It is clear that the range of features that were used to deposit animal bone varied over time. Whist pits, buildings and ditches were common features producing bone in most phases others were more specialised. Barrows constructed in the Bronze Age presumably for ceremonial focus were re used in later periods for animal bone deposition. As the range of features created in the landscape became more diverse so features like wells, drove ways, cess pits, chamber systems and quarries started to be used to deposit animal waste. It is clear that over time depositional practice was associated with different perceptions from ceremonial, deposition imbued with symbolism and meaning, to casual deposition of food or butchery waste. The types of features chosen for deposition and their location also reflected changing perceptions towards hygiene standards or methods of waste disposal.

The Neolithic period produced few finds, a single pit from plateau 3 produced animal remains reflecting a snapshot in time where people deposited bone waste within a pit. Although no bone was identified to species the presence of many large mammal fragments some of which appeared to be smashed open suggested the deposit may have represented consumption waste.

Bone deposits within the later Neolithic/Early Bronze age were more dispersed across the landscape, found on plateaus 1, 2, 5 and 7. A number of different features contained bone deposits suggesting that the landscape was beginning to be altered and utilised in a different way. Animal bone was found in burial contexts, enclosure ditches and in construction layers within barrow features. The range of species reflected mainly domesticated animals that included cattle, sheep/goat and horse whilst wild animals were represented by the presence of red deer.

The appearance of animal bone in burial contexts, suggested that animals may have played a role in ceremonies connected with the rites of passage for the deceased. Although most of the bone could not be identified to species, cattle limb bones in a burial context within the centre of a barrow may suggest that joints of meat may have been placed alongside the burial perhaps as food to accompany the soul into the afterlife. A deposit of fractured bones suggested that bones had been broken open to

extract marrow or to boil up in stews. It is possible that consumption of food may have occurred as part of a burial rite, with remains of the event placed into the burial context, the waste bone perhaps symbolic of the event of honouring a life or of people coming together.

Deposition of animal bone within the construction layers of two barrows suggests that animals may have further played a symbolic or sacred role in ceremonies of the time. One barrow predominantly contained cattle skulls with a few other large mammal bones, represented whilst in the second barrow cattle limb bones predominated and small deposits of other species, both wild and domestic were included in the deposit. It is possible that the two different types of deposits may have been significant within the symbolism reflected by the process of deposition and construction of the barrows. Data suggests that perhaps the types of animal, elements and the side of the elements chosen for deposition may have been important within the ceremonial process. The side of elements chosen for deposition seems to have also been important in remains from the same period from Ellington School, Ramsgate Kent (Jones 2009b). It is of interest that right sided elements seem to have been important in this assemblage as well as the one at Ellington School. In other countries, prehistoric sites also infer that side may have been important in ceremonial deposition. Right hind limbs of sheep were identified as being significant at the temple of Apollo in Cyprus (Davis and Payne 1993)

The presence of animal bone in barrow deposits is known from a number of sites. In particular cattle seem to be significant in a number of depositional acts. Cattle skulls have been identified in a number of barrow sites and associated human burials (Davis and Payne 1993; Chapman 2005; Piggott 1962; Grigson 1984) Antiquarian reports also describe finding cattle heads with human remains in many Barrow contexts (Hoare 1812, 87–88; Merewether 1851, 41; Bateman 1861, 138–30). It is possible that cattle played an important symbolic role in Bronze Age society. Their utilisation in the Bronze Age may have carried deep social connotations connected to belief systems and social perceptions. In many ethnographic examples, cattle are seen as symbols of wealth and mediums for social exchange. In Madagascar cattle also play an important part in funerary rites with their skulls forming an important component of ceremonies (Davis and Payne 1993).

An enclosure ditch terminus also contained a deposit of mainly cranial bones from cattle and sheep/goat as well as part of an articulating horse foot. Whilst the cranial deposits may simply reflect primary butchery waste, it is also possible that their deposition may also have held greater significance as deposits placed within the terminal section of the ditch. Animal bone was deposited in pits and ditch features at Ellington School, Ramsgate, Kent, of which a number were identified as special deposits (Jones 2009b).

Whilst it is impossible to identify exact meanings behind the acts represented in the archaeological record it is clear that animal deposits may have reflected beliefs and

ideologies of the time, burials and ceremonial monuments becoming a focus for deposition during this phase.

Later Bronze Age deposition appeared on plateaus 3, 5 and 8 and was centred on different types of feature, pits, droveways, ditches and field boundaries. Deposition in these features suggests that the landscape was perhaps becoming ordered, possibly as communities became increasingly domesticated. Deposits seemed to have suffered badly from erosion and weathering during this phase indicative of bone being left exposed to the elements prior to burial. Ditches produced the greatest volume of bone suggesting that deposits may have preferentially been deposited in open features. Assemblages represented a mixture of butchery and food waste that was left exposed by droveways, in ditches and at field boundaries. Their weathered appearance of a number of small deposits in a range of domesticated features may suggest that the focus of deposition represented by remains during this phase may not have carried the same level of symbolism or ceremonial value attached to their deposition, as the act of deposition had in earlier periods where bone was associated with burials or monuments.

Iron Age deposits formed the largest overall deposit with contexts from this phase producing over 10,000 fragments of bone. Although deposition was limited to plateaus 6 and 8 in the early Iron Age phases (6 and 7), by phase 8 deposits were much more dispersed being made on plateaus 1, 2, 6, 7 and 8. This increased dispersal may suggest the landscape was being utilised more extensively. The range of features that produced bone from this phase expanded to include ditches, pits, post holes, drove ways, graves/pit burials, levelling layers, quarries, a ring ditch and a secondary phase of deposition within an earlier barrow. Data suggested that the range of domesticated animal exploited in the area expanded to include goat and pig whilst the proportions of dogs and horse increased. The increased volume of bone and range of species raised must have meant that the landscape was more intensively exploited with the creation of more features associated with animal husbandry, pens, fields, animal housing, track ways, watering features, food stores. Features must have been developed to support the broad range of activities associated with animal husbandry.

The nature of the types of animal, element and accompanying finds in many different features and deposits suggested that whilst at one level deposits reflected butchery or consumption waste, that they may also have had symbolic connotations being structured carefully within many seemingly domestic features. The nature of deposition in certain features primarily suggested that the acts of deposition were imbued with symbology, reflecting beliefs and ideologies of the time. Data from the Iron Age assemblage suggests that for many species particularly pig, dog and horse the side of the element chosen may have been important in the act of deposition. Overall right-sided elements were more frequent where deposits of more than one bone represented a single choice of side. This reflects earlier associations with side being important in

depositional practice from the Bronze Age. Deposition of human remains on hillforts seem to suggest a similar practice with right sided elements noted to be more frequently chosen for deposition (Wait 1985, 83–121; Wilson 1992, 346–7; Fitzpatrick 1997, 82).

Burials in pits and graves were accompanied with animal bone as they were in earlier phases, earlier monuments were revisited, with animal bone re interred within the ground perhaps to connect with their ancestral past whilst a number of pits contained partially or fully articulated animal burials. Deposition of wild animals were rare, suggesting that communities held differing perceptions about wild and domesticated animals possibly treating them in different ways.

Most of the deposition was in pits from this phase. Even gnawed bone was deposited in pits suggesting that a level of care was taken over the environment with bone deposits cleared up and placed into pits. Preservation was moderate in this phase suggesting that bone may have been covered over fairly quickly and that a level of care was expressed towards managing waste. Whilst a number of pits clearly contained primary butchery waste and consumption waste, other pits contained partially or fully articulated remains representing parts of or whole animals. Deposition of dog, horse bones, neonatal animals, goat, cattle heads and whole or partial sheep in some pit contexts may have represented an act that contained greater meaning than just refuse disposal. Pits were functional features although their use in deposition may have related to ideas, beliefs and cultural behaviours that linked the sacred with the profane.

Ditches in the Iron Age contained fewer animal bone remains than pits, however ditch contexts on plateau 8 seemed to be a focus for heads of large mammals including cattle and horse. Whether these deposits represent animals slaughtered by liminal features or deliberate and structured deposits is unclear although their presence in ditches reflects earlier ditch contexts that contained the crania of animals. Ring ditch contexts were particularly rich in bone with wild and domesticated species represented their deposits. Neonatal remains were also present in ring ditch features that seemed to contain largely head and foot bones of domesticated animals.

Data suggests that pits frequently contained heads, teeth and metapodials rather than main limb bones. Pits containing food waste were frequently associated with many other depositional finds and may have formed special deposits.

Later Iron Age/Romano-British deposits suggested that perhaps the landscape was less intensively inhabited, the only features producing animal bone being pits and cremations. However the presence of animal bone with cremations and articulated animal burials in pits may suggest that some of the ceremonial practice or ideologies from previous periods may have been retained or modified to be incorporated into evolving belief systems for the communities burying deceased members. Cremated human remains seem to have been accompanied with animal teeth and meat bearing

limbs. This was observed at cremations at Holborough Quarry, Kent (Jones 2011a). The primary focus on deposition in pit contexts seems to have reflected earlier practices and may highlight continuing depositional practices over time.

Roman deposits were dispersed across plateaus 1, 2, 3, 4, 6 and 8. Again domesticated animals formed the majority of deposits with wild mammal being sparsely represented by hare and red deer. No goats were observed although sheep were. The nature of the bone deposits reflect a change in the character of deposition during this phase, which may have been driven by changing perceptions and beliefs associated with animals. Although many similar features to those in the Iron Age produced bone, (ditches, pits, trackways, metalled surfaces, quarries and field boundaries), the main type of feature producing bone changed from pits to ditches or liminal features like quarries. This change in depositional practice may reflect changing perceptions and beliefs within the communities of the time. Features around the peripheral edges of settlements may have become dumping grounds for animal waste. The dumping of waste into peripheral features has been observed on sites from this period elsewhere in the region and further away (Jones and Cooper 2009; Jones 2011c; Maltby 2002; Sykes 2001). Once again bone was poorly preserved suggesting that much had lain out in the open for periods of time prior to becoming incorporated within the burial matrix. Waste exposed in open features must have attracted insects and scavengers. It seems that domestic waste may have lost much of the symbology and ideology associated with it from earlier cultures having been replaced with new ideals and beliefs that was represented in waste taken to liminal features and casually deposited in open features.

Anglo-Saxon deposits derived from plateaus 1, 3 and 8. The range of features producing animal bone were sunken floored buildings, pits and ditches although the buildings produced by far the greatest volume of bone. The character of deposition also altered for this period with a few contexts producing the majority of bone rather than many contexts producing low quantities of bone as had been apparent in earlier phases.

The high presence of bone within buildings must have attracted insects and scavengers to the site and had implications for human hygiene. The high levels of bone within a few buildings may suggest that these sites were specialised areas where slaughter and further butchery or processing of carcasses was undertaken. The presence of trampled deposits and mixed butchery waste may suggest that no level of care was taken in the act of deposition and may purely represent domestic waste.

Medieval deposits show that bone deposition fluctuated over different areas, phase 13 saw minimal deposition in the area with only pits producing bone from plateau 1. Later periods saw gradual expansion with most finds centred around plateaus 4 and 5 until phase 16 where all plateaus became utilised with plateau 1producing the greatest volume of bone. Over the medieval period more features were utilised for bone deposition in addition to pits, ditches, quarries, droveways, sunken floored buildings

new features like wells, cess pits and chambered passages and rooms became utilised for waste deposition. In addition, the barrows created in the Bronze Age were once again utilised for deposition of animal remains.

Within the earlier phases of the medieval period pits produced the sparse assemblages of bone however in phases 15 and 16 primary deposition moved away from pits to the sunken floored buildings and a well in phase 15 and more liminal features like ditches, quarries and demolition or backfill layers in phase 16. The deposition of meat bones into a well may have affected water and had implications for the health of local populations. Liminal features tended to contain head or feet remains from primary butchery waste. Meat rich bone deposits tended to be found in buildings or chamber systems. It is possible that animals were slaughtered near to open features with primary waste disposed of into existing open features like demolition areas, quarries, field boundaries or ditches. Pits produced low proportions of bone during these phases. Evidence from other Medieval deposits from around the region suggest that there is variation across sites regarding the most common types of feature utilised for bone disposal (Jones 2010a; 2011b; 2011c). At new Romney, Kent, Medieval waste was deposited predominantly in pits from early to late phases (Jones 2011b).

Consideration of the range of elements present in assemblages from different phases, for each species present, highlighted retained and changing patterns in consumption and butchery practices over time. Overall the element distribution pattern for all the main species suggests that the majority of expected skeletal remains for the animals represented in the assemblages are missing from the collection. Whilst some of this may be the result of preservation or loss during the recovery process it is likely that element selection and processing methods contributed to the distribution pattern evident on the site in most phases.

Early deposits from the Neolithic and Bonze age suggested that remains reflected a mixture of primary butchery and consumption waste. However in phase 2 deposits seem to have been centred on burials and barrows. Heads of animals were used in depositional acts within an enclosure ditch and during the construction of a barrow 2. Heads may have held a particular significance within the acts of deposition. Whilst they represent primary butchery waste where animal heads are often removed in the first stages of carcass processing, they may also have been viewed as sacred, the heads representing the spirit of the animals. At the barrow site there was suggestion that the heads had been moved to the site after sitting elsewhere for a period of time. This was also evident for the ditch where incisors, which are lost in the primary stages of decomposition, were not present. This may suggest that although animals were clearly slaughtered in the area that the contexts that they ended up in did not necessarily represent the sites of primary butchery. Cattle crania found at the barrow site in Irthlingborough, Northamptonshire were also thought to have been positioned on the barrow after a period of decomposition elsewhere (Davis and Payne 1993).

Burials and barrow 3 seemed to contain deposits of food waste, perhaps a contrast to the deposits in barrow 2. Cattle, sheep/goat, and red deer were identified in Barrow 3 suggesting that prerequisites for inclusion within this barrow were different to barrow 2. It is of interest that a human burial in barrow 2 was accompanied with meat bearing limb bones from cattle. Bones within these contexts were fragmented and appear to have been broken open to extract marrow. It is possible that remains may have represented feasting or consumption at the time of burial or barrow construction and remains left as a token of the coming together of people and the celebration held. The elements represented for red deer and sheep/goat were pelves, scapulae and metapodials. It is possible that these elements held significance, beyond the merely profane perception as food components, to those placing them in the ground. Pelves and scapulae have been associated with selected Beaker Age deposits elsewhere (Davis and Payne 1993). There was evidence that the side and element may have been chosen deliberately in the acts of deposition represented in these cases. It is of interest that horse foot bones were the only representations of horse in all of the Neolithic and Bronze Age deposits.

During the Iron Age deposition focussed on a range of features. Whilst animal bone was placed in many seemingly domestic, functional features animal bone was also deposited in burials with human remains. The range of elements represented over the whole period suggested that all forms of processing occurred on site for cattle and sheep/goat from slaughtering, evisceration, removing heads and feet, portioning, food preparation, cooking, consumption, secondary processing of bones for marrow and grease occurred on the site and deposition. Deposits more frequently contained primary butchery waste with crania and/or feet occurring more often than meat bearing bones. Pits contained the majority of bone and included primary and secondary or meat bearing bones of both species. At other Iron Age sites ditches contained greater proportions of large mammal primary waste and it has been suggested that in these areas slaughter may have occurred near to these features (Hambleton and Maltby 2008; Maltby 1985); however this is not the case here, animals may have been slaughtered near to the pit contexts.

In all features for cattle few incisors were identified in cranial or teeth deposits, however this was the reverse for sheep/goat. This may suggest that although sheep/goat may have been slaughtered close to the pits and heads deposited shortly after death, that cattle may have been slaughtered elsewhere and the heads brought to the pits after a time of decomposition elsewhere. Sheep/goat and cattle remains were frequently found together suggesting that they may have held similar social connotations and been processed in similar ways.

The pig assemblage from the Iron Age was dominated by the presence of prime meat bearing bones suggesting that perhaps pig was consumed on the site with trimmed or portioned parts possibly brought in from elsewhere. Pig seems to have been deposited

in fewer features than other species and particularly appears to have been deposited in fewer open features like ditches or drove ways. This may tentatively suggest that pig was consumed and deposited with more care, not as casual discard by roads or in fields but as specific acts of consumption or deposition. At Iron Age sites in Wessex, Hill noted that there were frequently differences displayed in the depositional patterns for pig remains to those of the other main domesticated animals (1995, 105). He also suggests that pig was associated with feasting and high status at this time (*ibid*, 105).

With cattle and sheep/goat meat bearing bones were sparse in comparison to crania however even within the range of meat bearing, post cranial bones there were parts of the skeleton that were notably less well represented than others. It is acknowledged that taphonomic processes can have a variable effect on different elements and parts of skeletal elements that affects their potential to survive in burial conditions (Brain 1967), and this may have influenced distribution patterns. However there remains the possibility that some prime areas of meat may have been utilised elsewhere, or processed in ways that removed them from the archaeological assemblage.

Horncores and lower foot bones (phalanges) were minimally represented for both cattle and sheep/goat assemblages. Whilst foot bones are small bones and maybe overlooked in the hand recovery process, few were present in the sieved assemblage suggesting the underrepresentation in the main assemblage may have been due to other factors. It is possible that these areas of the body were removed deliberately to be processed elsewhere. Feet are often utilised to boil up for glue, or small bones tarsals or carpals utilised in games or divination. Horns may have been removed and processed in a specialised area connected to working horn. Deposits of two ram's horns in one context and a handful of others that included goat horns may have been special deposits, given their overall absence in the rest of the site

Horse deposits consisted of small groups of bone, often a tooth or few teeth alongside a limb bone or foot bone were deposited together. A pit burial contained 3 left sided bones from different regions of the body and another one contained the remains of a possibly articulating right rear leg. Overall more horse remains were found in ditches rather than pits suggesting that they may have been viewed and treated slightly differently to other domesticated species. For dog disarticulated remains were found in a limited range of features that included pits post holes, burials and the ring ditch contexts. Crania and front elements of dogs were the best represented. Crania were observed in ditches, pits, burials whilst a paw was observed in a post hole. Like horse remains frequently one or two disarticulated elements were deposited together. Many Iron Age deposits also contain disarticulated human remains (Jones and Randall 2010, 173–174), it is possible that animal bodies like horse or dog were left to decompose elsewhere and parts selectively chosen for deposition after the soft tissue had decayed. The focus on animal crania may reflect human depositions on many Iron Age sites that seemed to demonstrate greater proportions of cranial fragments or skulls. At Cadbury

Hillfort Somerset, human heads were left to decompose in areas away from their final place of deposition whilst collections of foot bones were also observed (Jones 2009a) presumably removed from decaying corpses, this curating and deposition of specific body parts may also have applied to animal bone and been the case for some of the cattle or dog heads or disarticulated animal bone deposits in the assemblage here. The act of decomposition or transformation may have been viewed as important and represented in acts of deposition imbued with symbolism, social perceptions and beliefs of the time.

Later Iron Age/Early Roman deposits seemed to suggest that the range of elements represented slightly changed. For cattle, scapulae and metapodials were the most commonly represented elements and no head and feet were found together. Front metapodials were absent suggesting that they may have been processed differently to other bones possibly left attached to skins to aid handling or used for bone working. Fewer crania were represented in deposits although rear upper sections of the carcass were similarly less well represented as had been shown in the earlier Iron Age assemblage.

Deposition in the roman period reflected many small deposits. Practices differed from earlier periods being largely made in ditches. For both cattle and sheep/goat most areas of the body were represented suggesting that all levels of processing from slaughter to consumption were occurring at the sites. Primary butchery waste seemed to be separated from meat bearing bones for cattle despite both occurring in ditches. Horncores and foot bones were present during this phase although less well represented than other areas. These may have been less likely to have been utilised during this phase than in earlier periods.

For sheep goat there were no metapodials amongst the assemblage suggesting that possibly these had been left attached to skins to aid handling and stretching of fleeces. Limb bones represented tended to be from lower legs suggesting that prime joints may have been consumed elsewhere. Pig remains and dog were very sparse, only represented by loose teeth and a cranium. Horse deposits occurred in pits and may have formed dumps of bone with most parts represented. No other domesticate bones were found in association with horse which may suggest they were treated differently and did not contribute much to diet. Feet and radii were absent. These bones may have been removed, hooves utilised for glue and limb bones providing good surfaces for working. Red deer antler fragments found in a ditch may suggest an episode of antler working had occurred in the area.

Anglo-Saxon deposits were focussed around specific sunken floored buildings that contained elements from all skeletal areas of the body, suggesting that the full range of butchery processes occurred during this phase and that slaughter and subsequent carcass processing may have centred round these buildings. Deposits from a sunken

floored building in plateau 8 suggested that the building was used for primary slaughter with deposits containing head and foot bones from all three of the main domesticated species. On plateau 3 all regions of the carcass were represented, as well as antler fragments, hare bones and horse foot bones that were butchered. The building on plateau 3 contained the most bone as well as trampled and burnt fragments. The building may have been a focus for all levels of butchery and carcass processing. Fragmentation and butchery marks observed suggested that the site may also have been used as an area to boil up bone perhaps to create tallow for candles, glue or grease. Bones showed very high levels of division and carcasses seem to have been maximised for extracting nutritional or useful components.

Medieval deposits once again were created from small bone deposits rather than large concentrations of bone in specific areas. Over all the area it is clear that animals were slaughtered and butchered in the region. Primary waste from all three domesticates, heads and feet seem to have been deposited mainly in ditches or peripheral locations like quarries or field boundaries. However meat bearing parts of the carcass were centred in building features in particular a chambered system suggesting that they were created as food waste. Whilst all areas of the carcass were well represented for sheep/goat and pig, upper limb bones were absent from the early Medieval phases suggesting that at this period of time cheaper cuts of meat were being consumed. In phase 15 the rear parts of two cattle in the prime stages of life were deposited in a well. It is likely that these were articulated at the time of deposition. It seems that prime joints or sections of carcasses were dumped into the well, deposition of meat into a well may have had health consequences for populations using the water when meat started to decompose.

Dogs and horse were represented in the disarticulated bone assemblages. In addition a number of articulated dog and horse burials were observed in the medieval assemblage. Articulated dogs appeared in a sunken floored building and a pit context. A dogs head was also found in a medieval building. Whilst these remains may reflect bones of a pet placed within the home it is also possible that the dogs may have been associated with other beliefs, superstitions or ideas. Hamerow (2006) and Hukantaival (2008) have both suggested that special deposits may have been made in buildings or at boundaries within the Anglo-Saxon and medieval periods and have given examples of animals used for this purpose.

Two dog heads and foot bones were found in a ditch whilst the remains from all areas of dogs were found in the chambered passage. Despite no clear marks the presence of just head and foot bones may reflect butchery waste. It has been suggested that dogs on occasions were butchered both for skins and meat (Murphy 2001; Armitage and Butler 2005).

Articulating horse remains were found in a cess pit and a backfill layer to a sunken floored building. Disarticulated horse limb bones were found amongst deposits of cattle and sheep/goat in a deposit within a chamber passage system in phase 16. One of these displayed butchery marks whilst others displayed fresh fractures and suggested that the animal had been utilised for meat or marrow. Other sites have also suggested that horse was exploited for meat, skins or marrow during this period (Serjeantson *et al* 1992; Bourdillon 1993; Hamilton Dyer 2003). Horsemeat was sometimes used to feed dogs. A number of horse bones from this phase displayed canid gnawing marks.

An articulating sheep skeleton and the remains of a fleece with metapodials attached were found in separate pits.

The only representation of wild animal in the assemblage was a left hare's foot which was located in a chamber pit. The fact that the food was articulated may suggest that the foot may have been a charm. Hares feet have long been associated with luck, mythology and superstition. Opie and Tatum (1992) suggest that a left hare's foot has been used in historic times as a charm to ward off evil, for curing stomach cramps and rheumatism. Even during the Roman period hares feet were attributed to healing, Pliny the Elder in Roman times suggested that a hares foot was used for healing (Historia Naturalis LXII 220, 77 AD). In medieval Finland, hare's feet have been found buried in houses and interpreted as charms (Hukantaival 2008)

Butchery marks were identified in Iron Age, Roman, Anglo-Saxon and medieval assemblages. Overall marks represented a number of butchery processes that included skinning, disarticulation, evisceration, portioning, filleting and breaking bone open to extract marrow. Over the whole assemblage butchery marks were sparse. This may reflect the general poor preservational state of the bone and the high levels of fragmentation observed. Marks may have been lost with surface erosion or loss of the articular ends of bones.

Iron Age deposits contained the most butchery marks, chop marks, fine cuts, nicks and scrapes were all observed suggesting a range of bladed tools were used to divide carcasses. Marks demonstrated that the whole range of processing activities took place during this phase. Marks were observed on cattle, deer, sheep/goat and large mammal fragments with cattle fragments demonstrating the greatest number of marks. This is to be expected as larger carcasses are divided up into more segments than smaller ones to create manageable portions for cooking and consumption.

Portioning marks were found on large mammal elements and cattle. Divisions seem to have been made commonly through the joints, chops being made through areas where two limb bones articulate. Places observed were across the scapula neck, neck of the ilium and long bone articulations. Evidence of initial carcass division was apparent through sagittally and transversely divided vertebrae. These two differing marks may

suggest different people butchered bones, some favouring a method by which the carcass is hung up and split down the central axis of the spine and another that was probably cut across transversely into manageable sections before further processing whilst resting on a table. These two different methods of carcass division were also observed in Iron Age deposits from Holborough Quarry (Jones 2011b) Ribs of both medium sized mammal and large mammals were chopped into portions perhaps creating chops and rib sections for consumption.

Cut marks were observed on the visceral surfaces of ribs and on some articulating ends of bones that may suggest that disarticulation and evisceration processes were occurring. Chops through the ramus region of mandibles of sheep/goat, cattle and a deer may suggest that these were removed to access the tongue. Differences in the way these were chopped through may further suggest that different people were responsible for butchering animals that favoured different butchery methods. Sheep/goat and cattle crania had been smashed open presumably to access the brain whilst one cattle cranium had been poleaxed. Scapulae and showed signs of filleting whilst lower limb bones of sheep/goat displayed fine cuts indicative of skinning. A dog phalange from phase 8 also displayed signs of fine cuts indicative of skinning. Evidence of dog skinning was also observed in Iron Age deposits at Stonehenge, Danebury and Houghton Down (Grimm 2008a; Brothwell 1995; Hamilton 2000a)

Roman butchery marks were sparse, marks only occurring on cattle fragments. Cattle radii had been filleted with a fine bladed instrument whilst scapulae had been chopped through the glenoid and had been trimmed along the spine. Two foot bones had been chopped through their proximal end presumably to remove the feet from the rest of the leg. These marks have been observed on other Roman Assemblages, cattle scapulae show classical roman butchery techniques that have been observed on many other sites (Maltby 1998; Dobney *et al* 1995; Jones 2010b; Lauwerier 1988) These are thought to be indicative of a cold curing process (Lauwerier 1988)

Although the few bones here are not enough to form interpretative comments, it is worth noting that roman butchery techniques are thought to have been largely standardised with methods developed for the military adopted by local butchers serving the community (King 1984). The techniques observed here are typical roman butchery marks.

Anglo-Saxon butchery marks were found on cattle sheep/goat, horse and deer. Chop marks were more common although scrapes, cuts and nicks were observed.

Cattle carcasses seem to have been divided through the joint areas as was seen in earlier assemblages, through the femoral head and the neck of the pelvis. Long bones had chops made through articular surfaces as well as through the shaft edges to break open bones and divide them into small fragments. These marks were observed at Anglo-

Saxon deposits from Barton Court, Canterbury, Kent (Jones 2010a). Ribs from large and medium sized mammals had been divided into small lengths around 6cm long presumably to boil up. The level of carcass division was higher than in other phases with all utilisable parts divided up to maximise their nutrient potential. Tarsals, scapulae and even the mandible had been divided up into small sections presumably to boil up. Mandibles had the tooth row carefully divided off using chops to separate the tooth row and the diastema and ramus region divided into sections. Long bones had been axially split to extract marrow or deliberately smashed into small pieces for the same purpose. It is possible that bones were all boiled up to release marrow or grease to create tallow candles. Wilson (1991) suggests that this level of division may suggest that fats and proteins were being extracted that could be utilised to turn into candles, soap and glue. A horse metapodial had chop marks on the rear shaft suggesting it had been chopped through during the disarticulation process whilst a deer antler had a chop mark into the base. Butchered horse remains may suggest horse carcasses were utilised with other domesticates. However the low frequency of horse bones relative to cattle may suggest that horse did not form a great contribution to diet.

Sheep/goat crania had been sagittally split open with a bladed cleaver or axe presumably to extract marrow and showed chops to the base of the horncore presumably to remove them from the main carcass. The same butchery marks were repeated on different bones of the same element suggesting that either marks were created by the same person or that similar techniques were utilised.

Butchery marks were exceptionally sparse in the medieval assemblage once again reflecting poor preservation across the phase. The only marks observed were on a horse metapodial and a sheep cranium. A horse metapodial had a chop made into the side of the shaft and was found in with highly fragmented cattle bones in the chamber passage system from phase 16. This may imply that horse was utilised at some level for food with other domesticates, broken open to extract marrow. It is of note that some horse bones in the same context were gnawed by dogs and may have been utilised to provide meat for dogs. Sheep cranium had chops made around the base of the horn core presumably to remove them from the main carcass.

Ageing data was available for cattle, sheep/goat, pig and horse.

Neonatal remains were observed in the Iron Age assemblages for cattle, sheep/goat, pig and dog. This would suggest that during this phase, the area was utilised as a producer site with all the main domesticates reared and raised in the area. The only other periods producing neonates were phases 12 and 15 where only sheep/goat neonates were observed. Although neonatal remains are fragile and may survive better in those periods that favoured deposition in pits or less exposed features, it is possible that the character of the landscape changed over time with fewer animals bred and reared in later phases. It is possible that animals may have been reared elsewhere and brought to

the area part way through their lives either to be fattened up, work as traction animals or for slaughter. Some meat may have been brought into the area as trimmed sections.

Cattle ageing data derived from the state of fusion and tooth wear patterns, was available for most phases. It is clear that in all phases, juveniles and adults were represented in the assemblages. Iron Age data suggested that culls may have been made of a seasonal or yearly basis with animals culled around a year, 2–2.5 and 3–3.5 and over 4 years. Whilst young animals may reflect a cull of excessive males or bullocks, other animals all seem to have been kept into their third year or more. Many of the animals were over four years old and are likely to have been kept into maturity exploited for, milk, breeding, manure and traction. Neonates may have served a demand for veal within the community. No sign of elderly animals with excessive toothwear were observed in the assemblage, which may suggest that animals were culled before old age became problematic for the animal. The pattern suggests that the economy focussed on keeping animals to exploit for secondary products with animals reviewed yearly or seasonally for culling. Cattle may still have been associated with wealth or status their heads utilised for special deposits.

Roman data was sparse although the little data that was available suggested no juveniles or immature animals were in the assemblage. Romano-British assemblages from Shelford Quarry and Market way also support the dominance of older animals in assemblages (Jones 2009c; Jones and Cooper 2009)

Anglo-Saxon data suggested the animals represented in the assemblage were older sub-adults aged between 3 and 4 or adults over 40 months old. One juvenile under 18 months was identified in the assemblage. This pattern may suggest that communities followed a similar cull strategy to earlier assemblages with animals culled in the first 18 months or over three years. It would appear secondary products were exploited before culling for meat, leather, sinew, marrow and grease.

In the Medieval period data shows a higher proportion of juveniles, sub-adults and young adults were culled. Only 2 animals over 40 months were in the assemblage. This may suggest that animals were raised for meat, both veal and beef as well as for dairy and traction with many animals entering the food chain in early adulthood.

Data for sheep/goat suggested that in the Iron Age sheep were culled or entered the food chain as neonates, between 1–6 months, 6–9 months, 12–18 months, 2–4 years and 4–10 years. This may suggest that whilst the majority of animals were kept to maturity exploited for wool, milk and manure some were raised for meat culled in the first and second year. It appears that there was a demand for lamb, probably served by culling off excessive males in the first year. No juvenile goats were included in the assemblage and as such goats may have been kept to older age before culling. Data suggests that seasonal culls may have been undertaken although adult sheep seem to have been

culled at less discrete times than cattle, perhaps being culled as and when they were needed after reaching adulthood.

Roman data suggests animals were sub-adults or adults when culled. Data is too sparse to extrapolate to husbandry regimes.

Anglo-Saxon data suggests that sheep/goat were culled between 6 and 9 months possibly an autumn cull providing lamb and between 2 and 4. No older animals were observed in the assemblage suggesting animals were bred for meat animals culled in their prime, with secondary products presumably exploited whilst alive. Neonates were observed in the assemblage, although in low numbers.

Medieval assemblages suggest that a mixed economic strategy was practised raising animals for both meat and wool or milk. Animals were culled between 6–9 months, again possibly in the autumn, between 2.5 years and 3 and at 3.5 or above years. No old adults over 6 were observed in the assemblage. Neonates were observed suggesting lambing took place in the vicinity.

Post-medieval sheep were all aged between 7 and 10 months old. They are likely to reflect a period of widespread disease rather than a cull strategy reflecting husbandry practice.

The data for pig suggests that in all phases animals were culled before the pig was fully mature at around 3–4 years of age. Neonates were observed in the Iron Age assemblage. Animals were culled between 1 and six months, between 15 and 26 months and between 27 and 36 months, perhaps again on a seasonal basis. Data from the roman and Anglo-Saxon periods is sparse but suggests in both periods animals were between 15 and 26 months old when culled. Medieval deposits suggest that pigs were juveniles all culled around 9 months old, probably in the autumn after fattening up on autumn waste.4 male teeth and 1 female were observed in the assemblage suggesting that animals were mainly males. No older animals were observed in the assemblage, which may suggest that a specialist market was apparent for younger animals rather than those one or two years old.

Medieval texts support the idea that pigs were frequently culled in the autumn or winter months. The annals of Conmacnoise (AD 1038), suggest that pigs were fattened up on woodland mast, beech, oak, chestnut and whitethorn before slaughter in the winter months (Sexton 1998). Dobney *et al* suggest that for medieval Flixborough one of the final agricultural tasks of the year was the winter culling of pigs (2007, 89). Scenes of pigs been slaughtered appear in 11th, 12th and 13th century calendar depictions for November and December (Perez-Higuera 1998).

Pigs are raised for their meat and as such there is no benefit to keep animals beyond their optimum meat weight. As such they are frequently culled before reaching full maturity between 9 months and 3 years of age. In the Irish Law codes it is suggested that during the Anglo-Saxon period pigs were commonly culled in their second autumn (16 months) or the following spring (2 years) after producing one or two litters (cited in Dobney *et al* 2007, 89). This would support the data from the Anglo-Saxon assemblage in this report.

Aging data from horses were observed in Iron Age, Roman and medieval deposits. In the Iron Age animals were aged between 6.5 and 17+ years with the majority aged between 6.5 and 9 years old. No foals were observed. This is common on most Iron Age sites and a number of specialists have suggested that horses may not have been bred but taken from semi feral horse populations around this time (Hamilton 2000b; Hambleton and Maltby 2008). Data from Bury Hill suggests that the optimum ages for culling horses was between 6 and 7 years (Hamilton 2000b). These ages fit well with the range from this site.

Data from the Roman and Anglo-Saxon periods was sparse but the animals were all aged over 12 years old.

Medieval data presents a differing picture. The range of ages ranged from 3 to 20+ years. The majority were aged between 9 and twelve suggesting that average ages of horses were older than those culled in the Iron Age. One horse aged 3–4 was young for an animal to die and may have represented a case of illness or an injured animal.

Dogs were all mature animals except for a neonate that was found in phase 10 and a puppy in the post-medieval assemblage.

Metrical data was fairly sparse in the assemblage, however data suggested that for cattle the withers height range during the Iron Age was between 94.8 cm and 115.8 cm with an average of 106.44 cm. Data from the medieval phase shows that cattle shoulder heights ranged from 101.5 cm to 110.1 cm with the average being 105.4cm. This may suggest that the average withers heights had changed relatively little between the two periods of time. For sheep/goat ranges from the Iron Age and Early Romano-British phase fell within 56.7cm and 68.4 cm with an average of 61.5 cm however in medieval assemblages the range was between 65.0 and 67.7 cm with an average of 66.4cm. This implies that medieval animals had increased in size. This increase was also suggested for horse where the range was between 115.8–132.7 cm with an average of 125.3 cm in the Iron Age deposits and a range between 123.7 and 142.3, with an average of 134.5 cm in the medieval period. These heights are still low. Today a horse under 140cm or 14 hands is classed as a pony (Hamilton Dyer 2003).

Throughout the whole assemblage pathological data was sparse forming less than 1 per cent of the overall deposit. The low volume of pathologically altered bone may to some extent have been an underrepresentation of specimens. The highly fragmented and overall weathered nature of the bone may have masked signs of pathologically altered bone. Most specimens derived from the Iron Age, Saxon and medieval deposits where cattle, dog, horse and sheep goat demonstrated pathological change.

Cattle crania presenting with occipital perforations were observed in Iron Age and Anglo-Saxon deposits. The possible aetiologies of these have been discussed earlier in the text however it is of note that a cattle crania from Barton Court (Jones 2010a) dating to the Anglo-Saxon period also portrayed this condition.

Raised longitudinal ridges that were visible on the proximal anterior shafts on a set of sheep/goat metapodials from phase 8 have been noted elsewhere (Dobney *et al* 1996, 43). It is of note that no other metapodials from the site displayed these characteristics and may suggest that the animal may have come from a different herd. It was of note that the metapodials may have been attached to a fleece when they were buried which may have been brought into the area from further away. It has been suggested that the condition may suggest animals had foot rot, were penned on hard standing, or that they were raised on rough hills or cliff pastures (Dobney *et al* 1996). At Lincoln sheep with this pathological condition were thought to have been raised on marshland, the terrain leading to these extended ridge formations.

Flattened occlusal surfaces and polished anterior edges of the second premolar teeth on a number of horse remains from phase 8, 13, 14 and 16 suggested that horses had been bitted and possibly exploited for traction and riding activities. Examples of horses that may have been bitted have been identified on other Iron Age (Jones 2010b; 2011a) and medieval sites (Jones 2011b; 2011c).

Osteoarthritis in joint areas was observed in cattle bone from the Iron Age. Some metapodials displayed broadened condyles and excessive wear to the articular facets. Whilst these problems may be symptomatic of age they may also be exacerbated by excessive strain on areas of the body and may be related to traction activity. A number of fused vertebrae on a horse in the medieval assemblage may also be symptomatic of old age or traction activity.

Of interest is that all but one of the articulated dog burials from the Iron Age and Late Iron Age–Early Romano-British assemblages displayed high levels of traumatic injury. Healed or healing fractures on ribs, long bones and crania implied that a level of care had been administered to the dogs during recovery. Fractures may have been splinted or supported whilst healing. However the types of trauma observed may have reflected kicks, beating with a stick, falls or impacts with moving objects. It is possible that these dogs many of which were male were used for hunting, for fighting or in battle.

Articulated dog burials from other Iron Age sites have also demonstrated similar signs of traumatic injury to the skull or longbones (Grimm 2008a; Brothwell 1995; Hamilton 2000a). Strabo in his accounts of Gaul and Britain in the 1st century BC suggests that Britain exported hunting dogs and suggested that dogs were used by the Gauls in war (Geographica IV, 5–23). It is possible that these dogs were afforded special treatment in burial and care in life in recognition of their contribution to society at the time.

Signs of mild infection in a dog from the Iron Age possibly caused by irritation from a collar or mites was observed in the articulated burials whilst an elderly horse with infection to the cheek area and mouth was observed in the medieval assemblage. The articulated sheep burials in the post-medieval period showed no sign of pathological alteration however given the nature of the burials is likely to have represented disease that had impacted sheep within an area. Many diseases may affect the soft tissue and organs of animals without leaving any apparent morphological change on the skeleton.

Observation of chronic infection osteomyelitis was observed in Iron Age dogs probably associated with traumatic injury. This level of infection can spread rapidly through the body and result in death if left untreated.

Overall the animal bones from Thanet Earth have provided a window through which it has been possible to see episodic moments of life that have been caught in time, illustrated by remains left within the archaeological matrix across the 8 plateaus that were excavated. Whilst it is impossible to truly gain understanding of what episodic moments or events involving deposition of remains must have meant to the communities of the time, the animal bone has suggested how landscapes were used, the intensity and locations that were utilised over time, the types of features used to deposit remains and the types of animals exploited by people and communities across time. It has highlighted associations of animals or food with burials and tentatively hinted at beliefs connected with the afterlife, creation of monuments and demonstrated that perceptions connected to wild and domestic animals food, waste disposal, animal husbandry, symbology or beliefs may have changed over time. The animal bone and its spatial patterning has provided a record of man's changing and evolving social perceptions, beliefs and activities, peoples waste representing a record, capturing moments otherwise lost in time.

TEPEX10: Thanet Earth Pipeline

Thanet Earth pipeline produced a total of 276 fragments of bone from across 17 contexts. 209 fragments derived from an articulated bone group whilst the remaining 67 fragments derived from disarticulated, commingled and fragmented deposits.

All bone was assessed and recorded following the methodology set out in the main report.

Faunal remains derived from 4 phases that included:-

- Phase 5: (Late Bronze Age) produced 21 fragments from 5 contexts
- Phase 11: (Roman) produced 24 fragments from 5 contexts
- Phase 13: (Medieval)
- Phase 16: (Medieval)

Late Bronze Age: Phase 5 produced 21 fragments of bone from across 5 contexts (Table 176), 1 pit (context 259, G33) and 4 boundary ditch features (contexts 215, 226, 228, 261), all from group G34. All bone showed signs of weathering and had suffered from erosion in the burial environment. 62 per cent of the fragments could not be identified to species. Those that were identified, included; cattle, sheep/goat, sheep and pig. The presence of gnawed bone in ditch context 226 may also suggest that dogs were present in the area, despite the absence of their physical remains.

A minimum number of 4 animals were present in the assemblage, one of each species. Ageing data from a sheep mandible demonstrating mandibular wear stage 10 (following Grant 1982 and Hambleton 2008) suggested that a juvenile animal around 6 months old was present in the assemblage, possibly representing an animal culled in the autumn/early winter whilst a worn molar suggested an adult animal aged between 2–4 years was also present. A loose, heavily worn cattle tooth suggested it derived from an elderly animal over 40 months old.

Elements represented in the deposit included scattered loose teeth and limb bone fragments for cattle and sheep/goat (including sheep), whilst a single limb bone formed the pig deposit. All finds except a single sheep/goat tooth derived from boundary ditch contexts. No metrical data or observations of butchery or pathology were recorded for this assemblage.

Roman: Phase 11 produced 24 fragments from across 5 contexts, 1 boundary ditch (20) and 4 storage pit features (22, 26, 67, 69). Bone summaries per context are provided in Appendix 1a. Bone fragments were highly fragmented and eroded having suffered in the burial environment. Only one fragment, the only ditch specimen, was not identified to species. Those species that were identified in the assemblage included cattle, pig and

horse. Pig fragments were most numerate although 99 per cent of those fragments derived from a single mandible. A minimum number of 4 animals were represented, 1 cattle, 2 pig and 1 horse. Pig remains were identified in 2 separate pit contexts. All finds were mandibular, representing two males one of which had a toothwear stage of 25 (following Grant 1982 and Hambleton 2008), suggesting that a sub-adult animal culled around 24–26 months was present in the assemblage. Horse was represented by a single eroded astragalus and cattle, two matching shin bone fragments that probably derived from food waste. No metrical data or observations of butchery, gnawing or pathology were recorded for this assemblage.

Medieval: Phase 13 produced 17 fragments of disarticulated bone from 4 contexts, 2 pits (contexts 72 and 109), one sunken floored building (context 82) and an enclosure ditch feature (context 367). Context 178 produced 209 fragments relating to an articulated horse skeleton buried in a small pit (S189) within a sunken floored building (G51). Eighty-two per cent of finds were unidentifiable to species, consisting of abraded and highly fragmented rib and long bone pieces that had probably sat on the surface for a period of time prior to burial. Species represented included sheep/goat and pig with a minimum number of one of each animal represented in the assemblage. All bone identified were meat bearing bone fragments, suggesting that deposits were probably created from food waste. A pig scapula suggests consumption of shoulder ham whilst a mature sheep tibia may indicate consumption of a mutton shank joint. One medium sized mammal rib fragment had been chopped across the mid shaft section with a cleaver type instrument presumably to create rib portions for consumption or boiling to make stew or stock.

The horse skeleton was not complete. All parts were represented except the head, neck, phalanges or hooves, tail, right humerus and right metatarsal. The bones had suffered within the burial environment showing signs of surface erosion, splitting and exfoliation. It is possible that the absent parts of the skeleton may have been deliberately removed. Small tarsal and carpal bones were present in the assemblage suggesting that recovery bias may not have influenced retrieval of smaller bones like phalanges or caudal vertebrae. The phalanges may have been removed to boil up for glue or resin and the tail for its hair. It is possible certain limb bones were removed to use for bone working. The absence of the right humerus seems deliberate given the presence of the articulating scapula and lower front limb bones. No butchery marks or pathological markers were observed on the skeleton.

All bones were fully fused suggesting the horse was a mature animal at the time of death. Metrical data collated from the bones is given in Table 177. The estimated withers height of the animal, (calculated from the average of estimated shoulder heights using Kiesewalter (1888) correction factors from the radius, metatarsal, tibia and femur) was 129.8 cm. This estimate falls into the average shoulder height for horses from within this

period and is within the range of shoulder heights derived from other horses within the overall Thanet Earth medieval assemblage.

Medieval: Phase 16 produced 5 fragments of bone from enclosure ditch context 40 and hollow way context 78. Only one fragment, an isolated specimen from the enclosure ditch was not identified to species. Those that were identified derived from the hollow way. These were sheep/goat and hare. One sheep/goat mandible with a toothwear stage of 36, appertaining to a young adult between 2–4 years was present in the assemblage. Three left limb bones from a single juvenile hare were also present in the hollow way assemblage. No butchery or gnawing marks were identified on the bones.

Discussion

The low sample size from the Thanet Earth pipeline excavations suggests that the additional data does not heavily affect overall results derived from the other Thanet Earth excavation plateaus. Data from the phase 5 results of the pipeline excavations suggests that pig is an additional species recognised from this period on the site, making those identified for this phase as cattle, sheep, sheep/goat, pig and horse as well as dog identified from the gnawed bone in the pipeline assemblage. The range of features producing bone in this phase matches the types of features identified on the other Thanet Earth plateau sites where ditches or boundaries produced the majority of finds. The range of elements present including limb bones and cranial fragments/teeth suggests that the deposits were created from a mixture of small scale butchery and consumption waste.

Bone from Phase 11 of the pipeline excavations predominantly derived from pits as opposed to a large majority of open features like ditches, boundaries, hollow way and quarries that produced most of the bone on other Thanet earth sites. The deposits here seem to represent low scale activity. The species represented, cattle, pig and horse were all found on other sites although here the area of interest is in the absence of any sheep/goat and the low incidence of food waste. The presence of pig teeth and mandibles in pits may possibly reflect primary butchery waste, an area where pigs were managed or slaughtered. The absence of pig limb bones was observed on other plateau sites and may reflect a tendency in the area for pigs to be slaughtered, heads removed and the carcass taken elsewhere for processing and consumption. The only food waste was a single cattle shin bone possibly suggesting activity may have been periodic here. The additional presence of a horse foot bone may possibly add to the liminal nature of this area. No female pigs were observed in any of the deposits and may reflect a strategy of selective culling where males were preferentially culled. Animals observed on other Thanet Earth locations were also in the 15–26 month old bracket and may represent a cull strategy focussing on young sub adult males exploited for their meat.

Phase 13 produced an articulated horse burial and a small number of finds from a sunken floored building, 2 pit contexts and an enclosure ditch. This range of features expands those associated with this phase on the other Thanet Earth sites where bone deposits derived solely from pit contexts. The presence of pig in the pipeline deposits creates an addition to the range of species identified in the overall phase 13 assemblage. The articulated horse burial placed in a shallow pit in a sunken floored building may suggest that although the meat was not utilised, some parts like the feet, certain bones the tail and head were. Other articulated burials, from other Thanet Earth excavation sites associated with the medieval period (phases 13–16) were also only partially complete, phalanges and hooves were often absent even in the disarticulated assemblage and may suggest that they were used for other purposes , like manufacturing resins or glue. The absence of two right limb bones may have been taken to be worked , possibly the chosen side held meaning to the craftsman , It is possible that the animal was skinned , butchery processes like skinning need not leave marks and the head taken attached to the hide. The withers height of the horse is within the average range for this period of time.

Phase 16 finds were very sparse, with sheep/goat and hare the only species identified. The presence of hare was only recorded in phase 14 in the overall Thanet Earth report, however its presence here adds it to the range utilised in phase 16. It is of course possible that the presence in a ditch by a hollow way could reflect a natural animal death or utilisation for meat or fur.

Samples

In total six samples from phase 13 produced 8g or 112 fragments of animal bone. Species counts are summarised in Table 178. Overall preservation was poor, with bone being eroded, extremely fragmented and highly abraded in all samples. Fragment size was commonly less than 5mm in diameter. Burnt remains were only observed in context 165, a wall where one unidentified mammal bone was black. This suggests incomplete combustion had occurred with bone exposed to low temperatures under 800 degrees Celsius. The even coloration of the bone may suggest that flesh had been removed from the bone prior to heating. No burnt specimens were observed in the main assemblage.

The only species represented in the samples were toad, sheep/goat and dog. Dog and toad were not identified in the pipeline phase 13 deposits. Similarly they were not recognised in the overall Thanet Earth assemblage. Elements represented for the mammals were broken loose teeth and limb bones for toad.

Sheep goat was recognised in contexts 125 and 109, a building and a pit. Dog was recognised from a loose tooth in pit context 111. Toad was identified in pit contexts 72 and 111. A minimum number of two toads were identified in context 111 and one in context 72.

The features represented must have all been open at some point. Toads may have been attracted to dark damp areas in search of small insects or food, or to hibernate. Some may have fallen into open pits, and been unable to find a way out. Common Toads are widely distributed throughout Britain. Their preferred habitat is in damp places in areas of woodland, scrub or rough grassland that are near a freshwater source. Their diet consists of invertebrates such as insects, larvae, spiders, slugs and worms. Toads are nocturnal and can shelter under tree roots, stones and vegetation during the day. They hibernate over winter being commonly found under leaf litter, logs or in burrows or drains.

Chapter 21: Bird bones and eggshell

Enid Allison

The material

Bird bones were recovered by hand-collection during excavation, and from bulk samples processed using standard methods of wet-sieving with flotation for recovery of biological remains. A total of 1078 bulk samples, with a combined volume of 20,816 litres, were processed from the Thanet Earth site, with a further 23 samples (352 litres) from the route of the pipeline. Flots were collected on 0.5mm mesh and residues on nested 2mm and 1mm sieves. Bone was chiefly recovered from the >2mm residues and occasionally from sample flots. The fine (>1mm) residues were not routinely examined.

Bone of all kinds was generally poorly preserved on the site, and the bird remains were no exception to this, being both fragmentary and often with much surface damage by roots. The condition of the bone presented problems with the identification of some fragments, and some remains that could not even be confidently identified as bird bone were discounted from the totals. The few bird remains from the Thanet Earth Pipeline were in a much better state of preservation than those from the main Thanet Earth site which was thought to be due to partial mineralization in deposits containing cess.

Avian eggshell fragments were noted as present in the >2mm residues and/or flots of 88 bulk samples from stratified phased deposits across the site. In a few cases eggshell of two distinct thicknesses was present.

Methods

Identification of bird bones was by comparison with modern reference specimens belonging to the author. Bones of immature birds were identified to species when possible. Vertebrae, ribs and phalanges were identified if they formed part of an articulated group. Indeterminate fragments were, where possible, categorized by size as very small, small, medium or large bird.

Bones of the various species of geese are difficult to separate on morphological grounds and, for the few bones that were sufficiently complete, selected measurements of von den Driesch (1976) were used to aid identification, and comparison was made with the data of Bacher (1967) and Boessneck *et al* (1979). The fragmentary state of the bone made distinguishing between domestic and the larger wild geese particularly problematic. Unless otherwise stated, 'goose' as used in this report refers to specimens comparable in size with domestic geese or the larger species of wild geese.

Age at time of death and the sex of individuals is mainly an issue with domestic poultry. The developmental stage of bones was recorded as mature, immature (incompletely ossified and porous, and for the metatarsus and tibiotarsus with unfused epiphyses), and chick to denote very young birds. Metatarsi and tibiotarsi that had achieved full size but still showed a line of epiphyseal fusion were noted. In domestic fowl the presence or absence of a spur on the tarsometatarsus is a fairly reliable character for determining the sex of adults although some spurred females do occur from time to time and (more commonly) young cockerels are often killed before the spurs become fused to the tarsometatarsus shaft (Sadler 1991). No spurred bones were seen among the Thanet Earth material however. There were indications of the sex of some domestic fowl bones from the presence of medullary bone which is only found within the bone cavities of female birds in laying condition, most abundantly in the femur.

There is a significant degree of sexual dimorphism with regard to size in domestic fowl and measurement of femora and tarsometatarsi, both of which can provide some idea of sex of the bird, can be measured to obtain an idea of the size of individual birds. The few measureable bones were from the hand-collected material. Bones were also examined for any pathological features or butchery marks but the poor condition of much of the material, particularly in the form of surface damage by roots, precluded the collection of much data.

All data obtained during the analysis is held in the CAT archive.

Results

Bird bones were not well represented on the Thanet Earth site given its size: the assemblage comprised 59 hand-collected bird bones and a further 217 fragments recovered from the bulk samples. Twenty six per cent of the hand-collected material and 42 per cent of the material from samples was unidentifiable. The majority of the remains were from two sunken-floored buildings (SFBs) of Anglo-Saxon date (Phase 12) on Plateaus 3 and 8. A smaller quantity of material was recovered from deposits assigned to Phases 8, 11, 14, 16, 17 on Plateaus 1, 6 and 8.

A full list of birds recorded is provided in Table 179, and the distribution of bird bones across the various plateaus on the main Thanet Earth site is shown in Table 180. Remains recovered by hand-collection and from bulk samples have been recorded separately in Tables 180–182 but are discussed together below.

Eggshell was present, usually in small amounts, in samples from a wider range of deposits. Its occurrence across the site in the various periods of activity is shown in Table 183, and all records are detailed in Table 184. It is emphasized that eggshell was generally noted in the >2mm residues and flots (most commonly the latter), and it is likely that greater numbers of fragments are present in the fine fraction (>1mm) of the

sample residues which was not systematically examined. Fine measurement and scanning electron microscopy would be necessary to distinguish diagnostic internal structures and sculpturing to produce definite identifications (Sidell 1993) and this was not within the financial scope of this project. Two thicknesses of eggshell fragments were present in a few occupation deposits, and given that the majority of the eggshell records were from Anglo-Saxon and medieval deposits, at least the majority of the thinner shell is very likely to be from domestic hens. Measurement of a sample of fragments showed them to be of the expected thickness for this to be the case (Keepax 1981). It is possible that other species may be represented among the thinner shell in some contexts however, particularly in a few Neolithic and Bronze Age deposits where it is unlikely be from domestic fowl. The less common thicker eggshell fragments were almost certainly from geese as few other British birds have such large and thick shelled eggs, and shell from the other large species is very unlikely to be common in domestic waste.

Neolithic deposits (Phase 1)

No bird bones were recovered from Neolithic deposits. Eggshell fragments were noted in the flot of a sample from the uppermost fill of an isolated grave-shaped pit on Plateau 1 (G10001, S10454), dated on pottery evidence to the Early Neolithic period. A radiocarbon date of 3944–3668 cal BC (at 95 per cent probability; Table 6, UBA-22207) was obtained from club wheat grains from an earlier fill of the pit. The fills of the pit contained hearth waste, cooking pots and crushed marine shell and a range of material hinting at ritual deposition. If the eggshell is contemporaneous with the deposit, it is unlikely to be from domestic hens' eggs at this date.

Mid Bronze Age deposits (Phase 3: 1600–1000 BC)

Eggshell fragments were noted in the flot of a sample from the fill of a ring ditch segment on Plateau 2 (G2052, S2704), and from deposits in pits associated with a possible 2-post structure relating to preliminary settlement on Plateau 5 (Structure 1; G5001).

General Iron Age features on Plateau 8 (Phase 8)

At time of writing most of the Iron Age features relating to settlement on Plateau 8 were only broadly dated. Few bird remains were recovered. The hand-collected fragments were badly root damaged and none were identifiable but it could be seen that large, medium and medium to small birds were represented. Identifiable material was recovered from two bulk samples: three bones from the wing and shoulder girdle of a small wader from the Middle Iron Age backfill of a storage pit (Group 8140), and a proximal fragment of a domestic fowl coracoid from a ditch (Group 8215) dated on pottery evidence to the Late Iron Age or early Roman period. Eggshell was noted in the

flot of a sample from one of a group of post holes originally forming Structure 26 and subsequently backfilled with domestic refuse (G8072).

General undefined prehistoric deposits (Phase 9)

Eggshell fragments were present in the flot of a sample from a post hole associated with two cremation burials on Plateau 1 (G10048).

Roman deposits (Phase 11)

The only identifiable bird bones from Roman deposits were abraded fragments of left and right femurs of domestic fowl from the fill of a boundary ditch on Plateau 8 (G8287). The bones may have been from the same individual. Medullary bone was present in both fragments indicating they were from a female in laying condition. The usual sites for measurement were either damaged or absent but the bones were similar in length to modern reference specimens of cross-bred bantams but more slender, indicating a more lightly built fowl. Eggshell was recorded from samples from two boundary ditch fills on the same plateau (G8156; G8159), and was notably common in the latter. On Plateau 2, eggshell was noted in the >2mm residue of a sample from the upper fill of a cremation cut (G2004, S2022), and in the flots from samples from the lower fill of a hearth in SFB 1 (G2020) and a pit probably associated the same structure (G2075).

Anglo-Saxon deposits (Phase 12)

The earliest deposits in SFB 2 that produced bird remains were the fills of several structural postholes (G3033: S11097, S11087). Recovery was by sampling and although the majority of the material was not identifiable, two fragments of domestic fowl bone and several bones of small passerine birds were recorded. At least two species were represented among the passerine remains, one of which was possibly a blackbird. Two indeterminate bird fragments showed signs of burning. Eggshell fragments were recovered from samples from six of the postholes (S11081, S11085, S11087, S11097, S11105, S11108).

The bulk of the bird remains associated with the structure came from a subsequent fill that overlaid what was thought to be its floor (Group 3034, S11083). A range of artefacts and animal bones suggested that it represented the dumping of domestic waste into the building after it went out of use. Identifiable bone from samples was mainly of domestic fowl, but goose, rook or carrion crow, possibly duck, and several species of small passerine birds were also represented. The small passerine remains included bones of starling, blackbird and either song thrush or redwing. Knife marks noted on the distal articulation of a domestic fowl tibiotarsus would have been caused when the non-meat-bearing lower part of the leg was removed during food preparation. Just over a quarter of the bird fragments (26 per cent) in the deposit were charred or calcined to some

degree, or covered in an ashy deposit, which is typical of bone that has been burnt in domestic fires. Most of the burnt/ashy bones were of domestic fowl or indeterminate fragments of medium sized birds (probably also mainly domestic fowl), but a few small passerine bones had also been burnt. Eggshell was noted in from 14 samples.

The upper fill of the structure consisted of a sequence of dark deposits containing large quantities of burnt clay, daub and domestic refuse that was thought to represent deliberate and probably rapid backfilling of the structure after disuse (G3035). Bird remains were recovered from several deposits within this fill (S11072, S11082, S11090) both by hand-collection and from samples. Domestic fowl bones were again in the majority but geese were better-represented than in the earlier fill. Bones of at least two sizes of geese were present: the larger bones were comparable with domestic geese or one of the larger wild species, and a humerus fragment appeared to be from a Brent Goose. A femur fragment assigned to the medium-large bird category from the same deposit as the Brent Goose bone may also have been from a small wild goose. Other species identified were great black-backed gull and starling. Four fragments of bone had been burnt: two from domestic fowl, one from a small passerine, and an indeterminate fragment. The hand-collected bone from this group of deposits contained a number of measureable domestic fowl bones indicating a small, slender type of fowl. A few bones of slightly larger fowl could be attributed to the presence of the two sexes. Several bones of immature fowl were recorded, including a tarsometatarsus that was almost full-sized but unfused proximally, indicating the consumption of young birds of around 6 months of age. Medullary bone in a domestic fowl femur indicated a hen in laying condition. Eggshell fragments were recovered from residues and flots of seven samples, being notably common in one from S11072.

SFB 4 (G8170) was thought to probably be too small for domestic use and it may have had an ancillary function. A few bird bones were recovered from deposits within it that contained a range of material suggesting deliberate backfilling. A single root-damaged bird bone, probably of domestic fowl, was recovered by hand. Several bones from the feet and wing tips of domestic fowl were recovered from samples, suggesting waste from carcase preparation. The only other remains were two shaft fragments from the long bones of a medium sized bird. Eggshell was recorded from 16 samples.

A summary of the occurrence of bird bones in the different fills of SFB 2 and SFB 4 is shown in Table 182.

Medieval I (Phase 13: 11th–12th century AD)

Bird remains relating to this phase were from the Thanet Earth Pipeline excavation. Sixteen bird bones were recovered from three bulk samples from pit fills (G48). Remains from a cess pit (S141) consisted of part of a sternum and twelve rib fragments of a goose representing a partial carcase that had been butchered by quartering across the breast.

Cut or chops marks were present approximately along the centre line of the sternum, and also transversely at the posterior part of the rib cage. Other identifiable remains from the same cess pit were incompletely ossified sternum fragments of a full-sized but skeletally immature domestic fowl. A bone from the foot of a domestic fowl was recovered from pit S153.

Medieval II deposits (Phase 14: c. 12th–1st half 13th century AD)

A carpometacarpus fragment from a wild goose was recovered by hand from the oyster-rich backfill of an underground chamber on Plateau 6 (Structure 55; G6048). Samples from the same feature produced a number of bones of immature domestic fowl, including two bones from a chick, and a single bone of a small passerine bird. Eggshell was recovered from three of the sample flots from this feature, and in one case from the >2mm residue. Also on Plateau 6, eggshell was recovered from the fill of an oven (G6013) and from a probable hearth rake-out and other material (G6105) within SFB 65, on Plateau 4 it was recovered from a basal layer within SFB45 (G4061), and on Plateau 5 it was noted in a fill of a cess tank (G5078) possibly associated with SFB 59, and the fills of ditches associated with Enclosures 49 and 51 (G5153; G5178).

Medieval III (Phase 15: 13th–early 14th century AD)

Eggshell was recovered from occupation tread in SFB 52 (G5061) and from a post hole in a foundation trench in SFB 53 (G5165). Two thicknesses of eggshell were noted in the occupation tread, the thicker almost certainly being of goose.

General medieval (Phase 16)

Bird bone was recovered from two deposits on Plateau 1: two fragments of a domestic fowl ulna from a pit containing domestic waste (Group 10111), and an indeterminate fragment from a sample from the fill of a probable cess pit (Group 10101, S10344). Eggshell was noted in the flots of eleven samples (and one >2mm residue) on the same plateau: from pits (G1186; G1218; G10083), ditches (G10084; G10089; G10091; G10089) and deposits relating to backfilling, abandonment and demolition in several SFBs (SFB 10, G1109; SFB 13, G1175; SFB 77, G10123; SFB 78, G10125). On Plateau 2 eggshell was common in a sample flot from a circular pit (G2007) possibly associated with Structures 51 and 52, and was present in flots from the fill of an oven (G2065) in SFB 32 and a collapsed oven in SFB 34 (G2073). Fragments were also present in a sample from a rake-out deposit in SFB 43 (G4054) and an enclosure ditch (G4404) on Plateau 4 (G4404), and in pits (G5088; G5128; G5122) and a surface in an erosion hollow (G5106) in Enclosure 55 on Plateau 5.

Post-medieval (pre-1900; Phase 17)

A carpometacarpus fragment of a goose, probably from one of the smaller species of wild goose, was recovered from a deposit containing other waste animal bone and shell filling the foundation ditch of a post mill (Structure 58, G6079).

Discussion and conclusions

The earliest bird bones on the site were recovered from the area of Iron Age settlement on Plateau 8. Very few of the remains were identifiable but large, medium and medium-small birds were represented by a few poorly preserved fragments. Three bones from a small wading bird were present in the backfill of a storage pit dated on pottery evidence to the Middle Iron Age. The assemblage, albeit small, hinted at some wildfowling activity. A single domestic fowl bone was recovered from a ditch fill dated on pottery evidence to the Late Iron Age or early Roman period. If it represents the earlier part of the period, this record would add to evidence for the low-level keeping of domestic fowl in southern Britain during the later Iron Age. The earliest finds of domestic fowl in central Europe are from the mid first millennium BC (Benecke 1993) and their introduction into Britain may have been later than this (Poole 2010). Julius Caesar stated that the Britons kept fowls for pleasure and diversion but did not eat them (Bello Gallico V, 12). Whether this was strictly adhered to is open to question, but their remains certainly do not commonly appear among food waste of the period.

Very few bird bones were recovered from Roman deposits, the only identifiable remains being of domestic fowl. The Romans appear to have developed the culinary and agricultural potential of domestic fowl in Western Europe (Wood-Gush 1964), and on British sites their bones become generally more common after the Roman occupation, particularly on urban and military sites. A comparative study of the occurrence of domestic fowl on different types of Roman settlement concluded that fowl were less common on native rural settlements than on Romanised sites (Maltby 1997).

The bulk of the bird bones from the site were from the Anglo-Saxon SFBs on Plateaus 3 and Plateau 8 where preservation was somewhat better than on other parts of the site. The assemblage indicated that domestic fowl were probably kept nearby, and that there may have been some wildfowling activity. A number of goose bones were recovered and their sizes indicated that at least two types were represented: either domestic geese or one of the larger wild species, and Brent Goose, bones of which are separable from other geese by virtue of their small size. Brent geese are winter visitors to Britain, feeding on coastal mudflats. They are closely associated with beds of the green eel-grass (*Zostera marina*), but also feed on green seaweeds, salt-marsh plants, some shellfish, and crustaceans (Cramp and Simmons 1977). The great black-backed gull generally breeds on the northern and western coasts of Britain at the present day, but it winters on other coasts and in estuaries (Harrison 1982, 150). Bones of the same species were recorded with other seabirds among domestic refuse associated with early medieval tenements in Dover, some bearing knife marks (Allison 2006). Bones of small passerine birds were

common in the fills of SFB 2, and a few had been burnt. While it is possible that some small birds were deliberately targeted by fowlers, and if so this would probably have been by netting, at least some of the remains of small birds may be related to abandonment of the SFB rather than to their exploitation for food. Remains of other small animals that are unlikely to have been eaten (amphibians, reptiles, and rodents) were present or common in many of the samples from the fills of SFB 2, and bones of a frog or toad had been burnt (CAT sample archive). The records suggest that voids within a midden of domestic refuse had been colonised over a period of time by a variety of small vertebrates, some of which died there, with periodic episodes of burning resulting in some of the remains becoming charred.

Eggshell was predominantly recorded from the fills of buildings, indicating the culinary use of eggs and by inference the domestic nature of the buildings, or from pits and ditches where there was other evidence for the dumping of domestic refuse. It was most commonly recorded from deposits within the Anglo-Saxon SFBs and from medieval deposits, but was also present in pits associated with a possible 2-post structure dating to the mid Bronze Age (Structure 1; G5001), in one of a group of Iron Age post holes originally forming Structure 26 and subsequently backfilled with domestic refuse (G8072), and in the lower fill of a Roman hearth in SFB 1 (G2020) and a pit probably associated the same structure (G2075). Several medieval deposits associated with hearths or ovens contained eggshell fragments. While this may simply reflect the disposal of domestic waste by burning, it could also relate to the common medieval practice of baking eggs in embers (Wilson 1991, 144–146). The consistent and widespread recovery of eggshell from medieval deposits suggests that the consumption of eggs and probably the keeping of domestic poultry were more common than might appear from the records of bird bone. The presence of domestic chick bones in a large underground chamber (G6048) on Plateau 6 certainly suggested that they were casualties from fowl bred nearby. Eggshell of two distinct thicknesses was noted in a few deposits: two fills of Anglo-Saxon SFB 2, occupation tread in medieval SFB 52, and an unphased and ungrouped pit fill on Plateau 1. The thicker fragments were thought very likely to be of goose eggs since few other British birds have such large thick-shelled eggs, and the majority of the thinner fragments were consistent in thickness to eggs of domestic fowl, suggesting that both were exploited for their eggs during these periods. Domestic geese have a much shorter laying season than domestic hens, traditionally begin to lay in February for two or three months (Kear 1990). The only wild goose that breeds in Britain is the greylag, the wild ancestor of the domestic goose, but it would not be possible to distinguish eggs of the two types.

Intriguingly, eggshell fragments were also recovered from four deposits with ritual connections: the uppermost fill of an isolated Neolithic pit (G10001), a mid-Bronze Age fill of the ring ditch surrounding Barrow 7 (G2052), and from two cremation burials, one of undefined prehistoric date (G10048) and the other Roman (G2004). For many cultures throughout history eggs have embodied the essence of life, symbolizing birth, re-birth,

and immortality. They were used in divination, and were widely believed to ensure fertility (Andrews 2000, 86–87). In the Hellenistic and Roman worlds there was a widespread tradition for the placing of whole hens eggs with the dead (Serjeantson 2009, 178). Eggshell comparable in thickness to that of domestic fowl was recovered from a cremation dating to the Late Iron Age (early first century BC) at Baldock in Hertfordshire (Murphy 1990), and hens eggs (one of which was almost complete) were found to have been buried in pots with four separate inhumations in the Romano-British cemetery at Trentholme Drive in York (Frazer and Ryder 1968).

Chapter 22: Insect remains from medieval wells on Plateaus 1 and 2

Enid Allison

Introduction

Five medieval wells on Plateaus 1 and 2 at the Thanet Earth site were boreholed using a cable percussion rig. Organic material preserved by anoxic waterlogging was found to be present in the basal fills of four of the wells. Recovery failed before the base of the fifth well was reached. Waterlogged sediments are rarely found on 'dry' archaeological sites on relatively high ground on the Chalk and samples from the wells therefore provided an opportunity to study types of evidence that are usually absent. All of the samples recovered were rich in insect remains and assemblages from three of the wells (a total of eight samples) were selected for full analysis. The locations of the three wells are shown in Fig. 300.

The samples

Due to the soft wet nature of the sediments in the bases of the wells it was not possible to obtain intact cores and all the samples consisted of loose sediment.

PLATEAU 1: Well G1143

The well was situated in Enclosure 16 where other features included at least two SFBs and numerous pits. The upper three fills were hand-excavated to a depth of 1.30m and the rest of the fills investigated by boreholing to a depth of 28m. The basal waterlogged chalky silt fills were sealed by chalky clay deposits containing flints, abundant mussel shell and medieval pottery possibly representing deliberate infill. Adjacent to the well to the south was a sub-circular post-hole (S1714) 0.40m in diameter and 0.50m deep that may have had a functional association. Two samples were taken from the basal well fills (C1780, C1781) at depths of 20.5m and 21.0m below the lowered ground surface. A calibrated radiocarbon date of AD 894–1117 (at 95 per cent probability; Table 6, UBA-22213) was obtained from a pronotum of *Pterostichus madidus* from the lowermost sample (sample <1066>).

PLATEAU 2: Well G2135

Well G2135 was situated in Enclosure 38 with other structures and features indicative of settlement. The top of the shaft was lined with large, angular and sub-angular flint nodules which formed a 0.20m thick lining. Pottery, iron objects and residual worked flint were recovered from the three hand-excavated upper fills. The rest of the shaft was boreholed and waterlogged chalky silt deposits were encountered at 24.5m, with the base reached at 25.3m below the existing ground surface. Three samples were taken

from the basal fills, and the lowest (25.3m) and uppermost (24.5–25.0m) were selected for analysis.

PLATEAU 2: Well G2059

Well G9280 lay towards the south-eastern corner of Enclosure 36, slightly to the north of SFB26. A flint cobble lining, laid on a ledge approximately 1 metre below the ground surface, extended around the circumference of the cut to a height of ~0.55m above the ledge. Above this, the cut was lined with two deposits of compacted chalk clunch that extended up the sides to ground level. The lower fills were boreholed and waterlogged chalky silt deposits were encountered at 24.4 metres, and the base at 25.77 metres below the existing ground surface. A few sherds of medieval pottery were recovered near the base during boreholing. Seven samples were taken from the waterlogged basal fills and the four selected for analysis were from depths of 25.7m, 25.5m, 25.0m and 24.4m.

Methods

The volumes of sediment processed from each sample were 4–10 litres. Since there were significant amounts of chalk fragments in the samples, 'washovers' were carried out to remove the lighter organic material with recovery on 0.3mm mesh. Paraffin flotation was then carried out on the 'washover' fraction to extract insect remains following the methods of Kenward *et al* (1980), also with recovery to 0.3mm. The paraffin flots were so rich in insect remains that for three of them only a proportion was examined to keep within budgetary constraints. In these cases the flots were mixed as thoroughly as possible before division. The sample volumes given in Table 187 have been adjusted to take this into account.

Beetles (Coleoptera) and bugs (Hemiptera) were removed from the paraffin flots onto moist filter paper for examination using a low-power stereoscopic microscope (x10–x45). Identification was by comparison with modern insect material and reference to standard published works. Numbers of individuals and taxa of beetles and bugs were recorded, and taxa were divided into broad ecological groups for interpretation following Kenward *et al* (1986) and Kenward (1997) (see Table 185 for groups used). The abundance of other invertebrates in the flots was recorded on a three point scale as present, common or abundant. Nomenclature follows Duff (2012a) for Coleoptera, and the list compiled for the British Bugs Website (2012) for Hemiptera: Heteroptera. The recovered insect material is currently stored in vials of industrial methylated spirits (IMS) with the relevant paraffin flot.

The insect assemblages

The findings of the analysis are described below. The percentages given for different groups of beetles and bugs relate to number of individuals within that group, expressed

as a proportion of the terrestrial fauna. The proportions of different ecological groups of terrestrial insects in each sample are shown in Fig. 301, hosts of plant-feeding insects in Table 186, and lists of insects and other invertebrates from each sample in Table 187.

General observations

All of the paraffin flots were very rich in insect remains, particularly beetles. Concentrations of remains ranged from 32–287 individuals per litre of sediment, with the greater concentrations present in the upper parts of each sequence (see Table 187). A consistent range of species were represented, and almost all were from terrestrial habitats. Some of the species identified are confined to localities in southern Britain at the present day, and some are specifically associated with coastal areas. The wells appear to have been too deep to have acquired established water beetle communities: the few aquatic beetles recorded were a few individuals of *Helophorus, Berosus* and *Ochthebius auriculatus* or *dilatatus* from wells G1143 and G2059. These are mobile species that would have formed part of the background fauna of the area. Water flea ephippia (*Daphnia*: resting eggs) were common or abundant in G1143, G2135, and the lower parts of the sequence in G2059. Lesser numbers of ostracod carapaces were recorded in five of the eight samples. Both of these groups of aquatic crustaceans attest to the presence of water in the wells, but in themselves do not necessarily indicate permanent water. The state of preservation of the insect material however, strongly indicates that water was constantly present at the bases of the wells even if there were seasonal fluctuations in water level.

The insect material was generally very well-preserved with retention of scales, hairs, wings, and membranes in some species. This was in contrast to plant remains in the same deposits which were neither abundant nor well-preserved. A high proportion of small and medium-sized beetle sclerites were complete but fragmentation of larger sclerites was high. The fragmentation of the larger remains was considered to have been largely caused during sieving rather than being a reflection of preservational conditions or taphonomic processes. Some remains of *Sitona* weevils were soft and rotted to various degrees which may be suggestive of a different origin to most of the other remains, but otherwise there were few signs of general degradation that would indicate intermittent or reduced waterlogging or chemical erosion.

Origin of the insect faunas

A modern study of insect remains from sediments in a well in Kent found that they provided a good representation of habitats in its immediate surroundings (Hall *et al* 1980, 132). Some species are more mobile than others and might arrive from further afield, but another modern study has shown that most terrestrial insects in small water bodies will have arrived from within a 100–200 metre radius (Smith *et al* 2010).

The interpretation of biological material from ancient wells can often be problematic. Firstly it is often unknown how long the wells remained open and therefore over what time period the sediments had accumulated; secondly they may have been cleaned out periodically; thirdly they often provided a convenient place to dump occupation waste that might include plant refuse and an associated insect fauna once their primary function ceased; and lastly they may have been infilled with soil to level the ground after they fell into disuse which could also have introduced substantial assemblages of plant and invertebrate material. At Thanet Earth these problems were minimised because only the basal clearly waterlain sediments were sampled. The lack or poor representation of very common soil-living invertebrates in the samples (particularly earthworm egg capsules) indicated that there was not a significant input of soil into the basal deposits. Some invertebrates could have been introduced into the wells with plant-based litter, probably mainly accidentally, but the large size of the insect assemblages (including a large number of taxa not associated with decaying material) in comparison to the small amounts of rather poorly preserved plant remains and even smaller amounts of other occupation material, suggests that most insects in the lowermost fills entered the wells from habitats in the surroundings rather than with dumped refuse. There were also very low numbers of fly puparia and beetles associated with foul habitation waste. Finally, the Saxo-Norman date (AD 894 – 1117) obtained from beetle remains from the lower sample from well G1143 ties in with the known date of occupation in the vicinity, implying that at least the lowest deposits were concurrent with settlement. The close similarities between the insect remains, both spatially between the wells and temporally within each well, indicate that ground conditions in the three locations were broadly similar and remained so for a considerable period of time.

Beetles from various terrestrial habitats were represented in the assemblages:

- Taxa living and breeding in accumulations of decaying organic matter of various kinds, many of which are typical of man-made habitats
- Taxa associated with buildings
- Taxa infesting wood and structural timber
- Ground-living taxa for which the wells appear to have functioned as pitfall traps
- Taxa from local habitats and vegetation that probably arrived in flight
- Scarabaeoid dung beetles associated with herbivore dung
- Beetles associated with underground mammal nests and burrows
- Beetles that may have lived in moss within and around the well

Conversely, several ecological groups were conspicuously absent or poorly represented:

- There were no taxa specifically associated with living trees
- There were no grain pests

- Beetles with larvae that feed on the roots of grassland plants were only present in very small numbers

Information on the wells

The wells appear to have been very effective pitfall traps for ground-living insects, strongly suggesting that they did not have substantial well-surrounds standing proud of the ground surface. Even a relatively low mortared masonry rim would have presented an effective barrier, particularly to large beetles. Large ground beetles (Carabidae), carrion beetles (Silphidae), and rove beetles (Staphylinidae) such as devil's coachhorse (*Ocypus olens*) and *Tasgius* species, were all well-represented and are particularly characteristic of a pitfall effect since their size and weight prevents them from scaling vertical surfaces. A well with a substantial rim would have generally been accessible only to flying insects and small species more adept at climbing steep barriers and this was clearly not the case here. If there were structures or barriers of some sort surrounding the wells, there must have been substantial gaps at ground level, or they may have been rather flimsy, providing easy access to ground-running beetles.

Beetles associated with wood and structural timber were recorded from all three wells in varying numbers. Common woodworm beetle (*Anobium punctatum*) was the most numerous of these, with death-watch beetle (*Xestobium rufovillosum*) and *Dropephylla vilis* present in smaller numbers. A fourth species, *Mycetaea subterranea,* can be found in rotten wood infested by the dry rot fungus *Merulius lacrymans* (Hinton 1945, Palm 1959), but also occurs in decaying vegetable material. It is likely that these beetles infested wooden buildings or other timber structures nearby, and some might have originated in decaying wooden superstructures associated with the wells. Indications for this were strongest for well G1143 where the group made up 3–5 per cent of the assemblage and wood fragments were also common. Wood-associated beetles made up 2–3 per cent of the assemblage in well G2135 and only 1 per cent or less in well G2059.

The pill beetle *Simplocaria semistriata* lives on moss and was recorded in small numbers from all but one sample. The most likely place where moss would have grown is on the upper lighter parts of the well shafts. Moss fragments were common among plant remains in at least two of the wells. The ground around well G1143 was probably relatively damp and muddy, perhaps due to spillage. Beetles found on damp ground and mud made up 4–6 per cent of the assemblage from its fills, but only 1 per cent or less in the wells on Plateau 2.

The decomposer component

Beetles found in decomposing organic matter were common in all the assemblages. Many of the species are synanthropic, i.e. favoured by human occupation and activity which archaeological evidence indicates was taking place close to all three wells. The

majority of the beetles at Thanet Earth that fall into this category are classed as facultative synanthropes, occurring in natural situations but opportunistically invading man-made habitats and often becoming very abundant (Kenward 1997). In most samples this group accounted for over 75 per cent of the synanthropic component.

There was no convincing evidence that deliberate dumping of occupation waste into the wells had occurred during the period represented by the basal fills. As noted above, the small quantities of plant material recovered from the wells in contrast to the very large numbers of insect remains are suggestive of an accidental rather than a deliberate input of organic litter. The amounts represented could easily have been introduced into the wells during farmyard activities or by wind action: the latter might well have been a factor in an exposed location such as Thanet Earth.

Many of the decomposer beetles were generalists, typically living and breeding in man-made accumulations of organic litter such as compost heaps, dung heaps and stack refuse, indicating that such accumulations were present close to the wells. Insects exploiting such habitats would have formed a significant part of the local background fauna, with a proportion inadvertently entering the wells. There were very few beetles indicative of very foul occupation waste other than animal dung. Decomposer beetles accounted for a somewhat larger proportion of the assemblage on Plateau 1 than elsewhere (40–47 per cent), particularly in the later of the two samples. On Plateau 2 decomposers made up 35 per cent of the assemblage in well G2185 and 25–31 per cent in well G2059, neither of which are particularly high values for the group on a medieval occupation site. The relative abundance of such insects on Plateau 1 may imply that compost heaps, middens, and other accumulations of plant litter were situated closer to the well, or that activity was more intense. There were also suggestions from the well on Plateau 1 that open-textured, nutrient-rich material such as stable waste may have been present nearby: *Acritus nigricornis* was common and in archaeological contexts is often associated with such material, as are the rove beetles *Oxytelus sculptus* and *Leptacinus batychrus*.

Insects associated with buildings

Small but distinct groups of beetles associated with relatively dry accumulations of mouldering plant material were represented in all the assemblages indicating that some of the litter accumulations close to the wells included material from within buildings. These insects accounted for 5 per cent of the assemblages in well G1143, 5–6 per cent in well G2185, and 2–4 per cent in well G2059. The group included white-marked spider beetle (*Ptinus fur*), *Latridius minutus* group, *Enicmus, Dienerella*, *Ephistemus globulus*, *Cryptophagus* spp., *Atomaria* spp., *Mycetaea subterranea*, *Xylodromus concinnus,* and *Crataraea suturalis*, although not all the species were recorded in every sample. This group, together with human flea (*Pulex irritans*) which was firmly identified only from well G1143, are characteristic members of an ancient building fauna, associated with

buildings that house livestock as well as human dwellings (Hall and Kenward 1990; Kenward and Hall 1995; Carrott and Kenward 2001). A building fauna would include species associated with the decay of cut vegetation used structurally (e.g. as thatch or floor litter). With the possible exception of human flea, the same group of species might also be found in barns where crops or fodder were stored since some of the species live and breed in stored and mouldy hay (Hinton 1941, 1945; Hunter *et al* 1973; Kenward and Hall 1997). *Mycetaea subterranea* is particularly characteristic of ancient buildings and is associated with both decaying cut vegetation used structurally and rotten wood. Other beetles that attack wood and structural timber may also have formed part a building fauna, but could equally have infested fences and other wooden structures associated with the wells so have not been included in calculating proportions of the building fauna group. *Laemostenus terricola* (a large ground beetle represented in all the wells) is also strongly associated with human habitation and is rarely found far from it, living in dark places such as cellars and stables (Lindroth 1986, 267–268). Sunken features associated with buildings in the medieval settlement would have provided an ideal refuge.

Insects associated with small mammal burrows and carrion

Choleva and/or *Catops* were common in all the samples and were not identified closely, but both genera were represented and *Choleva* appears to have been the more abundant. *Choleva* species are generalist scavengers typically found in or near small mammal runs and sometimes in other subterranean environments. *Catops* species occur both in mammal nests and in carrion (Duff 2012b, 400–408). *Ptomaphagus* has similar habitat preferences and was also recorded from all the samples in smaller numbers. The presence of rodent nests close to the well on Plateau 1 was specifically indicated by *Typhloceras poppei poppei*, a flea found primarily on wood mice (*Apodemus sylvaticus*) but also on other small rodents (Whitaker 2007, 116).

At least three species of carrion beetles (Silphidae) were represented and *Thanatophilus* species are distinctly associated with carrion. *Silpha tristis* and *S. ?obscura* occur both in dry carrion and at grass roots (Duff 2012b, 415–417) while *Saprinus aeneus*, a histerid beetle, occurs on carrion as well as dung (Duff 2012b, 302). It seems likely that some carrion was available close the wells, even if only in the form of dead rodents, and in any agricultural community the presence of dead animals is usually concurrent with the keeping of livestock. Such insects may also have been attracted to butchery waste in and around the settlements.

Evidence of local vegetation and land use

Insects from outdoor habitats (i.e. unable to live either within buildings or in accumulations of decaying organic material) were very well-represented in all the samples. Although there is a possibility that a minority of these insects arrived

accidentally with introduced plant litter, most appear to have arrived from the surroundings of the wells by natural agencies and therefore can provide information on local environmental conditions, vegetation and land use. The range of outdoor taxa represented in the three wells was very similar and allowing for minor differences in numbers of particular species, the basic implications for local vegetation and land use were also rather similar.

The ground beetles recorded were indicative of open rather dry land. There is likely to have been a growth of weedy vegetation and patches of bare earth immediately around the wells. Plant-feeding insects were numerous, and some those that were closely identified pointed to the presence of particular host plants (see Table 186). Beetles feeding on wild and cultivated members of the brassica family (*Ceutorhynchus contractus*, *Phyllotreta* spp. and *Psylliodes* spp.) were very common. *Ceutorhynchus erysimi* found specifically on shepherd's purse (*Capsella bursa-pastoris*), a common plant of disturbed ground, was identified on Plateau 1. *Diplapion confluens*, recorded from most samples, and *Microplontus rugulosus* are found on mayweeds (*Matricaria* and *Tripleurospermum*), while knotgrass (*Polygonum aviculare*) and other Polygonaceae, perhaps including docks, were indicated by the leaf beetles *Gastrophysa polygoni* and *Chaetocnema concinna/picipes*, and mallows by *Malvapion malvae* and *Aspidapion aenum*, both usually found on common mallow (*Malva sylvestris*). Nettles (*Urtica*) growing on nutrient-rich perhaps relatively neglected ground, were indicated by *Taenapion urticarium* and the nettle ground bug (*Heterogaster urticae*), and there was evidence for creeping thistle (*Cirsium arvense*) close to well G1143 from the weevils *Cleonis pigra* and *Hadroplontus litura*.

Remains of a honey bee (*Apis mellifera*) were present in the upper sample from well G1143. The record is certainly suggestive that bees were kept nearby but the single specimen might possibly have come from a feral population. Whether honey bees were managed or feral, the record indicates that honey and other bee products were available locally. Several species of wild bees (probably including bumble bees) were recorded from the same well suggesting an area rich in flowering plants.

Species associated with leguminous plants (Fabaceae) were common in all the samples: *Sitona lepidus* and *Protapion varipes* feed on clovers, the latter specifically on red clover (*Trifolium pratense*), while *Oxystoma* spp. feed on vetches (*Vicia* and *Lathyrus*). The most common of this group however were *Sitona lineatus* and *S. macularis,* both feeders on a wide variety of wild and cultivated legumes. These species are often common in grassland but the lack of seeds of grassland plants in the same deposits suggests that there was no substantial grassland in the immediate surroundings of the wells. The group as a whole could have been common in arable field margins or on waste ground where vegetation included clovers, vetches and other leguminous plants however. There is also a possibility that the abundance of *Sitona lineatus* and *S. macularis* may reflect the cultivation of pulses nearby. *S. lineatus* adults tend to prefer peas (*Pisum*) and beans (*Vicia faba*) to wild clovers (Jackson 1920), and *S. macularis* was formerly a minor

pest of peas and beans (Jackson 1922). A large seed weevil (probably *Bruchus rufimanus* or *B. pisorum*) was recorded from well G2135. *B. rufimanus* and *B. pisorum* are generally associated with pulses with medium to large seeds, especially field beans (*Vicia faba*) and peas (*Pisum sativum*) (Hoffman 1945; Hubble 2012, 29–31). The larvae of these beetles develop to adulthood within the seeds and their remains are often recorded from ancient cess pits having been ingested with infested pulses and voided in faeces, but there were no suggestions here that any cess had been deposited into the well.

Some (but not all) of the *Sitona* remains were much more poorly preserved than most of the rest of the material, possibly hinting that they had a different origin to the rest of the assemblage. *Sitona lineatus* in particular is regarded as a typical component of a hay fauna in archaeological deposits (Kenward and Hall 1997; Kenward 2009, 290) but records from hay often include unemerged individuals which were not seen here. It remains a possibility however, that semi-rotted *Sitona* originated in stack refuse close to the wells.

A number of the ground beetles are especially common in habitats that have been modified by man including the eurytopic species *Pterostichus melanarius*, *P. madidus* and *Nebria brevicollis* (Luff 2007). Seed-eating ground beetles were also well-represented: *Amara* spp., *Harpalus* spp., and *Ophonus* spp. are all found where there is soil disturbance, bare ground and an abundance of seed-producing ruderal plants. Cultivated land and disturbed or waste ground have very similar 'insect signatures' and it can often be unclear which is represented by archaeological insect assemblages. Some of the insects recorded here however, are particularly associated with cultivated and arable land. *Bembidion obtusum*, a small ground beetle recorded from all but one of the samples, is usually found on cultivated ground for example. Another larger ground beetle *Zabrus tenebrioides* recorded from all three wells is suggestive of cereal cultivation in nearby fields. It is typically found in and around cereal fields where its larvae eat emerging cereal shoots and the adults climb stems to feed on grain, but also occurs in dry grassland (Duff 2012b, 207). It can sometimes achieve local pest status in the southern parts of Britain after hot dry seasons, particularly with winter wheat (Bassett 1978). *Helophorus nubilis* and *H. rufipes* or *porculus* were recorded from all but one sample and are often found on arable land at plant roots and in decaying plant material. Their common English names provide an indication of plants that they are often associated with: larvae of wheat-shoot beetle (*H. nubilis*) can be a pest of autumn-sown cereal crops (Petherbridge and Thomas 1936), while adults and larvae of turnip-mud beetles (*H. rufipes* and *porculus*) can become pests of late sown brassicas and root vegetables (Petherbridge 1928). *H. rufipes* was specifically identified in one sample from well G2059. The abundance of insects associated with brassicas and legumes may indicate that cultivated varieties of these plants were grown locally. Unfortunately, firm conclusions cannot be drawn because many common crop weeds and plants of disturbed ground belong to the brassica family, and *Sitona* weevils feed on a wide range of leguminous plants.

Scarabaeoid dung beetles were common in all of the samples comprising at least eleven species of *Aphodius*, several species of dor beetles (*Geotrupes* s.l.), *Onthophagus joannae*, a second unidentified *Onthophagus*, and *Euheptaulacus sus*. All are primarily associated with herbivore dung although some species of *Aphodius* and *E. sus* will also exploit foul vegetable matter (Jessop 1986, 19–25). Dung beetles were not present in the levels that would be expected if livestock was enclosed in the immediate vicinity of the wells but grazing animals would have been a common presence in the wider environment. The dung beetle group made up a slightly greater proportion of the assemblages on Plateau 2 (6–9 per cent, compared to 4–5 per cent on Plateau 1), suggesting either that pastureland was closer, or that there were larger populations of domestic animals nearby. Modern studies of dung beetle remains in insect assemblages from small bodies of water have shown that they reflect intensity of grazing in the surrounding area (Smith *et al* 2010; 2014). The research indicates that dung beetles account for over 10 per cent of the terrestrial fauna if large or dense populations of grazing animals are present, and less than 5 per cent if there are natural populations of grazing animals or 'naturalistic' grazing by domestic animals. The results from Plateau 2 are somewhere between these values.

Dor beetles (*Geotrupes* s.l.) were common in all of the samples and given their large size they would have been an obvious component of the local insect fauna, burrowing beneath dung deposited in the open. *Aphodius porcus*, also recorded from all the samples, often appears to be associated with *Geotrupes* burrows (Chapman 1869) but is also found in cow and horse dung (Hyman and Parsons 1992, 387). *Onthophagus joannae* is usually associated with sheep or horse dung (Jessop 1986, 26), but most of the other species are either not specific to particular types of dung, or their preferences are poorly known. Some of the species recorded are characteristic of unimproved grazing land, and the survival of some of the less common species such as *E. sus*, *A. porcus*, *A. paykulli*, and *A putridus* is dependent on continuity of dung availability and grazing to maintain open conditions (Hyman and Parsons 1992, 386–391). The records of *Euheptaulacus sus* are particularly noteworthy since it is very rare at the present day. It has Red Data Book 1 (RDB1) Status and is currently threatened with extinction from the British Isles (Hyman and Parsons 1992, 391). It was recorded from three samples at Thanet Earth and was also present in a Roman well situated a short distance away near Monkton (Robinson 2008).

Summary of findings

The large numbers of insect remains in the basal fills of the wells provided a rare opportunity to study a line of evidence that is usually absent from archaeological sites on the Chalk, where very well-drained ground conditions limit the ways in which plant and invertebrate material is preserved. The insects also provide the main evidence that places the medieval archaeology at Thanet Earth in its environmental setting. The insect

assemblages produced a consistent picture of the local environment and also highlighted some slight differences between the immediate surroundings of the wells.

The fact that the wells all seem to have functioned as pitfall traps indicates that any well-surrounds were either insubstantial or had gaps at ground level that allowed entry to a cross-section of the local ground-living insect fauna. There were suggestions from a group of wood-associated beetles that well G1143 on Plateau 1 had a decaying wooden superstructure. Conditions around the same well were probably significantly damper and muddier than around the two wells on Plateau 2, probably due to spillage.

Many of the insects in the assemblages were typical of man-made habitats, indicating that accumulations of decaying plant-based litter or vegetable waste such as compost heaps, stack refuse and dung heaps associated with occupation were present close to the wells. The evidence for this was particularly strong in well G1143 suggesting that activity was closer or more intense. Some of the litter appeared to have come from within buildings but the types of buildings could not be determined on the available evidence. Human fleas were firmly identified from well G1143 but they can be associated with domestic mammals and stables as well as with humans (George 2008, 14), and they sometimes occur in archaeological contexts where stable waste is present (Kenward and Hall 1997).

There does not appear to have been dumping of large amounts of occupation waste of any kind into any of the wells, although there may have been limited incidental entry of some plant-based litter by natural agencies such as the wind, or because of ongoing settlement activity. Since there had been no distinct dumps of habitation waste it was not possible to deduce much of crafts or other activities carried out in nearby buildings.

A record of honey bee (*Apis mellifera*) in well G1143 does not provide conclusive proof that bees were kept on the settlement, but does imply that managed hives or feral bee colonies were present locally, and therefore that honey, beeswax and propolis (a bee-made resin used in traditional medicine (Kuropatnicki *et al* 2013)) were locally available.

As a whole, the insect assemblages point to a mixed farming economy in an open rather dry landscape. Immediately around the wells there is likely to have been a growth of weedy vegetation and probably patches of bare earth. Plants such as mayweeds (*Tripleurospermum* and *Matricaria*), common mallows (*Malva sylvestris*), knotweeds (*Polygonum*), and cruciferous plants (Brassicaceae) would readily have colonised such areas. Nettles were present on nutrient-rich, possibly relatively neglected ground, and thistles were indicated close to well G1143. Disturbed ground appears to have been present in the environs of the wells, much of it almost certainly under cultivation, either as gardens or arable land. There were hints of cereal cultivation from several records of *Zabrus tenebrioides*, and the numbers of some other plant-feeding insects were high enough to suggest that some may have come from cultivated pulses and brassicas. This

was not conclusive however, since many of the beetles recorded also feed on a variety of wild and cultivated members of the same families, some of which are common crop weeds or are found on disturbed or waste ground.

There was no evidence that domestic animals were kept in enclosures adjacent to any of the wells, but unimproved, permanent pastureland would have been present further afield. Some of the dung beetles would not have been able to maintain populations unless dung availability and grazing were continuous. The relative abundances of dung beetles in the well fills suggests that populations of domestic animals may have been present in higher concentrations, or perhaps closer to the wells, on Plateau 2.

The insect remains from Thanet Earth were comparable in many respects to an assemblage obtained from a Roman well of second to third century date near Monkton, approximately 1.8–2.5km metres to the south of Plateaus 1 and 2, where analysis also indicated a mixed agricultural regime (Robinson 2008). The proximity of the two sites and the similarities between the assemblages is highly suggestive of continuity of land use in the area between the Roman and medieval periods.

Chapter 23: Fish Bones

Alison Locker

Introduction

As well as fish from the main excavations there were fish from four samples taken from a later pipeline trench (TEP EX10) and included here as part of the same site. This assemblage has been tabulated separately (Table 195), but discussed as part of the main assemblage.

Tables 188–194 show the fish identified from the main excavation, those with a sample number are from sieved deposits and those marked 'hc' have been hand collected; the majority are from sieved samples. The material was generally well preserved including some indeterminate scale fragments and a few examples of burning.

It is evident that despite an intensive sampling programme the number of fish bones recovered per each sample is relatively low, with few of prehistoric date, the majority are associated two sunken feature buildings dated to the Anglo-Saxon period.

The following species were identified; Elasmobranch indet., shark indet.,ray (Rajidae), eel (*Anguilla anguilla*), smelt (*Osmerus eperlanus*), herring (*Clupea harengus*), Clupeidae indet., cod (*Gadus morhua*), haddock (*Melanogrammus aeglefinus*), whiting *(Merlangius merlangus*), large Gadid indet., small Gadid indet., mackerel (*Scomber scombrus*) plaice/flounder (*Pleuronectes platessa/Platichthys flesus*), dab (*Limanda limanda*) and indeterminate flatfish.

Phase 2. Late Neolithic/Early Bronze Age

A single tooth was identified from a grave in Barrow 1 of a male inhumation with grave goods. The tooth fragment was, on balance, closer to pike than shark (Table 188).

Phase 8. Iron Age.

Only two features produced any fish bone (Table 189). Both were pit fills and from the area of Plateau 8. Three herring vertebrae from one fill and an indeterminate fragment from the other.

Phase 12. Anglo-Saxon.

Despite the relative paucity of features of this date this phase produced the largest sample of fish bones. Found in two sunken featured buildings, mostly SFB 02 but also SFB 04 (Table 190) the 37 samples produced 261 bones of which 209 were identifiable to

species or family. Herring were by far the most numerous group, 53 per cent of all fish, and found in all but two samples. Eel and plaice/flounder were 11 per cent and 8 per cent respectively, but eel was found in 16 samples compared to only 6 for plaice/flounder, therefore eel occurs more frequently than the total number, or NISP, suggests. Three total lengths for eel were calculated of 25, 28, and 30 cm, average sized individuals (after Libois *et al* 1987). The clupeid bones are probably fragmentary herring. There was a small elasmobranch vertebra from 12442, indeterminate to species.

Phase 14. Medieval 12th–14th Centuries

All the fish were found in deposits associated with Structure 55 and one cess pit (15077) shown in Table 191. In 6 samples and one hand collected context only 27 fish bones were recovered. The low number of fish bones negates any significance of the relative quantities of different species. Herring is again present and both haddock and whiting hint at a wider exploitation of gadids than in previous periods. Mackerel, seasonally abundant in local waters, is also represented, by vertebrae.

Phase 15. Medieval 13th–14th Centuries

Three samples, one from each of three buildings produced very few fish, shark (from a tooth fragment), herring, and large gadid shown in Table 192.

Phase 16. Medieval

A variety of features of general medieval date (Table 193) produced a relatively wide variety of fish given the small sample size of 17 identifiable bones. Most came from a pit (10342) including 20 indeterminate fragments of skull, fin rays and scales.

The two hand collected elasmobranch vertebrae are probably from a small shark species rather than ray, though rays are represented by a single tooth. No denticles or any other distinctive elements of rays were found in these or any samples. Denticles (particularly of roker, *Raja clavata*) are often common as they are robust and survive well, which may support the elasmobranch vertebrae being small shark rather than ray. Eel was identified from a single vertebral centrum. Herring and cod (latter are two vertebrae from a fish of around 100cm total length) with three indeterminate gadid elements (one of which may be a small rockling vertebral centrum) represent the main commercial food fishes. Mackerel, represented by three vertebrae suggest a seasonal local fishery. Dab may have been trapped with other flatfish species along the shoreline.

The four medieval samples from the pipeline (Table 195) included eel, herring and flatfish, as well as some indeterminate material and are similar to other contemporary material from the main excavation.

Phase 20. Uncertain date

The pit back fill from 16288 (see Table 194) contained two smelt vertebrae. Despite the uncertain date the record of this marine species, which enters estuaries to breed, is of interest given its absence/scarcity in the area today and adds to data currently being collated (Dando *pers comm*).

Discussion

The settlements along the Thanet coastline would have had immediate access to the rich fishing grounds of the southern North Sea. Only a few miles inland the Thanet Earth settlements also were in in easy reach of marine fish. All the fish identified here could have been caught locally, the eel metrical data indicated individuals of up to 30cm total length (Libois *et al* 1987), most probably from local streams while in their freshwater phase, trapped, caught on lines or speared. The fragment of tooth that may represent pike from the Late Neolithic/Early Bronze Age is tentative evidence for the only exclusively freshwater species.

Other species are marine though smelt enter rivers from the sea to spawn and could have been netted prior to entering the Thames estuary. Herring were an important and age old fishery of the North Sea, identified in deposits dated from the Iron Age to the fourteenth century. Herring form discrete breeding groups and here, in the Southern North Sea, the local group is the 'Downs' (Cushing 1982, 60) netted in the autumn and winter.

The gadids, specifically cod, haddock and whiting were also abundant locally. Whiting are common inshore all year, while cod and haddock are inshore more seasonally, in winter for both cod and haddock in this area, while immature specimens tend to stay in shallower waters all year round (Wheeler 1978). Mackerel were identified from a few vertebrae in medieval deposits and are also migratory moving inshore and north in the summer months.

The elasmobranch vertebrae may be from small sharks or rays, many of these species including small sharks such as dogfish (*Scyliorhinus canicula*) and nursehound (*S. stellaris*), can be found in shallow water and caught close to the shoreline. Similarly flatfishes such as plaice and flounder can be trapped along the shoreline and flounder enter estuaries almost into freshwater.

The numbers of fish bones are insufficient in many cases to attach any significance beyond their species presence. The greatest number came from Anglo-Saxon deposits and indicate the predominance of herring in this period. Gadids, though low in number, seem to be more evident in the medieval deposits, and provide a hint of the rise of cod and other gadid fisheries in this period.

The Thanet Earth fish are difficult to compare with assemblages from other Kent sites, the medieval fish from Townwall Street Dover (Nicholson 2006), where herring predominated and Sandtun West Hythe (Hamilton-Dyer 2001), mid Anglo-Saxon in date and dominated by whiting and flatfishes, are both very large samples associated with fishing communities. At New Romney the fish assemblages are domestic debris of coastal townsfolk with direct access to commercial catches of fish (Locker 2011). Excavations at these three sites, where the majority of fish of 14th to 16th century date were mostly whiting (and the small gadid category), herring and clupeids and flatfishes. All the above sites are located on the Channel coast, while the Thanet Earth site is adjacent to the southern North Sea.

Inland, a small assemblage from Canterbury at Augustine House (Locker 2009a) was multi period from the Iron Age to Medieval date. There were few bones recovered in each of many samples, all marine apart from eel and quite similar to the Thanet Earth assemblage. An Anglo-Saxon deposit from Barton Court School, also Canterbury (Locker 2009b) had a substantial number of eel bones and many marine species.

The Thanet Earth assemblage shows some evidence of exploitation of marine resources in the prehistoric period and more particularly from the Saxon period onwards, as expected only a few miles from the sea. However the size of the assemblage, given the wide date range and large area of excavation is more typically rural rather than coastal with few fish in each of many samples and does not seem to indicate a strong role of the fish in the diet. There is some suggestion of an increase in consumption of gadids in the medieval period compared with the strong presence of herring in Anglo-Saxon deposits, which may be evidence of the rise of commercial line fisheries typical of the period.

Chapter 24: Mollusc remains

John Carrott and Alison Foster

Introduction

A comprehensive environmental sampling strategy was adopted, part of which was the collection of nine column sequences of samples from ditches specifically for the recovery of mollusc remains. It was hoped that study of the mollusc assemblages would allow insights into the landscape history of areas of the site. It should be noted, however, that the excavator recorded that the upper fills of features across the site had in many cases been disturbed by modern ploughing and that, consequently, mollusc remains in these deposits will also have been disturbed and often destroyed.

Most of the samples collected were sequential through fills of ring ditches associated with late Neolithic/early Bronze Age barrows. One column sequence was sampled from the fills of a substantial Iron Age ditch possibly subsequently utilised as a trackway in the medieval period.

Methods

Sample processing

Sequential sediment samples of 2 to 3 litres each were collected from seven ditches, one a large Iron Age boundary ditch in Plateau 4 and the remainder ring ditches of late Neolithic/early Bronze Age barrows, Barrows 1, 2, 3, 4 and 6 in Plateaus 6, 7 and 8. In all but one case, the depth range (below the modern ground surface after topsoil stripping) of each sample was recorded; the exception being the samples from the Iron Age boundary ditch. The samples were processed (by CAT) to 500 microns and two fractions obtained – a lighter 'washover' fraction (*sensu* Kenward *et al* 1980) and a denser (largely mineral) residue. Both fractions were air dried.

Recording

For the analysis, the molluscs from the 106 washovers were recorded and the corresponding residues sorted to provide additional records. Land snails (and very occasional aquatic mollusc taxa and remains of marine shellfish) were examined and individuals identified as closely as possible, with reference to published works (chief sources: Cameron 2003; Cameron and Redfern 1976; Ellis 1969; Evans 1972; Kerney 1999; Kerney and Cameron 1979; Macan 1977). Nomenclature follows Kerney (1999). Numbers of the burrowing snail *Cecilioides acicula* were, in the main, recorded semi-quantitatively as outlined below but these records are not included in any interpretation because of the likelihood of its being intrusive to the deposits (this species may burrow

to depths of 2 metres or more — Kerney 1999, 168; Evans 1972, 201); both Evans (1972, 168) and Kerney (1999, 168) also consider *c. acicula* as likely to be a relatively recently introduced species.

Numbers of a second burrowing species of land snail, *Pomatias elegans*, were recorded, however, as Evans (1972, 201) notes that "It does not appear to burrow in excess of a few centimetres below the surface, however, and in subfossil assemblages is rarely out of context with the associated fauna". Also, records for this characteristic calciphile (Evans 1972, 133) may be particularly informative as, in terms of ecological groups, Evans (1972, 196) states that "*Pomatias elegans* is best considered separately, for its habitat preferences are fairly clear cut. In general, it favours shaded places, but is particularly characteristic of habitats in which the soil surface is bare of vegetation and somewhat rubbly. In some instances its increase in a habitat is associated with woodland clearance".

In general, minimum numbers were determined by numbers of shell apices, but in cases where numbers of large (and diagnostic) portions of the shell other than the apex were more readily and reliably determined (e.g. for *Clausilia bidentata*) these were used instead. For the Pupillidae species present, *Pupilla muscorum* and *Lauria cylindracea*, identifications of fragmentary remains could often be made from the shell mouth and here a corresponding number of apex fragments were then discounted from the total recorded under 'Pupillidae sp. (apex fragment)'; similarly for apex and non-apex fragments of *Cochlicopa* sp.

The abundance of unidentified snails and snail shell fragments was recorded semi-quantitatively on a five-point scale: '+' – few/rare (up to 3 individuals/items); '++' – some/present (4 to 20); '+++' – many/common (21–50); '++++' – very many/abundant (50 to 200); '+++++' – super-abundant, over 200 individuals/items. The same scale was used to record estimated numbers of the burrowing land snail *Cecilioides acicula*, snail eggs and occasionally for other remains noted but not included within the analysis.

Incomplete shells of *Carychium* species have been recorded as *Carychium* sp. but it should be noted that there were no positive identifications of *Carychium minimum* Müller from the site and it is most likely that these records were in fact all additional individuals of the only other British species, *Carychium tridentatum*.

The initial assessment of the land snails recorded small numbers of individuals of *Vallonia pulchella* (Müller) from one Iron Age fill of the major boundary ditch (G4006/G5047; Context 4492, Sample 474) and possibly also from one prehistoric (Phase 9) fill of the inner ring ditch of Barrow 1 (G6005; Context 6093, sample at 30–40 cm depth). There were no positive identifications of this species in the analysis, however, and it seems likely that these individuals were additional *Vallonia excentrica*; although it is also possible that occasional individuals of *V. pulchella* were not recognised as both

samples contained remains identified only as *Vallonia* sp. in the analysis (see Evans 1972, 161–162, for notes regarding the difficulty in distinguishing these two species).

Brief notes were made of other invertebrates and other organic remains where present. Nomenclature for marine shellfish follows Hayward and Ryland 1995.

Interpretation

Identified mollusc remains were assigned a primary ecological interpretation code (ecode – see Table 196) following Evans (1972, Chapter 6); also see Davies (2008, Appendix 1). In some cases, secondary and tertiary codes have also been assigned which may allow some refinement of the interpretation as discussed in the text; although only the primary ecode has been used for the purpose of producing Figs. 302–319.

Two figures were produced for each series of samples from the deposit sequences, one with individual plots for particular species which are often abundant in archaeological mollusc assemblages and/or where changes in absolute numbers or relative proportions of species may be informative (*Carychium tridentatum* — and also fragmentary *Carychium* sp. — *Discus rotundatus*, *Pomatias elegans*, *Vallonia costata* and *Vallonia excentrica*) and other typically less numerous taxa grouped according to their primary ecode, and a second depicting only the total numbers of individuals grouped by primary ecode. Tentative identifications, prefixed by a '?' were not included in the totals for ecological interpretation but partial identifications at the level of, for example, *Vertigo ?pygmaea*, were included. Catholic taxa (primary ecode 'c') were not included within the figures on this occasion.

Results

In total, over 20000 individual molluscs were identified (at least in part) from the processed fractions of the 106 samples examined. The excavator noted extensive disturbance by modern ploughing of the upper fills of features across the site area which has almost certainly reduced the numbers of identifiable remains present in at least some of the corresponding samples, however.

Details of the recorded assemblages are presented in Tables 196–216. Table 196 provides a checklist of terrestrial mollusc taxa and partial identification levels recorded from the site as a whole, with their assigned ecological codes, and Tables 197–216 show records for the individual samples within each of the column sequences; even numbered tables for the washovers and odd numbered tables for the residues. The largest number of individual samples in one sequence, 20 in total, from the ring ditch of late Neolithic/early Bronze Age Barrow 3 (G7008) could not be accommodated within single tables and most are given in Tables 209 and 210, with the records for the four samples taken from the final fill presented separately in Tables 211 and 212.

Figs. 302–319 show the plots of species/groups of species by their assigned primary ecological interpretation code (ecode) for each sample sequence.

The following texts sections present the results of the investigations grouped by Plateau number.

Plateau 4

Iron Age major boundary ditch (G4006/G5047)

Archaeological information

A substantial ditch (G4006/G5047) 356 metres in length was identified running on an east-west alignment forming the boundary between Plateaus 4 and 5. The nature of the fills was indicative of gradual infilling by eroded material with no evidence for deliberate backfilling; the upper fill was very similar to the colluvial silty clay found in the upper parts of the prehistoric barrow ditches and may have accumulated at about the same time. The uppermost levels contained the occasional sherd of medieval pottery maybe introduced when the alignment became a possible medieval trackway. Such extensive linear earthworks, often cutting through earlier field systems, as here, and sometimes called 'ranch boundaries' are typical of the early-mid Iron Age in southern Britain (Cunliffe 2005, 420–421). This major boundary influenced the development of the subsequent Roman, Saxon and medieval landscapes, a fact confirmed by its part incorporation as a section of the parish boundary between Monkton and St Nicholas-at-Wade.

Mollusc remains

The sampled sequence from this ditch comprised seven samples in total each representing a different fill (context). Lowermost first, the deposits were Contexts 4500, 4498, 4496, 4492, 4491, 4490 and 4489 (depths below ground surface were not available); all were assigned to Phase 8 (Iron Age). The lowest and two uppermost deposits gave only small numbers of identifiable land snails but the four intermediate contexts yielded modest to large assemblages of interpretative value (Tables 197 and 198; Figs. 302 and 303).

The lowermost deposit, Context 4500 (Sample 522), gave only 14 land snail remains which could be identified (at least in part); too few for detailed interpretation but including a mix of dry, open ground taxa (*Vallonia* species and *Helicella itala*) and others suggesting damper, shaded conditions (*Carychium* sp., *Punctum pygmaeum* and *Vitrea crystallina*). The small size of the assemblage suggests that this first fill formed rapidly probably by initial collapse/erosion of loose material from the ditch sides.

Context 4498 (Sample 521) gave a somewhat larger assemblage which included remains of 108 identified or partially identified land snails. Small numbers of open ground taxa (*Vallonia* species, *Vertigo pygmaea*) were present but the assemblage was dominated by species preferring damp and shade. Most numerous were shells of *Carychium tridentatum* (59 individuals, with an additional 23 part identifications of *Carychium* sp.), with other species including *Acanthinula aculeata*, *Punctum pygmaeum*, *Discus rotundatus*, *Vitrea crystallina* and *Aegopinella ?nitidula* . The first records of *Pomatias elegans* (eight individuals) from this deposit sequence also occur here – a species which "In general…favours shaded and moist habitats with broken ground and loose soil into which it can burrow, and its presence in abundance generally indicates some form of disturbance of the ground surface, as for example, by forest clearance" (Evans 1972, 133–134). Here, however, there was little to suggest extensive substantial vegetation (most of the records for shade-loving taxa being provided by *Carychium tridentatum* (and *Carychium* sp.) which was probably exploiting the more sheltered conditions and likely longer grass growth within the ditch itself) and although the evidence for disturbance could reflect agricultural activity it was not sufficient for this to be more than tentatively proposed. This slightly larger land snail assemblage indicates somewhat slower deposition allowing larger populations to develop; although the assemblage was still small in absolute terms and deposit formation, presumably from continuing erosion, would have been fairly rapid.

Context 4496 (Sample 475) yielded the largest mollusc assemblage from this sequence with a total of 909 identified and partially identified individuals. Of these, by far the largest number for any one taxon was the 332 individuals of *Carychium tridentatum* (a matching number of fragments identified as *Carychium* sp. were also present) but numbers of the other shade-loving species recorded from Context 4498 (see above) were mostly also increased and there were records for an additional taxon from this ecological group, *Oxychilus* sp. Most of the records for other shade-loving taxa were of *Vitrea crystallina* (22 individuals, and more damaged shell identified as *V. crystallina*/*V. contracta*, a further 38 individuals) and *Punctum pygmaeum* (13), both of which share some affinities with more catholic taxa and could also be living in damper, longer grass growing within the ditch (see Kerney 1999, 137–138; Evans 1972, 195). There were marginally increased numbers of records for species likely to represent more substantial vegetative cover (i.e. *Acanthinula aculeata* – 9; *Discus rotundatus* – 1) perhaps indicative of development of some scrub vegetation in the vicinity. Counts for open ground species (*Vallonia* spp., *Vertigo pygmaea*) increased but remained relatively small; five individuals of the open ground species *Pupilla muscorum* were recorded which is characteristic of (though not restricted to) "…earth bare of vegetation" (Evans 1972, 146) and, together with *Vallonia costata*, is a strong pioneer species of freshly created open country (see Evans 1972, 163 and 157). Such areas of bare ground may, therefore, reflect human clearance activity or arable agriculture; and the increase in records for *Pomatias elegans* (a minimum of 45 individuals) would appear to support this.

The assemblages from Context 4492 and Context 4491 were very similar in size (474 and 490 identified and partially identified individuals, respectively) and character. They indicated a continuing trend towards increasingly open ground/dry grassland, with *Vallonia* species, *Vertigo pygmaea, Pupilla muscorum* dominating and a corresponding rapid decline in numbers of *Carychium tridentatum* and other shade-loving species (although numbers of *Punctum pygmaeum* appear to defy this trend this species has a greater tolerance for a wider range of habitats than others in this ecological group – see Evans 1972, 195). For *c. tridentatum*, Evans (1972, 136) notes that "The sensitivity of this species to drying out of the habitat coupled with its fragile shell, which is quickly destroyed by mechanical disturbance, makes it a particularly valuable indicator of the onset of cultivation or intensive grazing", and here its rapid decline, in combination with other changes in species numbers (see below), probably reflects the latter cause. The only records for the shade species *Lauria cylindracea* from this deposit sequence were recorded from Context 4491 (four individuals) which also appears contrary to the general trend but here this essentially rupestral species may be exploiting shaded habitats under rocks (rather than those provided by vegetative cover). Small numbers of the obligate xerophile *Truncatellina cylindrica* also appear in these deposits (just two and four individuals from Contexts 4492 and 4491, respectively, but with a further 19 and 13 damaged shells more tentatively identified, as ?*T. cylindrica*). The decline of *Pomatias elegans* (which although advantaged by initial clearance tends to decline as open country becomes established; see Evans 1972, 134) and the increase in numbers of *Vertigo pygmaea* (which "…occurs in dry habitats, and is often common in short-turfed, grazed grassland…", Evans 1972, 143) and *Vallonia excentrica* at the expense of *Vallonia costata*, provides further evidence of the establishment of a predominantly stable-surfaced, dry, open environment, such as short-turf grassland, whilst the continued presence of appreciable numbers of *Pupilla muscorum* and the appearance of *Truncatellina cylindrica* imply areas of bare earth and/or exposed rock.

Mollusc remains from the two upper deposits, Contexts 4490 and 4489, were too few for any interpretation, with the only (partially) identified shell (other than those of the burrowing snail *Cecilioides acicula*) being a single *Vertigo* ?*pygmaea* from the uppermost (Context 4489). This sudden dearth of remains could indicate that these deposits formed relatively rapidly, however – in contrast to the large assemblages from Contexts 4491, 4492 and 4495 and the modest assemblage from Context 4498 which were consistent with the excavator's impression of gradual infilling through natural erosion – but could also reflect destruction of mollusc shell originally present by modern ploughing (although if this were the case then more indeterminate shell fragments might be expected in the washover fractions).

Plateau 6

Inner ring ditch of late Neolithic/early Bronze Age Barrow 1 (G6005)

Archaeological information

This ditch (G6005) was, on average, 1.72 metres wide at the top, 0.73 metres wide at the base and 0.9 metres deep. The cut had a gradual to steep-sided profile and a flat base. It contained four main phases of infilling with the uppermost deposits having been disturbed by deep ploughing. It was primarily filled with a thin layer of evenly deposited dark grey brown fine clay silt. This basal deposit was notably similar to the backfill of a possible secondary grave (G6004) implying it derived from the same source. It was not observed in the outer ring ditch (G6006) and this may provide evidence that the outer ditch was contemporary to the possible secondary burial, but cut after the interment as an enlargement of the barrow.

This deposit was sealed by a sterile layer of loosely compacted chalk rubble interspersed with discoloured clay silt lenses. It probably derived from weathering and erosion of the ditch sides and the central mound. The middle layers mainly consisted of brown silty clays with varying concentrations of chalk probably accumulated through similar processes of erosion.

The uppermost fills consisted of fairly homogeneous dark brown clay silt, with occasional lenses and chalk inclusions. This deposit, similar to levels found in other barrow ditches is likely to have resulted from colluvial influx and levelling of the barrow mound through agricultural action. Through sampling, a trace of human bone was recovered and this suggests burials may have been disturbed during the levelling process.

Mollusc remains

The sample sequence collected from the inner ring ditch of Barrow 1 (G6005) comprised 11 samples from five deposits; lowermost first these were Contexts 6096, 6095, 6094, 6093 and 6092. The first of these was dated as late Neolithic/early Bronze Age (Phase 2) and the last was of uncertain date (Phase 20) with the intervening deposits broadly dated as prehistoric but not defined more closely (Phase 9). Most of the individual sample assemblages were small but two more substantial assemblages were recovered from samples of Context 6092 at depths of 10–20 cm and 20–25 cm; both of these gave remains representing a minimum of 201 identified or part-identified individuals (Tables 199 and 200; Figs. 304 and 305).

The single sample (Sample 621; depth 70 cm-base) from the bottom fill, Context 6096 (Phase 2), gave only 24 identified (at least in part) land snail remains. The assemblage was too small for detailed interpretation but included a mix of dry, open ground taxa (*Truncatellina cylindrica*, *Pupilla muscorum*, *Vallonia costata* and *V. excentrica*) suggesting short-turf grassland with areas of bare ground or where the underlying rock was

exposed, and those indicative of damper, shaded conditions and, perhaps, more substantial vegetation (*Carychium tridentatum* – and *Carychium* sp. – and *Discus rotundatus*; although the first of these could represent no more than longer grass growth, such that the base of the grass remained shaded and moist at all times, *D. rotundatus* is more strongly associated with leaf litter under woodland, hedgerow or scrub). The presence of a small number of *Pomatias elegans* (four individuals, three from the sample residue and one additional record from the washover) could perhaps indicate some disturbance of the ground surface and/or vegetation clearance.

Two samples (Samples 620 and 619; depths 60–70 cm and 53–60 cm, respectively) were collected from the next deposit in the sequence, Context 6095 (Phase 9). However, Sample 620 yielded no identifiable mollusc remains and Sample 619 gave just six, providing far too little evidence for reliable interpretation; although it may be noted that the taxa present in Sample 619 again included hints of open ground (*Pupilla muscorum*, *Vallonia costata*), shade (*Discus rotundatus*) and possible disturbance/clearance (*Pomatias elegans*).

Two samples (Samples 618 and 617; depths 50–53 cm and 45–50 cm, respectively) were also collected from the third deposit in the sequence, Context 6094 (Phase 9). Just five remains were identified to some degree from Sample 618, single representatives of the shade-loving *Carychium tridentatum* and *Vitrea crystallina*/*V. contracta*, one indeterminate clausilid apex and two individuals of *Pomatias elegans*. Sample 671 also gave only a very small assemblage of just 17 identified or partially identified individuals which was almost identical in character and ecological implications to that from the basal sample (Context 6096, Sample 621 — see above); although the caveat regarding interpretation based on such small assemblages is equally applicable here.

Context 6093 (Phase 9) was represented by three separate samples; Samples 616, 615 and 614 at depths of 40–45 cm, 30–40 cm and 25–30 cm, respectively. Slightly larger assemblages of land snails were recovered from each of the samples, although the largest (from Sample 615) still only amounted to 52 identified (or part-identified) individuals (with 32 from Sample 616 and 26 from Sample 614). There were some minor variations between these assemblages (notably the presence of single representatives of two additional shade taxa, *Lauria cylindracea* and *Acanthinula aculeata*, in Sample 616) but their general character was consistent exhibiting a continued mixed nature, with elements representing dry open ground, damper more shaded habitats and possible disturbance present throughout.

The upper deposit, Context 6092 (Phase 20; undated) also provided three individual samples; Samples 613, 612 and 611 at depths of 20–25cm, 10–20 cm and 0–10 cm, respectively. These samples gave the largest snail assemblages from this sequence, with 201 (Samples 613 and 612) and 60 (Sample 611) identified (at least in part) individuals. Species indicative of both open ground/dry grassland and shade were again present in

each of the deposits but here the first group (particularly in the form of *Vallonia costata*, *Pupilla muscorum* and *Truncatellina cylindrica* — the two last probably reflecting areas of bare ground/rock) was clearly dominant, with comparable numbers of *Pomatias elegans* from each sample (representing approximately 10 per cent of the two lower samples and almost a third, 32 per cent, of the uppermost) also recorded suggesting disturbance of the ground surface. Shade-loving species present (but always in small numbers – no more than seven individuals of any one species) in all three samples were *Carychium tridentatum* and *Discus rotundatus*, with single individuals of *Aegopinella* ?*nitidula* recorded from the uppermost and lowermost and the two lower samples yielding six and three records (lowest sample first) of *Lauria cylindracea*; the last currently a catholic snail in the west of Britain but becoming "…increasingly restricted to rocks, walls and woods…" further east (Kerney 1999, 105). Overall, these assemblages most likely reflect arable farming in the vicinity.

The small size of the land snail assemblages recovered from all bar the undated uppermost fill suggest that the lower fills formed rapidly, with the slightly larger assemblages from overlying Context 6092 (notably those from the two lower samples at 20–25 cm and 10–20 cm depth) representing a rather slower rate of deposition; somewhat contrary to the excavator's impression of deposit formation and perhaps implying relatively little destruction of shells by modern ploughing in this area.

Plateau 6

Outer ring ditch of late Neolithic/early Bronze Age Barrow 1 (G6006)

Archaeological information

This ditch was slightly wider than that of the inner measuring, on average, 2.21 metres wide at the top, 0.78 metres wide at the base and 0.85 metres deep. Otherwise, this ditch was very similar in form to that of the inner ring ditch suggesting they were contemporary at one stage. The cut (G6006) consisted of a gradual to steep-sided profile and a flat base and contained three main phases of infilling with the uppermost deposits having been disturbed by deep ploughing. It was primarily filled with a thick layer of chalk rubble interspersed by evenly laminated clay silts (G6006); slight dissimilarities in fill to the inner ditch may have been due to their relative positions in respect to the barrow mound, but the deposit was probably due to similar processes of erosion. At least one worked flint was recovered from these fills, but secure identification has yet to confirm this; a trace of bone of indeterminate source was also recovered through sampling.

The primary deposits were sealed by a series of layers comprised of evenly distributed brown silty clay and varying concentrations of fragmented chalk, also probably the result of erosion and weathering. Several artefacts were recovered from these deposits,

but were few in number and small in size. These included animal bone, worked flint and a small pottery sherd (this was spot-dated as medieval but might be misattributed).

The upper fills were dark brown clay silts with some chalk and yielded a small assemblage of prehistoric pottery, animal bone and burnt and worked flints. A small fragment of possible human bone may have represented part of a disturbed burial from the barrow mound. The general lack of laminations within this fill was indicative of steady backfilling. The disparity in the artefactual assemblages between the upper fills of the inner and outer ditches, might suggest a different origin and/or timescale for their deposition. Generally however, the deposits from both barrow ditches were surprisingly sterile considering the size of the monument and surviving depth. Further, the uppermost deposits within both the inner and outer ditches appeared to be the same as those observed in later quarry pits in this area, including that of the largest one (G6044) which is thought to be Roman in date. This suggests one phase of backfilling of deposits over the area as a whole (or infilling by a colluvial deposit) encompassing features other than the ring ditches, during the post-Roman period.

Mollusc remains

The column sequence from the outer ring ditch of Barrow 1 (G6006) comprised nine samples in total from four contexts representing the deposits from ground level after topsoil stripping (i.e. from the top of the excavated section) to the base of the feature. Lowermost first, the deposits were Contexts 6083, 6121, 6082 and 6081. The three samples from the lowest deposit, Context 6083 (Sample 630 at depth 75 cm to the base of the feature, Sample 629 at 70–75 cm depth and Sample 628 at 60–70 cm depth; Phase 2, late Neolithic/early Bronze Age), each gave only small numbers of identifiable land snails, with a modest assemblage from Context 6121 (Sample 627, 50–60 cm depth; Phase 2, late Neolithic/early Bronze Age) and large numbers from Context 6082 (two samples, Sample 626 at 40–50 cm depth and Sample 625 at 30–40 cm; Phase 9, prehistoric) and Context 6081 (Samples 624, 623 and 622 each spanning 10 cm of sequence at 20–30, 10–20 and 00–10 cm depth, respectively; Phase 20, uncertain date) — see Tables 201 and 202; Figs. 306 and 307.

Although each of the three samples from Context 6083 gave only small numbers of land snail remains — identified or part-identified individuals totalled 21 for Sample 630 (depth 75cm-base), 11 for Sample 629 (70–75 cm) and 15 for Sample 628 (60–70 cm) – all those of value for ecological interpretation (25 in total), bar a single record for the shade-loving *Carychium tridentatum* from Sample 628, were of dry, open ground taxa such as *Pupilla muscorum* and *Vallonia costata*. The small numbers of remains, therefore, provide limited but consistent evidence for open ground at the time of the creation of the ditch and are also consistent with the primarily chalk rubble nature of the fill which suggests rapid episodic formation via erosion and collapse from the sides punctuated by less dramatic deposition of the clay silt laminations.

The slightly larger assemblage (56 identified or partially so individuals) from the single sample (Sample 627, depth 50–60 cm) from the immediately overlying deposit, Context 6121, was of similar character implying continuation of a generally open landscape in the late Neolithic/early Bronze Age and a somewhat slower period of deposition (also reflected by the decrease in the proportion of chalk rubble). Small numbers of two shade-loving species, *Lauria cylindracea* (4) and *Punctum pygmaeum* (1), were recorded which were presumably exploiting more sheltered conditions within the ditch itself — *L. cylindracea* is described as a rupestral species by Evans (1972, 151), though catholic in the west of Britain today as noted above (see Kerney 1999, 105) — and there was a slight hint of disturbed ground provided by two records for *Pomatias elegans*.

Two subsamples were collected from the next deposit in the series, Context 6082 (Sample 626 at 40–50 cm depth and Sample 625 at 30–40 cm depth), which was broadly dated as prehistoric but not more closely (Phase 9). The lower of the two subsamples (Sample 626) gave a modest assemblage amounting to 151 identified (or partly so) individuals, whereas the corresponding assemblage from the upper part of the deposit (Sample 625) totalled 250 individuals. Although small numbers of shade-loving taxa were present in each assemblage (e.g. *Carychium tridentatum* and *Lauria cylindracea*, with single records for *Discus rotundatus* from Sample 626 and *Ena obscura* from Sample 625), both were dominated by open ground/dry grassland taxa, together with increased numbers of *Pomatias elegans* (16 individuals from Sample 626 and 28 from Sample 625) suggesting disturbed ground and possible clearance activity. Interestingly, it was *Pupilla muscorum* and *Vallonia costata* that dominated the open ground/dry grassland components of the assemblages which, together with evidence for ground surface disturbance, accords well with Evans' regard for these as pioneer species of recently cleared ground (see Evans 1972, 157 and 163, for example). Taken has a whole, these assemblages suggest the onset of tillage and steady infilling of the ditch — presumably a reflection of colluvial processes acting on the broken ground.

The top deposit, Context 6081 (Phase 20), was sampled in three parts (Samples 624, 623 and 622, lowermost first) each representing 10 cm of the first 30 cm of the deposit sequence below the stripped surface. The mollusc assemblages from each of these samples were larger than any of those from lower deposits, with Sample 624 (20–30 cm depth) yielding 652 identified (or partly so) land snails and the corresponding numbers from Samples 623 (10–20 cm) and 622 (0–10 cm) being 1090 and 463, respectively (unidentified land snail fragments were also abundant in each case). There was also a single conical shell (or shell apex fragment) from Sample 623 which was possibly from an unidentified marine mollusc and a single operculum tentatively identified as of a freshwater *Bithynia* species from Sample 622; these remains were almost certainly introduced via human activity. All three land snail assemblages were dominated by remains of *Pupilla muscorum* and *Vallonia costata*, with lesser numbers of other open ground/dry grassland taxa such as *Truncatellina cylindracea*, *Vallonia excentrica* and

Vertigo pygmaea always present and, in the two upper samples, small numbers of the heliophile *Helicella itala*. *Pomatias elegans* was also present in each sample, although never in particularly large numbers (25 per cent, at 20–30 cm and 16 per cent, at 10–20 cm), and represented by only a single individual in the uppermost (0.2 per cent at 0–10 cm). Overall, the assemblages from the two lower samples appear to indicate continued tillage, with the relatively large numbers of individuals present suggesting that the fills formed slowly via subsequent colluvial processes rather than deliberate backfilling. The somewhat smaller assemblage from the uppermost sample indicated a slightly increased rate of deposit formation and the decline in *Pomatias elegans* was perhaps indicative of reduced agricultural activity (although there was no evidence from the molluscs for the regeneration of denser vegetation or even longer grass growth, or proportional rise in the abundance of *Vallonia excentrica* at the expense of *V. costata* and bare ground taxa that might indicate the establishment of stable surfaced grassland). As previously noted for the final fill of the inner ring ditch of Barrow 1, the relatively large numbers of identifiable shells perhaps suggests that assemblages from upper deposits in this area have suffered less disturbance and destruction by modern ploughing than other areas of the site.

Plateau 6

Ring ditch of late Neolithic/early Bronze Age Barrow 4 (G6008)

Archaeological information

This monument was fully exposed and consisted of a single, circular ring ditch 15 metres in diameter (G6008). The ditch was recorded as cutting a north-south aligned linear (G6002) traced for only a short distance within the north-west segment of the barrow monument. The ditch was 1.77 metres wide at the top, 0.52 metres wide at the base and 0.76 metres deep on average with a gradual to steep-sided profile and flat base. It contained three main phases of infilling with the uppermost deposits having been disturbed by animal burrowing and deep ploughing. It was primarily filled with naturally accumulated chalk rubble and discoloured clay silt deposits; these were occasionally evenly deposited, sometimes slumped, and contained a few worked and burnt flints, but little else. They were indicative of the accumulation of sediments following erosion of the ditch and central mound.

These were sealed by a series of middle fills that consisted of tipped layers of grey and brown silt with varying concentrations of chalk fragments. A few artefacts were recovered and included worked and burnt flint, a few sherds of prehistoric pottery and animal bone. These deposits represented a gradual weathering of the ditch and mound resulting in the accumulation of chalk rubble and interleaved silt layers. It was apparent that most of the deposits had filled the barrow ditch from a north-westerly and easterly direction as evinced by the angle of deposition observed in the exposed sections.

The uppermost layers consisted of fairly sterile brown silty clay with occasional chalk lenses. One sherd of prehistoric pottery was retrieved and may have represented disturbed ritual deposits from within the central mound; two others were of medieval date. These final deposits were indicative of gradual backfilling of the ditch caused in part by natural weathering and colluvial influx, but perhaps also during periods of purposeful levelling of the mound through agricultural activity.

Mollusc remains

Two sequences of samples were collected from the fills of the ring ditch of Barrow 4. The first of these comprised ten individual samples from Contexts 6336, 6335, 6332/6333, 6331, 6330 and 6329 (lowermost first), with the three lower deposits assigned to Phase 2 (late Neolithic/early Bronze Age) and the three upper deposits assigned to Phase 9 (i.e. only broadly defined as prehistoric). The second series consisted of seven samples from Contexts 6429, 6414, 6412, 6411 and 6410; here the lowest deposit could be assigned to Phase 2 but the rest could only be broadly dated as prehistoric (Phase 9). Records from the first series of samples are shown in Tables 203 and 204 (Figs. 308 and 309), with those from the second given in Tables 205 and 206 (Figs. 310 and 311).

All of the mollusc assemblages from both sets of samples were small, with the largest (from Context 6410 immediately below the stripped surface, depth 0–10 cm; Phase 9, prehistoric) only amounting to a total of 52 identified or partially identified individuals; the largest assemblage from the other sequence was of 42 individuals from Context 6330 (depth 20–30 cm and also assigned to Phase 9).

Given the small size of the assemblages, any ecological interpretation can only be, at best, tentative. However, the character of most in each sequence was essentially the same being dominated by *Vallonia costata* and *V. excentrica* reflecting dry, open habitat, most probably short-turf grassland, with *Pupilla muscorum* and/or *Truncatellina cylindrica* recorded from Contexts 6334 (60–70 cm) and 6330 (20–20 cm) and Contexts 6414 (50–60 cm), 6412 (30–40 cm), 6411 (10–20 cm) and 6410 (0–10 cm) hinting at areas of bare ground/exposed rock. There were occasional records for shade-loving taxa from deposits in both sequences; *Discus rotundatus* in Context 6334 (60–70 cm) – the only Phase 2 deposit with any identifiable remains of value for ecological interpretation – and *Punctum pygmaeum* from Contexts 6330 (20–30 cm) and 6329 (10–20 cm) in the same sample sequence and Contexts 6414 (50–60 cm), 6411 (10–20 cm) and 6410 (0–10 cm) in the other (although as previously noted this species has a somewhat broader range of habitat tolerance than others in the shade-dwelling group). There was also a single record of *Carychium* sp. from Context 6411. The only evidence for possible human clearance or agricultural activity was provided by a single individual of *Pomatias elegans* recorded from Context 6410 accompanied by an increase in the numbers of both *Vallonia*

species and other open ground/grassland taxa; again, the total numbers recorded remain too small for any great significance to be ascribed to this change, however.

Plateau 7

Ring ditch of late Neolithic/early Bronze Age Barrow 2 (G7002)

Archaeological information

Barrow 2, with about half of its single ditch circuit exposed, was located at the extreme north-west end of Plateau 7 and was the largest of the barrow ditches examined. The barrow consisted of a single, circular ring ditch (G7002), approximately 30 metres in diameter. The ditch was 2.4 metres wide at the top, 1 metre wide at the base and 1.32 metres deep on average. The cut consisted of a very steep-sided profile and a flat base and contained three main phases of infilling with the uppermost deposits having been disturbed by animal burrowing and deep ploughing. It was primarily filled with a complex series of naturally accumulated, chalk rubble and discoloured clay silt bands, subtly varied in composition. These deposits were generally sterile, apart from a few middle Bronze Age pottery sherds, and a little animal bone and possible worked flint. They represented redeposited mound material and erosion from the ditch sides and edges, interdigitated with colluvial accumulations. Their complexity of layering suggested accumulation over a relatively long time span.

An interface was identified within the middle to upper deposits of the ring ditch. It represented a distinction between the lower erosion deposits and the upper, deposits which were colluvial (and possibly partially derived from agricultural action and subsequent levelling of the barrow). Initially interpreted as a re-cut, this was later dismissed because of the variation of depth and profile.

A sporadically present deposit consisting of black and brown ashy clay silt, was situated within the upper layers the main concentration extending over an 11 metre length of the ditch on the south-west side, the other only partially exposed to the south-east. It had an average thickness of 0.22 metres and was located at an average depth of 0.38 metres below the machine-stripped surface. The deposit contained a relatively large assemblage of prehistoric pottery, animal bone, worked and burnt flints and fragmentary seashell.

The upper layers consisted of orange and grey brown clay and silt, on average 0.7 metres deep. The fills were generally homogeneous with less chalk rubble and few signs of lamination, suggesting infilling occurred fairly rapidly and possibly purposefully with heavier inclusions gravitating towards the middle of the section. A large and varied assemblage of artefacts and other items was recovered from these deposits, including prehistoric pottery, shellfish, animal bone, and worked and burnt flint. A fragment of human skull was recovered from one context and its presence suggests that

a burial higher-up in the barrow mound was disturbed during the backfilling process (rather than the ritual deposition of human remains within the ditch). It is postulated that the majority of these deposits derived from a mixture of colluvial influx and an initial levelling phase of the barrow mound, the latter resulting from agricultural activities such as ploughing.

Several layers of colluvium sealed the uppermost ditch fills, particularly on the south-western extent of the barrow. This level was mostly removed by machine but where excavated its average depth was 0.23 metres. The deposits consisted of clay silt with flint, pot and bone inclusions and appear to represent the remains of a lynchet which disguised most of the southern edge of the barrow prior to the second phase of machine stripping.

Mollusc remains

The sequence of samples collected from the fills of the ring ditch of Barrow 2 comprised 16 individual samples from Contexts 7761/7764/7766, 7759, 7758, 7755, 7752, 7300, 7751 and 7750 (lowermost first). The five lower deposits were assigned to Phase 2 (late Neolithic/early Bronze Age) and overlain by the Phase 16 (medieval) Context 7300, with the two uppermost deposits assigned to Phase 20 (undated) – see Tables 207 and 208; Figs. 312 and 313.

The lowermost sample from Context 7761/7764/7766 (depth 120 cm-base) gave only a single identified land snail record of *Pupilla muscorum* and the lower (of two) sample from the overlying Context 7759 (110–120 cm) just five identified (or partly so) shells – single representatives of *Pupilla muscorum*, Pupillidae sp. and *Discus rotundatus* and two fragmentary ?*Helicella itala*. The upper sample from Context 7759 also gave only a small assemblage of land snails, too few for definitive interpretation, but with 43 individuals identified (or partly so). Of these, most that could be identified to species level were of open ground/grassland species, *Pupilla muscorum* (7 individuals, with a further 13 Pupillidae sp. apices), *Vallonia excentrica* (6) and the heliophile *Helicella itala* (3, possibly 4), with only a single *Vitrea crystallina/V. contracta* apex fragment representing shade-loving taxa (there were also 12 fragmented shell tentatively identified as ?*Trichia hispida*, a catholic species).

Numbers of identified land snails remained small in the next two samples, from Context 7758, at depths of 90–100 cm and 85–90 cm which yielded 32 and 24 records, respectively (although at least a third of the identifications were only tentative in each case, i.e. ?*Truncatellina cylindrica*, ?*Helicella itala* and ?*Trichia hispida*). Species level identifications were, again, mostly of *Pupilla muscorum* and *Vallonia excentrica* (all records for *Helicella itala* were tentative owing to fragmentation of the shells), with a few records for the obligate xerophile *Truncatellina cylindrica* (two from the lower sample and one from the upper). Both samples also gave single records for the shade taxa *Carychium tridentatum*

and/or *Carychium* sp. and *Punctum pygmaeum*, however; the last somewhat more ecologically catholic and the first able to exploit damp, shaded conditions provided by relatively light vegetative cover (e.g. longer grass growth, perhaps within the feature itself).

The recovered land snail assemblages begin to increase in size in Context 7755. Two samples were collected from this deposit at depths of 80–85 cm and 70–80 cm. yielding 54 and 118 identified (or partially identified) individuals, respectively. In general, these assemblages comprised increased numbers of both the dry, open ground/grassland taxa (e.g. *Truncatellina cylindrica*, *Pupilla muscorum* and *Vallonia excentrica*) and those of shaded habitats (e.g. *Punctum pygmaeum* and *Carychium tridentatum*) seen from Context 7758; although, curiously both *c. tridentatum* and *P. muscorum* were absent from the lower of the two samples (there were ten records for Pupillidae sp. apex fragments so, in the case of *P. muscorum*, the lack of positive records may simply reflect slightly poorer preservation). More interestingly, both *Pomatias elegans* and *Vallonia costata* appear in these samples, with two and three individuals of the former and two and 11 individuals of the latter from the lower and upper sample, respectively. Taken together, the first as an indicator of a disturbed ground surface and the second an early coloniser of cleared ground, the presence of these species in Context 7755 perhaps marks the onset of arable farming adjacent to the ring ditch.

The last late Neolithic/early Bronze Age deposit, Context 7752 (one sample at depth 64–70 cm) produced a substantially larger land snail assemblage of 787 identified (or part identified) individuals. The assemblage was dominated by open ground and grassland forms including *Truncatellina cylindrica* (41 individuals, with a possible 61 further records tentatively identified from broken shells; 5–13 per cent) and *Pupilla muscorum* (82 species level records; 10 per cent) indicative of very dry conditions and bare ground/exposed rock, and *Vallonia costata* (199 individuals; 25 per cent) and *V. excentrica* (99; 13 per cent) characteristically found together in short-turf calcareous grasslands. There was also a lesser assemblage of shade-loving species present, however. This included taxa previously recorded in smaller numbers from the underlying deposits but also some additional species; most numerous was *Carychium tridentatum* with 57 individuals (and a further 42 incomplete shells recorded as *Carychium* sp. but most likely also *c. tridentatum*; 7–13 per cent), together with 13 *Punctum pygmaeum* (2 per cent) and eight *Vitrea crystallina*/*V. contracta* (1 per cent), and new species within the sequence represented by single records of *Lauria cylindracea* and *Aegopinella* ?*nitidula* and two *Acanthinula aculeata*. The small component of shade-loving snails perhaps suggests some regeneration of more substantial vegetation, although once again the predominance of *Carychium tridentatum* could mean that this was largely just longer grass growth. The appearance of three shade species not previously recorded in the sequence is of some interest as this suggests migration in and therefore both the presence of suitable source habitats in the landscape and an access 'corridor' to allow colonisation (see Davies 2008, 83). *Pomatias elegans* was also present in this deposit (27

individuals; 3 per cent) providing continued evidence for disturbance of the ground surface (and perhaps some clearance of encroaching vegetation) which, together with the dominance of open ground forms in general and proportionately of *Vallonia costata* over *V. excentrica*, suggests a corresponding continuation in agricultural activity.

Three samples were collected from the single medieval (Phase 16) deposit in the sequence, Context 7300, at depths of 60–64 cm, 50–60 cm and 40–50 cm. The two lower samples yielded the largest land snail assemblages from the Barrow 2 ring ditch, with a fairly large number also recovered from the upper sample; 1224, 1256 and 573 identified (or partly so) individuals, respectively. The assemblage from the sample at 60–64 cm depth was larger but of very similar composition (both in terms of species represented and their relative numbers) to that from the underlying late Neolithic/early Bronze Age deposit (Context 7752); notable exceptions being the marked proportional increase in abundance of *Pomatias elegans* from 3 per cent to 11 per cent and decrease of *Vallonia excentrica* from 13 per cent to 6 per cent. Through the sequence of three samples relative numbers of *Pomatias elegans* remain high or very high (11 per cent, 29 per cent and 40 per cent suggesting continued ground disturbance), *Carychium tridentatum* initially increases and then declines rapidly at 40–50 cm, numbers of species of very open ground/bare earth (*Truncatellina cylindrica* and *Pupilla muscorum*) decline steadily and proportions of the two *Vallonia* species are (roughly) reversed; *Vallonia costata* initially forms 30 per cent of the identified assemblage at 60–64 cm, dropping slightly to 24 per cent at 50–60 cm and then dramatically to 7 per cent at 40–50 cm, whereas *V. excentrica* initially forms only 6 per cent of the assemblage, dips slightly to 4 per cent but then increases sharply to 23 per cent. Other shade-loving taxa (i.e. *Lauria cylindracea*, *Acanthinula aculeata*, *Vitrea crystallina*/*V. contracta*) generally decline steadily, although the more catholic *Punctum pygmaeum* shows a slight proportional increase in the upper sample (1.7 per cent at 60–64 cm, 1.4 per cent at 50–60 cm, 2.6 per cent at 40–50 cm); this represents the largest proportion for a single shade species other than *Carychium tridentatum* in any of the three samples, however. Without the evidence for continued ground disturbance, the land snail assemblages through this section of the deposit sequence would suggest some degree of clearance of denser vegetation and the creation of stable (in terms of the ground surface) grassland, with the disturbance, however, the implication is more for the presence of arable land and/or pasture (where *Vallonia excentrica* is often common and *V. costata* rare or absent despite apparently otherwise favourable conditions – see, for example, Evans 1972, 154, 162); or perhaps a transition from the former to the latter. The large assemblage sizes, particularly from the two lower samples, suggest a slow rate of deposit formation which is rather curious as this appears to be a midden deposit (including pottery, worked flints, animal bone and fired clay); it could be that the waste represents material discarded casually over a considerable period of time rather than a discrete dumping event, however. The isolated single record for the aquatic (or aquatic marginal) snail *Lymnaea truncatula* from Context 7300 (at depth 50–60 cm) is most likely to represent an accidental inclusion along with other discarded human waste (with

waste water perhaps) rather than the presence of standing water within the ditch (even on a temporary basis) at this time.

The remainder of the samples from this sequence (all undated; Phase 20), three from Context 7751 (depth ranges 30–40 cm, 24–30 cm and 20–24 cm) and two from the uppermost deposit, Context 7750 (at depth 10–20 and 0–10 cm), gave land snail assemblages of, in the main, diminishing size (identified or partially identified individuals numbered 360, 128, 62, 82 and 41, respectively) but of very similar character. Each was dominated by open ground and grassland forms, and in particular *Vallonia excentrica*, with relatively few records for shade-loving taxa and *Pomatias elegans* always present (also in, in general, declining numbers ascending through the sample series; 83 individuals at 30–40 cm, then 25, 10, 10, and finally 2 at 0–10 cm). These assemblages suggest the continuation of the medieval (Phase 16) environment, i.e. continued arable cultivation or use as pasture – though favouring a change from the former to the latter. The diminishing assemblage sizes imply increasingly rapid infilling of the feature (which accords with the excavator's observations in the field that the upper deposits had formed through a combination of colluvial influx and levelling of the barrow mound by agricultural activities such as ploughing). There were occasional records indicative of water from three of these final fills; two individuals of *Hydrobia* ?*ulvae* (Pennant) from Context 7751 (at 24–30 cm), which is a brackish/salt water snail typically found in "…estuaries, intertidal mudflats and saltmarshes" (Kerney 1999, 33), and a pair of ?ostracod valves (freshwater) and a calcified stonewort (*Chara*) oogonium (also predominantly freshwater) from Context 7750 (at 10–20 cm and 0–10 cm, respectively). These records were too few to infer the presence of standing water within the feature or marine incursion and presumably reflect accidental inclusions from the disposal of waste water and material collected from estuarine/saltmarsh habitats.

Plateau 7

Ring ditch of late Neolithic/early Bronze Age Barrow 3 (G7008)

Archaeological information

The second barrow exposed on Plateau 7 (Barrow 3) remained as a 19 metre diameter circular ring ditch G7008), completely exposed just 14 metres north-west of Barrow 2. The ditch cut had a very steep-sided profile and flat base and was 2.2 metres wide at the top, 0.92 metres wide at the base and 1.52 metres deep on average. It contained three main phases of infilling with the uppermost deposits having been disturbed by deep ploughing and occasional animal burrowing. It was primarily filled with a complex series of loosely compacted and numerously banded layers of chalk rubble deposits and colluvial sediments of discoloured clays and silts. A higher concentration of flints was noticeable in the south-western segments. The majority of these layers displayed relative symmetry of deposition and no predominance in the amount of erosion from the

interior or exterior of the barrow could be deduced. The possibility that there was an exterior bank has not been discounted, but no clear evidence of its existence was identified. These deposits were generally sterile apart from some animal bone and a few worked flints although the disarticulated remains of an inhumation were retrieved from one fill and comprised a human skull, pelvis and long bone fragments. Their presence and incompleteness suggests that a burial in the barrow mound was redeposited during infilling of the ditch possibly during a phase of levelling of the barrow mound. The levels were generally indicative of the considerable accumulation of redeposited mound material and erosion of the ditch sides and edges. Their complexity of layering was suggestive of accumulation over a relatively long time period.

A series of middle layers comprised brown clay silts and varying concentrations of flint and chalk which sealed the primary fills. Small assemblages of prehistoric pottery, worked flint, shellfish, land molluscs and animal bone, were retrieved from the fills. A number of deposits were loosely identified as having eroded-in from the interior and exterior side of the barrow ditch, and laminations were observed within some of these deposits suggesting infilling occurred naturally over a considerable period of time. It is likely that these layers derived from a mixture of purposeful backfilling interspersed by periods of abandonment or disuse which allowed for the natural accumulation of finer sediments by erosion.

A deposit of black, grey and brown ashy clay silt was interposed between the earlier and latest fills of the ditch. This level had an average thickness of 0.23 metres and was restricted to a 7 metre length in the extreme southern part of the ditch (apart from a small patch of similar material on the eastern side). Numerous domestic artefacts, including a relatively large assemblage of prehistoric pottery with animal bone, burnt clay and seashell, were retrieved from the fills.

The upper layers consisted of varying shades of brown silty clay with occasional bands of flint and chalk; the latter varying in concentrations. Inclusions of shellfish, animal bone, and prehistoric pottery, plus worked and burnt flint were retrieved from the fills. However, some post-medieval ceramic material was also recovered, and it is likely that most of the prehistoric material is residual. It seems likely that the majority of these deposits derived from a mixture of colluvial influx and a levelling phase of the barrow mound, the latter resulting from agricultural activities such as ploughing during the medieval/post-medieval period.

Mollusc remains

The sample sequence from the ring ditch of Barrow 3 contained the largest number of individual samples, a total of 20, although this did include two duplicates (based on depth) at 150–160 cm and 80–90 cm depth where two different deposits were represented (Contexts 7239 and 7235; Contexts 7204 and 7203); there was also a short

gap in the sequence at 130–140 cm depth from which no sample was taken. The deposits sampled, lowermost first, were Contexts 7239, 7235, 7232, 7229, 7227/7226, 7212, 7204, 7203, 7202, 7201, 7200 and 7198 of which the first five were assigned to Phase 2 (late Neolithic/early Bronze Age) and the remainder (with the exception of Context 7201 – see below) were of uncertain date. Context 7201 was described as a midden deposit of medieval date within the ditch; consequently the overlying Phase 20 deposits, Contexts 7200 and 7198, would be of medieval date or later and the underlying Phase20 deposits, 7212 through 7202, of late Neolithic/early Bronze Age to medieval date. The records are presented in Tables 209 to 212 and summarised in Figs. 314 and 315.

All but the last (uppermost) of the Phase 2 deposits gave very few mollusc remains. One of the two sampled deposits at 150–160cm depth (Context 7235) gave only a single very tentatively identified shell fragment (of ?*Cepaea nemoralis* and the other a similarly ambiguous fragment, together with single representatives of *Vallonia excentrica* and *Helicella itala* and an indeterminate Pupillidae sp. apex. Clearly, these remains were too few for any detailed ecological interpretation although it may be noted that the two positively identified species were both open ground taxa. The same may be said, in general, of the character of the very small assemblages from the two deposits next in the sequence, Context 7232 (140–150 cm depth) and Context 7239 (125–130 cm); there was no sample at 130–140 cm. Of the closely identified remains from these deposits (11 and 30 individuals, respectively), all bar a single *Aegopinella* ?*nitidula* from Context 7232 were of the open/bare-ground species *Truncatellina cylindrica*, *Pupilla muscorum*, *Vallonia costata* and *V. excentrica*. The final Phase 2 deposit, Context 7227/7226 (116–125 cm), gave a more substantial (although by no means large) assemblage of 112 identified or partially identified land snail remains, the component which was useful for ecological interpretation being fairly equally divided between open ground species (those listed above for Context 7232, and dominated by 27 *Vallonia costata*, plus 19 individuals of the heliophile *Helicella itala* – the latter regarded by Evans (1972, 180) as "…probably our most characteristic open-country species, having developed to an extreme degree the ability to live in places which are very open and very dry. It is however essentially a grassland species, not flourishing in rupestral habitats") with a total of 52 records and two shade-loving species *Aegopinella* ?*nitidula* (15 individuals) and the somewhat more catholic *Punctum pygmaeum* (27 individuals); Kerney (1999) notes that (at the present day) both of these shade species are tolerant of disturbance by man, the former being "…not infrequent in waste ground and in gardens" (see Kerney 1999, 142 and 114). Taken as a whole, these assemblages suggest that the ground into which the barrow ditch was cut was only lightly vegetated, most likely including areas of bare soil and rock, and remained so throughout the period of the late Neolithic/early Bronze Age represented by these deposits, with the shade-loving species in the uppermost exploiting the more sheltered environment within the feature itself (and, perhaps, suggesting additional cover from slightly greater vegetation growth within the ditch).

The next sequence of deposits (from Context 7212 through to Context 7202) was undated (Phase 20) but bracketed by the underlying late Neolithic/early Bronze Age (Phase 2) fills and the overlying medieval (Phase 16) midden deposit, Context 7201. Three samples were taken for the lowermost of this group of deposits, Context 7212, at depths of 110–116 cm, 100–110 cm and 90–100 cm. These samples gave land snail assemblages increasing in size (from modest to large) with reduction in depth. The lowest yielded a total of 206 identified (or part-identified) remains, with the corresponding numbers from the subsequent samples of this fill being 413 and 1320, respectively. Overall records of shade-loving taxa remained more or less constant in the two lower samples and were principally of two taxa *Aegopinella* ?*nitidula* and the more catholic *Punctum pygmaeum*, with absolute numbers of the latter increasing significantly in the third sample (though actually declining as a proportion of the identified assemblage as a whole through the sequence; from approximately 25 per cent at 110–116 cm depth, to 16 per cent at 100–110 cm and 14 per cent at 90–100 cm). In contrast, indicators for open ground, and in particular *Vallonia costata*, increased markedly with their total numbers being only slightly greater than that of the shade-loving taxa at 110–116 cm depth, roughly three times greater at 100–110 cm and over four times greater at 90–100 cm; as a proportion of the identified assemblage as a whole *Vallonia costata* forms approximately 33 per cent, 55 per cent and 61 per cent at the corresponding depths. Only small numbers of those open ground taxa typically indicative of bare earth or exposed rock surfaces (*Truncatellina cylindrica*, *Pupilla muscorum* and the heliophile *Helicella itala*) were present in each of the three samples from this deposit (other than an absence of *P. muscorum* at 110–116 cm; Pupillidae sp. apices were always present, however) as were the grassland species *Vertigo pygmaea* and *Vallonia excentrica* (with the last showing a doubling of its proportional representation at 90–100 cm; to around 7 per cent). Records for *Pomatias elegans* first appear at 90–100 cm depth (Context 7212), increasing in numbers at 80–90 cm depth (Contexts 7204 and 7203; where they form 6 per cent and 19 per cent of the identified assemblages) and becoming the dominant species of the assemblage in the uppermost sample of this group at 75–80 cm depth (Context 7202; 28 per cent). The characters of the other components of the large land snail assemblages from Contexts 7204 and 7203 (both at 80–90 cm, 1638 and 1760 identified, or partly so, individuals, respectively) were similar both to each other and to that of the assemblage from the uppermost sample from Context 7212, with open ground/grassland species continuing to dominate and *Vallonia costata* particularly abundant (representing 41 per cent of the identified remains from Context 7204 and 51 per cent from Context 7203). Most of the records for shade taxa continued to be of the more ecologically tolerant *Punctum pygmaeum*, although numbers of *Lauria cylindracea* increase significantly (from a single individual (0.2 per cent) in the uppermost sample from the underlying deposit, Context 7212, to 38 (2 per cent) from Context 7204 and 75 (4 per cent) from Context 7203) and *Carychium tridentatum* (and *Carychium* sp.), *Vitrea crystallina*/*V. contracta* and *Aegopinella* ?*nitidula* were all present in both deposits (there was also a single record of the shade-loving *Acanthinula aculeata* from Context 7203, a species which was not recorded from Context 7204 or from any of the underlying deposits/samples). One

additional difference in the land snail assemblages from Contexts 7204 and 7203 (other than in the absolute numbers and proportional representation of *Pomatia elegans* noted above) was in the ratio of the two identified *Vallonia* species. In Context 7204 *Vallonia costata* forms 41 per cent of the identified total and *Vallonia excentrica* 15 per cent (less than 3 to 1), whereas in Context 7203 the corresponding percentages are 51 per cent and 10 per cent (approximately 5 to 1). This perhaps provides a slight hint of less disturbed ground at the time of the formation of Context 7204 and could indicate that, although present at the same depth (80–90 cm) within the feature, Contexts 7204 and 7203 may not be wholly contemporary. Overall, the ecological implications of the land snail assemblages from Context 7212 (from the uppermost of the three samples, at 90–100 cm depth) through to Contexts 7204 and 7203 (both at 80–90 cm depth) was of open, disturbed ground probably reflecting ploughed fields. As previously noted, the dominant single land snail species in the assemblage of 1761 identified (at least partially) individuals from the final deposit of this Phase 20 group, Context 7202 (75–80 cm depth) was *Pomatias elegans* (28 per cent). In terms of ecological groups, however, the assemblage was roughly equally divided between *P. elegans* (indicative of disturbed ground), open ground/grassland taxa (29 per cent, predominantly *Vallonia costata* at 20 per cent) and shade-loving taxa (27 per cent, predominantly *Carychium tridentatum*, 11 per cent, and fragmented shells identified as *Carychium* sp. but probably also *c. tridentatum*, a further 9 per cent). This then was a somewhat curious assemblage providing continued evidence for ground disturbance which probably reflects ploughing but also suggesting some regeneration of denser vegetation. There was no reversal in the relative proportions of *Vallonia costata* and *V. excentrica* which might suggest the establishment of a more stable surfaced dry grassland and perhaps a change from arable agriculture to grazing land (the fact that bare ground species such as *Pupilla muscorum* and *Truncatellina cylindrica* were still present and the large numbers of *P. elegans* also contra-indicate this). Perhaps the simplest explanation would be for returning vegetation within the remnants of the ditch itself with continued agriculture in the immediate surroundings; this would accord with the dominance of *Carychium tridentatum* in the shade-loving component of the assemblage as this species could be exploiting long, permanently damp at the base, grass rather than requiring the regeneration of any more substantial vegetative cover. However, the increase in numbers of *Acanthinula aculeata* (to 14 individuals – although this is still less than 1 per cent of the total identified assemblage from Context 7202) and the appearance of *Clausilia bidentata* (only a single record for the latter but, as also noted for the single record of *Acanthinula aculeata* from Context 7203, this species does not appear in any of the assemblages from lower deposits/samples in this sequence) perhaps indicate at least some larger plant growth (possibly scrub/hedgerow species?). It would seem that, despite the predominance of open ground taxa and the strong evidence for disturbed/cleared ground in several of the underlying deposits, more heavily vegetated and undisturbed areas persisted from which shade-loving snail taxa were able to move into formerly cleared areas if denser vegetation was allowed to regenerate.

Four samples were collected from the Phase 16 (medieval) midden deposit, Context 7201, at depths of 70–75 cm, 60–70 cm, 50–60 cm and 44–50 cm. Moderate to quite large assemblages of land snails were recovered from each (although all were significantly smaller than those from the underlying Phase 20 deposits), with 525 identified (at least in part) individuals from the lowest of the four and 203, 239 and 180 from the subsequent samples. The declining numbers of land snails is consistent with more rapid infilling resulting from waste disposal into the feature; which also explains the common to abundant fragments of marine mussel (*Mytilus edulis* L.) shell recorded from all four samples and the presence of fragments of barnacle (at 70–75 cm) and indeterminate limpet (at 50–60 cm). The lowest sample (at 70–75 cm depth) yielded an assemblage which was much smaller but almost identical in composition to that from the underlying Phase 20 deposit (Context 7202) – 525 individuals as against 1761 – but with the reappearance of the shade-loving *Discus rotundatus* (just two individuals, but this species was only previously recorded from fills of this feature in the lower and upper of the three samples from Context 7212 at 110–116 cm and 90–100 cm depth, respectively; Phase 20). This species was also present in relatively large numbers in the next two samples, with 59 individuals at 60–70 cm depth and 44 at 50–60 cm depth, forming the largest single identified species component of the former and the second largest of the latter. Evans (1972, 185) describes *D. rotundatus* as "…a common woodland species, occurring in leaf litter, under logs and in hedgerows often in enormous numbers…" and its presence within these samples could indicate regeneration of substantial 'woody' vegetation; the nature of the deposit should be considered, however, as it could also be that these records represent accidental inclusions incorporated together with waste materials originally collected from such habitats elsewhere (although presumably still fairly close by) and discarded into the feature. Another "…woodland and hedgerow species…" (Evans 1972, 165), *Ena obscura* was also recorded from the sample at 50–60cm depth (two individuals, and again from the final sample from Context 7201 at 44–50 cm, one individual) having not appeared in any of the earlier deposits/samples. The appearance of this species in these samples provides further support for the presence of woodland/hedgerow in the area although whether this was in the immediate vicinity or at some remove and the snails transported by human agents cannot be definitively determined. Evidence for disturbed ground in the form of remains of *Pomatias elegans* was present in each of these samples although only the lowermost (at 70–75 cm) gave large numbers (121 individuals, 23 per cent of the identified assemblage and the most abundant single species). Dry, open ground/grassland species and others reflecting bare earth/exposed rock surfaces were also present throughout. Of the former, *Vallonia costata* was always the most numerous, initially declining between the samples at 70–75 cm and 60–70 cm, it then increases to become the most abundant single species identified in the two upper samples (at 50–60 cm and 44–50 cm, forming 29 per cent and 43 per cent of the identified assemblages, respectively); *V. excentrica* also declines initially and then recovers somewhat in the upper two samples but is always outnumbered by *V. costata* by at least 3 to 1 and in the sample at 60–70 cm depth by as much as 12 to 1. The dry, bare ground species, *Truncatellina cylindrica* and *Pupilla*

muscorum were also present in all four of the samples from Context 7201, although never in large numbers. Given that Context 7201 was a midden layer, rather than a largely natural accumulation, it is difficult to base any definitive interpretation on the land snail assemblages recovered. It would appear, however, that broken ground surface and open terrain continue to be represented and, consequently, that arable agriculture also continued adjacent to this feature in the medieval period. One aspect of these midden assemblages which supports the theory that some of the snails were introduced by human activity was the fact that each contained small numbers of charred snail shells (and also some charcoal). The small numbers imply that these did not reflect *in situ* burning but rather the disposal of fire waste into the feature and the woodland snail species present could, therefore, have originally been accidentally collected elsewhere along with wood and kindling for the fire.

Immediately overlying Context 7201 was Context 7200, an undated (Phase 20) deposit from which a single sample (at 34–44 cm depth) was collected. The sample gave an assemblage of land snail remains similar to that from the uppermost sample from of the medieval (Phase 16) midden deposit, Context 7201, but of larger size (368 identified, at least in part, individuals), with a slightly increased proportion of open ground taxa and some variation in the character of both the open ground and shade-loving components. Although, the open ground fraction of the assemblage continued to be dominated by *Vallonia costata* the relative proportions of those species likely to indicate bare earth and exposed rock were both increased; *Truncatellina cylindrica* from 2 per cent in Context 7201 to 3 per cent in Context 7200 (4 per cent to 12 per cent if more tentative identifications of fragmented shells as ?*T. cylindrica* are included) and for *Pupilla muscorum* from 4 per cent to 7 per cent. At the same time, numbers of *Discus rotundatus* decreased from ten to two (6 per cent and 0.5 per cent, respectively) and records for *Carychium tridentatum* (and *Carychium* sp.) rose slightly to form a combined total of 11 per cent of the identified assemblage (from 8 per cent in Context 7201). At least 15 individuals (4 per cent of the identified assemblage) of *Pomatias elegans* were recovered from Context 7200 providing limited evidence for continued ground disturbance. This assemblage again indicates predominantly open ground and a somewhat disturbed ground surface (perhaps most likely to reflect continued ploughing), with a suggestion that although longer grass growth within the remnant of the ditch appears to continue more substantial vegetation may have been cut back. Small fragments of marine mussel valve remained common and are perhaps most likely to reflect some mixing with the underlying midden deposit (Context 7201) caused by more recent ploughing; although it is not impossible that they derive from a continuation of casual waste disposal into the feature.

Four samples were collected from the final undated deposit in this sequence, Context 7198 (Phase 20), at depths of 30–34 cm, 20–30 cm, 10–20 cm and 0–10 cm., and yielded assemblages of 113, 110, 142 and 204 identified (or partly so) land snails, respectively. All of the assemblages had essentially the same character. Each was predominantly of

open ground taxa, with the most abundant individual species being *Vallonia costata*, and also gave small numbers of shade taxa (mostly records of the somewhat catholic *Punctum pygmaeum* and *Carychium tridentatum* and/or *Carychium* sp., which were present in all four samples but never represented by more than five individuals) and of *Pomatias elegans*. Overall, the land snail assemblages from the samples of this deposit suggest continued arable farming in the surroundings. Fragments of marine mussel shell were also recorded from all four of the samples from Context 7198 and, again, most likely derive from the underlying midden deposit (Context 7201) as a consequence of modern ploughing.

Plateau 8

Ring ditch of late Neolithic/early Bronze Age Barrow 6 (G8005)

Archaeological information

Barrow 6 was formed by a complete ring ditch (G8005), approximately 21.2 metres in diameter. The width of the top of the ditch varied between 1.8 and 2.5 metres, with an average of 0.84 metres for the base, and a depth of between 0.72 and 1.12 metres. In general, the wider, deeper portions of the ditch were on the north and north-western side of the barrow suggesting greater truncation to the south. The ditch profile consisted of moderate to steep sloping sides, breaking sharply to a flat base. The primary fills of the ditch were virtually identical with little variation observed, primarily consisting of sterile, laminated deposits comprised of banded layers of clay silts mixed with occasional deposits of chalk. It is likely that these were derived from the barrow ditch and mound, the result of natural erosion though the symmetry of deposition meant that no differentiation between the interior and exterior of the barrow could be deduced. Apart from a small amount of worked flint and animal bone, these primary fills were sterile.

The middle fills formed a sequence with an average thickness of approximately 0.41 metres (maximum 0.86 metres) and consisted of mixed deposits of clay silts and silty clays, much of which may have been deliberate infill. No datable material was recovered from these deposits. The upper fills had an average thickness of approximately 0.6 metres and consisted of generally homogeneous deposits of silty clay which contained a small quantity of prehistoric pottery, and one sherd which was Anglo-Saxon in date, as well as quantities of animal bone. The nature of the deposits suggests that the barrow mound may have been partially slighted, these episodes possibly relating to Roman and Anglo-Saxon activity in the area, the barrow having acted as a focus for two Roman mortuary enclosures and the later Anglo-Saxon settlement.

No central burial or any other interments or features were associated with this monument.

Mollusc remains

Two sequences of samples were collected from the ring ditch of Barrow 6. The first comprised 12 samples from Contexts 12669, 12695, 12691, 12690 and 12689 (lowermost first), with the first two dated as late Neolithic/early Bronze Age (Phase 2), the second two as undefined prehistoric (Phase 9) and the uppermost undated (Phase 20); there was a small discontinuity in the sampled sequence at 98–100 cm depth. The second sequence consisted of 14 samples from Contexts 12744, 12742, 12741, 12739, 12737, 12736 and 12735 (lowermost first) of which the first five were of late Neolithic/early Bronze Age date (Phase 2), with the two remaining deposits undated (Phase 20). Data for the first sequence of deposits is presented in Tables 213 and 214 (Figs. 316 and 317) and for the second sequence in Tables 215 and 216 (Figs. 318 and 319).

Identified (or partly so) mollusc remains from the two lowest samples in the first sequence (Context 12669, depth 107 cm-base; Context 12695, 100–107 cm) were restricted to single shells of *Vertigo pygmaea* and *Punctum pygmaeum* from the first and a single *Vertigo* sp. apex fragment from the second; too few records for even tentative interpretation – the dearth of remains would suggest that the deposits formed rapidly, although this appears at odds with their generally fine-grained and laminated nature as recorded in the field. The higher part of Context 12695 (at 90–98 cm) provided a small assemblage of land snails amounting to 64 identified (or part-identified) individuals which was dominated by open ground forms, notably *Vallonia costata*, with three records for each of two other dry grassland taxa (*Vertigo pygmaea* and *Vallonia excentrica*), and including small numbers of *Truncatellina cylindrica* (1) and *Pupilla muscorum* (3) suggesting some areas of bare ground/exposed rock. There was a single individual of the shade-loving species *Aegopinella* ?*nitidula* but most of the records indicative of shade were of *Punctum pygmaeum* which, as previously noted, is tolerant of a rather wider range of habitat types. The two land snail assemblages from Context 12691 were also small, especially the lower one, providing just ten identified (at least in part) shells at depth 80–90 cm and 45 at depth 75–80 cm. The lower part of Context 12691 may, therefore, represent very rapid deposition (perhaps reflecting deliberate infilling as postulated by the excavator). The upper part of Context 12691 appears to have formed a little more slowly (though the small numbers of snails suggest that deposition was still relatively quick) and the character of the assemblage was very similar to that from the upper part of Context 12695 implying continuation of the predominantly open landscape. Two samples were also collected from the uppermost of the Phase 9 deposits, Context 12690, at 60–70 cm and 50–60 cm depth. The first of these gave a rather large assemblage of identified (or partially identified) land snails, and one which was significantly larger than any other assemblage from this sequence, with a total of 431 remains. The character of this assemblage was also quite different as it was dominated by remains of *Pomatias elegans* (226 individuals) and shade taxa were more numerous and diverse (*Carychium tridentatum* 18 records – with an additional 19 for *Carychium* sp.

which were almost certainly also *c. tridentatum* given that there were no positive identifications of the other *Carychium* species, *c. minimum* Müller, from the entire site – *Punctum pygmaeum* eight records, *Vitrea crystallina/V. contracta* two records and *Clausilia* ?*bidentata* one record). Although open ground taxa were again present and *Vallonia costata* was still quite common (53 individuals, the second most abundant species recorded) the nature of this ecological component had altered, notably by the presence of 35 individuals of *Pupilla muscorum* which is a strong pioneer species of cleared ground (there were a further 21 apex fragments which, in the absence of another identified Pupillidae species, were most likely also *P. muscorum*). At first glance, this assemblage appears rather anomalous as its composition strongly suggests vegetation clearance but there was no evidence for the existence of substantial vegetation from the assemblages recovered from the underlying deposits. A more likely interpretation therefore is that the ground disturbance indicated reflects the partial slighting of the barrow mound postulated by the excavator based on the composition of the upper deposits. The sample from the upper part of Context 12690 (50–60 cm depth) yielded just 14 further *Pomatias elegans*, two *Vallonia costata*, one tentative record of ?*Cepaea nemoralis* and a few unidentified land snail fragments; too few remains for detailed interpretation but probably indicating rapid deposition.

The five samples collected from the uppermost deposit, Context 12689 (Phase 20) each represented 10 cm of the deposit sequence from 0–50 cm depth. Each yielded no more than three identified land snail remains (other than records of the burrowing snail *Cecilioides acicula*) providing too little information for any interpretation to be attempted (other than to note that the deposit appears to have formed quickly and may represent deliberate infilling of the last remnants of the ditch). The only other shell record of any note was of a single ?juvenile marine mussel (*Mytilus edulis* L.) valve from the sample at 10–20 cm depth; presumably discarded by humans but too small to represent waste from a mussel deliberately collected for food.

The lowermost deposit represented in the second series of samples, Context 12744 (depth 92 cm-base; Phase 2) gave only a single identified land snail, a *Vallonia costata* (other than a few records of the burrowing species *Cecilioides acicula* which was present throughout the sequence, becoming increasingly numerous with decreasing depth). The second deposit, Context 12742 (depth 90–92 cm) also provided too few indentified (or partially so) remains for interpretation (just four in total) and it seems likely that both lower contexts were formed by rapid deposition of material eroded from the ditch sides and, perhaps, also from the barrow mound itself.

Two subsamples were collected from the next deposit in this sequence, Context 12741 (Phase 2) representing depths of 80–90 cm and 74–80 cm. Each provided a small identified land snail assemblage (of 25 and 38 individuals, respectively). Although rather too small for detailed interpretation, both were largely composed of open ground/dry grassland forms such as *Truncatellina cylindrica* (only positively identified

from the lower of the two subsamples but with possible records from both), *Vertigo pygmaea* (upper subsample only), *Pupilla muscorum*, *Vallonia costata* (predominant in the upper subsample with 20 records) and *V. excentrica*, with the only positively identified shade-loving species present being the somewhat ecologically catholic *Punctum pygmaeum* (five individuals from the lower part of the deposit and three from the upper). The trace of ?juvenile marine mussel noted in the sample from the upper part of Context 12741 (74–80 cm depth) presumably derives from casual waste disposal by humans.

Two subsamples were also collected from Context 12739 (Phase 2), at depth ranges of 70–74 cm and 65–70 cm. Both assemblages reflected a continuation of the open ground/dry grassland conditions suggested by the snails from Context 12741, yielding slightly larger assemblages (particularly from the lower part of the deposit) of 120 and 48 individuals, respectively, which were of very similar ecological character. The same was also true of the subsample from the uppermost of the Phase 2 deposits, Context 12737 (depth 60–65 cm; single subsample) which gave the largest identified (at least in part) Phase 2 land snail assemblage (187 individuals) from this series. The dip in snail numbers at 65–70 cm depth (upper part of Context 12739) might reflect an episode of deliberate infilling or other rapid deposition such as an episode of collapse of the ditch sides. A trace of ?juvenile marine mussel was also recorded from this deposits (70–74 cm), again probably reflecting the casual disposal of waste by humans.

The mollusc assemblages from the two subsamples from the first of the undated (Phase 20) deposits, Context 12736, collected at depths of 50–60 cm and 45–50 cm, were, again, very similar in character to those from the underlying contexts, and also very similar in size to each other and that from Context 12737; 177 and 171 identified, or partially indentified, individuals, respectively. This suggests a continuation of both the prevailing open ground/dry grassland habitat and the depositional processes at the time of the formation, with perhaps the most likely explanation being that this layer also formed in Phase 2 (late Neolithic/early Bronze Age), prior to the rapid (and perhaps deliberate) infilling represented by the final fill (see below).

Five separate subsamples were collected from the uppermost deposit, Context 12732 (depth 00–45 cm; Phase 20), with the lowest from 40–45 cm depth and the four others each representing 10 cm of the remainder of the context. Other than *Cecilioides acicula* (which was common to abundant), identified land snail records were very few consisting of just single individuals of *Vertigo pygmaea* from each of the subsamples other than that at 10–20 cm depth, a single Pupillidae sp. apex fragment from the lowest of the five, one and three shells of *Vallonia costata* at 30–40 cm and 10–20 cm depth (respectively) and one *Discus rotundatus* (also at 10–20 cm depth). The dearth of remains (unidentified land snails were also few) suggests rapid deposition perhaps reflecting deliberate infilling undertaken during the partial slighting of the barrow mound in the Roman and/or Anglo-Saxon periods as suspected by the excavator; although if the

immediately underlying deposit, Context 12736, is of late Neolithic/early Bronze Age date (as the similarity of composition and size of the mollusc assemblages to those from Context 12737 seems to indicate) it may be that the backfilling of this feature was an earlier, prehistoric, event.

Discussion

The primary objective in studying the snail assemblages recovered from the sequential sampling of deposits within the cut features was to provide information regarding the past landscapes of the area and evidence of the possible affects of human activity on them. While this has been possible to some degree it should be noted that Davies (2008, Chapter 5 in general and, for specific quotations following the Summary thereof, 85) has remarked that snail assemblages provide "…highly site-specific information that also to some extent reflects the wider landscape" and that "...while reconstruction of the immediate environment of the site is usually quite clear, at least at the level of open-country versus wooded, the extent to which interpretation can be applied to the wider landscape remains problematic". This said, the Thanet Earth samples have provided an opportunity to compare and contrast several series of assemblages within a relatively small area – particularly those from the late Neolithic/early Bronze Age ring ditches associated with the Barrows located in Plateaus 6 and 7 at the southern end of the site area (Barrows 1, 2, 3 and 4) all of which were separated by no more than 350 metres or so.

The following text sections discuss the results of the investigations of the mollusc assemblages from across the site by period/phase groups.

Late Neolithic/early Bronze Age – Phase 2

Deposits of this period were encountered as the lower fills of ring ditches associated with Barrows 1, 2, 3, 4 and 6 (features G6005, G6006, G7002, G7008, G6008 and G8005), the first four of which were (as noted above) located close together on Plateaus 6 and 7 at the southern end of the site, with Barrow 6 on Plateau 8 approximately 1 km to the north.

Barrows 2 and 3 were located within 50 metres of each other. The lower Phase 2 deposits from each of the associated ring ditches (G7002 and G7008, respectively) gave only rather small assemblages of land snails; too small for detailed interpretation but predominantly of taxa suggesting open/bare ground and light vegetation (e.g. short-turf grassland). From the Barrow 3 ring ditch, only the final Phase 2 deposit, Context 7227/7226 (116–125 cm depth) gave a somewhat larger assemblage which again suggested open ground, with some shade-loving taxa present perhaps exploiting the more sheltered conditions (and perhaps longer grass growth) within the ditch cut. The slightly larger assemblages from the Barrow 2 ring ditch deposits of this phase (from the

upper of two samples from Context 7755 at 70–80 cm depth and the final Phase 2 deposit, Context 7752 at 64–70 cm) provided, in general, evidence of a similar local environment. However, for these deposits the appearance of *Pomatias elegans* (an indicator of disturbed ground) and the increase in numbers of *Vallonia costata* and *Pupilla muscorum* (which are regarded as strong colonisers of cleared ground – see Evans 1972, 163 and 157) could indicate the beginning of arable farming in the immediate vicinity.

The Phase 2 deposits encountered in two sequences through the ring ditch of Barrow 4 (G6008, located approximately 200 metres north-east of Barrows 2 and 3) provided very few identifiable land snail remains; far too few for any reliable interpretation, although most of the remains were, again, of open ground/short grassland species.

The same may be said of the Phase 2 assemblages from the outer ring ditch of Barrow 1 (G6006), although here the last deposit of this phase, Context 6121 (50–60 cm depth), gave a slightly larger number of land snails which, although still predominantly of open ground/grassland species, also included some indications of more substantial vegetation, together with two records of *Pomatias elegans* and slight increases in numbers of *Vallonia costata* and *Pupilla muscorum* which hint at some possible clearance activity. Only the lowermost deposit from the inner ring ditch of Barrow 1 (G6005), Context 6096 (70 cm to base), was assigned to Phase 2 and this yielded few identifiable mollusc remains. Subjectively, the character of the assemblage was more mixed, however, with numbers of open ground and shade/scrub/woodland taxa more or less even; perhaps suggesting that somewhat denser vegetation was present at the time of the creation of the inner ring ditch than was the case for the outer ring ditch (or those associated with Barrows 2, 3 and 4).

Other than records of the burrowing (and almost certainly intrusive) snail *Cecilioides acicula*, the two lowermost Phase 2 samples from each of the two sequences collected through fills of the ring ditch of Barrow 6 (G6008) gave no more than four identified (at least in part) land snails of no real interpretative value; although, again, almost all were of open ground/grassland taxa. The remaining samples yielded small to modest assemblages that consistently reflected open ground/exposed rock and short-turf grassland. There were no indications of clearance or other human activity resulting in disturbance of the ground surface and the only shade species recorded was *Punctum pygmaeum* which is tolerant of a wider range of habitats than other taxa within this ecological grouping (sharing affinities with more catholic forms – see Evans 1972, 195). Overall, it appears that the Barrow 6 ring ditch was cut into open, lightly vegetated ground and that the immediate environs remained this way throughout the late Neolithic/early Bronze Age.

All of the Phase 2 ring ditch deposits gave only very small to modest assemblages of land snails, with the larger numbers occurring in the later fills, indicating rapid initial

infilling of the features from erosion/partial collapse of the ditch sides followed by a period of slightly slower deposition.

Prehistoric – Phase 9

Deposits assigned to Phase 9 were encountered within the inner and outer ring ditches of Barrow 1 (G6005 and G6006, respectively), both of the sample sequences from the ring ditch of Barrow 4 (G6008; all of the fills of this feature other than the underlying Phase 2 deposits were assigned to Phase 9) and two deposits in one of the sequences from the ring ditch of Barrow 6 (G8005; Contexts 12691 and 12690, lowest first).

All of the snail assemblages from Phase 9 deposits within the inner ring ditch of Barrow 1 (G6005) were small or very small (there were no identified remains other than of *Cecilioides acicula* from the lowermost sample at 60–70 cm, Sample 620, Context 6095). The assemblages were rather too small for definitive interpretation but mostly included both open ground/grassland taxa and shade-loving forms, with a few *Pomatias elegans* also always present (other than in Sample 620). Just one deposit within the outer ring ditch (G6006) was assigned to Phase 9, Context 6082 (two samples at 40–50 and 30–40 cm depth). The snail assemblages from the two samples were of modest size and very similar species composition, including elements of bare ground, short-turf grassland and shade-loving taxa, together with small numbers of *Pomatias elegans*. In contrast to the smaller assemblages from the inner ring ditch, here the open ground/grassland forms were predominant (with *Vallonia costata* and *Pupilla muscorum* the principal species present from this ecological group). Overall, the two assemblages from Context 6082 appear to represent the onset of tillage.

The Phase 9 snail assemblages from both sequences of samples through the fills of the ring ditch of Barrow 4 (G6008) were all small but were almost exclusively composed of open ground/short-turf grassland taxa. Records of *Pomatias elegans* that could suggest disturbance of the ground by human activity were confined to a single individual from Context 6410 (0–10 cm depth). Records of *Vallonia* species snails were predominantly of *V. excentrica* rather than *V. costata* which also suggests a stable, undisturbed ground surface. There was, therefore, nothing of note within the snail assemblages to suggest past ploughing but the area could have been used by humans as grazing land for sheep (for example). The small assemblage sizes preclude any more definitive interpretation but appear to imply relatively rapid deposit formation; although the feature was relatively shallow and the small assemblages may also be a consequence of destruction caused by modern ploughing.

The two remaining Phase 9 deposits were within the ring ditch of Barrow 6 (G8005) in the north of the site. Two samples were collected from each of Context 12691 (at 80–90 and 75–80 cm) and 12690 (at 60–70 and 50–60 cm). The lowermost and uppermost of the four samples gave too few identifiable remains for interpretation. The mollusc

assemblage from the upper sample within Context 12691 (at 75–80 cm) was somewhat larger but still too small for reliable interpretation; although species represented were predominantly open ground/short-turf grassland forms (in particular *Vallonia costata* which accounted for over half of the identified shells). The lower sample from Context 12690 (60–70 cm) gave a rather large assemblage dominated by remains of *Pomatias elegans*, with a range of open ground/grassland and some shade-loving taxa also recorded. *Vallonia costata* was also quite common (the second most abundant species recorded) and there were 35 positively identified individuals of *Pupilla muscorum*; both strong pioneer species of cleared ground. Overall, this assemblage appeared to represent vegetation clearance but the snail assemblages recovered from underlying deposits provided no evidence to suggest the presence of substantial vegetation. Here it seems that the surface disturbance and creation of cleared/bare ground indicated reflects the partial slighting of the barrow mound postulated by the excavator based on the composition of the upper fills of the ditch.

Iron Age – Phase 8

All of the deposits of Iron Age date that were analysed for land snail remains were fills of the major boundary ditch (G4006, G5047) encountered in Plateau 4 at the approximate centre of the excavation area. A single sample was collected from each of seven consecutive fills (no depth ranges were recorded).

The lowest and two uppermost deposits gave only very small numbers of identifiable land snails but the four intermediate contexts yielded modest to large assemblages of interpretative value. These showed a progression from predominantly shade-loving taxa in the two lower deposits, Contexts 4498 and 4496 (lowest first) – particularly Context 4496 which gave a large assemblage dominated by *Carychium tridentatum* and fragmentary remains identified as *Carychium* sp. but almost certainly also all *c. tridentatum* – to taxa indicating open habitats in Contexts 4492 and 4491 (lowest first). Evidence of ground surface disturbance from records of *Pomatias elegans* was present in all four deposits but the largest numbers were from Context 4496. The presence of *Pupilla muscorum* and *Truncatellina cylindrica* in Contexts 4492 and 4491 implies that areas of bare ground/exposed rock existed at the time of formation of both fills. An increase in the numbers of *Vallonia excentrica* relative to *V. costata* between Contexts 4492 and 4491, together with a marked increase in numbers of *Vertigo pygmaea* in Context 4491 and the relatively small numbers of *Pomatias elegans* in both deposits, suggests the establishment of stable surfaced, dry, short-turf grassland, perhaps indicative of grazing land for sheep.

Undated (above prehistoric layers and with no dated overlying deposits) – Phase 20

Undated deposits overlying prehistoric layers (Phase 2 or Phase 9) and extending to the stripped surface level without any intervening dated deposits were encountered in the

inner and outer ring ditches of Barrow 1 (G6005 and G6006, respectively) and in both series of samples through the fills of the ring ditch of Barrow 6 (G8005). Three samples were collected from a single such fill of both the inner and outer ring ditches of Barrow 1, Context 6092 (samples at 20–25, 10–20 and 0–10 cm) and Context 6081 (samples at 20–20, 10–20 and 0–10 cm), respectively. One series from the ring ditch of Barrow 6 comprised five samples from a single final fill, Context 12689 (each sample representing 10 cm of the final half metre) and the second a total of seven samples from two fills, Context 12736 (two samples at 50–60 cm and 45–50 cm) and Context 12735 (five samples, one at 40–45 cm and the rest each representing 10 cm of the final 40 cm).

The final fill of the inner ring ditch of Barrow 1 (G6005), Context 6092, provided three individual samples (Samples 613, 612 and 611 at depths of 20–25cm, 10–20 cm and 0–10 cm, respectively). These gave the largest snail assemblages from the sequence of samples through this feature (although none were particularly large – a maximum of 201 identified, or partly so, individuals). Molluscs indicative of both open ground/dry grassland and shade were again present in each of the deposits but the first group (particularly in the form of *Vallonia costata*, *Pupilla muscorum* and *Truncatellina cylindrica* – the two last probably reflecting areas of bare ground/rock) was clearly dominant, with records for *Pomatias elegans* from each sample suggesting disturbance of the ground surface and an overall impression of the presence of ploughed land in the vicinity. The larger mollusc assemblages from the samples of this final fill appear to represent a rather slower rate of deposition than those from the underlying prehistoric (Phase 2 and Phase 9) deposits; somewhat contrary to the excavator's impression of deposit formation and perhaps implying relatively little destruction of shells by modern ploughing in this area (which is also contrary to notes made in the field).

The final fill of the outer ring ditch of Barrow 1 (G6006), Context 6081, also provided three samples (Samples 624, 623 and 622, lowermost first; each representing 10 cm of the first 30 cm of the deposit sequence below the stripped surface) and the mollusc assemblages from each were, again, larger than any of those from lower deposits (even the smallest, from Sample 622, yielding 463 identified or part-identified remains). All three land snail assemblages were dominated by remains of *Pupilla muscorum* and *Vallonia costata*, with lesser numbers of other open ground/dry grassland taxa such as *Truncatellina cylindrica*, *Vallonia excentrica* and *Vertigo pygmaea* always present and, in the two upper samples, small numbers of the heliophile *Helicella itala*. *Pomatias elegans* was also present in each sample, although never in particularly large numbers. Overall, the assemblages from the two lower samples gave continued evidence for the tillage posited from those recovered from the underlying prehistoric (Phase 9) deposit, Context 6082, with the relatively large numbers of individuals present suggesting that the fills formed slowly via subsequent colluvial processes rather than deliberate backfilling. The somewhat smaller assemblage from the uppermost sample indicating a slightly increased rate of deposit formation and the decline in *Pomatias elegans* perhaps indicative of reduced agricultural activity (although there was no evidence from the

molluscs for the regeneration of denser vegetation or even longer grass growth, or of a proportional rise in the abundance of *Vallonia excentrica* at the expense of *V. costata* and bare ground taxa that might indicate the establishment of stable surfaced grassland). As previously noted for the final fill of the inner ring ditch of Barrow 1 (G6005), the relatively large numbers of identifiable shells perhaps suggests that assemblages from upper deposits in this area have incurred less damage from modern ploughing than in other areas of the site (although this is, again, contrary to the excavator's records).

The top deposits represented in each of the two sequences of samples collected from the fills of the ring ditch of Barrow 6 (G8005), Context 12689 (five samples, each representing 10 cm of the uppermost 50 cm) and Context 12735 (five samples, the upper four representing 10 cm and the fifth 5 cm of the uppermost 45 cm), gave only trace quantities of identifiable mollusc remains which were too few for interpretation. Here it may well be that the size of the snail assemblages recovered from these upper deposits have been significantly reduced through destruction caused by modern ploughing; the large numbers of unidentified shell fragments in Context 12689 could support this but in Context 12735 unidentified fragments were few favouring the interpretation that the original numbers of snails present were small and that the dearth of remains indicates rapid deposition. The mollusc assemblages from the two samples from the only other undated deposit represented in the sequences through fills of the ring ditch of Barrow 6, Context 12736 (immediately underlying Context 12735 with samples collected at depths of 50–60 cm and 45–50 cm), were very similar in character to those from the underlying late Neolithic/early Bronze Age (Phase 2) contexts, and also very similar in size to each other and that from Context 12737 (immediately underlying). This suggests a continuation of both the prevailing open ground/dry grassland habitat and the depositional processes at the time of formation, with perhaps the most likely explanation being that Context 12736 also formed in the late Neolithic/early Bronze Age, prior to the apparent rapid (and perhaps deliberate) infilling represented by the final fill (Context 12735). The current archaeological interpretation is that the final infilling of the ditch (Context 12735) occurred during partial slighting of the barrow mound in the Roman and/or Anglo-Saxon periods but the similarity of the snail assemblages recovered from Contexts 12736 and the underlying Context 12737 (Phase 2) could suggest an earlier, prehistoric, date for this activity

Undated (but above prehistoric deposits and underlying medieval midden layers) — Phase 20

Four contexts within the sequence of deposits in the ring ditch of Barrow 3 (G7008) were undated (Phase 20) but bracketed by underlying late Neolithic/early Bronze Age (Phase 2) fills and an overlying medieval (Phase 16) midden layer. These deposits were, lowest first, Context 7212 (three samples at depths of 110–116, 100–110 and 90–100 cm), Context 7204 (80–90 cm), Context 7203 (a separate deposit also at 80–90 cm) and Context 7202 (75–80 cm).

The samples from Context 7212 gave land snail assemblages increasing in size (from modest to large) with reduction in depth. indicators for open ground/grassland (in particular *Vallonia costata*, with lesser numbers of the grassland species *V. excentrica* and *Vertigo pygmaea*) increased markedly with their total numbers being only slightly greater than that of the shade-loving taxa in the lowest of the three samples, roughly three times greater in the middle sample and over four times greater in the upper; only small numbers of open ground taxa typically indicative of bare earth or exposed rock surfaces (*Truncatellina cylindrica*, *Pupilla muscorum* and the heliophile *Helicella itala*) were present, however. Records for *Pomatias elegans* first appear in the upper sample from Context 7212, increase in numbers in Contexts 7204 and 7203 and become the dominant species of the assemblage in Context 7202, whilst other components of the large land snail assemblages from Contexts 7204 and 7203 continued to be dominated by open ground/grassland species (*Vallonia costata* remaining particularly abundant). Overall, the ecological implications of the land snail assemblages from the upper sample from Context 7212 and from Contexts 7204 and 7203 was of open, disturbed ground probably reflecting ploughed fields.

Although the dominant single land snail species from Context 7202 was *Pomatias elegans*, in terms of ecological groups, the assemblage was roughly equally divided between this species (indicative of disturbed ground), open ground/grassland taxa and shade-loving taxa (predominantly *Carychium tridentatum* and *Carychium* sp., the latter, again, almost certainly all also *c. tridentatum*). In combination the elements of this assemblage suggest returning vegetation within the remnants of the ditch itself, with continued arable farming in the immediate surroundings.

Occasional records of some shade-loving taxa, e.g. *Acanthinula aculeata* and *Clausilia bidentata* in Context 7202 and the former also in Context 7203, provided hints of some more substantial vegetation (perhaps scrub or hedgerow). The appearance of these species (which were not recorded from earlier in the deposit sequence) suggests that, despite the predominance of open ground taxa and the strong evidence for disturbed ground/ploughing, more heavily vegetated and undisturbed areas persisted from which shade-loving snail taxa were able to move into formerly cleared areas if denser vegetation was allowed to regenerate.

Medieval — Phase 16

Medieval period deposits were confined to single fills within the ring ditches of Barrow 2 (G7002) and Barrow 3 (G7008), Contexts 7300 and 7201, respectively. Both were interpreted as midden deposits rather than representing 'natural' accumulations and three samples were collected from Context 7300 (at depths of 60–64, 50–50 and 40–50 cm) and four from Context 7201 (at 70–75, 60–70 and 50–60 and 44–50 cm).

The two lower samples from Context 7300 yielded the largest land snail assemblages from the Barrow 2 ring ditch (G7002), with a fairly large number also recovered from the upper sample. The assemblage from the lowest sample at 60–64 cm depth was larger but of very similar composition (both in terms of species represented and their relative numbers) to that from the underlying late Neolithic/early Bronze Age deposit (Context 7752) – notable exceptions being the marked proportional increase in abundance of *Pomatias elegans* and decrease of *Vallonia excentrica*. Through the sequence of three samples relative numbers of *Pomatias elegans* remained high or very high, *Carychium tridentatum* initially increased and then declined rapidly (in general, other shade-loving taxa declined steadily), numbers of species of very open ground/bare earth (*Truncatellina cylindrica* and *Pupilla muscorum*) declined steadily and proportions of the two *Vallonia* species present were (roughly) reversed. Without the evidence for continued ground disturbance, the land snail assemblages through this section of the deposit sequence would suggest some degree of clearance of denser vegetation and the creation of stable (in terms of the ground surface) grassland with the disturbance, however, the implication is more for the presence of ploughed land throughout but perhaps a transition indicating a change in land-use away from arable agriculture and towards the creation of grazing land. The large assemblage sizes, particularly from the two lower samples, suggests a slow rate of deposit formation which is rather curious as this appears to be a midden deposit (including pottery, worked flints, animal bone and fired clay); it could be that the waste represents material discarded casually over a considerable period of time rather than a discrete dumping event, however. The single record for the aquatic (or aquatic marginal) snail *Lymnaea truncatula* from Context 7300 and the small numbers of charred land snail shells most likely represent accidental inclusions along with other discarded human waste; perhaps with waste water for the former and fire waste for the latter.

Moderate to quite large assemblages of land snails were recovered from each of the samples from Context 7201 (although all were significantly smaller than those from the underlying Phase 20 deposits in the ring ditch of Barrow 3; G7008). The declining numbers of land snails is consistent with more rapid infilling resulting from waste disposal into the feature; which also explains the common to abundant fragments of marine mussel (*Mytilus edulis* L.) shell recorded from all four samples and the presence of fragments of barnacle (at 70–75 cm) and indeterminate limpet (at 50–60 cm). The lowest sample (at 70–75 cm depth) yielded an assemblage which was much smaller but almost identical in composition to that from the underlying Phase 20 deposit (Context 7202) – i.e. indicative of predominantly open ground/short-turf grassland, with some longer grass growth within the ditch and perhaps some more substantial vegetative cover – but with the reappearance of the shade-loving *Discus rotundatus* (just two individuals, but this species was only previously recorded from fills of this feature in the lower and upper of the three samples from Context 7212 at 110–116 cm and 90–100 cm depth, respectively; Phase 20). This species was also present in relatively large numbers in the next two samples at 60–70 cm and 50–60 cm depth and another

woodland/hedgerow species, *Ena obscura*, was present in the latter and also at 44–50 cm. These records could indicate regeneration of substantial 'woody' vegetation but, given the nature of the deposit, it could also be that they represent accidental inclusions incorporated together with waste materials originally collected from such habitats elsewhere (although presumably close by) and discarded into the feature (i.e. woodland snail species accidentally collected along with wood and kindling for the fire). Evidence for disturbed ground in the form of remains of *Pomatias elegans* was present in each of the samples although only the lowermost gave large numbers and dry, open ground/grassland species (and others reflecting bare earth/exposed rock surfaces, e.g. *Vallonia* species and *Pupilla muscorum*) were also present throughout. Given that Context 7201 was a midden layer it is difficult to base any definitive interpretation on the land snail assemblages recovered but broken ground surface and open terrain both appear to be represented, with the implication that arable agriculture continued adjacent to this feature in the medieval period.

Undated (but overlying medieval deposits) – Phase 20

Undated deposits overlay the medieval (Phase 16) midden deposits in the ring ditches of both Barrow 2 and Barrow 3 (G7002 and G7008, respectively). There were two such deposits within the ring ditch for Barrow 2, Contexts 7751 and 7750 (lowest first), with two samples collected from the first (at depths of 30–40 and 24–30 cm) and three from the second (at 20–24, 10–20 and 0–10 cm). There were also two such deposits within the ring ditch for Barrow 3, Contexts 7200 and 7198 (again, lowest first), the first represented by a single sample (34–44 cm depth) and the second by four samples (at depths of 30–34, 20–30, 10–20 and 0–10 cm).

The five samples from the two deposits in the ring ditch of Barrow 2 (G7002) gave modest to small land snail assemblages which, in the main, diminished in size with decreasing depth (the exception being the assemblage recovered from the sample at 10–20 cm which was slightly larger than that from the underlying sample) and were of very similar ecological character. Each was dominated by open ground and grassland forms, and in particular *Vallonia excentrica*, with relatively few records for shade-loving taxa and *Pomatias elegans* always present (also in, in general, diminishing numbers ascending through the sample series). These assemblages suggest the continuation of the medieval (Phase 16) environment, i.e. continued use as pasture or for arable cultivation (though favouring the former), with the diminishing assemblage sizes implying increasingly rapid infilling of the feature (which accords with the excavator's observations in the field that the upper deposits had formed through a combination of colluvial influx and levelling of the barrow mound by agricultural activities such as ploughing – although also see concluding paragraph of this section, below). There were occasional records indicative of water from three of these final fills; two individuals of *Hydrobia ?ulvae* (Pennant) from Context 7751 (at 24–30 cm), which is a brackish/salt water snail typically found in "…estuaries, intertidal mudflats and saltmarshes" (Kerney 1999, 33), and a pair

of ?ostracod valves (freshwater) and a calcified stonewort (*Chara*) oogonium (also predominantly freshwater) from Context 7750 (at 10–20 cm and 0–10 cm, respectively). These records were too few to infer the presence of standing water within the feature or marine incursion and presumably reflect accidental inclusions from the disposal of waste water and material collected from estuarine/saltmarsh habitats.

The single sample from Context 7200 (fill of ring ditch of Barrow 3; G7008) gave an assemblage of land snail remains similar to that from the uppermost sample of the underlying medieval (Phase 16) midden deposit, Context 7201, but of larger size, with a slightly increased proportion of open ground taxa and some variation in the character of both the open ground and shade-loving components. Although, the open ground fraction of the assemblage continued to be dominated by *Vallonia costata* the relative proportions of those species likely to indicate bare earth and exposed rock (*Truncatellina cylindrica* and *Pupilla muscorum*) were both increased. At the same time, numbers of *Discus rotundatus* decreased and records for *Carychium tridentatum* (and *Carychium* sp.) rose slightly. At least 15 individuals of *Pomatias elegans* were also recovered from Context 7200 providing limited evidence for continued ground disturbance. This assemblage again reflects predominantly open ground and a somewhat disturbed ground surface (perhaps most likely to reflect continued ploughing), with a suggestion that although longer grass growth within the remnant of the ditch may continue more substantial surrounding vegetation had been cut back. Small fragments of marine mussel valve remained common and are perhaps most likely to reflect some mixing with the underlying midden deposit (Context 7201) caused by more recent ploughing; although it is not impossible that they derive from a continuation of casual waste disposal into the feature. The four samples from the final fill of this feature, Context 7198, each gave land snail assemblages of essentially the same ecological character. Each was, again, predominantly of open ground taxa, with the most abundant individual species being *Vallonia costata*, and also gave small numbers of shade taxa (mostly records of the somewhat catholic *Punctum pygmaeum* and also *Carychium tridentatum* and/or *Carychium* sp., which were present in all four samples but never represented by more than five individuals) and of *Pomatias elegans*. Overall, the land snail assemblages suggested continued arable farming in the surroundings. Fragments of marine mussel shell were also recorded from all four of the samples and, again, most likely derive from the underlying midden deposit as a consequence of modern ploughing.

As previously noted, the size of the snail assemblages recovered from these upper deposits may have been significantly reduced through destruction caused by the modern ploughing (and also disturbance by animal burrowing in some areas) recorded by the excavator. Moderate to quite large numbers of identifiable molluscs from at least some of the upper deposits in the ring ditches associated with Barrows 1, 2 and 3, coupled with unexpectedly small numbers of unidentified land snail fragments, seem somewhat at odds with the excavator's records for modern disturbance in these areas.

Overview

The land snail assemblages recovered from fills of the ring ditches of the late Neolithic/early Bronze Age barrows and the Iron Age major boundary ditch encountered during the Thanet Earth excavations have provided some insights into the past landscapes of the area.

The mollusc remains suggest that much of the area was already cleared of trees and other substantial vegetation by the late Neolithic/early Bronze Age, with consistent evidence for the presence of bare earth and/or exposed rock surfaces; although there were hints that greater vegetative cover remained in the vicinity of Barrow 1. The possible onset of arable farming around Barrow 2 was indicated at this time, with the last sample of this date also containing hints of the regeneration of more substantial vegetation; showing that pockets of woodland/scrub/hedgerow habitat remained within the largely cleared landscape providing havens for shade-loving snail taxa from which they were able to re-colonise areas if these were allowed to become overgrown.

The assemblages from the fills of the Iron Age boundary ditch (all of which were also dated as Iron Age) also suggest that the surrounding area may have started to be used as grazing land for sheep at this period.

The mollusc assemblages from later prehistoric fills of the barrow ring ditches suggest that, in the main, the area remained open with possible evidence for the beginnings of arable agriculture around Barrow 1 and perhaps grazing land around Barrow 4.

Occasional hints of the regeneration of more substantial vegetation were recorded from undated (but overlying prehistoric and underlying a medieval midden layer) deposits within the ring ditch of Barrow 3, implying that such habitats had persisted within the largely open landscape throughout the intervening period. Mollusc assemblages from these deposits and also undated (but overlying prehistoric) contexts within both ring ditches of Barrow 1 provided evidence suggesting the continuation of arable farming in the vicinity of these features.

The land snails from the medieval deposits in the ring ditches of Barrow 2 (immediately overlying the late Neolithic/early Bronze Age contexts) and Barrow 3 (located between two sequences of undated deposits) appeared to imply a continuation of arable farming. For the first, however, changes in the assemblage composition through the deposit suggested a corresponding change in principal land-use away from the growing of crops and in favour of the creation of grazing land. It should be noted that both of these medieval deposits were middens and that elements of the land snail assemblage from each were almost certainly introduced by human activity.

During the field work, the excavator noted that the upper fills of features had been heavily disturbed by modern ploughing over much of the site. The small numbers of identified mollusc remains, coupled with large numbers of unidentified shell fragments, from many of the samples from these deposits was consistent with this. In four deposits though the evidence suggested that the small numbers were a genuine reflection of the original assemblage sizes present and reflected rapid, and perhaps deliberate, infilling of the final remnants of the ditches; namely the two uppermost fills of the Iron Age major boundary ditch (Contexts 4490 and 4489) and the top fill from each sequence from the ring ditch of Barrow 6 (Contexts 12689 and 12735). Samples from the upper fills of the ring ditches associated with Barrows 1, 2 and 3 (all located in the south of the excavation area) provided at least some relatively large identified snail assemblages with the implication that these areas had been subject to less modern disturbance by ploughing (rather contrary to the excavator's records for considerable disturbance of all three by deep ploughing and also by animal burrowing around Barrows 2 and 3). Each continued to be primarily composed of open ground/grassland taxa with the assemblages from the ring ditches of Barrows 1 and 3 favouring an interpretation of the continuation of arable agriculture and those from the ring ditch of Barrow 2 following the trend towards stable-surfaced grazing land seen from the underlying medieval midden deposit.

Retention and disposal

All of the washovers and the remains sorted from the corresponding residues should be retained as part of the physical archive for the site. Unless required for study of their mineral composition or additional sorting for other classes of organic and/or artefactual remains, the sorted residue fractions may be discarded.

Archive

All material is currently stored by Palaeoecology Research Services (Unit 4, National Industrial Estate, Bontoft Avenue, Kingston upon Hull), pending return to the excavator, along with paper and electronic records pertaining to the work described here.

Chapter 25: Charred, Waterlogged and Mineralised Plant Remains

Wendy J. Carruthers

Introduction

Methods

During the excavations soil samples were taken from a wide variety of contexts for the recovery of environmental information. The samples were processed by CAT staff using standard methods of floatation for the majority of dry-land deposits (250 micron flot mesh; 1mm residue mesh), and using paraffin floatation and wet-sieving techniques for the waterlogged samples (minimum mesh size of 250 microns). A total of 1078 samples were processed and the final volume of soil processed amounted to 20,816 litres. The flots were briefly scanned by CAT Environmental Archaeologist Enid Allison in order to determine which were worth assessing for further potential. In January 2010 387 flots were selected and sent to the author for assessment. At a later date a few residues showing signs of mineralisation and wash-overs/residues from waterlogged deposits were sent to the author for assessment/analysis.

With such a large number of productive samples available it was decided that the analysis would focus on a few important topics;

- Neolithic features, since evidence of arable agriculture from this period is rare and excellent preservation was seen at Thanet Earth
- Hearth and oven fills from a range of phases, and burnt deposits associated with them, as prime deposits of food waste and/or industrial waste are likely to be preserved, and comparisons can more easily be made across the phases where assemblages derive from the same sorts of features
- Lower fills of SFBs dated to the Roman, Anglo-Saxon and medieval periods, in order to compare uses of buildings, evidence for building materials and the deposition of waste

In addition to these topics, well-preserved (particularly waterlogged and mineralised) and unusual assemblages were given priority, since they were likely to provide the maximum information about diet, arable agriculture and specific craft activities. Efforts were also made to ensure that there was reasonable coverage of the different phases so that changes through time could be investigated. A total of 163 samples, plus 3 pipeline samples, were analysed from the eight plateaux (excavated in 2007) and pipeline site (2010) for this report, as listed in Table 231.

Notes on Quantification and Identification

Chenopodiaceae – Most of the flots contained some uncharred seeds, indicating movement of modern material down the soil profile. Soil fauna were probably the main cause of this, since roots were not frequent and a particular range of taxa was involved. This is a common occurrence, particularly on calcareous soils and in most cases there is no difficulty in distinguishing ancient charred material from modern uncharred seeds. Even where mineralisation preserves seed coats so that they appear to be modern, the presence or absence of a fresh, moist embryo confirms the provenance of the seed. The absence of an embryo in potentially mineralised material is less straightforward, and decisions then need to then be based on texture and appearance, with amber-coloured, brittle seed coats indicating mineralisation.

The exception with regards to charring is the family Chenopodiaceae (which includes fat hen (*Chenopodium* sp.) and orache (*Atriplex* sp.)), since the black, shiny seed coats look identical when fresh or charred. Therefore, it is necessary to break open each seed to see whether or not the embryo is charred. For this reason, and because in some cases contaminants were abundant, Chenopodiaceae were not included in the analysis in order to maximise the recovery of useful information within the allotted time period. Since taxa from this group are of limited value in interpreting the assemblages, and other taxa can reflect the same type of disturbed, nutrient-rich habitats, the loss of information was considered to be a reasonable trade off for increasing the number of samples analysed in total.

Mineralisation – A high percentage of the flots contained small numbers of mineralised seeds, though identifications were mainly limited to a few, very commonly mineralised taxa. These consisted of *Brassica/Sinapis* sp., poppies (*Papaver* sp.), henbane (*Hyoscyamus niger*) and corn gromwell (*Lithospermum arvense*). These taxa have a high silica content in their seed coats so they readily become mineralised where soils are moist and nutrient-rich, for example in middens and cess pits (Green 1979; Carruthers 2000a). Wherever possible, residues were checked in samples where a wider range and larger number of mineralised seeds were found (marked as 'R' next to the sample number in the tables), but in no cases were concentrated faecal deposits found (indicated by faecal concretions containing bran, frequent edible taxa such as apple and *Prunus* sp. and large, fawn-coloured, clinker-like residues).

The following features contained mineralised remains;

- 24 Phase 8 pit fills on Plateau 8
- 9 Phase 12 samples from layer 11222 in SFB 2 on Plateau 3
- 2 Phase 14 samples from layer 6230 in Underground Storage Chamber Structure 55 on Plateau 6

The evidence suggests that many of the features, such as the re-used storage pits on Plateau 8 and SFB 2 on Plateau 3, had been backfilled with richly organic domestic

waste that may have come from communal middens. When combined with the lime-rich soils of the area, organic waste and charred material would have created ideal nutrient-rich conditions for mineralisation to take place, providing that the deposits were sufficiently water-retentive. Trampling in the base of features and compaction of pit sides due to re-use may have assisted the retention of moisture in these particular features. Although some human cess may have been present, it had probably become diluted with larger quantities of stable waste, hearth and floor sweepings etc., and then mixed and decomposed by a range of flora and fauna.

Subsampling – Charred plant remains were often poorly preserved at Thanet Earth (vacuolated, eroded and/or fragmented), but were sometimes abundant. In a few cases a riffle box was used to divide the flot into sub-samples, and these are marked with an asterisk in the sample volume data, showing the seed counts in the sub-sample and extrapolated sample volume (e.g. if 50 per cent of the flot from a 20 litre soil sample was sorted, 10* litres is given as the sample volume, and this figure is used in calculations of seed density).

Quantifying – Since poorly preserved indeterminate cereal fragments were often abundant in the flots, only those greater than half a seed were extracted and counted. For this reason cereal numbers should be considered to be a minimum figure only. The data is still useful because the same methods were used across the sites, so comparisons could be made with regards to grain frequency. For items such as large pulses (peas, beans) fragments were roughly added to make whole seeds unless 'fragment' is stated in the table (e.g. 'hazelnut shell fragment') of 'f' is placed next to the number in the column. Where quantification was difficult because items were highly fragmented (e.g. oat awns) and with mineralised chewed up/ground up pea and bean seed coats, cereal bran fragments etc., the following rough quantification system was used;

+=occasional (*c.* 1–5); ++=several (*c.* 6–20); +++=common (*c.* 21–100); ++++=abundant (>100)

Where concentrations of charred plant remains are discussed in this report they are expressed in fragments per litre of soil processed or 'fpl'.

Identification:

a) Tetraploid free-threshing ('naked') wheat (*Triticum turgidum* -group***)***
Some notable plant remains were recovered from the Thanet Earth samples, in particular the small-grained free threshing wheat grains radiocarbon dated to the early 4th millennium BC. The unique set of characters for these cereal remains, in particular the recovery of small fragments of rachis, meant that identification, although difficult, was possible. I am very grateful to Professor Stefanie Jacomet, Basel University, for her help with identification, and for providing me with comparative (much better-

preserved!) material dated to 3700 cal BC from Greifensee, Storen-Wildsberg, Canton of Zürich, Lake Greifensee, Switzerland. Prof Jacomet also gave me permission to use her photograph of the Greifensee rachis fragment next to a Thanet Earth rachis fragment from pit S10454, Plateau 1 (Plate 363b), for which I am very grateful. I am also grateful to Ruth Pelling (Historic England) who photographed the Thanet Earth free-threshing wheat grains and chaff fragments in Plates 362–363.

The following set of characters form the basis of the identification, though it should be noted that there is quite wide variation in the material, as might be expected for a cultivated crop that is at an early stage in its development:

1. Grains

Frequent well-preserved emmer-type and free-threshing wheat grains were recovered from the four Neolithic pits. All of the wheat grains that were identified as free-threshing or probably free-threshing expressed the following characters;

- Mostly short-grained compact-type but with some variation; lengths x breadths ranged from 3.2mm x 2.6mm to 4.8mm x 3.5mm. Length/breadth indices ranged from 1.14 to 1.5.
- Mostly blunt apical ends and fairly rounded profiles but deeper backed than hexaploid free-threshing wheats (with some variation, a few tending towards more pointed emmer grains)
- Rounded convex ventral surfaces (and sometimes wide furrows) to differentiate them from the flat-faced hulled wheats that are held more tightly together in pairs at each node by the chaff
- Embryo depressions wider, deeper and more rounded than the shallow, narrow, tilted emmer depressions
- Absence of longitudinal grooves along dorsal side which are found in hulled wheats, caused by tight enclosure by chaff

2. Rachis fragments

A few, very poorly preserved rachis fragments were recovered from samples <1851> and <1863> (pit S10454, Plateau 1), all broken below what would have been a spikelet fork in emmer wheat but with ragged breaks, (or in free-threshing tetraploid wheats below the bulges at the bases of the glumes).

- Rachis fragments with clear bulges at the base of the glumes, as is characteristic in tetraploid free-threshing wheats of the *turgidum*-group
- Stumps of glumes often surviving, always bending in an outward direction ('splayed'), indicating a free-threshing wheat which loosely holds its grains

- Rachis fragments broken close to the base of the bulges (probably due to poor preservation, breaking across the thinner part of the rachis)

This mixture of tetraploid and free-threshing (or naked) wheat characteristics indicates that a member of the *turgidum*-group (includes rivet (*T. turgidum*) and hard wheat (*T. durum*)) was being cultivated. Since this is an important 'first' record for the British Isles samples of grain and rachis were sent to Prof Stefanie Jacomet for confirmation and comparison with similar early Neolithic finds from Switzerland. This is discussed further below.

It should be noted that short- or compact-grained emmer wheat grains (a tetraploid hulled wheat) can closely resemble this cereal, since genetically they are closely related (Zohary *et al* 2000; Feldman and Kislev 2007). The presence of rachis fragments enabled the identification to be confirmed as grains alone are too variable in morphology (Jacomet 2006). Only the best-preserved grains were positively identified by Professor Jacomet. The most important differentiating characters for free-threshing grains are the absence of longitudinal grooves along the side of the grain, the appearance of rounded ventral surfaces and the presence of rounded embryo depressions. Where some of these characters were present but not clear cut 'cf.' identifications were used.

b)* cf. *Lepidium* sp. and cf. *Sisymbrium officinale

Small (1 to 2mm), elongated seeds of the Brassicaceae family were common in the Iron Age pits on Plateau 8, and abundant (>600 seeds) in one of the 6-post structure post holes. The identification of two slightly different types has not been confirmed, but two 'most likely' candidates have been used to categorise the remains on the basis of morphology. The investigation included some experimental work on the charring of seeds, to see whether differences that could not be reconciled were due to changes brought about by charring. However, this did not lead to a positive identification so the remains are left at;

i) cf. *Lepidium* sp. – pepperworts – This genus includes field pepperwort (*Lepidium campestre*) which is the most likely species, an archaeophyte of open grassland, banks, walls, waysides and arable, mainly located in southern Britain. Seeds put into this taxon were 1.5 to 2mm long, elongated and lop-sidedly U-shaped (rounded, with the radicular side slimmer than the other but not to the extent that *Camelina sativa* exhibits), with a fine reticulate cell pattern but slightly rough textured surface. Seeds of this taxon were present in ten of the 29 features in phases 7 and 8 on Plateau 8, but not on any other Plateau. The ABCD (Allan Hall, pers. com.) contains 2 published Iron Age finds in northern England, two Roman, and several later records. The seeds can be used as a pepper substitute and they contain around 20 per cent oil so could have been used as an oil-seed crop.

ii) cf. *Sisymbrium officinale* – hedge mustard – This species is a common archaeophyte of waste places, cultivated and rough ground, hedges and waysides. The seeds placed in this category were 1mm long, more evenly U-shaped with sharper edges, had a more angular appearance and shiny surface, and slightly longer cell pattern. Two samples contained a few seeds of this taxon. There is evidence that hedge mustard seeds may have been cultivated in the past, for example at an Iron Age settlement in Feudvar, Yugoslavia, where a conglomerated mass of seeds was described by Kroll (1991) as possible evidence for use as an oil-seed crop. In the British Isles over a hundred seeds were recovered from a Middle Bronze Age pit fill at Trethellan Farm, Cornwall (Straker, 1991).

Because seeds with a high oil content do not preserve well by charring, crops such as this are likely to be under-represented in the charred plant record. It is also difficult to prove that native taxa have been grown as crops, unless large numbers such as these are found in storage contexts. Even in this case, it is possible that small-seeded potential 'weeds' like these could have trickled through a grain crop, accumulating at the base of the posthole over time. However, because so few other small weed seeds were present in the richest sample (7 other weed seeds, sample 898a, context 8524) it is almost certain that the 656 *Lepidium*-type seeds represented a crop plant.

RESULTS

The results of the analyses are presented in the following tables;

Tables 217–224: charred and mineralised plant remains listed, sample by sample.
Table 225: lists waterlogged plant remains from four samples from plateaux 1 and 2.
Table 226: summarises the data for seventeen sunken featured buildings (SFBs) dating from the Late Iron Age/Roman period (Phase 11) to the medieval period (Phase 16).
Table 227: summarises the data from fifteen of the most productive Iron Age (Phase 8) pits on Plateau 8.
Table 228: summarises the data from eleven Phase 9 to Phase 16 heath pits, hearths, ovens and oven rake-out deposits from five different plateaux.
Table 229: Pipeline Site cess pits
Table 230: summarises the main cultivated and gathered plants through the phases, using an approximated frequency scale that has been averaged across the samples.
Table 231: lists all of the processed samples from Thanet Earth.

Nomenclature follows Zohary and Hopf (2000) for cereals and Stace (2010) for the remaining plants. Habitat and ecological information are mainly taken from Stace (*ibid.*), Hill *et al* (1999) and Ellenberg (1988). The general term 'seed' has been used in the text to cover what are botanically speaking in some cases fruits and others seeds, but the species table provides the appropriate botanical identification.

I. Feature descriptions by phase

PHASE 1: Neolithic Pits

Samples 1861 (context 10449), 1862 (context 10450), 1863 (context 10452) and 1851 (context 10452), Neolithic Pit [S10454], Plateau 1– Four samples from three contexts were examined from this important feature. The pit contained dumps of midden-type material, with abundant pottery, burnt flint, shellfish and ashy material. No burial was found in the base, but traces of calcined bone and possible placed pot and quernstone hinted at ritual deposition (Thanet Earth database). It appears that the pit contained a dismantled hearth, which could be the source of the charred cereal remains.

Considering the possible early date of this feature, unusually large concentrations of cereal remains were recovered from three layers, with a maximum density of 44.9 fpl (fragments per litre) in the lowest sample, context 10452. The most notable aspect was the presence of frequent small, rounded free-threshing wheat grains with the blunt-ended deep keeled shape typical of free-threshing wheat (see Plate 362). A free-threshing wheat grain from sample <1851> was radiocarbon dated to 3944–3668 cal BC (at 95 per cent probability; Table 6, UBA-22207).

A few grains of long, slender emmer-type wheat were also present and several spikelet forks that had some characteristics typical of emmer, but whose glumes splayed out at the top in an unusual way and were slightly more robust than typical emmer spikelet forks. Bulges at the bases of the glumes indicated that they were from a tetraploid wheat and the splayed glumes suggested a free-threshing species. Three spikelet forks of this type were recovered from sample 1851 and one from 1863 (Plate 363) but no typical straight-glumed emmer chaff was found.

Twelve grains of naked barley (*H. vulgare* var. *nudum*) and six grains of possible naked barley (of a rounded profile but lacking in characteristic surface wrinkling) were recovered, as well as 26 poorly preserved indeterminate barley grains. Naked barley is most frequently found in early prehistoric assemblages up to the Middle Bronze Age in date, such as Trethellan Farm, Cornwall (Straker 1991) and Bestwall Quarry, Dorset (Carruthers 2009). Their association with coastal sites in the British Isles is notable, suggesting that climatic factors were important in ensuring the success of this useful free-threshing barley. Perhaps this also helped free-threshing wheat to thrive on the south-east coast, as small, rounded possible tetraploid-type wheat grains dated to around 3700 cal BC (UBA-13517 and UBA–13518) were recovered from pits at Ramsgate (Carruthers forthcoming), as well as from three pits on Plateau 8 at Thanet Earth ([3941], [12304], [12309]). Tetraploid free-threshing wheat grains from two of the Plateau 8 pits produced very similar Early Neolithic dates (see below).

In addition to a few small fragments of hazelnut shell (*Corylus avellana*), several weed seeds were present, some of which suggested that contamination may have taken place. Nine stinking chamomile seeds (*Anthemis cotula*) and a possible capsule valve from corn cockle (*Agrostemma githago*) were present. Both of these taxa are not usually found prior to the Late Bronze Age and are not common until the IA. For this reason the *Anthemis cotula* seeds were submitted for radiocarbon dating. An early medieval date of cal AD 1010–1170 (948±38 BP; UBA-25299; Pelling *et al* 2015, 90) was returned. Almost identical results were obtained from a Neolithic pit at King Stanley, Gloucestershire (Pelling *et al* 2015) demonstrating that very small seeds such as these can travel some distance down the soil profile and accumulate in earlier archaeological deposits. This finding does not cause concerns about the well-preserved and morphologically distinctive tetraploid wheat assemblage, particularly as this cereal was also possibly present in a Neolithic pit on Plateau 8. It does, however, draw attention to the importance of radiocarbon dating unusual finds in early deposits.

Other weed taxa, such as bittersweet seeds (*Solanum dulcamara*), dock (Rumex sp.), vetch/tare (*Vicia/Lathyrus* sp.) and cleavers (*Galium aparine*), are more typical of Neolithic assemblages. Seeds from these taxa were present in low numbers and were also found in early Neolithic pits from Plateau 8, as described below.

Samples 1300 and 1374 (context 3840), pit [S3941], G8004, Plateau 8 – Two extremely well-preserved charred plant assemblages were examined from an ashy lower layer within pit [S3941]. The pit also contained cremated human remains, pot, daub and worked flint. The main component of the two samples was well-preserved emmer-type grains. In sample 1300 emmer glumes bases (counting two glumes for each of the spikelet forks) were almost exactly as frequent as grains, suggesting that complete spikelets may have been burnt *in situ* in the pit. In the second sample cereal grains were over ten times as frequent, so some clean grain may have been burnt. An emmer grain (*Triticum dicoccum*) was radiocarbon dated to 3912–3652 cal BC ((at 95 per cent probability; Table 6, UBA-22211). A smaller amount of possible tetraploid-type free-threshing wheat was also present, as well as a trace of barley. Although only a trace of hazelnut shell was present, several crab apples must have been burnt in the pit, perhaps having been cut in half first, as two near-complete halves with cut surfaces were recovered. Apple pips, fragments of apple flesh and fragments of apple core were present in both samples. The range of weed seeds was similar to that found in pits [S10454] and [S12309], with black bindweed, cleavers and bittersweet being the most frequent items. Black bindweed was particularly abundant in sample 1374 (213 seeds), which suggests either that it was a particularly troublesome weed which was difficult to process out of the crop because of its large, heavy seed, or possibly that it was a tolerated contaminant. The relatively large seeds can be ground up with cereals and are quite palatable in basic breads and stews according to Mears and Hillman (2007). Since bindweed, cleavers and bittersweet are all twining/scrambling weeds they are more likely to have been harvested with the crop if uprooting was the method used. Of the occasional other weeds only nipplewort

(*Lapsana communis*) is not typical of early prehistoric assemblages, but as it is a native species its presence is not a concern. In view of the presence of human bone and the possibility that the remains had been burnt *in situ,* these food items may have been burnt for ritual purposes, so perhaps contamination by clearly visible, black seeds of bindweed was either not considered important, or deposition was deliberate. Although mention of this common weed is scarce in herbals, Culpepper (1826; facsimile edition 1979, 30) describes black bindweed as being a plant of hot nature, with the power to dissolve. He notes that juices of the leaves can be taken internally to open the belly, or externally they dissolve hard swellings.

Samples 1402 (context 12306) and 1403 (context 12307), pit [S12304], G8002, and samples 1419 and 1421 (context 12303), pit [S12309], G8003, Plateau 8 – These isolated features produced low concentrations of cereal, nut and fruit remains indicative of food waste, either from transient feasting, ritual activities or domestic occupation. Most of the cereal grains were small and rounded, as found in the large feature on Plateau 1 and in pit [S3941], and appear to be tetraploid free-threshing wheat (cf. *Triticum turgidum/durum*-group). A trace of emmer chaff (*Triticum dicoccum*) was present in one sample (a spikelet fork) and a single indeterminate barley grain (*Hordeum* sp.) was found, providing evidence of other cereals grown. A flax seed (*Linum usitatissimum*) was present in one of the pits, perhaps having been cultivated for fibre and/or oil extracted from the seeds. Native fruits and nuts included hazelnuts (3 samples, shell fragments frequent in one sample), rose (*Rosa* sp.; 1 sample) and crab apple (*Malus sylvestris*). These may have been gathered from woodland margins, clearings or scrubby areas. Apple seeds, flesh fragments and core fragments were present in both pits but were much more frequent in pit [12304]. A few common weeds of cultivated/disturbed ground were present, including black bindweed (*Fallopia convolvulus*), cleavers (*Galium aparine*), and bittersweet (*Solanum dulcamara*), all of which are climbers/scramblers. The frequency of these taxa in Neolithic assemblages (which generally produce a very limited range of weed taxa) may reflect crop husbandry methods such as harvesting by uprooting, or may suggest that crops were being grown in woodland/scrub clearings. The presence of a possible lesser celandine tuber (cf. *Ficaria verna*) suggests that vegetative materials such as tubers may also have been gathered for food (Mason and Hather 2000). Short emmer wheat grains or tetraploid wheat grains from two of the pit fills were radiocarbon dated; <1421> context 12303, dated to 3796–3653 cal BC (at 95 per cent probability; Table 6, UBA-22209) and <1403> context 12307, dated to 3926–3659 cal BC (at 95 per cent probability; Table 6, UBA-22210). These dates place the tetraploid wheat from the Plateau 1 pit and two Plateau 8 pits all in the Early Neolithic.

Discussion of Phase 1, Neolithic pits on Plateaux 1 and 8 and comparisons with other sites

The recovery of tetraploid free-threshing wheat (*Triticum turgidum/durum* group) from pit S10454 on Plateau 1 (identification confirmed by Professor Jacomet, University of

Basle, Switzerland) is an important finding that connects this area of south-east England to Early Neolithic cultures on the Continent. This feature produced the earliest radiocarbon date (3944–3668 cal BC at 95 per cent probability; Table 6, UBA-22207) from the site and produced the only confirmed tetraploid free-threshing wheat remains. The identification of free-threshing wheats is dependent on the presence of rachis fragments (Jacomet 2006) so well-preserved assemblages are essential. Although only small fragments of rachis were present in the pit sufficient characters were observed to confirm the identification.

Tetraploid free-threshing wheat (*Triticum turgidum/durum*-group) has been recovered from sites on the North European Plain associated with the Funnel Beaker Culture (FBC) (Kirleis and Fischer 2014). According to recent research of FBC sites by Kirleis and Fischer, a relatively limited range of crops was grown on FBC sites, comprising emmer, naked barley and tetraploid free threshing wheat. Two sites in Denmark and Northern Germany included in this study produced both impressions on pot and charred plant assemblages containing frequent tetraploid rachis fragments. Other records of this crop in Central and Northern Europe were assembled and comparisons were made with crops recovered from early Early Neolithic and later Early Neolithic cultural groups from Northern, Western and Central Europe. Similarities were noted with the Michelsberg group in south-western Europe and Early Neolithic groups in northern Alpine areas through their cultivation of tetraploid free threshing wheat and limited crop range. Linking these cultural groups and their crop plants in different areas of Europe can provide information about the route by which crops were introduced into different parts of Europe. In contrast, Early Neolithic sites of the Linearbandkeramik culture (LBK) in Central Europe have produced a wider range of crops including einkorn, emmer, pea, lentil and flax. Free-threshing wheat only appears in the late LBK and the type is hexaploid free threshing wheat (*T. aestivum* group), rather than tetraploid (Kreuz *et al* 2014).

Although the evidence from Thanet Earth was recovered from just a single pit, the assemblages from four pit fills from pit S10454 on Plateau 1 fit in well with the FBC and Michelsberg crop range, comprising emmer, naked barley and tetraploid free-threshing wheat, a little hazelnut shell and a very limited suite of crop weeds. To help explain variations in crop plants being grown Kirleis and Fischer (*ibid*.) point out differences in the ecologies of tetraploid and hexaploid free-threshing wheats, with the tetraploid wheat *T. durum* preferring rich, loamy soils and warm climates with most of the rain occurring in spring. *T. turgidum* is also less tolerant of cold, wet climates than the hexaploid free threshing wheat and requires a longer growing season (Percival 1921). Both tetraploid wheats are more drought tolerant than hexaploid wheats. The authors suggest that climatic deterioration may have been one factor leading to the changes in the cereal crops being grown, alongside cultural choices and technical advances such as the invention of the ard which facilitated movement onto heavier soils. The earliest farmers were likely to have been employing slash-and-burn methods to open up small

areas of woodland for arable cultivation, moving on to new areas when nutrient levels became depleted. This may be one explanation why arable weed species were limited at this time, being unable to become well-established and diverse in Early Neolithic sites. The common presence of woody nightshade or bittersweet (*Solanum dulcamara*) in early Neolithic cereal assemblages such as Thanet Earth may be an indicator of forest clearances as it is a twining plant of woodlands and scrub that grows on nutrient-enriched soils, as would be provided by burning ancient forests.

The assemblages from three pits on Plateau 8 differed to that on Plateau 1, containing no rachis fragments or rounded grains comparable with tetraploid free threshing wheat. Each pit assemblage was slightly different to the others and only pit S3941 was dominated by cereal remains, in this case primarily emmer grains with just a trace of indeterminate barley. The other two pits were dominated by gathered food remains, mainly hazelnut shell in pit S12309 with some crab apple, though a single flax seed demonstrated that other crops were grown. In pit S12304, frequent crab apple fragments, some hazelnut shell, a rose seed and several possible lesser celandine tubers were present. Some of the large fragments of charred crab apple had clearly been cut before they were charred, suggesting that fruits may have been dried prior to storage. Mears and Hillman (2007) point out that rose hips contain the highest concentration of vitamin C of all the fruits in the British flora and, as long as the hairs are washed from the flesh, they are good to eat. Drying improves the palatability of many wild fruits and nuts (Wiltshire 1995), removing the astringency from fruits such as crab apple and sloe. Lesser celandine tubers have been consumed in the past but must first be dried or cooked to reduce the toxins, as ethnographic evidence from North America and Canada demonstrates (Mason and Hather 2000, 422). Charred plant remains from a large Mesolithic feature used to process hazelnuts on Colonsay, Southern Hebrides, revealed that amongst the vast quantity of hazelnut shell, other potential foods being dried were crab apples and lesser celandine tubers which were present in small numbers in almost every sample analysed (Mithen *et al* 2000, 437). In the Early Neolithic, when agriculture was still at an early stage in its development, a wider range of native plant resources are likely to have been considered to be valuable foods.

The radiocarbon dates from pits on Plateau 8 were slightly later than pit S10454 on Plateau 1, particularly pit S12304, so it is possible that these features derive from a later phase of activity. Black bindweed, a common weed of cultivation, was particularly frequent in these three samples, especially the grain-rich pit 3S941. Ribwort plantain, an important indicator of cultivated land, was also present in this pit, perhaps suggesting that arable weed populations were beginning to build up within crops by this time. Unfortunately the amount of evidence recovered from both Plateaux was insufficient to determine whether the increased numbers of non-cereal remains on Plateau 8 and absence of evidence for tetraploid free threshing wheat and naked barley might relate to reduced reliance on cereals at this time. Alternative culture-based explanations could be given if the features contained deliberately placed deposits.

The position of Thanet Earth at the mouth of the Thames Estuary is likely to be highly significant with regards to this site being the first in the British Isles to produce evidence for tetraploid free threshing wheat. Not only is the location easily accessible to mainland Europe, the River Thames also offers a route into the heart of the British Isles so was likely to have been a busy setting for the movement of people and trade to take place. Studies of early records of cereals suggest that the Thames provided an important route for new crops to make their way from continental Europe, moving westwards into other parts of the Britain (Carruthers *et al* 2013). For example, the earliest radiocarbon date for spelt wheat (with spelt glume bases being directly dated) was obtained from an Early Bronze Age field ditch at Minster in Thanet, Kent, a site also located on the Isle of Thanet (Martin *et al* 2012).

Small, rounded grains that were either short emmer wheat or tetraploid free threshing wheat were recovered from Ellington Road, Ramsgate, Kent (Carruthers forthcoming) though the grains were poorly preserved and no rachis fragments were present to identify the remains further. Ramsgate is located on the southern side of the Isle of Thanet. The main feature producing these grains was a Neolithic pit containing a large worked flint assemblage and a basal charred deposit dated to *c.* 3700 cal BP using two of the short wheat grains (UBA-13517 and UBA-13518). The principal component of the charred assemblage, however, was abundant hazelnut shell fragments. At least eight flax seeds were also present and some emmer wheat, as well as a similar small range of weed seeds to the Thanet Earth Neolithic assemblages. The Ramsgate assemblages are, therefore, more similar to the slightly later Plateau 8 features than the early Plateau 1 cereal-rich pit.

Although no other examples of tetraploid free-threshing wheat have been recovered from sites in Kent a particularly rich, well-preserved deposit of emmer wheat that appears to represent clean charred spikelets was recovered from a pit at Westwood Cross, Thanet (Stevens 2011). The deposit was radiocarbon dated to the Early Neolithic (3 dates ranging from 3940 to 3650 cal BC). Because the shallow pit had probably been truncated it was uncertain whether the deposit represented stored grain, waste from a processing accident or ritual burning. It does suggest, however, that cereal cultivation was taking place in this area on a reasonable scale and from an early stage in the Neolithic.

Excavations at East Kent Access Road (EKA) were carried out by Oxford Wessex Archaeology in 2009 and 2010. From a total of 1794 samples processed, full analysis of 68 samples dating from the Early Neolithic through to the medieval periods has provided useful comparative data (Hunter undated). Most of the analysed samples came from alluvial deposits on the Ebbsfleet Peninsula, located further upstream along the River Thames, so some of the differences between the sites may be due to differences in the soils being cultivated. Five Early Neolithic pits produced much fewer cereal remains

than the Thanet Earth pits and did not contain tetraploid free threshing wheats. However, flax seeds were recovered, dated to 3640–3380 cal BC (SUERC-40742) and a flax stem fragment was identified.

PHASE 2: Late Neolithic/Early Bronze Age and other probable Early Prehistoric features

Although not all of the following samples produced dating material, they contained very similar assemblages that suggested possible early prehistoric dates. All of the taxa can occur in later periods, but in general terms samples that are rich in hazelnut shell fragments but poor in cereal remains tend to originate from Neolithic to Early Bronze Age deposits. Fruits such as hawthorn and apple are also often found in early samples, at a time when cereals were probably only grown on a small scale and gathered wild foods would have been more important in the diet (Moffett *et al* 1989). The drying of fruits such as apples over fires probably took place in order to build up a stock of foods that could have been stored and consumed over winter. Where foods were being dried over hearths there would have been greater opportunities for charring to take place.

Sample 888, context 3069, single fill of pit [3068], Plateau 3 – This small pit contained antler, burnt flint and cremated bone, plus abundant large and small fragments of hazelnut shell. No cereal remains or weed seeds were observed. Almost the whole flot from sample <888> consisted of hazelnut shell fragments. A hand-collected sample of mostly half-nut shells was also examined. From a 21 litre soil sample, plus the hand-collected nutshells, a total of around 400 nuts (376 to 566 nuts) was calculated to have originally been present, using experimental figures obtained by charring modern *Corylus avellana* (*c.* 0.42g per charred nut; Carruthers 2000b). Weighing the charred half-nuts this figure came to around 330 nuts (0.5g per nut), but the silt encrustation will have reduced the accuracy of this second method of calculation. When the volume of whole nuts was estimated, this amounts to around 2.5 litres of whole nuts; enough to fill a large saucepan.

Around eleven charred hazelnut kernels were recovered (four whole, plus fragments), which is notable since the oily nuts tend to burn to a soft, easily crushed macrofossil, or disappear completely (see experimental charring in Carruthers 2000b). In addition, large fragments of nutshell, including complete halves, were frequent and many of the breaks were modern. Rather than the more commonly found numerous small fragments of nutshell typical of domestic waste, the feature appears to have contained at least some charred whole nuts. One possible interpretation is that the sample contained accidentally charred nuts that were being roasted prior to storage or opening. Roasting prolongs storage life, improves the flavour and digestibility and makes opening and grinding into flour easier. The recovery of vast quantities of nutshells (plus some apples and tubers) from a large Mesolithic feature on Colonsay, Southern Hebrides, suggests that the drying of nuts was sometimes carried out on a large scale in the past, when

stored wild foods would have been essential in order to survive the winter. A second possible interpretation for this feature is that whole nuts had been burnt for ritual purposes, perhaps showing similarities to cremation [G6017] on Plateau 6 (see below). Hazelnut shell fragments were radiocarbon dated to the Late Neolithic 2851–2484 cal BC (at 95 per cent probability; Table 6, UBA-22208), demonstrating that the feature was not contemporary with the cereal-rich assemblages deposited in the Early Neolithic period. Whether this marks a general change in the subsistence base over the c. 1000 years between these phases cannot confidently be established from these few assemblages, but the subject is discussed further below.

Phase 2, Sample 2303 context 7141 Grave [S7143], Barrow 2, Plateau 7 – The fill of grave [S7143] in Barrow 2 produced only two small fragments of hazelnut shell and four small tail grains of barley (*Hordeum* sp.). The flot was primarily composed of small fragments of bone. The plant remains may have been deposited at the time of burial as part of ritual activity, or they may represent low levels of redeposited waste from feasting in the area.

Phase 9 (general prehistoric) -?EBA Sample 1367 context 11016 Pit [S11017] G3073, Plateau 3 – Cereal remains were a little more frequent in this sample although most of the grains were too eroded to be identified to a cereal type. One well-preserved slender emmer-type grain was present, though this is recorded as emmer/spelt (*Triticum dicoccum/spelta*) in the table because of the difficulties in accurately identifying cereal grains (Jacomet 2006). Three fragments of probable apple (cf. *Malus sylvestris*, pip and core fragments) were also recovered.

Discussion of Phase 2, Late Neolithic/Early Bronze Age and other probable early prehistoric features in the wider context

According to results from these few samples, by the Late Neolithic to Early Bronze Age cereal cultivation appears to have been greatly reduced in the area (presuming that the quantity of charred remains recovered reflects usage), though hazelnuts were still being collected, sometimes in large quantities. Abundant hazelnut shell was present in a Late Neolithic pit [S3068] on Plateau 3, perhaps indicating the drying of nuts prior to storage. Several other scattered features that may have been dated to the Neolithic/EBA period (Phase 9 and some Phase 20) produced smaller amounts of hazelnut shell, possible apple, emmer and barley on Plateaux 2, 3, 5, 6 and 7. It appears that at this time that the balance between the collection of wild foods and the cultivation of cereals had tipped in favour of the former, perhaps following the pattern discussed by Stevens and Fuller (2012) in their review of the early prehistoric evidence. They suggested that in the Late Neolithic the population became primarily pastoral, with several possible explanations being given as to why this change occurred. At Thanet Earth only a few features in this phase were investigated, and some of the samples were of uncertain date, so the interpretation is tentative. Nevertheless, there does appear to be a difference between

the Early and Late Neolithic plant-based economy at Thanet Earth which fits in with the model presented by Stevens and Fuller (*ibid*.). More recently, however, other authors have questioned the validity of applying the model to the British Isles as a whole and suggest that, due to the scarcity of radiocarbon dates in some areas, studies should be carried out on a more regional scale (Bishop 2015).

PHASE 4: Bronze Age

Sample 205, context 6016, cremation [S6017], G6018, Plateau 6 – An isolated Bronze Age feature contained pottery dating to 1100–300 BC. Although the cut contained a vessel and was thought to have been ritual in character, no cremated bone was found. The presence of 83 fragments of hazelnut shell supports the suggested early date and ritual nature of the deposit.

PHASE 5: Bronze Age

Sample 503, context 5019, ditch [S5020], G5006, Trackway 1, Plateau 5 – This trackway consisted of two parallel ditches. A small quantity of cereal grains, chaff and arable weed seeds was present, perhaps representing burnt domestic waste being trampled along the route, or washed into the ditch from adjacent fields. The presence of emmer wheat (*Triticum dicoccum*; one glume base and spikelet fork) and barley (*Hordeum* sp.), but not spelt remains, despite being more robust, suggests the date might be earlier in the Bronze Age. However, it may be that these remains came from burnt animal waste, as spelt is more likely to have been found closer to habitation than in a trackway ditch. There is some suggestion from the Iron Age pit fills on Plateau 8 (see below) that emmer and barley may have been mainly used for fodder, and stored separately from spelt. Weeds included poppy (*Papaver* sp.) and brome grass (*Bromus* sp.), both common weeds of arable, although brome grass becomes more frequent in the IA and Roman periods. One of the poppy seeds was tentatively identified as the introduced medicinal species, opium poppy (*Papaver* cf. *somniferum*) although the state of preservation was too poor to confirm this identification. At Thanet Earth opium poppy has mainly been recovered from Iron Age samples on Plateau 8. It has been found on a number of Neolithic and later sites (e.g. West Cotton, Raunds, Long Barrow ditch; Campbell 2007), and may have been grown as a minor crop from an early date.

Sample 2003, context, 15029, pit [S15030], G5014, Plateau 5 – The charred remains from this sample could indicate an early date, since only 95 hazelnut shell fragments and a small grass seed (Poaceae) were present. The small isolated feature contained Bronze Age pottery and worked flint, so rubbish or ritually deposited food might be represented.

Bronze Age Barrows 2 and 3, and Cremation [S7090], Plateau 7 – Eight samples were examined from barrow ditch fills (Barrow 2: ditches S7638, S7749; Barrow 3 ditches S7240, S7373), a grave fill (sample 2303, context 7141, grave S7143) and a satellite

cremation burial associated with Barrow 2 (sample 1731, context 7094, cremation S7090). Fairly small concentrations of charred plant remains were recovered in most cases (0.2 fpl to 4.6 fpl) and the diversity was low, but in comparison with other barrows examined by the author the ditch fills contained surprisingly frequent cereal grains. The ratio of grain to chaff to weed seeds was roughly 50:1:1 suggesting that processed grain may have been brought to the site, or that cooking waste, rather than processing waste, was represented (providing that poor preservation had not caused too great a loss of chaff fragments). This may indicate feasting activity in the area. Alternatively the material could have originated from run-off from manuring (including grain from cooking waste) close to the barrows, perhaps at a slightly later date to the construction of the barrows. The very poor state of preservation of most of the material and scarcity of chaff fragments and weed seeds could be said to support the latter suggestion. However, the range of taxa was characteristic of the Bronze Age, with emmer wheat being the dominant cereal (or at least emmer/spelt wheat with emmer confirmed from a few chaff fragments and well-preserved grains) and barley (*Hordeum* sp.) being common, though unfortunately this was too poorly preserved to determine whether it was hulled or naked. One possible rounded free-threshing wheat grain (cf. *Triticum aestivum*-type) and an oat grain (*Avena* sp.) were recovered, possibly representing contaminants. Small quantities of hazelnut shell were present in three of the ditch samples and two flax seeds were found in one sample. The few weed taxa included common ruderals such as black bindweed and cleavers. These large seeded weeds are often found as contaminants of processed grain, because they are of a similar size and density to cereal grains. It is possible, therefore, that the assemblage was more or less contemporary with the barrows, and that processed cereals were being brought to the site either for ritual purposes or for feasting.

Soil from the fill of grave [S7143] produced only four poor barley (*Hordeum* sp.) grains and two small hazelnut shell fragments. These remains were too sparse to suggest ritual deposition; they may represent background waste. The cremation was notable in containing six tubers of onion couch grass (*Arrhenatherum elatius* var. *bulbosum*) and a small hazelnut shell fragment. Onion couch tubers are so frequently recovered from cremations that explanations such as 'accidental inclusion because of being present in the turf on which the cremation was carried out' are probably no longer credible, unless this species was extremely common in the past in all types of grassland across the British Isles. Other suggestions include the use for tinder (Robinson 1988) and the ritual deposition of edible items. However, some sort of symbolic significance may be more likely since the tubers are not dry enough to make to useful tinder in all seasons, such as in the spring, and they are fairly inedible according to experimental work by Mears and Hillman (2007). Onion couch can become a troublesome weed of arable as the tubers easily detach and can become propagules. In grassland grazing causes it to decline, but it can reappear once grazing is reduced. Perhaps, therefore, the high frequency of onion couch in cremations relates to previously cultivated or grazed areas being set aside for ritual purposes such as cremations, allowing it to become well-established.

Discussion of Phase 4 and 5, Bronze Age samples and comparisons with other sites

The Bronze Age features included two barrows on Plateau 7, a trackway ditch and pit [G5014] on Plateau 5 and an isolated possible cremation on Plateau 6. The isolated cremation and pit contained only hazelnut shell fragments which were frequent in both deposits and probably represented ritual activities. In contrast, the grave and cremation associated with the barrows on Plateau 7 only produced a few fragments of hazelnut shell and four barley grains (grave S7143). The cremation also contained onion couch tubers, as is typical of these features. This tall grass often grows in poor, un-manured meadows or abandoned cultivated ground. It is also found in areas disturbed by human activity (Stearn 1975; Ellenberg 1988). Tubers of onion couch (technically a swollen stem-base, but tuber-like) and thickened rhizomes can become charred when turves are exposed to fire, for example below funeral pyres or bonfires. Onion couch tubers are particularly common in Bronze Age cremation deposits, most likely having become charred in the turf beneath the pyre. The use of turves for fuel is alternative explanation as to why these items become charred, and a ritual significance cannot be ruled out, but it is unlikely that these structures were consumed (Robinson 1988).

In contrast, the barrow ditches both produced frequent cereal remains, with emmer and barley being the main crops present and a single flax seed. It is possible that this represents the waste from periodic feasting activities taking place around the barrows. No spelt wheat was recovered from the Bronze Age samples and the limited charred plant evidence obtained from this period demonstrated that little charred domestic waste was being deposited in the area. Since the samples were taken from primarily ceremonial or ritual deposits rather than settlement features the results are unlikely to be very representative of the Bronze Age economy. In some areas of the Isle of Thanet cereals were clearly being cultivated on a considerable scale. As noted above, a deposit of barley grains and emmer and spelt grains and chaff was recovered from a field boundary ditch at Minster in Thanet. Spelt glumes bases were radiocarbon dated to the Early Bronze Age (*c.* 1910–1750 cal BC with a recut dated to *c.* 1860–1690 cal BC; Martin *et al* 2012). The deposit appeared to have contained cereal processing waste, as well as fragments of Celtic bean and a large number of hazelnut shell fragments. Evidence for settlement continued into the Late Bronze Age.

Further to the west at Shelford Farm Estate, Broadoak, Canterbury, excavations of a Late Bronze Age/Early Iron Age settlement revealed (amongst other features) a grain dryer and four-post storage structure (Carruthers and Allison forthcoming). The presence of such features at this early date demonstrated the importance of arable cultivation on the local London Clays. Widespread sampling and the recovery of several cereal-rich assemblages provided good evidence for the relative importance of different crops being cultivated. Emmer wheat was the principal crop with some spelt and moderate amounts of barley. Cultivated oats were also confirmed although charred grains were present in

low numbers. Peas and Celtic beans were present, perhaps to help maintain levels of soil fertility. Although located on different soils, this site may be more typical of the arable economy of Kent in the Late Bronze Age.

Further west along the River Thames the East Kent Access Road excavations produced a well-preserved deposit of 183 naked barley grains from a Late Bronze Age pit radiocarbon dated to between 1010 – 790 cal BC (2 dates). At Thanet Earth only the Early Neolithic samples contained this cereal.

PHASE 7: Middle Iron Age

Sample 963, context 8800, pit [SS8801], G8135, Plateau 8 – This pit differed in form to the storage pits of phase 8, appearing to have been dug as a rubbish pit. Amongst the waste materials deposited in the pit was a fired-clay spindle whorl, which may relate to the finding of eleven charred flax seeds amongst the cereal remains and weed seeds. If deposited together the assemblage could have ritual significance as seeds are separated from flax fibres at an early stage in the processing. Hulled barley was the principal cereal in the sample, with emmer wheat being the other confirmed crop plant (8 glume bases). The single oat grain (*Avena* sp.) may have been present as a weed contaminant. The other main weeds were black bindweed and brome grass (*Bromus* sp.). These were also the most frequent weed taxa in many of the phase 8 pit assemblages. As with the bulk of the pit assemblages, cereal grains, chaff fragments and weed seeds were all present with no component being particularly dominant, suggesting that mixed de-husking waste and domestic waste was probably present. The unidentified large pulse seed and fragments were probably peas or beans, but identifying features were missing. Peas (*Pisum sativum*) and Celtic beans (*Vicia faba* var. *minor*) were confirmed as being present in several of the phase 8 pits.

Sample 1252, context 3591, pit [S3668], G8144, Plateau 8 **–** The shape of this pit indicated that it had originally been dug as a storage pit. Chaff was a little more dominant in this sample, which came from an upper fill. Spelt wheat was the main cereal identified from glume bases, though emmer was almost as frequent. Barley and possibly oats were less frequent. Black bindweed, knotgrass (*Polygonum aviculare*) and brome grass were the dominant weed seeds, all of which commonly grow in cultivated and disturbed soils.

PHASE 8: Iron Age

A large number of pits date to this phase, particularly on Plateau 8 where storage pits were abundant. Most of the storage pits examined for this report had served a secondary use as rubbish pits and a few of the pits were not classified as storage pits, but were possibly originally dug for this purpose. Table 227 summarises the results from the fifteen most productive pits. They are discussed jointly below, as individual descriptions would have been very repetitive.

The Plateau 8 Pits

Thirty-four pits have been examined from this area in the hope that a deeper understanding of the arable economy might be obtained. In some cases where the stratigraphy of the pits was complex several samples were examined in order to determine the extent to which the composition of waste varied throughout the period of backfill (e.g. pit [S8722] and pit [S8642]). These two pits are discussed below. It was also hoped that remnants of stored crops might have been preserved in the basal layers, having been charred during sterilisation of the pits (Reynolds 1974). However, the only clear evidence of a stored crop was found in the post holes of a six-post structure, Structure 15 (see below).

It was clear from the overall composition of the assemblages that the pit assemblages primarily represented redeposited mixed charred (sometimes with a little mineralised) waste. A summary of the fifteen most productive pits presented in Table 227 illustrates the amount of variation between pit fills. Spatial patterning was investigated to see whether the character of waste varied across the site, perhaps flagging up activity areas or differences between households. No obvious patterns were found, suggesting that deposition may have been fairly random.

a) General character of the pit fills – Pits classified as storage pits had been backfilled with burnt waste containing frequent cereal grains, chaff fragments and weed seeds in roughly equal proportions. Grain usually dominated at a ratio of c. 5 cereal grains: 3 chaff fragments: 3 weed seeds on average, though there was some variation with chaff occasionally dominating (but never by much), and in one case abundant robust corn gromwell seeds (*Lithospermum arvense*) giving weeds the highest proportion (pit [8260]). In no cases were the fills entirely composed of cereal processing waste; chaff fragments and weed seeds only reached a maximum of 65 per cent. If this sample represented pure processing waste, crop processing methods must have been very inefficient, since grain was frequent. It is suggested, therefore, that mixed burnt waste derived from a variety of activities was being deposited. Because all fifty-seven of the pit samples contained mixed waste it is probable that mixing primarily took place before charring, otherwise occasional unmixed deposits would have been found. Types of waste being deposited most likely included the waste from small scale, day-to-day processing of hulled cereals, plus a variety of types of domestic waste such as floor sweepings, deliberately burnt pest-infested or mouldy grain, foods accidentally dropped into the hearth while cooking and waste used for tinder and fuel deposited as hearth sweepings. If small scale cereal processing was carried out indoors over a domestic hearth, floor sweepings could contain both the processing waste and cleaned grain, though grain was unlikely to be wasted in large quantities unless it was very plentiful.

Although the waste assemblages were similar in character, there were small but common variations that suggested that deposition was piecemeal, rather than originating from a centralised midden-type dump which would have given a more uniform result. Perhaps the minor variations between pits reflected differences between individual households (or groups of dwellings), with each house having its own midden where waste became mixed. Comparisons between several fills from two large pits support this theory, in that specific crops such as flax and opium poppy were concentrated in particular pits.

Hulled wheat was always the most frequent cereal type in the backfilled storage pits, although the percentages ranged from 53 per cent to 85 per cent. Judging from the proportions of identifiable chaff fragments, spelt wheat was always more frequent than emmer, but the proportions varied from just a trace of emmer (<1 per cent) to a maximum of 46 per cent emmer. This demonstrates that emmer was not just a relict crop surviving in the spelt fields as a 'weed', but continued to be valued as a crop in its own right in the Iron Age at Thanet Earth. Further evidence for this was recovered from the six-post storage structure, as discussed below. Another method of determining the relative importance of cereals is presence analysis (the percentage of samples where an item is present). Presence analysis showed that out of the 57 pit samples, 84 per cent contained emmer chaff and 84 per cent contained spelt chaff, suggesting that both crops were equally important to the economy in the Iron Age, though maybe in different ways (for example some were valued for human consumption and some for animal fodder).

Although hulled barley grains were not often present in large numbers, their constant presence across the site demonstrated that barley was an important crop. Barley percentages ranged from 8 per cent to 40 per cent in the productive samples, and it was present in 95 per cent of the pit samples as a whole. In addition, it was the principal crop being stored in the six-post structure described below. Barley would have suited the calcareous soils of the area, and it would have been a useful fodder crop, surviving storage well into winter due to being protected by its husks. It may also have been used for human consumption from time to time (as was certainly the case from the Anglo-Saxon period onwards). Its dominance in the three refuse pits in the north and west of the trench, pits [S14419], [S14252] and [S12265], may be due to temporal differences rather than differences in cereal usage, since two of the three pits were very different from the other phase 8 pits. These are described separately below;

Refuse pit [S14252], sample 1945, context 14251 – This pit was one of five sub-circular features of unknown function in G8091 in the north of the trench. The charred assemblage was dominated by pulses (both peas (*Pisum sativum*) and Celtic beans (*Vicia faba* var. *minor*) were confirmed; 383 items) and barley (151 grains). Hulled wheat was much less frequent than in the storage pit refuse dumps, particularly chaff fragments (only 3 items). Weed seeds were also scarce, as in the six-post storage structure described below. The assemblage could be interpreted as the burnt remnants of a stored

crop of barley and beans, although the shallowness of the pit does not support this suggestion. Alternately the feature could date from a later period, perhaps the Anglo-Saxon period (Phase 12), since this is the only period when Celtic beans were common (SFB 2 and SFB 4). Only small numbers of peas and beans were found in other phase 8 features, with presence values of 5 per cent for beans and 40 per cent of the peas and probable peas. Radiocarbon dating would be needed to answer this question.

Pit [S12265], sample 1383, context 12283 – This isolated feature (G8178) in the south-western area of the site contained evidence for *in situ* burning in the base, suggesting that it may have been a fire pit that was backfilled with rubbish. The cereal assemblage contained primarily hulled barley, with a higher than usual number of free-threshing wheat grains, fewer hulled wheat grains and no chaff fragments. A Celtic bean and a large number of black mustard seeds (*Brassica nigrum;* 219 seeds) probably represent other crop plants. The beans and mustard may have been dried or processed over the hearth, as beans would store better and could be milled into flour if dried, whilst oil-seed crops such as brassicas may have been heated to increase the yield of oil that could be pressed from the seeds. Black mustard seed contains some poisonous components, so in areas such as Asia where it is still valued for cooking it is heated to a high temperature before being consumed (www.uni-graz.at/~katzer). *Brassica/Sinapis* sp. seeds were common in samples from a Phase 12 backfill layer in SFB 2 on Plateau 3 and frequent in a Phase 16 oven-rake out in SFB 46 on Plateau 4. Although arable weeds such as charlock (*Sinapis arvensis*) can become frequent crop contaminants, the abundance of *Brassica/Sinapis* sp. within hearth and oven contexts supports the possible use for the extraction of oil.

The main difference in this sample in comparison with the other IA samples was the recovery of 17 seeds of stinking chamomile (*Anthemis cotula*) from an otherwise small weed assemblage. This weed of heavy, damp clay soils was not found in samples from Thanet Earth sites prior to Phase 12, the Anglo-Saxon period, apart from one Neolithic sample where the seeds were shown to be early medieval in date (see above). Although it has been found on other sites from the Iron Age onwards, its almost total absence from the Thanet Earth Iron Age and Roman samples is significant, suggesting that arable cultivation was primarily taking place on the local light calcareous soils at this time. During the Anglo-Saxon period, however, there appears to have been expansion onto heavier soils, most likely due to a rise in the cultivation of bread wheat (*Triticum aestivum*).

b) Spatial and temporal differences between the pits – Although no clear spatial patterns could be determined, it was notable that the more typical, spelt and emmer-rich assemblages came from the central, densely occupied area of the trench, as did the pits that produced the most cultivated flax seeds (pit [S8722]) and opium poppy seeds (pit [S8642]). The seeds of such useful fibre and oil crops were probably processed and

stored close to dwellings. Both seeds also have culinary and medicinal uses and may have been added to foods.

Temporal differences could not be detected when comparing sequential fills from the two, less productive phase 7 pit samples with the phase 8 pits. More data was available from the two pits [S8722] and [S8642], and this made it possible to compare samples from different levels through the soil profile. In the large storage pit [S8722] thirteen samples were examined, ten of which were productive enough for statistical analysis. The samples were very similar, although minor variations existed between them, as was the case between pits. No obvious trends were observed in successive fills, though at certain points adjacent samples contained the same rare items, for example flax seeds in contexts 8626 and 8624. All of the six samples from pit [S8642] contained opium poppy seeds, though they were found in only four other pit samples across the site. This indicates either a long term specialisation in this crop for the household responsible for backfilling the pit, or that the pit was fairly rapidly backfilled using the same source of mixed waste. Such small seeds as poppy can also trickle down through the soil profile. Similarly, the lack of changes in waste being deposited throughout the period of backfill of these two pits suggests either that the arable economy and cultivation regime saw very few changes through this period of occupation, or that pits were backfilled over a fairly short period of time. A spelt-type grain from a lower fill of cut 8642 (sample 942, context 8640) produced a radiocarbon date of 389–284 cal BC (at 95 per cent probability; Table 6, UBA-22215).

SIX-POST STRUCTURE 15, G8054 (sample 897, context 8513, PH8515; sample 898a, context 8524, PH8525; sample 905, context 8569 PH8568; sample 916, context 8585, PH8586) – Samples from four post holes making up this six-post structure stood out from all of the pit samples, demonstrating that it had served a specific function. The flots all contained high concentrations of clean, well-preserved hulled barley (*Hordeum vulgare*), with the average concentration of the three central post holes being 81 fragments per litre. Post hole 8568 on the eastern side of the structure was less productive (9.4 fpl). It appears that the feature was a raised granary being used to store six-row hulled barley (twisted lateral barley grains were observed to confirm the identification). The samples were remarkably free from chaff fragments and weed seeds demonstrating that the grain had been threshed and sieved to remove straw, rachis segments and small weed seeds, though protective husks were still in place. Instead of containing mixed, redeposited waste, as in most (if not all) of the other samples from this phase, these samples contained a prime stored product, and from this a number of observations can be made. As noted above, less chaff was present, which is to be expected where barley is dominant as the ratio of chaff items that survive charring to grain is lower than in hulled wheats. Of the hulled wheat chaff (glume bases and spikelet forks) 94 per cent was from emmer wheat, with only three glume bases identified as spelt. This clear dominance of emmer chaff was not found in any of the pit samples. Spelt chaff was dominant in all of the productive samples shown in Table 227, and the highest percentage that emmer

reached was 46 per cent of the identifiable chaff in pit [S14265]. It is likely that emmer was present amongst the barley as a relict from a previous crop, since it only accounted for 8 per cent of the identified grain, which was less than the wild/cultivated oats (12 per cent). The fact that relict spelt was so scarce suggests that it may have been grown in a different location. Barley and emmer prefer light, well-drained soils, such as occur on the chalky plateau. Spelt wheat grows best on heavier, more loamy, moist soils, like the colluvial soils in river valleys. These results suggest that emmer and spelt were being grown as separate crops, rather than as a maslin (mixed crop), a fact that could not have been determined from the more mixed pit samples. It has been suggested that emmer/spelt maslins were commonly grown, and this may in part account for the gradual dominance of spelt through time, as it is a stronger grower (van der Veen 1992). However, these samples confirm that separate crops of hulled wheats were grown in at least some fields.

The only non-cereal taxon that was present as more than one or two seeds was possible field pepperwort (cf. *Lepidium campestre*). Identification of this taxon is uncertain as experimental charring of a number of crucifers has shown that size, shape and even cell patterning can be greatly altered by charring, so an exact match is hard to make. Bearing all possible taxa in mind, field pepperwort is the most likely and closest match. Six hundred and thirty seven seeds of this species were present in PH 8525, and a few were found in two of the other post holes. It is a short-lived (annual to biennial), common ruderal plant, so could have been growing as a crop weed, though it is rarely found amongst cereal assemblages, especially not in such large numbers. In the York Archaeobotanical Database (ABCD) only two published records of a couple of seeds were present for the Iron Age. In addition, the fact that the structure had held clean, fairly weed-free grain suggests that these small seeds would have been sieved out of the crop during processing if the plant been growing as a weed. It is possible that at Thanet Earth the 6-post structure had previously been used to store a crop of field pepperwort grown to produce oil.

Sample 1982, context 6366, Pit [S6364], G6021, Plateau 6 – This large pit contained abundant worked flint and charcoal, but only a low concentration of charred plant macrofossils (0.9 fpl). Hazelnut shell (77 fragments) and indeterminate, poorly preserved cereal grains were the most frequent items. The only identifiable cereal types were spelt wheat (one glume base and five emmer/spelt grains) and a possible free-threshing wheat grain (cf. *Triticum aestivum*-type). The character of this assemblage set it aside from most of the pits on Plateau 8, perhaps indicating backfilling with a different type of waste or serving a different function. The radiocarbon dating of a wheat grain showed it to be Anglo-Saxon in date (782–984 cal AD at 95 per cent probability; Table 6, UBA-22212) which fits in with the mixed free-threshing and hulled wheat assemblage, though with a higher concentration of hazelnut shell than in any of the Anglo-Saxon samples from Plateau 3 or 8. However, it should be remembered that 77 fragments of

shell could have come from only a handful of nuts, and hazel nuts were present in six of the samples from other plateaux.

Discussion of Phases 7 and 8 samples, Middle Iron Age and Iron Age (Plateau 8), and comparisons with other sites

The number of charred plant remains per litre of soil processed greatly increased from this phase, reflecting increases in cereal cultivation from the Iron Age onwards. The abundant evidence for grain storage in the form of beehive-shaped pits cut into the chalk on Plateau 8 provided evidence for large scale cereal cultivation. Although most of the charred plant remains came from samples representing re-use of the pits for the dumping of waste, rather than stored products, a picture has been built up from a range of different deposits. Phase 7 (MIA – 2 samples) and Phase 8 samples (IA – 60 samples) were very similar, so they have been discussed together.

Judging by the density of storage pits dug into Plateau 8, arable cultivation had become a major component of the economy by the Iron Age and the density and/or duration of settlement was significant. This presumes that the pits had originally been used for grain storage, as is usually suggested for steep-sided, beehive shaped pits (Reynolds 1974). Storage can be a difficult point to prove archaeobotanically unless exceptionally well-preserved *in situ* deposits are found, as at Danebury, Hampshire (Jones 1984). It is generally accepted that in the damp climate of the British Isles hulled cereals would have been stored in spikelet form (Hillman 1981). Unfortunately differential preservation following charring (Boardman and Jones 1990), centuries of burial, sampling and sieving are likely to break up charred deposits of spikelets into their component parts and alter the ratios of grain to chaff and weed seeds, giving assemblages a very similar appearance to mixed domestic waste containing de-husking debris, and spilt or spoilt grain. In the case of the Plateau 8 pits, however, the frequency of other types of refuse such as pottery, bone and mineralised plant remains confirms that the pits had been re-used for the disposal of waste.

The overall similarities in all of the pit fills across the site, with very similar ranges of arable/disturbed ground weed seeds being present and only minor variations in the percentages of crop species or the percentages of grain, chaff and weed seeds suggest that most of the assemblages represented mixed domestic waste. The same type of random variation between samples was observed in the sequence of pit fills examined in pits [S8722] and [S8642]. Because emmer, spelt and barley grains were recovered together from over 80 per cent of the samples, though they were unlikely to have been used for the same purposes by all households over a length of time, or grown together as mixed crops, it is probable that a middening system was initially used to deposit household and animal waste. Midden material was then redeposited in the storage pits once they had become contaminated with pests and diseases and could no longer be used to store grain. The presence of small numbers of mineralised seeds and mineralised

nodules (Carruthers 1989) in 37 per cent of the pit samples supports this suggestion, as mineralisation is characteristic of middens and faecal deposits (Green 1979; Carruthers 2000a). There was insufficient evidence to indicate that human faecal waste had been deposited in the midden, as no bran-rich concretions or mineralised fruit seeds were preserved, but small amounts of cess could not be ruled out and dung was very likely to have been present. A midden rich in hearth sweepings and animal waste is likely to have contained sufficient moisture-retentive material and nutrients to enable the more readily-preserved seeds such as brassicas (*Brassica/Sinapis* sp.) to become mineralised in localised damp pockets. Henbane (*Hyoscyamus niger*) was recovered as mineralised seeds from three pit samples and as charred seeds from fourteen samples; this plant is typical of nutrient-rich habitats such as middens and farmyards. The following mineralised and charred plant remains were present in the Phase 8 pits;

Possible flavourings or oil seeds:

poppy (*Papaver* sp.) – [2] (10)
opium poppy (*Papaver somniferum*) – [4] (85)
(possibly) mustard (*Brassica nigra* and *Brassica/Sinapis* sp.) – [90] (>200)
cf. pepperwort (cf. *Lepidium* sp.) – [3] (>700)
cf. hedge mustard (cf. *Sisymbrium officinale*) (c. 30)

Possible medicinal plants:

henbane (*Hyoscyamus niger*) – [13] (33)
cf. upright hedge-parsley (cf. *Torilis japonica*) – [13] (50)

It may be coincidental (and related to ease of preservation and association with middens), but the plants providing the most seeds have known uses and are often found in medieval cess pits. Both henbane and hedge-parsley have been used to combat parasites in the past. All parts of henbane are deadly poisonous, but the plant has long been used (mainly externally) as a sedative, pain killer, and antispasmodic. Upright hedge-parsley seeds are still used in Korea to treat amnesia, scabies, as an antifungal, antiviral, expectorant and tonic (www.practicalplants.org). *Brassica /Sinapis* sp. includes both mustards, vegetables such as turnip and common arable weeds such as charlock. Opium poppy seeds do not contain active medicinal opiates, but the seeds are often used as a nutty flavouring and the contain 48 per cent fat content, with the extracted oil being of a similar quality to olive oil. It is possible, therefore, that human sewage was a minor component of the midden-like waste deposited in the pits.

Backfilling the pits with potentially useful midden material may suggest that soil fertility was not a major problem on this site, a hypothesis supported by the relatively low numbers of leguminous weed seeds in the assemblages in comparison with Late Iron Age to mid Romano-British samples from Stansted, Essex (Carruthers 2008). Small-

seeded legumes such as trefoils and clovers often colonise poor, bare soils, as their ability to capture atmospheric nitrogen gives them a competitive advantage (Moss 2014). Although clover/medick/trefoil seeds were present in most of the samples their frequency was mostly low and small-seeded weedy vetches (*Vicia/Lathyrus* sp.) were infrequent. Alternatively the use of midden material to fill abandoned pits could be said to demonstrate the large size of the settlement and high rate of waste production by the population. A third suggestion is that the settlement functioned in a similar way to the Late Bronze Age settlement at Potterne, Wiltshire, where animal husbandry and perhaps feasting appears to have caused the build up of a vast midden deposit stretching over five hectares (Lawson 2000, 84–95). Although mineralised plant remains in the pits were nowhere near as frequent as in the midden-type deposit at Potterne it is notable how many of the charred and mineralised weed/wild plant taxa at Thanet Earth were also common in the Potterne deposit, for example henbane, blinks, nettles, corn gromwell, buttercups (Carruthers 2000a).

The frequency of mixed charred cereal waste and the abundance of storage pits suggest that cereals were a major component of the economy on this site. Spelt was the dominant crop in the Plateau 8 samples, but emmer was still being grown in significant quantities. Barley was also much more important than on sites on heavier soils, for example at Stansted Airport on the Essex clay, barley averaged at less than 6 per cent of identifiable grains in the Iron Age (Carruthers 2009), whilst the average in the storage pits in Table 227 was around 24 per cent. The association of emmer chaff with barley being stored in six-post Structure 15 suggests that emmer may have primarily been grown as a fodder crop, since the same function is usually suggested for barley in the Iron Age and Roman periods. Structure 15, therefore, may have been used to store grain to be used for winter fodder. During the winter when the grass has stopped growing, hay made in the autumn can quickly be in short supply. Since livestock need to be built up at this time of year prior to spring calving and lambing, grain would have been an important fodder crop. De-husking waste and some types of household waste may also have been fed to livestock through the winter.

Barley was present in 95 per cent of the Plateau 8 samples but dominant in only 26 per cent (usually by only a small amount). Its constant presence demonstrates the importance of this crop which was probably primarily used for fodder, but may also have been mixed with wheat in breads and pottages. Barley may therefore have entering the charred plant assemblages in the pits amongst burnt stable waste mixed with household waste. It is likely that some burnt hay was also present, having originated from stable waste, since a variety of long- and small-seeded grasses (indeterminate Poaceae) and other grassland taxa such as ribwort plantain (*Plantago lanceolata*) were common in the samples. Grass seeds are often recovered in substantial numbers from Iron Age and Roman assemblages and it is sometimes suggested that this may have been due to crop rotation involving fallow years. This is possible at Thanet Earth, but

the alternative suggestion in mixed waste deposits such as these is that burnt hay used for tinder, bedding and fodder was represented.

Oats (*Avena* sp.) were present in 60 per cent of the samples but were mainly found in low numbers (*c.* 2–5 per cent of identified grain), probably indicating that they were growing as weeds rather than a minor crop in the Iron Age. The only chaff fragments recovered in an identifiable condition were from wild oat (*Avena fatua*; 3 samples), supporting this suggestion. No rye was recovered from the Phase 8 samples.

Other crop plants sporadically preserved by charring included cultivated flax (*Linum usitatissimum*; 8 samples), Celtic beans (*Vicia faba* var. *minor*; 3 samples) and pea (*Pisum sativum*; 3 samples with identifications confirmed, 23 samples containing possible pea or large vetch). Opium poppy (*Papaver somniferum*) was present in 10 samples, mainly from pit [8642]. Fragments of large unidentified tap roots very similar to carrots were present in six of the re-used storage pits, amounting to 40 fragments in total. Most of the fragments were recovered from the large pits 8722 and 8624. It is likely that these items represented food waste considering the overall nature of the waste deposits but several common weedy taxa also produce tap roots, for example docks and dandelions. More detailed anatomical studies need to be undertaken using high-power microscopy.

Native foods gathered from hedgerows and woody areas included rose hips (*Rosa* sp.; 6 samples), sloe (*Prunus spinosa* and *Prunus* sp.; 5 samples), hazelnuts (*Corylus avellana*; 4 samples) and blackberry (*Rubus* sect. *Glandulosus*; 1 sample). These were present in small quantities but from several samples, suggesting that wild foods were still an important aspect of the diet.

Because the assemblages contained mixed waste, information from the ecology of the weed taxa is more limited in value, since it is unknown whether the weeds were growing amongst one of the crop plants or as grassland weeds, weeds of disturbed ground etc. Bearing in mind the fact that the Chenopodiaceae had to be excluded from the samples because of contamination, the principal family represented in the samples was the Polygonaceae, which includes common crop/disturbed ground weeds such as black bindweed (*Fallopia convolvulus*), docks (*Rumex* sp.) and knotgrass (*Polygonum aviculare*). These taxa are common in disturbed, nutrient-enriched soils such as cultivated land and trampled wasteground.

Direct evidence of stored crops was recovered from Structure 15. Samples from four postholes in the six-post storage structure were found to contain abundant clean stored hulled barley with smaller amounts of oats and emmer wheat. The oats and emmer may have been relict crops growing in the barley field as volunteer plants. Probable pepperwort (cf. *Lepidium* sp.) was also abundant (over 600 seeds), perhaps representing another crop that had been stored in the structure. The most likely and most similar species are either field pepperwort (*L. campestre*) or narrow-leaved pepperwort (*L.*

ruderale). Both are archaeophytes of waysides and cultivated or waste places and both are more common in southern England. Seeds of this genus are rarely found in cereal assemblages, especially in such large numbers as in sample 898a. However, large numbers of cf. *Lepidium ruderale* have recently been recovered from two Early to Middle Iron Age pits at the nearby East Kent Access Road site (268 and 64 seeds; Hunter undated), so perhaps it was locally important. The seeds can be used as a spice, tasting like black pepper. Oil can be extracted from the seeds if heated.

A comparative site in Kent is the Early to Middle Iron Age settlement at Turing College, University of Kent, Canterbury, located on London Clay (Carruthers forthcoming). Although large numbers of samples were taken from this site very few productive cereal assemblages were recovered, indicating that cereal production may have been taking place at fairly low levels at this site. Unlike the Late Bronze Age/Early Iron Age settlement at Shelford described above and also on London Clay, no storage features or grain dryers were excavated to suggest that arable crops were a major component of the economy. Emmer, spelt, lower quantities of barley, peas, beans and some native hedgerow remains formed the basis of the charred plant assemblages. Although emmer and spelt were present in roughly equal quantities, when an examination was made of which types of features they were recovered from it was suggested that spelt was more frequent in hearths and domestic waste pits while emmer and barley were more common in deposits likely to have been waste fodder/bedding. A large deposit of peas and beans radiocarbon dated to the Middle Iron Age appeared to have been a structured deposit containing placed pot sherds. In comparison with this site the Thanet Earth Plateau 8 features present a much larger scale, more productive settlement with a wider range of crops and with spelt dominant over emmer in most samples. These are the sorts of differences that distinguish a small settlement from a much larger one. Apart from differences in scale, there are no obvious indications that crop husbandry practices differed between the sites.

PHASE 9: Prehistoric

?EBA, sample 1367, context 11016, pit [S11017], G3073, Plateau 3 – Several cereal grains and hazelnut shell fragments were present in this small refuse pit but the state of preservation was very poor. One well-preserved grain had the slender appearance of emmer wheat, but no chaff was found to confirm the identification. A few fragments of probable apple flesh and an apple seed edge provided further indications that the feature was probably early in date (Neolithic to EBA?).

Sample 221, context 5258, hearth pit [S5260], Plateau 5 – This feature was one of several intercutting pits that may have served as hearths, perhaps in the MBA. The only items to be found amongst the burnt material were a poorly preserved emmer/spelt grain and a whole, four-seeded berry of buckthorn (*Rhamnus catharticus*). Buckthorn grows on calcareous soils in oak woodlands and fen scrub. The berries of buckthorn can be used

both medicinally (as a laxative and cathartic) and to produce dyes. The fact that the berry was charred suggests the latter was most likely to be the case, since for medicinal purposes the juices would have been squeezed from the fresh berries, whilst dyes were extracted from dried berries, with yellow being obtained from unripe berries and green from ripe berries (Grieve 1992, 135). The hearth may, therefore, have been used to dry the berries prior to crushing them to extract dye. The evidence may be slight, but where there is proof that the species was present it is very likely that it was exploited and that there was knowledge of its useful properties.

Sample 200, context 6008, PH [6009] and sample 202, context 6012, PH [6013], Structure 35, Plateau 6 – These samples came from two of a cluster of six similar-shaped postholes. The sparse cereal remains and frequent hazelnut shell fragments (143 in total) suggest they may be early in date. Because of the poor state of preservation the only level of identification of the cereal remains was emmer/spelt (*Triticum dicoccum/spelta;* trace of chaff and grain). No weed seeds were present.

Sample 1731, context 7094, cremation [S7090], Barrow 2, Plateau 7 – This satellite cremation burial located on the east side of barrow 2 contained no evidence for a vessel, so it could date to the IA. The only charred plant remains recovered were a small fragment of hazelnut shell, six onion couch tubers (*Arrhenatherum elatius* var. *bulbosum*) and a few unidentified rhizomes. Onion couch tubers are frequently associated with Bronze Age cremations, so much so that some sort of ritual significance has sometimes been attributed to the remains. The tubers are held near the turf surface so they can easily be gathered for this reason, or perhaps for use as tinder as suggested by Robinson (1988). However, they may also be gathered accidentally if the cremation takes place on a grassy area where this species is frequent. In the authors opinion the association of these remains with cremations but rarely other burnt features such as hearths suggests deliberate collection for ritual purposes. Despite the name the tubers are not palatable, but the plant often grows on abandoned arable land so some meaning could be derived from its occurrence.

PHASE 11: Roman

SFB 1: Plateau 2

a) Deposits within SFB 1: G2020

This SFB was thought to be of Roman date. Samples from some of its internal features are described below. It is notable that, in comparison to the 'spelt with common emmer' found in the Phase 8 samples, no emmer chaff was identified from Phase 11 samples suggesting it was no longer cultivated in the Roman Period at Thanet Earth.

Sample 386, context 2445, post hole [9872] – This sample came from a stake-hole alignment. Emmer/spelt chaff fragments, with only spelt glume bases identified to species level,

were the principal components of the assemblage (98 per cent). A few unidentified grains and a vetch/tare seed were the only other items present. Spelt de-husking waste burnt on the hearth was probably present.

Sample 376, context 2324, gully [S2325] – Grain dominated this sample (71 per cent), though a little hulled wheat chaff (with spelt identified) and weed seeds from a range of taxa were present, including two of the few sedge (*Carex* sp.) seeds recovered from the Thanet Earth samples as a whole. The well-drained, calcareous soils provided few habitats suitable for this wet ground/marsh plant. It is unlikely that the gully had provided a habitat for sedges, but marsh vegetation may have been brought to the area for use as fodder, building materials or bedding.

Sample 310, context 2390, hearth [S2392] and Sample 393, context 2566 and sample 394, context 2567, hearth [S2569] – These two out of three probable hearths in SFB 1 produced fairly low concentrations of cereal grains, chaff fragments and weed seeds of a very similar character to the IA rubbish deposits in the pits on Plateau 8. Spelt wheat, possible bread wheat-type grain and barley were represented, with spelt slightly dominating in one hearth and barley in the other. The most productive sample, sample 394 from hearth S2569, contained a greater proportion of chaff fragments (ratio 4:9:2 grain:chaff:weed seeds). If the samples are representative of the types of waste being burnt in the hearths they appear to have been used to de-husk grain on a small scale. Since most of the weed seeds are not large, so are unlikely to have been present amongst the spikelets being de-husked, and since grassland taxa were common, other types of waste might also be represented, such as hay and/or burnt stable waste being used as tinder and fuel. A possible pea (pea-sized pulse, no hilum; cf. *Pisum sativum*) was present in hearth S2569, indicating a further crop that may have been cultivated for human or animal consumption.

b) Features associated with SFB 1

Sample 280, context 2149, pit S2142, G2075 – The moderate assemblage from this pit had a similar composition to posthole 9872, consisting of mainly spelt wheat chaff with a few cereal grains (emmer/spelt and barley) and very few weed seeds. The dominance of spelt supports the suggestion that it is associated with SFB 1.

Sample 300 (context 2283) and sample 301 (context 2284), pit [S2285], G2078 – A similar range of cereal grains, chaff fragments and weed seeds was recovered from this pit at a ratio of 2:4:1 grain:chaff :weed seeds. Again, the dominance of spelt wheat supports a Roman date. Small scale de-husking waste was most likely present.

Sample 1997, context 14644, ditch S14645, G8159, Plateau 8 – The small assemblage from this field boundary ditch contained elements that suggested a later date than Roman, unless contamination had occurred. No hulled wheat was present, bread wheat-type

grain and barley were the main cereal grains and three possible rye (cf. *Secale cereale*) grains were found. Rye was only positively identified from Anglo-Saxon and later samples on other Plateaux. In addition, two stinking chamomile (*Anthemis cotula*) seeds were present, and this weed was almost exclusively found in Anglo-Saxon and medieval samples at Thanet Earth (although it has been found in IA and Roman samples from other sites).

Discussion of the Phase 11 Roman samples and comparisons with other sites

By the Roman period emmer wheat appears to have been abandoned, since no emmer chaff was recovered, although, admittedly, much fewer samples were available for analysis than for the Iron Age. At the nearby East Kent Access Road site (Hunter undated — see below) traces of emmer chaff were found into the Middle/Late Romano-British Period, but this could represent persistence as a relict crop. Most of the samples from SFB 1 (Plateau 2) produced low concentrations of charred cereal remains that were dominated by spelt and emmer/spelt chaff fragments, indicating that small scale dehusking was taking place. No obvious differences were observed in the narrow range of weed taxa that was recovered to indicate that crop husbandry methods changed after the Iron Age. The only possible new crop recovered from the Roman samples was a tentatively identified rye grain, which may have been growing as a weed at this time (or could have been a contaminant).

A nearby Roman settlement at Monkton, Isle of Thanet, produced a very extensive range of charred plant remains (Pelling 2008). The assemblage indicated that the occupiers had access to imported foods such as figs and pine nuts, as well as cultivating substantial amounts of spelt wheat locally. Mixed redeposited de-husking and final cleaning waste made up most of the assemblages, and malting may have taken place. Although the Roman period was poorly represented in the Thanet Earth samples and no exotic foods were represented some similarities can be found with the much more productive Monkton site, in that spelt was the principal crop, some bread wheat-type grain and barley was present and peas were being grown. However, at Monkton the wide range of weed seeds included stinking chamomile, whilst at Thanet Earth this weed of heavy, clay soils did not occur until the Anglo-Saxon period. The settlement at Monkton appears to have placed more emphasis on arable cultivation, resulting in the need to extend onto clayey soils, perhaps the clayey loams located in the river valley to the south and west of the site. It may also have been a higher status site since it had access to exotic imported foods.

PHASE 12: Anglo-Saxon

SFB 2; Plateau 3

Samples 1348 (context 11070); 1358, 1363, 1385, 1388, 1390, 1392, (context 11079); 1355, 1360, 1366, 1369, 1391(context 11083) – This SFB consisted of a rectangular cut with nine structural postholes. Features including a large number of stake-holes and five beam-slots indicated that activity in the building had been intense. These features were sealed by contexts 11070 (a localised daub-rich area), 11079 (a dark, greenish-brown occupation deposit) and 11083 (another quadrant of the same deposit as 11079). Large amounts of domestic waste were found in these contexts, including iron objects, loomweights and beads. The charred plant remains were equally diverse, although concentrations in fragments per litre (fpl) were not large, averaging 2.5 fpl in total. An examination of the spatial distributions of different taxa suggests that some variation occurred across the floor surface, perhaps indicating different areas of activity. Rye appears to have been more abundant in the western half of the deposit, and where rye was frequent barley was not common (sample 1366) and vice versa (sample 1369). If charring occurred as a result of an accidental fire this could represent the storage of cereals in different areas of the SFB. If it derived from day to day cooking activities it could be the result of dumping different types of waste in different areas. Bread wheat-type grain was scarce in this SFB (5 grains) and hulled wheat chaff (14 fragments plus six glume bases identified as spelt) together with grains (2), although not frequent, outnumbered free-threshing wheat grains. In order to see whether the relatively high frequency of spelt chaff indicated the continued cultivation of spelt or residuality, several spelt glume bases were sent for radiocarbon dating. A radiocarbon date of cal AD 73–224 (at 95 per cent probability; Table 6, UBA-22935) was returned, demonstrating that the latter was the case, i.e. some Romano-British cereal processing waste was residual in the soil into which Anglo-Saxon structures were constructed.

Since the soils of the plateau were light and calcareous barley may have taken over in importance during this period, being used to make bread when mixed with other grains such as rye and bread wheat. Barley flour does not contain sufficient gluten to form a well-risen loaf, but in combination with wheat flour it produces a softer, well-flavoured loaf.

The earliest substantial evidence showing that stinking chamomile became established as a crop contaminant were found in this SFB, although two seeds were found in Phase 11 ditch 14645 on Plateau 8. As this phase also saw the first definite evidence for cultivating oats and rye as grain crops, perhaps the two events were linked, either because the weeds were brought in with the new seed-corn or because new types of soils were brought into cultivation — perhaps the damper, heavier soils of the river valleys and coastal plains. Other taxa of note were the frequent black mustard seeds (*Brassica nigra*) in four of the samples, amounting to 164 seeds in total as a minimum (possibly up to 258 as 94 seeds were only identifiable to *Brassica/Sinapis* sp.). This may represent the processing of seeds for oil, or using roasted seeds for flavouring – roasting gives them a nutty flavour and improves digestibility. Several mineralised *Brassica/Sinapis* sp. seeds were also recovered, as were one mineralised henbane seed

(*Hyoscyamus niger*) and several nodules that are typically found in mineralised deposits such as cess pits and middens (Carruthers 1989). As noted above, mineralisation occurs in nutrient-rich, moist conditions, so either the trampled floor provided this type of environment, or the remains had been brought in from a midden or cess pit outside the SFB, perhaps through trampling. Since SFBs in calcareous areas often contain small amounts of mineralised material the former is quite likely, e.g. Saxon SFBs at Abbots Worthy, Hampshire, (Carruthers 1991). However, the presence of henbane does suggest that a midden-type habitat was the source of the remains.

Charred insect pupae were common in three of the samples and present in four others. Probable rodent droppings were also present in six samples indicating that midden-like conditions probably existed in the feature. One possible deformed wheat grain characteristic of the wheat gall nematode *Anguina tritici* was recovered from sample 1355. This nematode parasitises the grain, causing considerable loss of yield. It can be reduced if crop rotation is implemented, so in cases where frequent galls are found, as in the post-medieval barn deposit at Wharram Percy (Carruthers 2010) it is likely that crop rotation was not being used. A single gall in this context may not be as significant, but its presence demonstrates the type of problems farmers were facing. Perhaps this was one of the reasons why alternative crops such as rye, oats and barley were grown in greater quantities at this time.

Refuse pit [S11074], sample 1350, context 11073, Plateau 3 – A fairly low concentration of cereal grains, chaff and weed seeds was recovered from this pit fill (2.0 fpl). Barley, spelt (grains and chaff) and bread wheat-type grains were present with occasional weed seeds including cleavers (*Galium aparine*) and wild radish (*Raphanus raphanistrum*). Cleavers were notably frequent in the Phase 12 samples on Plateau 3 in comparison to other periods and Plateaux. It is said to indicate autumn sowing (Reynolds 1981), and it grows in fairly nutrient-rich habitats (Hill *et al* 1999). It is likely that autumn sowing occurred in other periods, too, but the difference could be the cultivation of heavy, nutrient-rich soils in the river valleys for winter crops in this period.

SFB 4: samples 1440 (context 12442), 1471 and 1473 (context 12534), 1493 (context 12441), 1900 (context 12608), 1901 (context 12604), Plateau 8 – As with SFB 2, the scarcity of free-threshing wheat (4 grains) and continued presence of hulled wheat remains (1 grain, 21 emmer/spelt chaff fragments and 4 spelt glume bases) suggests that the abandonment of hulled wheat in favour of free-threshing wheat was still in transition in the Early-Middle Saxon period. Barley was by far the dominant crop in this SFB, too, though oats and rye were much less frequent. Several Celtic beans and some possible peas were present, and a few sloe stones were recovered. None of the weed seeds were especially frequent, except for stinking chamomile. Whatever change had occurred in SFB 2 had also affected SFB 4, as 5 of the 6 samples contained stinking chamomile seeds. Cleavers was also present in four samples.

Discussion of Phase 12, the Anglo-Saxon period and comparisons with other sites

The most obvious change after the Roman period is that much lower quantities of hulled wheat remains were recovered from the Anglo-Saxon samples from SFB 2 on Plateau 3 and SFB 4 on Plateau 8. Spelt glume bases from SFB 2 were radiocarbon dated to the Roman Period, indicating that they were present only as residual material rather than a crop. Barley was now the main cereal present in both structures, and in SFB 2 rye had become the second most frequent cereal (see Table 226). During this period rye was being consumed by humans rather than growing as an early bite fodder crop (grazed green from the field) or fodder grain. Rye is commonly found to have been an important crop in the Anglo-Saxon period, perhaps because of a cultural preference for rye bread on the Continent, where it was often the dominant cereal by the medieval period. It is also a useful crop on poor, acid soils, particularly on free-draining sandy soils (e.g. Breckland sands at West Stow; Murphy 1985) as it has a long root run. Small amounts of bread wheat-type grain and spelt were present, and oats were possibly being grown for human consumption, perhaps as the mixed crop dredge (oats and barley). Pulses were increasingly important at this time, with Celtic beans and possible peas being recovered from several samples in each SFB. This increase in the consumption of pulses, barley and rye corresponds with findings from a number of other sites of the period, both in the north of England (e.g. West Heslerton, Yorkshire; Carruthers and Hunter forthcoming) and the south (e.g. St Mary's Stadium, Southampton, Carruthers 2005). West Heslerton was also situated on free-draining calcareous soils, and the large Middle Saxon settlement produced overwhelming evidence for the importance of barley for human consumption.

At Thanet Earth the main change in the weed flora was the presence of stinking chamomile from this point forward, a weed of damp, clay soils. This arable/waste ground weed has been found to increase from the Iron Age in some other areas of the country (Jones 1981). At Thanet Earth it became the most frequent weed taxon from the Anglo-Saxon period, perhaps suggesting that the main focus of arable cultivation had moved onto the heavier river valley clayey loams to the south and west of the site. This appears to be at odds with the rise in barley cultivation, which would have grown better on the lighter plateau loams. One possible explanation is that stinking chamomile was spreading into the area along the damp river valleys and was brought onto the plateau by livestock that had been grazing in the valley. In addition, dung and the spreading of manure on the fields may have enabled it to become established in some, damper areas of the site. Alternatively, weed seeds from wheat crops grown in the valley had become mixed with that from barley in the SFB deposits. It is notable that in features such as hearths and ovens in the medieval period small seeds such as stinking chamomile and *Brassica/Sinapis* sp. accumulated at the bottom of the ash, escaping full combustion due to the lack of oxygen. Perhaps they also accumulated in the base of the SFBs when hearths were swept out and debris became scattered, blown and trampled across the floors.

PHASES 14 TO 16: THE MEDIEVAL PERIOD

Phase 14 – Medieval II (C12th – first half C13th)

Underground Storage Chamber Structure 55, Plateau 6- This large, sub-rectangular feature, cutting enclosure ditch (G5133) had no internal features to suggest that it was a SFB, so was interpreted as being some sort of storage chamber. Two samples from context (6230) were analysed and were found to contain low frequencies of charred cereal remains (traces of bread wheat-type grain and barley with occasional weeds including stinking chamomile) and mineralised remains. The mineralised seeds included poppy (*Papaver* sp.), *Brassica/Sinapis* sp. and henbane. These are some of the most frequently mineralised taxa. Although mineralised plant remains are most commonly found in cess pits, there was no definite evidence for the presence of faecal material in this feature, as seeds of edible taxa (such as apple, cherry), faecal concretions, straw fragments (often used as toilet wipes) and bran fragments were not present. Dilute faecal material is still a possibility, as both poppy seeds and some species of *Brassica/Sinapis* sp. (e.g. mustards) have been used for flavouring in the past. Preservation by mineralisation does indicate that nutrient-rich, moist conditions, such as are found in middens and cess pits, were present at the site where the seeds were initially deposited. The material may then have been redeposited in the storage pit when it fell into disuse, or the chamber may have been originally constructed to store compost. The position of this feature in the corner of the enclosure gives some support to the latter suggestion. When livestock are penned in a small area their dung needs to be regularly removed to enable grass to grow and to prevent the land from becoming soured and parasite-infested. Having cleared dung from the enclosure it may have been left to compost for a while in the chamber, before being transported to manure the arable fields.

THE MEDIEVAL SUNKEN FEATURED BUILDINGS

Thirty samples from nine SFBs located on Plateaux 1, 2, 4, 5 and 6 were analysed. Table 226 summarises the results, showing that the proportions of different cereals varied from building to building. However, the same type of mixed waste was found in all cases suggesting that the taphonomy was very similar, with the same types of activities leading to the build up of charred waste in the deposits.

PHASE 14: Medieval II (C12th – first half C13th)

SFB 65, Plateau 6 – Three samples from fills of this SFB (G6055) were analysed; 2054 (context 16133), 2055 (context 16134) and 2057 (context 16132). The feature consisted of a sub-rectangular cut adjacent to a circular cut (G6103). A sample from a large oven associated with G6103 was also examined; sample 2060 (context 16261), oven [16263]. The basal fills of the SFB contained very similar rich charred cereal assemblages, two of which had to be sub-sampled because they were so large (maximum concentration=

156.5 fpl; sample 2055). Hulled barley grains were the dominant components, with bread wheat-type grain and oats both being common. Only a trace of rye was present. Although concentrations of charred remains varied (increasing from context 16132 to 16134), ratios for all three contexts were almost identical at roughly 1 : 5 : 1 bread wheat-type grains to hulled barley to oats. Weed taxa were also very similar, with brome grass (a distinctive short, plump type) being the most frequent and stinking chamomile also being common. The medium sized (3–4mm diameter) vetch/tare seeds in these samples might have been cultivated vetch (*Vicia sativa* ssp. *sativa*), which was positively identified (i.e. hila were present) in five other SFBs on Plateaux 1, 2 and 4. The large Fabaceae (4–6mm) in sample 2054 may have been peas, but no hila were present. If the remains were deposited during use of the SFB the same range of cereals were being used in very similar quantities throughout the period of deposit build-up. Bread wheat-type grain, rye and possibly dredge (a mixed crop of barley and oats) was being prepared in this building, most likely for human consumption. The use of dredge is discussed further below. If the deposits represent backfills, the source of material was the same for all three layers.

The oven fill in the adjacent section of the building, sample 2060, contained very little charred plant material (0.5 fpl). A few wheat grains (including both bread wheat-type wheat and hulled wheat), barley grains, and possible peas were the main cultivated species. Weed seeds were primarily from brome grass and grasses, perhaps indicating the use of hay for tinder. It is uncertain whether the assemblage as a whole represents occasional cereals spilt during cooking or drying, or the use of small amounts of waste animal bedding, fodder or floor sweepings for tinder.

PHASE 15 – Medieval III (C13th – early C14th)

SFB 44: Sample 470, context 4839, pit [S4847], Plateau 4 – Although no definite hearths or ovens were found in this rectangular SFB, patches of burnt chalk may have marked the position of simple fires or braziers. The fact that a much higher concentration of cereal remains than usual was recovered from the sample (40.7 fpl) suggests that hearth [S4847] had been used for food preparation. Cereal grains were the main component with frequent weed seeds (ratio 3:2 grain to weed seeds) but only one chaff fragment – a cereal-sized straw node. Large seeds such as brome grass, shepherd's needle (*Scandix pecten-veneris*), wild radish capsule segments (*Raphanus raphanistrum*) and corn cockle (*Agrostemma githago*) were common, and the small seeds such as stinking chamomile, might have originally been present as whole seed heads. These remains may have been picked out of the grain during food preparation to prevent tainting the food and burnt on the fire. As with five out of the six productive hearths/oven from the medieval period (see Table 228), barley was the most frequent cereal type, with the ratio of free-threshing wheat to barley to oat to rye being approximately 9:38:1:4.

SFB 49, samples 362, 372 (context 5551), lower fill of SFB, Plateau 5 – These two samples, although from the same context and of a similar size, were very different in the quantity of charred plant material they produced. Sample 362 produced only a few bread wheat-type grains, barley grains, large pulse fragments and a brassica seed (0.8 fpl). Sample 372 produced a more diverse assemblage of 28.9 fpl, with frequent cereal grains dominated by barley with common bread wheat-type grains. Large pulses were common, although no confirmed identifications were made. The frequency of medium sized vetch/tares suggested cultivated vetch was present, but again this was not confirmed. Brome grass was the most frequent weed taxon and a few onion couch tubers were present, perhaps originating from turf being used for fuel or building material.

PHASE 16 – General medieval

The findings from the SFB samples are summarised in Table 226. Because hearths and ovens were deliberately selected for analysis much of the information is derived from these specific types of assemblage. Comparisons were made between cereals from heath/oven samples and those from SFB layers and fills and very similar ratios were obtained. In most of the medieval heath/oven/rake-out samples barley was dominant, bread wheat-type grains the next most frequent, followed by rye and then oats. The following overall percentages were recovered from the non-hearth SFB fills: 31 per cent bread wheat-type, 52 per cent barley, 5 per cent oats and 12 per cent rye. The medieval hearth deposits produced the following average composition: 36 per cent bread wheat-type, 46 per cent barley, 2 per cent oats, 16 per cent rye

The evidence suggests that the hearths were primarily being used for day to day cooking preparations, rather than larger scale processing of specific products, such as malt. It also suggests that barley was probably being used for human consumption as well as for fodder, since fodder crops would not have been de-husked over domestic fires. If larger quantities of oats had been recovered it could be suggested that dredge (a mixed crop of barley and oats) was being grown, as might be the case for SFB 65 (above), but the low percentage of oats in almost every sample (apart from ditch sample 518 described below) suggests that oats may have been growing as weeds or relict crops in many cases, or only for fodder, thus rarely coming into contact with fire. The dominance of barley is most likely due to the light, calcareous soils suiting this crop better than bread wheat. However, cultural preferences could also have played a part, as could social status. The slight differences between the SFB fill and hearth percentages given above may be because barley and oats in the non-hearth contexts sometimes originated from fodder and animal bedding, rather than human food waste.

SFB 7: Sample 1704, layer 192, and sample 170, rake-out context 194, Plateau 1- The oven rake-out sample produced one of the few samples dominated by bread wheat-type (see Table 228). However, when the two samples were examined together barley was still the

most frequent cereal. Small amounts of free-threshing wheat, barley and rye chaff were present and several fragments of possible pea or large pulse were recovered. Cultivated vetch was confirmed in the rake-out sample and a cherry stone (*Prunus avium*) provided evidence of the types of orchard fruits that might have been grown, but that rarely become preserved by charring. A typical, fairly wide range of medieval arable weeds was present in both samples, including corn cockle, shepherd's needle, cornflower (*Centaurea cyanus*) and stinking chamomile. More similarities between the samples were observed than differences, so the origins of both assemblages were likely to have been very similar, with charred material from the hearth finding its way into deposits accumulating on the floor. The fact that a few cereal-sized straw fragments were present in the rake-out but not in the layer probably has more to do with destruction from trampling than sources of waste.

SFB 8, sample 1727 (context 644) oven rake-out – A typical waste deposit was present in this rake-out sample with barley being the dominant cereal, followed by bread wheat-type grains, rye and then oats. In this sample, however, chaff fragments were a little more frequent, including some bread wheat rachis fragments (*Triticum aestivum*), barley and rye rachis, and a few fragments of straw. Cultivated vetch was confirmed as being present and pea/bean was probably present. The main weed seeds were, as in other SFB samples, stinking chamomile, brome grass, corn cockle and cornflower.

SFB 10: Sample 1743, context 917, oven [919], Plateau 1- The only sample from this SFB was an oven fill which produced more weed seeds than cereal remains (ratio of grain : chaff : weed seeds = 1 : 0 : 4). Barley was the only identifiable cereal. Small weed seeds such as stinking chamomile and *Brassica/Sinapis* sp. (includes the weed charlock but also mustard) were frequent, having perhaps accumulated at the base of the oven over many years of use. The possibility of ovens and hearths being used to heat *Brassica/Sinapis* sp. seeds prior to oil extraction or use as a spice has been put forward below.

SFB 21: sample 1060, (context 1745) layer below oven/kiln [1396], Plateau 1 – This sample produced a fairly low concentration of grain (mainly barley) with a trace of chaff and a limited range of weed seeds. The main weed taxa were stinking chamomile and a long-seeded grass, possibly perennial rye grass (*Lolium perenne/rigidum* - type).

SFB 23: samples 1734 (context 791), 1735 (context 794), 1736 (context 795) and 1737 (context 796) from fills of oven [586], Plateau 1 – As in the oven described above, very few cereal remains were recovered from all four fills (53 grains in total of barley, oats and bread wheat-type), the main component of the assemblages being small seeds from stinking chamomile, *Brassica/Sinapis* sp. and, in the case of sample 1734, cf. long-headed poppy seeds (*Papaver* cf. *dubium*). The same explanation to that given above is applicable – small seeds would have been able to fall through the main heart of the fire to the bottom, where they were not destroyed by oxidation. Cultivated vetch and peas (with

both confirmed as present) were common in the ash over the floor of building [446], context 556.

SFB 29: sample 763, context 9193a, infilling of SFB or pit 9089, Plateau 2- This sample may be derived from burnt material from oven 2909 or hearth 9232. A moderate concentration of charred remains was found, the most notable factor being the dominance of bread wheat-type grains and relatively frequent free-threshing wheat rachis fragments. Cultivated vetch was also present. Although the range of weed seeds was not great, stinking chamomile seeds were common.

SFB 34: sample 784, context 9347, backfill 9347, Plateau 2 – A small backfill sample was examined from this SFB. Bread wheat-type and rye grains were the most common. A small amount of free-threshing wheat, barley and rye chaff was present and frequent stinking chamomile seeds.

SFB 46: sample 325 (context 4574) oven rake-out and sample 329 (context 4655) oven [4655], Plateau 4 – As with the previous oven samples, cereal grains were infrequent and small weed seeds were abundant, in particular *Brassica/Sinapis* sp. and stinking chamomile. A ratio of roughly 1 grain : trace chaff : 7 weed seeds was present in the two samples, with barley and oat being the only positively identified cereals. A single cultivated flax seed was present in sample 325 and several sprouted barley were recovered from this sample. Although the evidence is slight (8 sprouted grains out of 27 barley grains) it is possible that this oven had sometimes been used for malting.

SFB 47: sample 455, (context 4728), post hole in SFB, Plateau 4 – This small soil sample from a post hole (8 litres) produced a surprisingly large number of cereal grains (90 per cent barley with some bread wheat-type grains), several cultivated vetch seeds (identification confirmed by the presence of hila in two seeds) and a few weeds seeds. Stinking chamomile and knotgrass were the main taxa, but weed seeds were not frequent or varied. If this assemblage represents waste from the preparation of food it is interesting to see that cultivated vetch was frequent inside the SFB (or at least medium-sized *Vicia/Lathyrus* sp. seeds, 3–4mm, counted as probable cultivated vetch, since vetches of varying sizes were not frequent as weeds on this site). This crop is usually considered to have been grown for fodder, often being eaten green from the field. However, it was used in times of emergency for human consumption, and Mears and Hillman note that the young shoots and young seeds are good to eat (2007). Whole seeds may also have been used to flavour pottages and stews, adding protein to the meal. Vetch may have been growing as a volunteer crop amongst cereals if crop rotations were used, but the possible count of 34 seeds in an assemblage of 334 seeds suggests a more deliberate presence. Mixed crops of cereals and vetch were grown to increase grain yields and prevent lodging, as shown by the stored crops recovered from the C16th burnt barn at Wharram Percy (Carruthers 2010).

SFB 77: sample 1840 (context 10398) upper surface of hearth [10401] and sample 1846 (context 10318) layer in SFB, Plateau 1 – The hearth sample from this SFB produced sparse cereals but also very few weed seeds, perhaps because in this case it was an upper surface layer, rather than the lower fill of an oven. The occupation deposit produced a typical domestic waste assemblage, with frequent cereal grains which was made up of 74 per cent barley, 20 per cent rye, 3 per cent bread wheat-type grains and 3 per cent oats. Chaff was scarce and the main weed taxa represented were stinking chamomile and *Brassica/Sinapis* sp. The relatively high occurrence of rye in this SFB suggests that it, too, was sometimes used for human consumption in the medieval period, as it had been in the Anglo-Saxon period in SFB 2.

SFB 78: samples 1812, 1826, 1827, 1831, 1835 and 1841, occupation layers and backfills, Plateau 1 – Six samples from occupation layers and backfills in this SFB were examined. The occupation layers (context 10157, sample 1812, and context 10309, samples 1835 and 1841) provided the most productive samples, with concentrations reaching 22.6, 57.9 and 19.5 fpl respectively. Cereal grains, in particular barley, were abundant with the averaged composition of the three samples being 67 per cent barley, 17 per cent rye, 15 per cent bread wheat-type grains and 1 per cent oats. Small amounts of cultivated vetch (confirmed identification), possible peas or beans and a small amount of hazelnut shell fragments were evidence of other economic plants that were present. Chaff and weed seeds were infrequent, although a few small items such as stinking chamomile seeds and corn cockle capsule valves were common. An identifiable rachis fragment confirmed that bread wheat (*Triticum aestivum*) was present and several rye rachis fragments were present in sample 1835. This waste is characteristic of the type of domestic materials being burnt on hearths in medieval houses, including contaminants being hand-picked from grain prior to cooking, infested grain, animal waste including fodder, nutshell and accidentally burnt food items. The three backfill samples contained smaller concentrations (0.7 to 6.7 fpl) of the same types of waste, presumably having been diluted, and perhaps to some extent damaged beyond recognition, during the process of redeposition.

Other medieval features

Hearth [S5745], sample 650 (context 5744), G5107, Plateau 5 – This hearth had possibly been located within a building which could not be identified (TE database). Scarce charred plant remains were present including a possible bread wheat-type grain, possible pea/vetch and a few common weed seeds.

Pit [S9196], sample 765, context 9195, Plateau 2 – This fairly small assemblage of grain and several weed seeds but no chaff (2.5 fpl) is similar to many of the 'background waste' and redeposited waste samples. Barley, wheat, rye and oat grains were present, but all in low numbers.

Pit [S15162], sample 2018, context 15161, Plateau 5 – This pit contained sunken pots, suggesting some sort of deliberate burial of material. Cereal grains were the main component of the assemblage but it was not large (10 fpl). Barley, bread wheat-type grains and oats were present in the usual ratios. A few large pulse fragments including possible pea were recovered. The only weed taxon was stinking chamomile, represented by a couple of seeds. These remains are more typical of a low concentration of domestic waste, rather than any type of deliberate burial, so the charred food items may be accidental inclusions already present in the backfill soil.

Enclosure 62, sample 518, context 1037, ditch S10051, G10051, Plateau 1 – This sample came from an enclosure on the western side of the site. No dating evidence was found but stratigraphically the enclosure was dated to the medieval period. The assemblage from the primary fill of the ditch was unique in being composed of an almost pure deposit of common oats (581 grains), identified as *Avena sativa* by ten intact floret bases. No other identifiable cereals were mixed with the oats, so the accompanying weed taxa provided reliable evidence of the type of soil on which the oats had been grown – a situation rarely encountered in archaeobotanical assemblages because of the mixing of different crops. Stinking chamomile was the main weed taxon (136 seeds), with corn cockle, dock, *Brassica/Sinapis* sp., *Vicia/Lathyrus* sp., *Odontites/Euphrasia* sp., grasses and sedge (*Carex* sp.) being present as only occasional seeds. Sedge seeds were very rarely found in the samples from Thanet Earth, as the chalk soils on the plateau were well drained (occasional seeds in 11 samples out of 163 samples fully analysed), so their presence in this deposit was notable. As a whole, the evidence suggests that oats were being grown on heavier, damp soils such as the loamy, clay soils of the river valley and coastal flats to the west and south of the site. The charred oat deposit is most likely to have originated as fodder that was burnt as waste, or because it was infested, and dumped in the ditch as waste. However, if it had been dated to the prehistoric period its purity and its presence as a primary deposit in a ditch may have suggested some sort of ritual deposition.

Droveway funnel G1031, Ditches S1467 and S1505, samples 1027 (context 1465), 1028 (context 1466), 1031 (context 1504), Plateau 1 – These three possible droveway ditch fills were surprisingly productive, containing an average of c. 63 charred fpl. For ditch 1467 it was the upper fill that contained the highest concentration of material, perhaps suggesting that the abundant bread wheat-type grains with frequent barley grains (consisting of 60 per cent wheat, 35 per cent barley, 2 per cent oats and 3 per cent rye) may have been dumped in the ditch in its later phase of use. Grain accounted for over 96 per cent of this sample, so it was probably waste from a domestic source, perhaps infested material cleared out from stores and burnt. The lower fill produced very few remains, but bread wheat-type grains were still the main component. Ditch S1505 also produced mainly bread wheat-type grains with very few weeds seeds and chaff fragments. Considering that almost all of the SFB produced primarily barley grains the comparison with ditch fills is very interesting, with the above ditch producing the only clean oat assemblage

and this ditch system producing three bread wheat rich assemblages. This is discussed further below.

Discussion of Phases 14, 15 and 16 medieval samples and comparisons with other sites

A large number of SFBs dated to the medieval period were examined, nine of which are summarised in Table 226. As in the Anglo-Saxon period, hulled barley was dominant in most of the hearths, occupation layers and backfills. The only samples from SFBs to produce more bread wheat-type grains than barley were two backfills from SFBs 29 and 34 on Plateau 2, but these were only single samples and they did not produce large assemblages. No rivet-type free-threshing wheat remains (*Triticum turgidum*) were recovered from the medieval Thanet Earth samples. Since free-threshing wheat is thought to be under-represented in charred assemblages it is possible that barley was not actually the main cereal being consumed by humans. In addition, if bread wheat was mainly being brought in as flour, and grains such as oats, rye and barley were being used whole in stews and pottages, this would also affect the wheat macrofossil record. One large deposit of primarily bread wheat-type grain was recovered from an upper fill in droveway ditch [S1467] (G1031, Plateau 1) demonstrating that some larger quantities of wheat were being transported around the settlement. Perhaps this deposit was destroyed because it had become infested. On the whole, in view of the calcareous nature of the local soils, it seems most likely that barley was grown on a large scale in the Thanet Earth area. Barley is a very adaptable crop that can be used for a range of purposes including bread-making (if mixed with wheat to make the loaf lighter), as whole grains in soups and stews, for fodder, and to make malt for brewing. A small amount of sprouted grain was recovered from oven S4655 in SFB 46 on Plateau 4, but the evidence was too slight to confirm that malting was taking place rather than premature sprouting due to damp storage conditions. When used for human consumption hulled barley would need to be parched prior to de-husking, and this may be why the SFB ovens and hearths were dominated by barley grains, rather than free-threshing wheat that requires no parching.

In his studies of medieval manorial accounts from Sedgeford, Norfolk, Dyer (2000, 84–85) demonstrated that C13th harvest workers were consuming large amounts of bread, and in the thirteenth and fourteenth century this was mainly made from barley flour. By the C14th barley bread was becoming replaced by wheat and rye bread, and workers were consuming only wheat bread by the beginning of the C15th. Supervisors, however, had probably always eaten wheat bread. Although these records are specific to Sedgeford, the general relationships between different foods and status no doubt could be applied more widely. The dominance of barley in the dwellings at Thanet Earth, therefore, could indicate that they had been occupied by labourers and craftworkers, rather than people of a higher status. Perhaps the occupants of SFBs 29 and 34 were of higher status, since bread wheat-type grain was dominant in these buildings.

Unfortunately the evidence was too slim for this to be more than a tentative suggestion, since only one sample from each SFB was examined.

If the link between cereal usage and status holds true, spatial analysis of the SFB fills could provide information about areas of high and low status housing. One observation is that rye appears to have been more frequent in the northern and western areas of the site, on Plateau 1 and 2 (ranging from 7 per cent to 28 per cent rye out of identifiable grain) than in the south of the excavated area. The SFBs on Plateaux 4, 5 and 6 all contained low percentages of rye (1 per cent to 5 per cent). No other obvious trends were found, and the implications of higher rye consumption are not clear. According to the Sedgeford records described above (Dyer *ibid.*), bread made from wheat and rye may have been considered to be of higher status than barley bread, perhaps making the northern end of the settlement superior to the southern end. Alternatively the differences may be temporal, indicating that the settlement extended in a northerly direction at a later date (providing that a similar sequence of change to that at Sedgeford occurred in the Thanet Earth area). Clearly more data is needed to follow this tentative line of argument further.

An 11th to 13th century medieval farmstead at Monkton produced a range of fruits and flavourings preserved by mineralisation in a latrine deposit (Robinson 2008). Mustards, blackberry, cherry, plum, apple/pear and pea provided evidence of foods that could have been gathered or grown locally in gardens and orchards. Henbane was included amongst the non-food remains, and the possibility of its medicinal use was raised. The findings were said to be typical of rural, medieval cess pit assemblages.

THANET EARTH PIPELINE – TEP 10

PHASE 13: Mineralised and charred plant remains from medieval cess pits

Flots and residues from a number of pits along the pipeline site were scanned by the author for additional information that could add to that already recovered from the 2007 excavation. Concentrated cess was not found in any of the pits, although many contained small amounts of mineralised material that indicated they had been used as cess pits. It is likely that most were too free-draining to provide the moist, nutrient-rich environment necessary for full mineralisation to take place. Chalk fragments made up a large proportion of the residues so perhaps chalk was shovelled onto the cess after each use in order to dampen odours. Charred plant material, which was often used to reduce odours in cess pits on other sites, was not frequent. Mineralised straw/grass fragments, and possibly some rushes were common, perhaps having been used as toilet wipes. This type of material is commonly found in cess pits and use for this purpose has often been suggested.

The presence of cess was confirmed in several pits, including pit [74] (sample 2, context 72) and pit [141] (samples 7, context 109 and 8, context 111). In these features faecal concretions containing curled bran and occasionally fragments of pea or bean seed (pulse testa) were present, though not abundant (*c.* 2–5 per cent; see Table 229). This 'percentage of faecal concretions' estimate is a method of roughly quantifying cess pit residues for faecal concentration, involving a rapid visual estimation of the percentage of a petri dish filled with a thin layer of residue that is made up of faecal concretions. The exercise is repeated several times for each residue until a rough estimate is determined. One example of mineralised, sometimes well-preserved deposits from an urban location is Roman to medieval pits in Winchester (Carruthers 2011) where preservation ranged from 2 per cent faecal concretions up to 50 per cent in some residues.

Dietary evidence was not abundant in the Thanet Earth samples but some useful information was recovered that added to the evidence from the charred remains, as described below;

Sample 2, context 72, pit [S74] – Faecal concretions amounted to c. 5 per cent of the residue. Straw/grass and rushes had probably been used as wipes, and some matted straw/grass stems were present. Fruit remains included elderberry (*Sambucus nigra*), blackberry/raspberry (*Rubus* sp.), sloe or cherry (*Prunus* sp.) and apple/pear (*Malus* sp./*Pyrus communis*), with similar numbers of each being present (4 to 69 seeds, mainly without seed coats). These may have been gathered from the wild, or in some cases cultivated species such as cherries might have been consumed, having been grown in orchards or gardens. Sixteen *Brassica/Sinapis* sp. seeds were present, perhaps representing use as a spice or possibly a weed contaminant. However, few other weeds were present. Knotted hedge-parsley (*Torilis nodosa*), knotgrass (*Polygonum aviculare*) and corn cockle seed embryos and seed coat impressions were present, but not abundant. In the Late Saxon and Saxo-Norman cess pits in Winchester corn cockle seed impressions and seeds were abundant, suggesting that quality control was very lax, since the seeds of this weed can cause serious harm if present in high enough levels (Carruthers *ibid*.). A possible flax cotyledon fragment was present but no pulses were noted. Mineralised nodules (see Carruthers 1989) were abundant in this sample.

Samples 7 (context 109) and 8 (context 111), pit S141 – Five samples were assessed but the lower three (samples 9, 10 and 11) were not productive. Although the lowest two contained much higher percentages of fawn-coloured mineralised material, the state of preservation was soft and crumbly and no recognisable plant macrofossils were found. However, arthropod fragments were fairly frequent, including woodlice, fly pupae and millipede fragments. Presumably by the time the upper layers were accumulating the drainage had become impeded, so the state of preservation of the plant remains was better.

Sample 8 came from an upper fill, context 111. Straw/grass fragments and fragments of seed coat from pulses were the most frequent items. Concretions with bran and matted straw/grass amounted to c. 2 per cent of the residue. Fortunately several pulse hila were also preserved to provide identifications for the types of pulse present. Five pea hila and two bean hila were counted. Fewer fruit remains were present in this deposit when compared to pit 74 (4 elderberry seeds, 2 apple/pear seed margins). Three corn cockle seed impressions and an embryo were recovered. Mineralised nodules were absent and arthropod remains were scarce, suggesting that there was some sort of difference between the different samples in the formation process (see sample 7 description below). Perhaps this layer was rapidly covered by the next, or too waterlogged for flies to lay eggs.

Sample 7 came from the uppermost fill of the feature. Mineralised concretions were not observed although traces of bran were present and other remains confirmed that cess was present. Again, no nodules were present but two worm cocoons, frequent fly puparia and several millipede segments confirmed that arthropods were active in the pit. Both fruit remains and pulse remains were scarce. Fourteen elderberry seeds, an apple/pear seed margin, two pea hila and a few fragments of pulse seed coat were the principal food remains. Nine *Brassica/Sinapis* sp. seeds, may also have been consumed as spices. The weeds included corn cockle, corn gromwell, probable hedge-parsley, and stinging nettle (*Urtica dioica*). Some of these remains may have been consumed accidentally as contaminants of food, some may have been growing nearby and some may have been introduced with items such as the toilet wipes (though hopefully not the stinging nettle!).

Discussion

These three samples provided relatively small amounts of information about the medieval diet because preservation conditions were not ideal. However, they were important in confirming that the much larger and more numerous charred plant assemblages actually do provide a reasonable overall impression of the medieval diet on this site. They confirm that;

- no exotic fruits, nuts or spices were being consumed, at least not on a frequent basis
- cereals and pulses (peas and beans) were part of the staple diet
- fruits (and occasional nuts from the charred assemblages) were also consumed, although this may have mainly been on a seasonal basis, since one pit contained more fruit remains than the other. It is uncertain whether the remains were all from native fruits gathered from hedgerows, but this is possible from the taxa represented. If orchard fruits were grown they may not have been in large enough supply to be preserved and eaten throughout the year.

To summarise, the diet of the occupants of the medieval settlement at Thanet Earth was a fairly simple, rural one based on cereals, pulses and gathered hedgerow fruits and nuts. When the meat, fish and shellfish component is added this was probably a fairly healthy, if not very varied, diet.

Waterlogged plant remains from medieval wells, Phase 13

Plateau 1, Samples 1065 (context 1780) and 1066 (context 1781), Well G1143 – Two waterlogged samples from the lower fills of well G1143 were examined (see Table 225). A radiocarbon date on a beetle fragment from sample 1066 produced a Saxo-Norman date of 894–1117 cal AD (at 95 per cent probability; Table 6, UBA-22213). Plant remains were common in the samples but not abundant or well-preserved, and many were fragmented. Wood chips and moss fragments were the most frequent plant items. The range of taxa was typical of disturbed ground and cultivated land, including wasteground taxa such as knotgrass, bladder campion, orache and wild radish. Some species indicated nutrient-enriched habitats, such as henbane, while others were typical of arable fields, such as corn cockle and cornflower. The recovery of small fragments of corn cockle seeds often indicates the presence of faecal material, as the seeds become ground with the corn and are incorporated into foods such as bread. However, no other indicators of cess were present, such as fruit stones, so the seeds may have been deposited in waste flour. Both samples from the well were similar in composition, although the upper sample contained a larger number of plant remains. It is likely that these assemblages represent waste that was deposited in the well after abandonment. If so, it was probably derived from woody debris that accumulated on waste ground. Insect remains were abundant in this and the Bore Hole sample below, providing much more detailed evidence of the deposits.

Plateau 2, Samples from Bore Hole 3, 24.5–25m and 25.5m – A similar range of wasteground taxa was recovered from two borehole samples from a well on Plateau 2. The lower sample was a little more productive than the upper one, but once again plant remains were fragmentary and fairly limited in character. A few charred cereal remains were present, but some may have been residual as hulled wheat was present. The waterlogged taxa were primarily from wastegrounds and cultivated land, as in the well on Plateau 1. The only item of note was a possible hemp seed (cf. *Cannabis sativa*) fragment in sample 25.5m. This may represent waste from a fibre crop.

PHASE 20: UNPHASED

?Beaker Post hole [2276], Sample 298 context 2275, Plateau 2 – The 134 fragments of hazelnut shell and two hawthorn seed fragments (*Crataegus monogyna*) suggest an early prehistoric date. However, a single reasonably well-preserved spelt glume base (*Triticum spelta*) indicated either that contamination had occurred, or that the feature was MBA or later, since spelt is not found prior to this period.

Post hole [14344], sample 1959, context 14343, G8214, Plateau 8 – This isolated post hole produced 78 fragments of hazelnut shell, a poorly preserved emmer/spelt glume base (chaff) and a small leguminous weed seed of the clover/medick/trefoil type (*Trifolium/Medicago/Lotus* sp.). The frequency of hazelnut shell suggests a possible early date, although, of course, nuts were being eaten in all periods.

Pit 15057, Sample 2004, context 15056, Plateau 5 – The only charred plant macrofossils recovered were 45 very small fragments of hazelnut shell. This could be an early prehistoric feature, as no background cereal waste was present in the 17 litres of soil.

Pit [16291], sample 2062, context 16292, Plateau 6 – This unphased pit fill was examined because the flot was different in character. It contained frequent cereal straw fragments (culm nodes and culm bases). A free-threshing wheat rachis fragment and several bread wheat-type grains were also present, with a few small weed seeds. Since this post hole/pit may have held a roof support, the straw may be the remnants of roofing that was burnt down and fell into the feature. If so, it appears that wheat straw was being used for thatching at this time. Bread wheat and rivet wheat straw were commonly used for thatching in medieval times, and both would have been growing on much longer straw than is found on the modern varieties (Letts 1999). The presence of several culm bases is slightly at odds with this suggestion, as thatching straw needs to be carefully trimmed to lie in a water-tight fashion. A range of materials including uprooted straw can be used as a base coat, or the thatch may have been fairly rudimentary. Very basic thatch composed of a variety of waste materials was often used on small agricultural structures and outbuildings (Letts *ibid.*).

Conclusions

From the long history of occupation on the Isle of Thanet revealed as a result of excavations in 2007 and 2010 it is clear that the value the free-draining, lime-rich soils for arable farming was understood throughout the past. The excavation of a large area has produced important evidence for the cultivation of tetraploid free threshing wheat in the Early Neolithic period, revealing probable connections with cultures in other areas of Continental Europe. The archaeobotanical evidence from this and other sites suggests that the Isle of Thanet was an important area of agricultural innovation.

Although plant macrofossil evidence from most of the other periods followed the general trends for the region in terms of the crops being cultivated, the analysis of a large number of samples from re-used Iron Age storage pits on Plateau 8 produced an interesting range of charred and mineralised crop plants including opium poppy, cf. pepperwort, cf. hedge mustard and possibly black mustard. The evidence suggested that the pits had been backfilled with midden material probably derived from one or more communal middens. Large quantities of cereal remains in these deposits provided

reliable data from which to calculate the relative importance of the different cereals being cultivated.

Table 230 summarises changes in the main gathered foods and crop plants through the phases, showing how the arrival of new cultivated plants changed the subsistence base through time. The introduction of new crops would also have meant that husbandry methods would have needed to adapt, since crops such as barley may have been well suited to the light soils, but nutrient-demanding cereals such as spelt wheat and bread wheat will have required the regular input of manure. It should be remembered that the bulk of the plant macrofossil evidence was preserved through charring, so the range of foods/crops represented was limited and biased. The effect of this can be seen in the medieval period, where two cess pits from the pipeline excavation increased some assemblages by preserving frequent apple/pear pips and pulse hila (identifiable fragments of the seed) by mineralisation. Rather than providing detailed evidence of diet, therefore, the table mainly serves to show changes through the periods revealed in the charred and mineralised assemblages.

Evidence for Middening?

The recovery of mineralised plant remains from eleven Iron Age storage pits, an Anglo-Saxon SFB (SFB 2) and a medieval underground storage chamber (Structure 55) provided evidence that organic waste had either deliberately or incidentally accumulated. It either suggests that organised middening was taking place in different periods in order to make full use of valuable waste materials, as perhaps could be suggested for the medieval storage chamber Structure 55 on Plateau 6, or that the opposite situation was occurring in terms of cleanliness and organisation, i.e. that waste was accumulating to such an extent that mineralisation was taking place *in situ*, as might have been the case for the Anglo-Saxon SFB. Saxon deposits in both urban (e.g. Winchester; Carruthers 2011) and rural locations (e.g. Abbots Worthy; Carruthers 1991) are notable for the quantities of mineralised remains found in archaeobotanical samples from SFBs and pits. Evidence for faecal material is often found in these features, suggesting that there may have been differences in the deposition of waste at this time.

In the case of the Iron Age pits, middening was probably not taking place in the features, but accumulated midden material may have been cleared away from another location, perhaps from around domestic buildings. Some plants found in the pits were unlikely to have been growing locally on the chalky soils, for example bracken and sheep's sorrel, both of which are usually found on nutrient-poor, acidic soils. The large pits [8722] and [8642] both contained high numbers of bracken frond fragments and seeds of sheep's sorrel. This demonstrates that materials were being brought in from a range of sources to create these deposits. Animal bedding and hay collected from damp grassland on the slightly acid, loamy soils to the south and west of the site may have been the source of these two taxa. Hay and turf can also be used as building materials,

human bedding and fuel, providing additional reasons for bringing these materials onto the site. At West Heslerton (Carruthers and Hunter forthcoming) frequent tubers and sedge nutlets suggested that the Middle Saxon SFBs had possibly been constructed using turf walls, but no clear evidence was found for this at Thanet Earth. SFB 2, however, was the only structure on the well-drained soils at Thanet Earth to produce reasonable numbers of wetland plant remains, primarily consisting of spike-rush nutlets (*Eleocharis* subg. *Palustres*) and sedge nutlets (*Carex* spp.).

The use of midden material to backfill a pit does not necessarily suggest that composted waste was not valued, as it may represent just a small proportion of what had originally been collected to spread on fields (i.e. the fraction that did not enter the archaeobotanical record). On a practical level, the backfilling of pits in a busy settlement must have been a fairly high priority to prevent accidents and restore land to be used for other purposes. Large pits such as [8722] may have been used to store or mature midden material, and if so they could have been re-used for this purpose several times. The free-draining nature of the chalky soils unfortunately did not provide a moist enough environment for the widespread mineralisation to take place as was found in the extensive LBA midden at Potterne, Wiltshire on Upper Greensand. A large range of plant taxa was represented in this deposit, enabling reconstruction of the conditions on the midden to be attempted (Carruthers 2000a).

By the time the medieval storage chamber (Structure 55) was in use a more organised system of middening may have been in operation, with manure being collected from the fields and deposited in a purpose-built structure. This would have assisted decomposition and retained a valuable resource for use on arable fields at a later date. Although reasonably fertile, free-draining calcareous soils can be subject to crop failure in years with low rainfall. The addition of manure would have helped to make the soil more water-retentive, as well as adding important nutrients.

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Chapter 26: Soil Micromorphology, Chemistry and Magnetic Susceptibility

Richard Macphail and John Crowther

Introduction

Five Kubiena box samples, and associated bulk samples, from Barrow 1, Plateau 6, Thanet, Monkton, Kent, were received from Enid Alison (Canterbury Archaeological Trust). These samples came from contexts associated with a Beaker Period inhumation within Barrow 6. These samples, because they are believed to be representative of Beaker Period soils at the site, were analysed employing soil micromorphology, chemistry and magnetic susceptibility.

Samples and methods

The study of thin section samples M430, M431, M432, M433 and M434, was complemented by the analysis of selected bulk samples from the least stony and potentially most humic 'turf' horizons, namely: 6021, 6028, 6030 and 6032 (see Tables 232 and 232).

Chemistry and magnetic susceptibility

Analysis was undertaken on the fine earth (i.e. < 2 mm) fraction of the samples. Phosphate-P_i (inorganic phosphate) and phosphate-P_o (organic phosphate) were determined using a two-stage adaptation of the procedure developed by Dick and Tabatabai (1977) in which the phosphate concentration of a sample is measured first without oxidation of organic matter (P_i), using 1N HCl as the extractant (after a slight excess of HCl has been added to remove the carbonate present); and then on the residue following alkaline oxidation with sodium hypobromite (P_o), using 1N H_2SO_4 as the extractant. Phosphate-P (total phosphate) has been derived as the sum of phosphate-P_i and phosphate-P_o, and the percentages of inorganic and organic phosphate calculated (i.e. phosphate-P_i:P and phosphate-P_o:P, respectively). LOI (loss-on-ignition) was determined by ignition at 375°C for 16 hours (Ball 1964) – previous experimental studies having shown that there is normally no significant breakdown of carbonate at this temperature.

In addition to X (low frequency mass-specific magnetic susceptibility), determinations were made of X_{max} (maximum potential magnetic susceptibility) by subjecting a sample to optimum conditions for susceptibility enhancement in the laboratory. X_{conv} (fractional conversion), which is expressed as a percentage, is a measure of the extent to which the potential susceptibility has been achieved in the original sample, viz: (X/X_{max}) x 100.0 (Tite 1972; Scollar *et al* 1990). In many respects this is a better indicator of magnetic

susceptibility enhancement than raw X data, particularly in cases where soils have widely differing X_{max} values (Crowther and Barker 1995; Crowther 2003). A Bartington MS2 meter was used for magnetic susceptibility measurements. X_{max} was achieved by heating samples at 650^0C in reducing, followed by oxidising conditions. The method used broadly follows that of Tite and Mullins (1971), except that household flour was mixed with the soils and lids placed on the crucibles to create the reducing environment (after Graham and Scollar 1976; Crowther and Barker 1995).

Soil micromorphology

The five thin section (M430, M431, M432, M433 and M434) were impregnated with a clear polyester resin-acetone mixture; samples were then topped up with resin, ahead of curing and slabbing for 75x50 mm-size thin section manufacture by Spectrum Petrographics, Vancouver, Washington, USA (Goldberg and Macphail 2006; Murphy 1986). Thin sections (Plates 364–367) were further polished with 1,000 grit papers and analysed using a petrological microscope under plane polarised light (PPL), crossed polarised light (XPL), oblique incident light (OIL) and using fluorescent microscopy (blue light – BL), at magnifications ranging from x1 to x200/400. Thin sections were described, ascribed soil microfabric types (MFTs) and microfacies types (MFTs; see Tables 233 and 234), and counted according to established methods (Bullock *et al* 1985; Courty 2001; Courty *et al* 1989; Goldberg and Macphail 2006; Macphail and Cruise 2001; Stoops 2003). Special reference was also made to studies of buried rendzinas at the Experimental Earthwork on Overton Down, Wiltshire (Macphail and Cruise 1996).

Results

Chemistry and magnetic susceptibility

The results are presented in Table 232. These show all four samples of buried turf material still to be quite organic rich (LOI, 3.95–5.03 per cent), despite the inevitable amount of post-burial decomposition that will have occurred in such a well-drained and, presumably, aerobic environment. The phosphate-P concentrations are consistently low (range, 0.545–0.619 mg g^{-1}), and provide no indication of enrichment. It should also be noted that, compared with many archaeological contexts, the proportion of inorganic phosphate is relatively low (phosphate-P_i:P: range, 46.8–59.4 per cent). This further suggests a lack of phosphate enrichment: e.g. mineralisation of organic phosphates from any animal manure inputs on the ground surface from which the turves were derived would lead to phosphate-P_i enrichment. Compared with some other buried chalk topsoils (e.g. Overton Down Experimental Earthwork (Crowther 1996; Crowther *et al.*, 1996): X range, 25–27 x 10^{-8} m^3 kg^{-1}), the X values recorded for the turf samples are relatively high (range, 60–73 x 10^{-8} m^3 kg^{-1}). The resulting X_{conv} values (range, 8.57–9.20 per cent) are all greater than the 5.00 per cent threshold that is often taken to indicate some degree of enhancement associated with burning in UK archaeological contexts.

On the basis of the analytical work undertaken, there is no evidence that the ground surface from which the turves were cut had been subject to phosphate enrichment, e.g. through manure inputs from animals. The magnetic susceptibility of the samples is somewhat higher than anticipated and could reflect burning.

Soil micromorphology

Results are presented in Tables 233 and 234, and illustrated in Plates 364–378. Fifteen soil micromorphological characteristics were counted.

Context 6033 (M434): This is a coarsely mixed, loose chalk (sand, gravel and angular small stone-size material) and chalky subsoil (coarse silt and fine sand embedded in micritic soil), that also includes very few humic soil peds (Plate 364). The last contain very fine charcoal. Root traces are present alongside weak cementation by needle calcite ('lublinite'; Courty *et al* 1989, fig. 8.11d; see Plates 368–369).

This lowermost context is a loose deposit of coarse chalk, chalky soil and earthworm-mixed humic soil peds from above.

6032 (M434): This is a loose, possibly very thinly (5mm) layered humic silty soil (mainly weakly calcareous with some decalcified) mixed with chalk gravel/small stones (Plates 364, 368–371). Much biogenic calcite is present, in the form of: partially fragmented root pseudomorphs, with rare land snail fragments, and trace amounts of earthworm granules. Some chalk is coated with needle calcite. The soil is heterogeneous with broadly burrowed-in calcareous silt (loess-rich subsoil of rendzina). This material contains anomalously high amounts of yellowed and browned (Bullock *et al* 1985) root and other plant fragments, and amorphous organic matter which includes pollen/spores (Plates 372–373). Very fine charcoal is present.

Context 6032 is composed of possible chalk turf layers, with humic rendzina topsoils formed in loess drift overlying chalk. Burrowed inclusions of calcareous silt subsoil, which contains humifying plant material (including possible dung traces) and amorphous OM containing pollen/spores, is enigmatic.

Context 6032 (M433): This Context in M433 is the same as in M444, and can be considered as a mixed turf and chalk layer.

Context 6031 (M433): This is a micritic calcite and needle calcite-cemented, semi-layered mixture of soil clasts of calcareous silt, chalky subsoil and topsoil humic silt (Plates 365, 374–376). Some humic soil includes many very fine charcoal. Trace amounts of charcoal, including 1.5mm-size fragment are also present. The partially cemented 'planar voids'

between these soil clasts commonly show fine root traces and associated needle calcite infills and coatings. Areas of this layer are also fragmented.

This appears to be a layer of dumped material from possibly a trampled/compacted surface. It is also rather enigmatic, because it became cemented and rooted for a while, before being re-deposited here.

Context 6030 (M433): This Context is also present in thin section M432, where it is interpreted as a fragmented humic turf layer (Plate 365).

6030 (M432): This is a loose humic soil dominated layer with the humic soil as crumb structures (Plates 365, 377–378). Crumbs/peds from overlying Context 6029 are loosely mixed in.

Context 6030 is a fragmented humic turf layer.

6029 (M432): This is composed of loose, fragmented crumb and fine subangular blocky peds of chalky subsoil; a few humic soil crumbs are included in the layer (Plate 366).

Context 6029 is a layer of loose chalky subsoil.

Context 6029 (M431): This is composed of subsoil chalky soil and calcareous drift subsoil, with few included crumbs of humic silty soil (Plate 367).

Context 6029 can be considered as a layer dominated by subsoil material, which occurs between turf layers 6028 and 6030, which were also studied in this thin section.

6021 (M430): Here, a loose, burrow mixed crumb (humic topsoil) and fine subangular blocky (chalky subsoil) soil mixture occurs. The chalk stone content increases upwards from few to dominant.

Context 6021 is a mixed, loose turf layer buried by chalk dump.

Discussion

Soil classification

The humic nature of the turf material, both measured chemically (see above, Table 232) and as described in thin section, suggests that these soils can be classed as humic rendzinas (Icknield soil series) formed on chalk and a thin loessic silty drift cover (Jarvis *et al* 1983; 1984). Such turf material has been used extensively for the construction of barrows on the chalk and was employed at the Experimental Earthwork on Overton Down, Wiltshire (Crowther 1996; Crowther *et al* 1996).

Construction

The packing material around the Beaker inhumation is composed of often loose and fragmented humic turf, chalk stones, chalky subsoil and calcareous silty subsoil material (Plates 364–367). Unlike the experimental turf stack at Overton Down, which was exclusively composed of tightly packed decalcified humic soil, the packing material is much more loose and heterogeneous. It also includes some enigmatic materials. For example, in thin section M433, a cemented lump of mixed turf and subsoil is present (Context 6031; Plates 365, 374–376). This material appears to have been previously mixed, compacted and left to 'cement' and become finely rooted, all before being employed as packing material. It can be suggested that this material derives from an earlier construction/trampled construction area, and was re-used at this inhumation. This may suggest that the barrow was multiphase or material was collected from other barrow construction sites. In addition, fine humifying organic fragments and amorphous organic matter (some including pollen/spores) rarely occur as enigmatic inclusions with dumped subsoil materials.

Beaker (EBA) soil cover

The chief characteristic of the turves at Barrow 1, is that they are humic and contain much very fine charcoal. Management of the presumed downland landscape by fire can also be implied from the enhanced magnetic susceptibility (Table 232; Allen 1988; 1994; Evans 1972; Macphail 1987). Although these data imply a grazing land use, there is neither chemical nor soil micromorphological evidence to suggest marked stock concentrations in the locality of the barrow (*cf* Folly Lane turves; Macphail *et al* 1999; Wiltshire 1999).

Conclusions

Soil micromorphology and bulk analyses of packing material around a Beaker inhumation at Barrow 1 show that this is often a loose and heterogeneous material composed of humic turf and chalky subsoil materials. Some material was probably re-used from earlier constructional activity. It can be inferred that the turfs employed indicate a probable open downland landscape managed by fire, but that no local intensive stock concentrations are recorded.

Chapter 27: Documentary sources during the medieval period

Sheila Sweetinburgh

The Thanet Earth site, although extensive, still provides considerable challenges regarding its location within the documentary records. The site crosses the parish boundary between Monkton and St Nicholas at Wade which might in other parts of England indicate the presence of different manors, each being co-terminus with the parish. Unfortunately in Kent this is not the case where manors frequently comprised lands in several parishes and parishes might include lands from several manors. In addition, manorial lands were often parcellated, and this might refer to the demesne as well as to the tenant land.[1] Laws regarding tenant land were also complex, in part due to the large proportion of land within the county held in gavelkind that could be alienated by the holder and was subject to partible inheritance. Similarly for those higher in the social hierarchy, even though primogeniture was the standard form of inheritance under the feudal system, land held under knight service often became sub-divided over time, leading to multiple holders through sub-infeudation, inheritance, marriage, forfeiture and reapportionment. Nor were matters more straightforward for the lower peasantry who held by various forms of customary service, because even though they were nominally not allowed to 'sell' their lands, in reality there seems to have been a land market during the period, as seen in the various manorial court rolls, and, provided a relief was paid to the manorial lord, sons were able to acquire their father's holding under a partible system of inheritance. To add to this complex mix of landholding, manorial lords might seek to extend their estates by leasing out the right to reclaim or assart marshland and woodland, the recipients in the charters frequently described as A.N. Other and his co-parceners. Such groups may represent extended families of brothers and uncles as well as the nuclear family, but may also have included more distant family members or those from outside the blood and affinal kin. From the sources such networks were active by the first centuries after the Conquest in Thanet, as elsewhere in the county in what might be seen as the margins, a necessary development as the population rose and more land was needed to be brought into cultivation.[2] Such developments are in accordance with the archaeological results for the designated site and thus this report will concentrate principally on landholding and agriculture for the periods either side of the Black Death; that is up to the most densely populated time in the decades of the early fourteenth century and the impact of the apparently catastrophic depopulation that occurred in 1348–50 and beyond in the subsequent plague outbreaks. Before focusing on these two periods, the first section covers the earlier centuries to provide a short introduction.

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[1] Although now somewhat dated Du Boulay's assessment remains a useful starting point; F.R.H. Du Boulay, *The Lordship of Canterbury* (London, 1966), esp. ch. 4.

[2] For information on the various landholding agreements used in Kent see: K. Whitney (ed.), 'Introduction', in *The Survey of Archbishop Pecham's Kentish Manors 1283–85*, Kent Records 28 (Maidstone, 2000), xlvi–lxx.

Anglo-Saxon and Norman

Although probably spurious, in terms of the Seamark within the designated area, it is perhaps worth mentioning Ekwall's ideas regarding the name 'Thanet'. He suggests that it is 'a Celtic name identical to or cognate with the Old Welsh *tanet* (a derivative of *tan* 'fire') … and that Thanet may mean 'fire island' or 'bright island', in which case the reference is possibly to a beacon or lighthouse'.[3] However Paul Cullen believes this proposal should be treated with caution until or if more conclusive evidence can be found.

Turning to landholding more specifically, by the time of the Norman Conquest much of east Kent was in the hands of the Church, and the Isle of Thanet was no exception. Not only the Kentish kings but certain overlords such as Offa of Mercia had granted lands to local monastic houses and to the great Benedictine houses at Canterbury, as well as to the archbishop of Canterbury (originally the recipient might be the archbishop and his monks but, as Domesday records, these estates had been allocated to the two parties: the see; the prior and convent, and later further subdivisions within each took place). The earliest known grants date from the late seventh century and concern King Hlothhere of Kent and his gifts to Abbess Abba and Abbot Beorhtwald, the abbess receiving confirmatory and additional grants by the king's successors.[4] By the early ninth century some of these local institutions and those at Canterbury were seeking to consolidate their holdings in the area, which could involve the exchange of lands but at times also led to disputes and the need for arbitration between the parties concerned.[5] While such charters provide some topographical information, for the designated site the most relevant are probably from the tenth century. The first dated 943 refers to land at *Miclan grafe* which it has been suggested roughly corresponds to the parish of St Nicholas at Wade, although there are certain problems with this. If correct there are a couple of personal names associated with the bounds of this piece of land – *Ealuwig*, *Seolca* and *Hacga* – which may refer to earlier 'owners'.[6] A charter of the following year may be similarly informative because the bounds of *Æt Ealdingtune* are thought to encompass an area roughly corresponding to Monkton parish and adjoining Acol. This charter includes the Old English personal name *Ealda* and also *raculfinga mearce*, that is 'boundary of the people of Reculver', a larger forerunner perhaps of the collective holdings produced as a result of reclamation in the twelfth and thirteenth centuries (see below).[7] Moreover a contemporary charter for land nearby refers to 'the boundary of the people of *Niwantun*', again suggestive of collective working and residential practices.[8]

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[3] P. Cullen, 'The Place-Names of the Lathes of St Augustine and Shipway, Kent' (unpublished PhD thesis, University of Sussex, 1997), 522.
[4] Sawyer, *Anglo-Saxon Charters*: 8, 10, 14, 15, 1648.
[5] Sawyer, *Anglo-Saxon Charters*: 1267, 1436.
[6] Sawyer, *Anglo-Saxon Charters*: 512. Cullen, 'Place-Names', 523–524.
[7] Sawyer, *Anglo-Saxon Charters*: 497. Cullen, 'Place-Names', 525.
[8] Sawyer, *Anglo-Saxon Charters*: 489. Cullen, 'Place-Names', 527.

As a consequence of Viking raids and other problems that beset these local religious communities, the lands of houses such as the nuns of Minster and the abbey at Reculver were appropriated by Canterbury institutions in the eleventh century. The principal beneficiaries were St Augustine's Abbey and the archbishop, but the archbishop's monks of his cathedral church continued to have an important stake in Thanet through their extensive manor of Monkton (Cullen lists the first use of the name: *Munccetun* – 'Monks' farmstead' to a charter dated 961).[9] This priory manor extended beyond Monkton parish boundary to the north east into St Nicholas/Birchington where there were a number of subordinate manors or farmsteads, some of which acted as satellites of the main court at Monkton. Thus the Anglo-Saxon boundary between Canterbury Cathedral's (archbishop and monks, later Christ Church Priory) 'half' and St Augustine's Abbey's 'half' of the island was essentially the parish boundary between Monkton and Minster.[10] Additionally, the archbishop's lands in St Nicholas at Wade (subordinate manor of Downe Barton) and Sarre were counted within the manor of Reculver following reorganisation of the archiepiscopal estates and the break-up of the great manor of Northwood by the late eleventh century.[11]

Following such reorganisation and consolidation, Domesday provides a useful snapshot of the territorial landholders in the late eleventh century, the type of peasant communities in this part of Thanet, as well as information about the local economy. The entries for Reculver (archbishop), Monkton (Christ Church Priory) and Minster (St Augustine's Abbey) highlight the relative importance of the tenant land in that in each the proportion of ploughs in lordship to the total is small (Reculver: 30 ploughs, 3 in lordship; Monkton: 31 ploughs, 4 in lordship; Minster: 62 ploughs, 2 in lordship).[12] Again as one might expect in Kent considering the different forms of land tenure (see above), villagers significantly outnumbered smallholders (Reculver: 90 villagers, 25 smallholders; Monkton: 89 villagers, 21 smallholders; Minster: 150 villagers, 50 smallholders). These well-established, sizeable peasant communities also had a church, the manor of Monkton having two which suggests the priory's manor had multiple foci in addition to any scattered farmsteads. In part these may correspond to particular sites of economic activity, such as mills, salt-houses and even fisheries. Place-name evidence may extend such information because in addition to the mill at Monkton itself, the 'ancient' name for Acol was Millburgh which comprises the elements *myln* and *beorg*, denoting 'a mill-mound' (see below).[13] Whether these early mills were also used as seamarks is not clear but they presumably had the potential to fulfil that role.

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[9] Sawyer, *Anglo-Saxon Charters*: 1212. Cullen, 'Place-Names', 535.
[10] Sawyer, *Anglo-Saxon Charters*: 14; A. Williams, 'The Anglo-Norman Abbey', in *St Augustine's Abbey*, ed. R. Gem (London, 1997), 62–3.
[11] Witney, *Survey of Manors*, 69.
[12] *Domesday Book: Kent*, ed. P. Morgan (Chichester, 1983), 2.13; 3.7; 7.8.
[13] Cullen, 'Place-Names', 527.

Before the Black Death – landholding, settlement patterns and farming practices

As noted above, the manorial composition in the Isle of Thanet comprised a mix of demesne land and various forms of tenant land. Even though in reality the balance among these different constituents might change over time, each category was theoretically linked to the particular customary services due from that type of holding.[14] Those owing the least were the gavelkind tenant holdings, which were to be found on all the major ecclesiastical manors and known as 'sulung/swyllyng/suling'. This term, like the yoke, had been extensively employed by the Domesday commissioners but its continuing value as an administrative/fiscal as well as to a degree a physical entity (but perhaps not necessarily in one block) within the manorial structure seems to have been in place by the thirteenth century.[15] The sulungs of the archiepiscopal estates were about 160 to 200 acres in size, those in the manor of Reculver *c.* 200 acres, but whether this also holds true for the Canterbury religious houses is unclear.[16] These sulungs were predominantly named after an early tenant, which may indicate that originally these were intended to be extended family holdings, or perhaps more likely the holdings of the principal tenant and his associates (see above). Comparable examples of such designated holdings are particularly prevalent in the Romney Marshes, especially in the manors of Christ Church Priory and Battle Abbey.[17] The naming of these sulungs by tenant rather than by topography means that they are generally impossible to place in the landscape, but occasionally it is possible to ascertain the approximate location. For example the sulung of Thomas at Brook in Reculver manor appears to have included land in St Nicholas at Wade.

By the late thirteenth century, and probably earlier, these holdings had been sub-divided and become fragmented as peasants held small plots in a number of these large holdings, and sometimes even more than one plot in the same named sulung. Such division was the result of inheritance, the land market and also sub-letting, as in the case of the heirs of John Rike who held part of John Potyn's half acre holding within the sulung of Thomas at Brook. As a result there were at least 59 landholders who had a share of the land in this sulung in the 1280s. Moreover the tiny size of some of these holdings can be seen in the same sulung where the heirs of Roger of Algnod and his partners only held in total one and a half virgates.[18] One of the reasons for such fragmentation was the increase in population during the twelfth and thirteenth centuries, yet as Richard Smith has shown for East Anglia, another region where

[14] Although from the later Middle Ages, it is worth noting that Inland could be part of a Sulung; CCAL: U15/24/28.
[15] In addition to named sulungs in the late medieval court rolls, land was sometimes referred to as 'inland', 'rentland', 'freeland' and 'dayworks'.
[16] Witney, *Survey of Manors*, 380.
[17] The southern marshes seem to have had a comparable system although the nomenclature apparently differed. For example the tenant land of the Christ Church Priory manor of Appledore included 36 tenementa in 1383–4, these ranged in size up to 100 acres.
[18] Whitney, *Survey of Manors*, 74.

partible inheritance was customary, the number of peasant families where more than one or two male heirs came to maturity was in reality small, and thus was less important in the break-up of family holdings than previously believed.[19] Unfortunately this cannot be tested for Monkton because court rolls from this period do not survive (a single roll for Monkton and Brooksend dated 1276).[20] Nevertheless, it was not the only factor and the presence of an active peasant land market was significant because it created an inherently fluid system.[21] In some cases peasants might 'sell' all or part of their small acreage, probably through poverty, so becoming more impoverished longer-term or even more reliant on by-employment, but conversely it offered some opportunities for the more prosperous to increase their overall acreage through the acquisition of these same small plots. For example in the late thirteenth century Gervase, Robert, John and Walter inherited equally from their father but Gervase then bought out one of his brothers, although Robert and John retained their shares.[22] Some of these plots might be adjoining, yet it seems many tenants had scattered holdings which might extend beyond their home parish. In addition, some peasants 'sold' land and/or rents to institutions, especially the Church, as a kind of insurance system where they would then become the institution's tenants or sub-tenants, which might in turn safeguard the relationship between the seller and the land for the next generation, and also provided them with an initial small lump sum.[23] This apparently more flexible land market was due in part to the agrarian field system used in Kent, which included large fields but not the great open fields of the champion country of the Midlands where strip farming was the dominant system. Instead the large Kentish fields were generally divided into small unenclosed blocks held by the various peasant landholders who could farm them as they saw fit (see below).[24]

Further evidence for the exceptionally high population density within Thanet during this period comes from a number of sources.[25] For example rentals for St Augustine's manor at Minster list large numbers of tenants, and in addition they also show the presence of collective holdings, as least in terms of the rents paid.[26] Perhaps even more significant is a Christ Church charter of about 1200 in which the priory leased out part of

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[19] R.M. Smith, 'Some issues concerning families and their property in rural England 1250–1800', in R.M. Smith (ed.), *Land, Kinship and Life-Cycle* (Cambridge, 1984), 50.
[20] CCAL: U15/24/22.
[21] The transfer of customary land between tenants was accepted by manorial lords provided the transfer was recorded in the manorial court rolls and a relief was paid by the incoming tenant.
[22] CCAL: DCc/ChAnt/M/137, 138, 139.
[23] Something similar was agreed between John the clerk son of Adam and Christ Church Priory in 1249, where for greater security John bound his whole holding to the priory so that it could not be sold without the prior's consent; CCAL: DCc/ChAnt/M/133.
[24] B. Campbell, 'Agriculture in Kent in the High Middle Ages', in *Later Medieval Kent 1220–1540*, ed. S. Sweetinburgh (Woodbridge, 2010), 26.
[25] Campbell, 'Agriculture', 27.
[26] *Black Book of St Augustine, Canterbury*, ed. G.J. Turner and H.E. Salter (London, 1915), pt 1, 15–16, 19–21.

the demesne lands to 52 of its tenants.[27] Most received a few acres, ranging between five to half an acre, although whether this represents additional land or their total holding is unknown. Nor is it clear where this land was located but it did include marshland which may imply it was to the west of the parish near to the Wantsum Channel. However such land would have been exceedingly productive, if somewhat vulnerable to flooding, while the higher, eastern chalkland of the island was also good farmland, reflected in the area's high land values.[28] Nevertheless, the small scale of individual tenant holdings suggests that generally the Thanet peasantry were not prosperous and that a proportion may have been poverty stricken at certain times during their lives. It has been calculated that a peasant family in this period would need at least fifteen acres to be self-sufficient; that is to include a slight surplus to allow for the payment of rent and other dues, as well as essential purchases. An idea of the relative economic difficulties for the region's peasantry can be seen from the 1334/5 lay subsidy figures (calculated by hundred), where this extremely densely populated region saw average assessments of 3s 3d (Romney Marsh and its borders average payment 4s, north-central Kent 4s 5.5d).[29] The range of individual assessments within Ringlo Hundred did vary, yet it is worth noting that the lowest assessment of 1s is higher than that of some other hundreds, indicative perhaps of local land quality and customary tenure.[30] Regarding the latter, labour services were generally light compared to elsewhere in the country and the shift to cash rents had already occurred by the end of the 13th century in much of Kent (mostly at customary or fixed levels rather than the market price), or where customary works were still required they were relatively moderate.[31] This had a considerable impact on the management of the demesne land because rather than relying on the tenants to perform the necessary works such as ploughing, harrowing, sowing, weeding, mowing, harvesting, carrying, etc., the sergeants or reeves at Monkton (as elsewhere) had to hire specialists as well as agricultural labourers.[32] Such factors had implications regarding landholding: families could supplement their income through employment opportunities provided on the demesne farm (and associated activities such as blacksmithing, carpentry, thatching) which meant they could survive/prosper on a smaller holding or total acreage than elsewhere in England; and also local settlement patterns and the economy (see below).

So what effect did matters of landholding and customary manorial regulations as outlined for the Monkton area have on local settlement patterns? In broad terms, the archaeological findings of small enclosures with buildings (farmsteads and ancillary

[27] CCAL: DCc/ChAnt/M/130.
[28] Campbell, 'Agriculture', 31, 36.
[29] 'The Kent Lay Subsidy Roll of 1334/5', ed. H. Henley and *c.* Chawklin, in *Documents Illustrative of Medieval Kentish Society*, Kent Records Series 18 (Maidstone, 1964), 66, 68, 71–6.
[30] CCAL: DCc/Register C, ff. 128v–9, custumal of Monkton. Whitney, *Survey of Manors*, 69–3, customs and services of Reculver manor. *Black Book of St Augustine*, pt 1, 25–9, custumal of Minster.
[31] Campbell, 'Agriculture', 27.
[32] For example in 1317/18 twenty-two famuli are listed; CCAL: DCc/BedelsRolls/Monkton/49.

buildings) often sited against a roadway are generally similar to Luke Barber's findings for peasant holdings in the Lydd area.[33] Although those at Lydd were on gravel rather than chalk the similarity is probably not surprising because there too many peasants engaged in by-employment having small scattered acreages, and access to and from their discrete plots, and the local markets and manorial centres would also have been important. The documentary evidence for Monkton substantiates these ideas, such as the grant Alwyn son of William of Monkton made to the priory in the mid thirteenth century of an acre of land with a house on it.[34] The boundaries of his plot included the land of his brother to the east (suggestive of partible inheritance) and the king's highway to the north. Road frontage was also a factor even where there were no buildings present: one of Luke of Broadgate's plots (1 acre) abutted the road to Monkton, and it also abutted part of the priory's demesne, which may imply matters of access were equally pertinent for Christ Church. This is not to suggest the settlement pattern was exclusively linear (ribbon development), as found in the Midlands where the strips in the great open fields were generally behind each individual holding, but that along many of the roads and trackways in the Monkton/St Nicholas area there was a mixture of small enclosures of which some included farmsteads.

Additionally the manorial centres with the parish churches were also places of settlement, allowing easy access, in particular, for those working on the demesne land. Equally the peasants themselves made use of these village centres. The two peasants who granted 4.33 acres in several plots but all within the 'villa' of Monkton to Adam son of William de Wode intended that Adam should pay the rent annually to them when they met in the local churchyard.[35] Similarly William of Monkton, whose capital messuage was in Monkton village, specified in his grant to Hugh son of Jordan of Chillendon that the rent for the 3 roods of land in Monkton should be paid annually at his house. It is possible most of Hugh's other land was at Chillendon rather than at Monkton, which may highlight the distances peasants were prepared to travel to acquire even small plots of land. However it is also possible that having acquired the 3 roods Hugh sub-leased it to someone more local.[36]

The settlement pattern also included smaller clusters such as 'Parva Monketon', although how much smaller is unclear. Such sub-centres were similarly linked into the road network across this part of Thanet. For example William of Monkton's messuage with two houses in the 'villa' of Parva Monketon abutted the king's highway to the north.[37] It is possible some of these smaller settlements coincided with the location of the priory's three mills in Monkton manor, and the mills of others (the Monkton

[33] L. Barber and G. Priestly-Bell, *Medieval Adaptation, Settlement and Economy of a Coastal Wetland: the Evidence from around Lydd, Romney Marsh, Kent* (Oxford, 2008), esp. ch. 1, 2 & 4.
[34] CCAL: DCc/ChAnt/M/147.
[35] CCAL: DCc/ChAnt/M/168.
[36] CCAL: DCc/ChAnt/M/171.
[37] CCAL: DCc/ChAnt/M/149.

beadles' rolls from the late thirteenth century refer to Monkton mill, Grovemell, the mill of Brokesend, the mill of Aghelo [Acol]).[38] About seventy years earlier Gilbert the Scot had come to an agreement with the priory which allowed him to build a mill. Its site is not specified but the circumstantial evidence points to one of the sub-centres, the 'berga' called 'Hecgelane'.[39] Gilbert does not appear to have been the only tenant seeking to build a mill because William at Wode, in 1203, agreed to renounce his intention to build one although it is not clear whether he had previously had one on his land at Acol.[40] The prior seems to have viewed such developments with some concern, seeking written confirmation of the priory's superior position vis-à-vis milling in the area. Nevertheless, such agreements do highlight causal features in the development of the settlement pattern in western Thanet, the location of windmills similarly linked to topography.

The form and layout of the peasant messuages or farmsteads is exceedingly difficult to ascertain from the documentary sources, not least because court rolls and wills hardly survive at all from this period for this part of Kent. Similarly charters barely ever include any details of this nature, an exceedingly rare exception being that involving the messuage with buildings rented to Henry le Irnygh in Minster by St Augustine's Abbey, the messuage said to be fifty feet in length and forty-seven foot in breadth, the plot abutting the road to the north.[41] In addition, an inquisition taken in 1304 concerning the damage done to one of the priory's tenant farmsteads in Monkton is indicative of the mix of domestic and agricultural buildings to be found on such sites. The buildings damaged included the hall and kitchen (which may have been detached), and the barn, and the damage itself included the removal of windows, doors, benches and the hall roof.[42] Interestingly the two miscreants were also said to have cut down trees that may imply some sort of shelter break around the holding, a feature similarly found on the Romney Marshes. Although the beadles' rolls only refer to buildings which formed part of the manorial complex, they do highlight the diversity of agricultural buildings at Monkton and Brooksend – barns, granary, stables, sheep house, cattle sheds, pigeon houses (dovecote) – and certain peasants may have had some specialist structures.[43] In addition to these categories of building, it seems likely that those involved in craft occupations such as blacksmithing would have had their forge there too, but for some such as shoemakers no special workshop space would have been required. The documentary evidence for peasant brewing and baking which can be gleaned from the Assize of Bread and Ale is only available for the late fourteenth century, where it shows very few brewers or bakers, and may not be applicable to the earlier period.[44]

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[38] CCAL DCc/BedelsRolls/Monkton/6, 9, 18.
[39] CCAL: DCc/ChAnt/M/146.
[40] CCAL: DCc/ChAnt/M/131.
[41] CCAL: Lit. MS/E/19, f. 15.
[42] CCAL: DCc/ChAnt/M/191.
[43] CCAL: DCc/BedelsRolls/Monkton/3, 9, 14, 20, 23.
[44] Frequently only a couple of brewers are cited at the most whereas on other manors women brewers, in particular, were often numerous.

Nevertheless it is likely a number of households engaged in these activities, especially brewing, for sale to their neighbours.

Even though probably most households were involved in some form of by-employment, the primary economic activity would have been farming among the peasantry of Monkton. Documentary evidence for peasant agriculture pre Black Death is exceedingly limited which means our knowledge rests principally on the archaeological record and indirectly from demesne accounts. Bruce Campbell's assessment of these accounts for thirteenth and fourteenth century Kent has highlighted the predominance of an agrarian system based on intensive mixed farming with cattle. As he notes the key features of this system are the close integration of arable and livestock production, the cropped land providing fodder and seasonal grazing for the animals, the latter in turn supplying draught power and manure to the arable. Legumes were important in various combinations but almost always involving peas, beans and vetches. As a consequence the 2 or 3-course rotation found elsewhere that included leaving the land fallow for a year was not necessary (land might be left fallow occasionally if it became too 'dirty' due to weeds). Such greater flexibility meant communal-wide cropping regimes were not practical, but did mean both winter and spring-sown crops could be grown in the same large fields in discrete sectors. Wheat was the premier winter-sown crop, barley the spring-sown, but oats were also significant in some areas/manors. Soil improvement – manure, legumes, marling – was also practiced, and seed rates for the various cereals were particularly high.[45] Even though oxen were used as draught animals, horses were similarly employed. Of the pastoral livestock, cattle were kept more as dairy animals rather than for meat production, which meant intensive management requiring skilled husbandry. Sheep were managed less intensely, and although numerous in terms of livestock units were less significant than cattle except where conditions favoured sheep over cattle. Pigs were also kept, partly due to the large tracts of woodland, often as denns associated with manorial centres elsewhere, but also intensively through the use of pig housing and stall feeding.[46]

This is broadly applicable for Monkton but it is worth noting a few points. Although the acreage down to any particular cereal varied year on year, those sown regularly were (winter) wheat, winter and spring barley, spring oats, and rye, but unlike some manors barley and oats were especially important.[47] The legumes – peas and vetch – often represented a considerable acreage, and perhaps equally significant such cropping was not new in the late thirteenth century (first bedels' rolls) having been part of the arable regime from at least 1191x1213.[48] Oxen, cart and plough horses were used at Monkton, and milk for dairy production (butter and cheese) was provided from the cow herd and sheep flock, the latter also important for wool production (including wethers). A small

[45] Campbell, 'Agriculture', 38–9.
[46] Campbell, 'Agriculture', 32–5.
[47] R.A.L. Smith, *Canterbury Cathedral Priory* (Cambridge, 1969), 185.
[48] CCAL: DCc/ChAnt/M/130.

breeding herd of pigs was also kept and poultry were similarly present (could include swans).[49] Nevertheless, frequently sizeable acreages of herbage were rented out to tenants, and some of these blocks were also large: a 52-cow pasture, a 176-ewe pasture.[50]

How far these findings might apply to the peasantry is probably impossible to ascertain but it seems feasible that such husbandry techniques were to a degree copied by the more able. Moreover this intensive horticultural system was possible on small plots especially where family labour was available for activities such as weeding and harvesting, and similarly for intensive, if small-scale livestock production. Even though the evidence covers the hundred of Newchurch in Romney Marsh, it may represent a similar scenario to Monkton in the early fourteenth century. For Newchurch, Andrew Butcher found that almost all the peasant households taxed had pigs and three-quarters owned sheep but only small flocks (over 80 per cent had less than twenty-one animals).[51] Cattle were less common, not least because they require a larger acreage, and 58 per cent had at least one cow, most having a small herd. Far fewer kept oxen but over 40 per cent had horses, including mares and foals. The arable is more problematic because the taxation records only refer to surpluses but from these it seems wheat and oats were the main cereals, while beans and vetches were also grown. However from the Monkton charter evidence it is clear spring barley was grown locally.[52] It seems likely, therefore, that all three cereals (wheat, barley and oats) were to be found on local tenant holdings, individual peasants to a degree aided by the composition of their dispersed small landholdings. As a consequence, where individual peasants were sufficiently prosperous it seems likely the buildings on their farmstead would have reflected their farming activities, but how far this would have involved specialist structures is difficult to assess (see above).

After the Black Death – continuity and change

Like other priory manors Monkton was at times badly affected by the agrarian disasters of the early fourteenth century. Even before the Great Famine and subsequent problem years in the 1320s and 1330s, the sheep flock had already sustained considerable losses.[53] Peasant agriculture was presumably also affected although to what extent is unclear. Nevertheless, Campbell considers the agrarian regime employed on the demesne lands of Kent was sufficiently intensive and well-managed to maintain fertility, and that its managers were sufficiently resilient that it was capable of sustaining the status quo if plague had not struck.[54]

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[49] CCAL: DCc/BedelsRolls/Monkton/27.
[50] CCAL: DCc/BedelsRolls/Monkton/20.
[51] A. Butcher and A. Gross, 'The History of Romney Marsh c.1150–1350', unpublished report, Romney Marsh Research Trust (1991), cited in Barber and Priestly-Bell, *Lydd*, 20.
[52] CCAL: DCc/ChAnt/M/150.
[53] For example sheep mortality was exceedingly high in 1301/2, 1304/5 and 1305/6.
[54] Campbell, 'Agriculture', 49–50.

The arrival of the Black Death and subsequent plague outbreaks did not immediately lead to significant changes in either how the land was farmed or by whom. Yet in the longer-term considerable changes did occur regarding who farmed the demesne, as well as issues concerning peasant landholding and settlement, and would to a degree also lead to changes to farming practices. Nevertheless because this area of east Kent was so densely populated in the immediate aftermath there were still considerable numbers whose holdings were small and who could take on the plots of their dead neighbours and kinsmen.[55] For example in 1374 the heirs of Laurence Carles inherited an acre of tenant land in Monkton manor and John Gylbart acquired three roods.[56] By the next generation, however, there was a change and even though the court rolls continue to record some small land transfers, others refer to far larger acreages. At the court in April 1397 Simon atte Weye and Joan his wife paid relief on four acres she had inherited from Christine Charles, possibly her widowed mother, and the same day the beadle John Rook paid relief in the name of the heirs of John Stapelgate for two hundred acres of land. Purchases too might involve larger acreages: at the same court John Broke acquired seventy-four acres from John Kynton, whereas Thomas Stenedy's new acquisition was tiny being an acre and three roods.[57] Consequently even if these holdings still comprised scattered plots, it does indicate the realization that individual peasants could build up far larger holdings over time that might also include lands from different landlords. The disparate size of the plots of land that were bought or inherited continued into the fifteenth century but another growing trend was the problem court official encountered in trying to find blood or affinal heirs. For example at a court in September 1406 the beadle was called upon to answer for the heirs of a number of deceased tenants who were required to inherit land and also for several others who were also 'missing'.[58] In other cases only one of the heirs was present in court, and even though the others were distrained to attend the court, the officials were not always successful. Moreover the connections between families and land were disappearing within the communal memory, at an inquiry in the same year when the jurors were unable to say who rightly held the tenement and land lately held by Roger Ynkele.[59] Such difficulties at times meant that the priory's officials were forced to take land or property in hand: in 1396 a messuage that had been John Toddy's.[60]

As a result of these changes regarding the balance between land and tenants some sulungs were no longer held by numerous peasants but might be in the hands of one individual, for example the Swyllyng of Dene that was inherited by Edmund Wykes on

[55] CCAL: DCc/ChAnt/M/160.
[56] CCAL: U15/24/23.
[57] CCAL: U15/24/26.
[58] CCAL: U15/24/27.
[59] CCAL: U15/24/27.
[60] CCAL: U15/24/26.

the death of his mother in 1422.[61] Such peasant holders might in turn lease out part or all of these holdings, the sulung or similar becoming in effect a sub-manor. John Stapulgate had 200 acres of land in *c.* 1420, which appears to have been farmed by his own 'tenants'.[62] Not all those acquiring or building up such holdings were locals and from the later fourteenth century there was a growing engagement in the Monkton land market by those from Canterbury, other Kentish towns and from outside the county. This was not a totally new phenomenon but was more pronounced not least because at times large acreages were involved. In general these new landholders were prosperous, leading citizens, men such as John Roper of Canterbury, who from the late fourteenth century were in a position to accumulate land from several manors in east Kent, but also included members of the nobility.[63] Furthermore, the role of outsiders in the customary land was not confined to individuals, because as elsewhere in the county real estate was used to endow and support the new Oxford and Cambridge Colleges. For example in 1495 the master of Queen's College, Cambridge purchased 143.5 acres of land at Nicholas Courte, Birchington.[64]

An associated development that similarly reflects this balance was the move away from direct farming by the institutional landlords to renting out the demesne land as a complete holding for an annual cash payment. This farming of the demesne was often on a short-term lease of up to ten years, and involved restrictions on the way it could be farmed, especially in the final year of the lease.[65] Such agreements generally involved the manorial farmstead and equipment, thereby providing additional opportunities for economic and social advancement. John Queyk was the farmer of Monkton manor between 1418 and 1420, and then seems to have leased it again in partnership with two other men.[66]

How far such changes in landholding affected the settlement pattern in west Thanet is more difficult to quantify from the documentary sources, but most of the land transfers recorded in the court rolls was not said to include property. Yet small plots with a messuage did not disappear completely, although it seems increasingly unlikely that these comprised the sum total of an individual's holding except for the poor. It is possible some property became dilapidated, its new holder valuing the land not the buildings, while the absence of the landlord's intervention at such times, found elsewhere nationally, may reflect the light level of customary manorial control and the

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[61] This broad change to much larger peasant holdings appears to have taken place about a century before such changes on the Romney Marshes, see J. Eddison, M. Gardiner and A. Long (eds) *Romney Marsh: Environmental Change and Human Occupation in a Coastal Lowland* (Oxford, 1998); A. Long, S. Hipkin and H. Clarke (eds), *Romney Marsh: Coastal and Landscape Change through the Ages* (Oxford, 2002).
[62] CCAL: U15/24/23.
[63] CCAL: DCc/ChAnt/M/161, 180.
[64] CCAL: U15/24/23.
[65] CCAL: DCc/ChAnt/M/165A is a lease for Monkton manor for seven years, dated 1403.
[66] CCAL: DCc/BedelsRolls/Monkton/112, 114; DCc/ChAnt/M/185A.

inability of court officials to punish offenders. Consequently for those continuing to live and farm in the Monkton area, the pattern of a mix of nuclear settlements, some linked to mill sites, and scattered farmsteads probably did not change fundamentally, but some settlements may have shrunk, or even disappeared, and the farmsteads probably became far more scattered, although still wherever possible abutting a roadway. In an agreement drawn up between Christ Church and John Bengekyn of Sarre, there was to be a right of way marked by stones from John's house to the common way. Regarding the disappearance of potential settlement foci such as mills, Monkton manor leases from *c.* AD 1400 only mention two windmills: at Monkton and Birchington, the mill at Acol seems to have disappeared, its earlier existence solely preserved as a place name – a 'milborough' called 'Accolt milborough'.[67] Nevertheless, there court rolls and charters continue to record the presence of numerous roads/trackways across the Monkton area which suggests it was still relatively densely populated.[68] Nor were mills and roads the other man-made features because seawalls continued to be essential parts of the marshland/Thanet infrastructure, and even in the early fifteenth century a new salt pan was developed within Monkton manor.[69] Such features in the Monkton landscape were used as topographical markers, like 'Mildrede mark, that seems to have been on the way between Westgate and Higham. This particular marker may have involved some sort of stone or collection of stones (John Seman broke a mark stone in 1474).[70] Whether it was directly associated with 'Myldredweye' is less certain because this appears to have been a royal highway at Monkton (or on the border with Minster) that led to the sea.[71]

From the manorial and testamentary evidence, it appears those farming in the Monkton area were generally engaged in mixed farming in this period. Wheat remained the premier cash crop but some barley was presumably also sold, perhaps most frequently as malt. Oats, for animal and human consumption, was grown, as were peas and tares. John Malyn in the mid fifteenth century was using a horse-drawn plough, and the other livestock on his farm included at least 250 ewes and a small number of cattle, including cows.[72] Thus livestock were seemingly becoming more important as average holdings increased in size. Yet compared to some other parts of the county continuity rather than change would seem to define the farming practices of the late medieval and Tudor yeoman and husbandrymen in the Monkton area.

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[67] CCAL: DCc/ChAnt/M/167A, 203.
[68] For example: the pathway from Acol to Minster mill, the common way at Queykestrete, the common way leading to Brokesende mill, the common way between Birchington and Wood, the king's way leading to Gorestrete, and the way from Monkton to Minster; CCAL: U15/24/23, 27.
[69] CCAL: DCc/ChAnt/M/165.
[70] CCAL: U15/24/23.
[71] CCAL: U15/24/28.
[72] CKS: PRC 32/2, f. 160.

Chapter 28: Monkton Mill and the Monkton seamark

Peter Searey

The present section describes the results of brief documentary research into the post-medieval history of Monkton Hill. The research sought to clarify the origin and nature of some of the 'most significant' post-medieval (Phase 17) features uncovered on Plateau 6 of the Thanet Earth excavation, 2007 to 2008, as described in the *Draft Assessment* (Rady *sd*): specifically, Structures 57 to 59 and the SFB 80/18.

The main documentary sources used have been the Trinity House records, now held at the London Metropolitan Archive (LMA); and topographical works at a variety of institutions including Margate Public Library (MPL) and Special Collections of the Templeman Library of the University of Kent (SCTL). The local-studies and mills material at SCTL have also been most useful; we are grateful to Jane Gallagher, who is in charge of these collections. We are also grateful to Phil Spain, administrator of the *Ramsgatehistory* website, for providing us with a scanned photograph of the Monkton Seamark (Plate 384). The original of this photograph is held locally, and it would be worth investigating whether other documents survive with it.

The results of the documentary research agree seemingly very well with the excavated features. It has been possible to refine their interpretation considerably, bringing to light some interesting local history. They represent a former post-mill (Structure 58), perhaps the last of a series of windmills that had stood in the vicinity from medieval times. A nearby sunken-floored structure (SFB 80/81), was probably ancillary to this mill, although we have not uncovered any documentary evidence to confirm this. The mill was removed *c.* 1782, and was almost certainly translated to Sarre, a short distance down the road. This deprived Thames sailors of a useful seamark, and, in 1783, a timber 'beacon' or seamark was erected as a replacement (Structure 57?). This was augmented, in 1785, with a second mast, to make it more conspicuous; shortly afterwards, however, the whole beacon was blown over. A second timber beacon was erected in 1786, but this lasted only a few years before it, too, was blown down. In 1791, a very substantial brick seamark was erected on the site, in the form of an obelisk (Structure 59), standing until its demolition in 1922.

Monkton Mill, medieval or early post-medieval to early 1780s

Down to the eighteenth century, Monkton Mill was one of several windmills, standing on eminences, overlooking Thanet, grinding corn from the island's abundant cornfields.[73] The evidence for cross-trestle foundations unearthed on Plateau 6 of the

[73] There were few, or perhaps no, streams in the area adequate to power watermills.

Thanet Earth excavations certainly belonged to this mill – the last to have stood in this vicinity. There appears to have been a mill on the present site by 1596 (Symonson's map), and one may well have existed since medieval times. Hasted (1799, 309) considered the eighteenth-century Monkton Mill the direct descendent of the one mentioned in Domesday, belonging to the Archbishop's manor of Monkton.[74] It seems likely that the mill leased, by the Prior, to members of the Fantyng family, Henry at See, and Vincent Notyngham, on 26 July 1505, together with the manor of Monkton, the 'Accolt milborough,' and other property (CCA: DCc/ChAnt/M/167A *cf* EKA: U1496/T20 and CCA: U62/21/B/2/3/1), was hereabouts. The only contemporary pictures of Monkton Mill that we have been able to trace are the, presumably conventional, depictions of it on maps (*e.g.* Plates 379 and 380). These, for what they are worth, suggest a post-mill, which well agrees with the excavated remains. The nearby sunken-floored building (SFB 80/1), known only from excavation, was presumably ancillary to the mill, but we have not yet discovered any documentary reference.

Brent (1863, 307) suggested that the brick seamark, which had, by his time, replaced Monkton Mill, denoted the site of an ancient warning beacon:

> The rising land especially, stretching from St Nicholas towards Birchington, was one continuous forest; a spot which is still denoted by a sea-mark, where the timber was once consumed.

There cannot have been any such direct continuity, however. For many years, the windmill was the only conspicuous object at this point on the horizon, and it seems unlikely a fiery beacon would ever have been wanted in close proximity to such a structure. As we shall see, the decision to build the Monkton Seamark, late eighteenth-century, was taken quite independently of any conception that there might have been a beacon here in the past.[75] Rather, Monkton Mill itself had provided a seamark.

The use of Monkton Mill as a seamark

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[74] This might, given that the mill on the present site had been removed by this time, suggests Hasted was referring to a different windmill, especially since he, elsewhere (*ibid.*: 302), refers to a mill that had been replaced by a brick obelisk. Hasted, however, described the obelisk in question under the heading of 'St Nicholas' rather than that of 'Monkton,' so it is very likely he merely failed to notice that the mills he was talking about were identical. Hasted could quite easily have made such an error, having been noticeably less careful with regard to details places and buildings than he was with genealogy and heraldry (see Austin and Seary 2005: 13). As we shall see, several late eighteenth- and early nineteenth century maps failed to notice that the Monkton Mill had been removed.

[75] Beacons were of course prominent in antiquarian conceptions of Thanet; since at least the seventeenth century it had been suggested the island itself was named for its prehistoric warning fires in elevated locations. There is cartographic evidence for one or more beacons somewhere between St Nicholas-at-Wade and Woodchurch in Thomas Elmham's early fifteenth-century map, and in Lambarde's late sixteenth-century *Carde of the Beacons in Kent* (1588). Neither of these, however, provides strong evidence for the present location; Telegraph Hill, nearer Minster, seems at least equally probable. We have not been able to find that anyone has published a very detailed topographical interpretation of Lambarde's *Carde*, although such a document may simply have eluded us. The Monkton Seamark would sometimes be referred to as a 'beacon', but this was, as we shall see, in the nautical sense, quite distinct from that of the fiery military signal.

> The two steeples of the church, called the Sisters, or the Reculvers, [...] formerly served as a sea-mark for avoiding the flats or shallows in the mouth of the Thames; but, by the shifting of the sands, they are now said to be no longer useful, and mariners rather depend on St. Nicholas' Church, or Monkton Mill (Battely 1774, 51n.).

Assuming such a structure then existed, a mill in this vicinity may well, like the nearby spires of Reculver Church (Austin and Seary 2010), have aided navigation since medieval times.

Historically, landscape features thus employed went by a variety of names: landmarks, seamarks, leading marks, thwart marks, beacons (variously hyphenated and with considerable overlap in their meanings). By lining prominent marks on the horizon with other features nearer the shore, pilots could keep to fair channels and avoid submerged hazards such as rocks and shoals. Increasingly, during the early modern period, seamarks on the land were supplemented by 'beacons' – ships deliberately sunk to mark the positions of dangerous sands – and by timber buoys, out in the Estuary. Pilots could also, of course, take bearings on seamarks, and establish their location by triangulation, but this, being a rather more complicated procedure, seems to have been less common than simply watching for a series of alignments between such marks, whether on land or at sea. Occasionally, however, it was useful to know that a certain beacon were at a given, and usually a simple, bearing relative to a feature at sea. Directions for the use of seamarks, beacons, and buoys in particular courses were set down in notebooks called rutters, and later printed and published. From the sixteenth century, the more important of the seamarks became, in part, the responsibility of the Brethren of Trinity House, who were also, from 1566, entitled to set up new, purpose-built marks on land and at sea.[76]

The probable removal of Monkton Mill to Sarre, early 1780s

Monkton Mill seems to have disappeared from the Thanet skyline in the early 1780s – probably in 1782, certainly by late September 1783 (LMA: MS 30010 vol. 17: 277–278; see below). According to local tradition it was taken away and rebuilt just down the road at Sarre:

> Many years ago a windmill stood in the cornfields on the high ground on the west side of the road leading from Brooksend, near Birchington, to Monkton, and near the junction of the road leading towards Acol. It was used as a landmark from the sea, but it was removed to Sarre, where we see it to-day, and then the

[76] *Act to enable the Trinity-house to erect sea-marks and give licence to mariners to row in the river of Thames.*

> sailormen, while cruising up and down the Channel, found that they had lost their beacon (Igglesden 1932: 77).[77]

Finch (1933, 247–248; 272) cited this tradition, as explaining why he could not find Monkton Mill on maps later than 1769.[78] He, however, strongly doubted that the mill had been thus translated, since 'the records of Messrs. Holmans [millwrights] of Canterbury show that the [Sarre] mill was built [...] by John Holman in 1820.' The present mill is, in any case, a smock mill, rather than a post mill as existed at Monkton, so the two could not, simply, be identical. Windmill relocations are a particularly perilous subject in local history, with many dubious examples asserted throughout South-East England (Hawksley *s.d.*).[79]

In the present instance, however, there is strong circumstantial evidence to support the tradition. Firstly, the existence of a functioning mill at Sarre is attested some decades before Holman's construction, of 1820. It is recorded as early as 13 May 1783, when a 'Henry Creed of Sarr ... miller' took out a Royal Exchange fire insurance policy (No. 86509; LMA) 'on his Windmill timber built situate at Sarr,' valued at £300 (CPD: 123278/20). If the present smock mill had been meant, the policy would almost certainly have mentioned its brick base; this policy, therefore, probably relates to an all-timber precursor.[80] In 1788 (*Kentish Gazette 25* January), when Henry Creed's Sarre windmill was offered for sale, it was noted that it had been 'built within these few years,'[81] suggesting, perhaps, that he had raised it only shortly before taking out his insurance policy, *i.e.* at almost exactly the date when Monkton Mill seems to have disappeared. Further, when Henry Creed died, aged 81, at Birchington, on 6 April 1819, his obituary claimed he had been 'many years since, a miller at Monkton' (*Kentish Gazette* 17 April 1818; CPD: F123215/3).

The excavated evidence (Structure 58) supports, or at least does nothing to refute, the idea of relocation. The mill footings seems to have been carefully and completely

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[77] Igglesden's sources are unclear – possibly local oral tradition.

[78] Following the 1769 map (Plate 379), Finch apparently had no further cartographical evidence at his disposal until that of 1819–1843 (*Ordnance Survey*). In fact, Monkton Mill was subsequently shown on several Thanet maps, and even at least one nautical chart (380370), down to the second quarter of the nineteenth century – long after it had actually been removed.

[79] The situation is not likely to be significantly better in Thanet, where late eighteenth- and nineteenth-century antiquarian speculation produced a number of resilient topographical myths, such as the supposed re-use of columns from the front of Kingsgate, in the 1830s frontage of the Sea-Bathing Hospital at Margate (see Seary 2004).

[80] The site of a former post mill has been identified close to the present Sarre Windmill, but evidence from excavation apparently suggests this was in use during the medieval period, rather than the eighteenth and nineteenth centuries (NMR: TR 26 NE 169).

[81] It was offered again in September, and, by 23 September 1791 (*Kentish Gazette*; CPD: F123278/22), it was occupied by William Kennett.

removed, and the base dug-out – rather than, for example, merely burning down or being left to rot in the ground.

Most likely, therefore, Henry Creed dismantled his Monkton Mill, probably in 1782, and rebuilt it, shortly afterwards, at Sarre. Forty-or-so years later, the rebuilt mill would doubtless have seemed rather outdated, difficult to adapt to new technology, and perhaps even slightly shaky. We should not be at all surprised that its later owner, Holman, replaced it with a new smock mill in 1820.

The first timber replacement beacon, 1783

Monkton Mill had, by this time, become a highly important seamark and was missed immediately and sorely. Trinity House were quickly appraised of its disappearance, and, on 24 September 1783, the By Board of Trinity House ordered that a replacement beacon be erected.

> It was refer'd to Capt. Rose to give directions for such a beacon or sea mark to be erected [...] as he shall judge the most proper to direct ships in crossing the Middle Ground into the Gore instead of Monckton Mill which has been lately taken down (LMA: MS 30010 vol. 17: 277–278).

By 11 October 1783 Captain Rose, the Buoy Warden, and Captain Calvert had visited the site and given the necessary directions (LMA: MS 30010 vol. 17: 284); the first timber replacement beacon was probably raised soon afterwards. Trinity House, at this time, used the word 'beacon' in the nautical sense:

> [Beacons are] vessels which are sunk, and whose masts bear a mark of discrimination, to denote the sand upon which they are deposited [...]. The flag beacons on shore also fall under this designation of beaconage, of which there are not many erected for that purpose solely (Cotton 1818, 67–68).[82]

Indeed, the new seamark at Monkton seems closely to have resembled a ship's mast–complete with rigging and probably a capstan. It was surmounted by a large vane, which would doubtless have provided this beacon's 'mark of distinction.'[83] Similar structures would be provided at Reculver, in 1816, where the two spires, which had collapsed in 1813 following the purchase of the towers by Trinity House in 1810, were

[82] Smyth (1867), similarly, describes a beacon as a 'post or stake erected over a shoal or sand-bank, as a warning to seamen to keep at a distance; also a signal-mark placed on the top of hills, eminences, or buildings near the shore for the safe guidance of shipping;' the OED (sense 6.a.) gives 'a lighthouse or other conspicuous object placed upon the coast or at sea, to warn vessels of danger or direct their course.'

[83] The evidence for the form of this beacon comes, primarily, from Trinity House Court Minutes of September and November 1785, cited and discussed below.

each replaced with 'a top-mast and a top-gallant mast rigged upon each tower, with vanes on the top' (Cotton 1818, 155).

Apparently, the new timber beacon at Monkton was not yet considered an adequate replacement for the former windmill, and at another Board meeting, on 15 September 1785, Capt. Lanty suggested that some addition 'be made ... to make it more conspicuous.' The matter was again referred to the Buoy Warden (LMA: MS 30010 vol. 17: 506) and the necessary 'alterations and additions,' ordered. These included a second vane – probably fixed to a second, adjacent, mast – and had been completed by 17 November (LMA: MS 30004 vol. 13: 264).

These additions may well, however, have offered too much resistance to the prevailing winds, and the augmented beacon soon failed. By the end of the month, Mr. Mitchener of Margate, had written to Trinity House, 'setting forth,' in an appropriate mixture of nautical and architectural terminology:[84]

> that the beacon lately erected at Monkton (instead of the mill which was taken down) is blown over from the south to north in a violent gale of wind, in consequence of which the new fan lays downwards with the southernmost standard turn'd up by the braces, which standard has sprung in two places; the old fan is shatter'd to pieces, the capston [*sic*.] head is split off, & most of the braces are broken. Capt. Calvert mentioning that he was going there in a few days; the Court [of Trinity House] requested him to give such directions for reinstating the beacon as he shall see necessary (LMA: MS 30004 vol. 13: 267).

Although we cannot be certain, it is highly tempting to identify the two masts or standards of the augmented first replacement beacon with the two large postholes, containing eighteenth-century artefacts, identified by excavation (Structure 57).

The second timber replacement beacon, 1786

On 20 May 1786 'it was refer'd to Capt. Calvert to give directions for a timber beacon to be erected at Monckton with a fan of the same kind as that placed on the first beacon, which was erected in the room of the mill sometime since taken down' (LMA: MS 30010 vol. 18: 51). By this time, the Thames pilots may have been impatient for a permanent and adequate replacement for Monkton Windmill, as a sea-mark. On 22 May 1786, William Cowley, Clerk to the Fellowship of Pilots at Dover wrote to Trinity House:

[84] The 'standards,' here, were evidently of timber – since the southernmost one 'sprang' – but they cannot, here, have been the 'inverted knees' of nautical terminology. They were probably two large vertical masts. The 'braces' seem to have been at the feet of the standards, bracing them. It is not yet clear whether they were ropes (as in nautical terminology) or timbers (as in building terminology); more likely the latter. 'Fan,' here, is presumably a confusion (*OED*) for the nautical term 'fane' or 'vane.' Smyth (1867) gives 'Fane. An old term for a weather-cock.'

> signifying that the master of that Fellowship has had frequent complaints set forth to him of the loss of the beacon where Monkton Mill lately stood, it being the only thwart mark to lead ships clear of the upper end of the Middle Ground in the Gore; that the said beacon being gone, & the Searne buoy removed, are a great detriment to the navigation of the Inner Channel; & therefore requesting that a beacon may be erected at Monkton & a buoy laid on the Searne.

The Court duly ordered:

> that a letter be written to Mr Cowley, to acquaint him for the information of the Fellowship, that directions have been given sometime for placing the beacon at Monkton, which will be done very soon; that it was represented to us in September last that the Searne Swatch was used by very few vessels, & being in our opinion not perfectly safe for ships to pass thro' we directed the buoy of the Searne to be laid on the Hook of Margate Sand, where we judge it will be of more value to navigation than on the Searne (LMA: MS 30010 vol. 18: 53).

The second timber replacement beacon was completed on, or shortly before, 25 June 1786, when Captain Calvert wrote to the Court, from Broadstairs, 'signifying that the beacon at Monckton [was] finished' (LMA: MS 30010 vol. 18: 67). This structure in its turn, however, would last only a few years before being blown down – probably late in 1790 or early the following year. If the first timber replacement beacon may perhaps be identified with Structure 57, from the excavation, it is harder to identify the second. Conceivably, it may have stood on the same spot as its brick replacement of 1791, and any evidence therefore removed.

The brick beacon, 1791

> Acol ... on the top of [Primrose] Hill there is an obelisk sea-mark, erected by the Brethren of the Trinity House (MPL: Y 042.955: 41).

On 4 August 1791, the Court of Trinity House 'being acquainted that the timber beacon sometime since erected at Monkton Hill is blown down, and that it [was] necessary that another should be built in its stead.' This time, a more resilient construction was required:

> It was refer'd to Capt. Cotton the Buoy Warden, Capt. Calvert, and Capt. Rice to give orders for a beacon to be built of brick on the same spot at Monkton on which the timber one lately stood (LMA: MS 30004 vol. 14: 60).

The task of building this beacon fell to a Mr John Gray (LMA: MS 30010 vol. 18: 541), who was promised the materials of the previous, timber, beacon in part payment. It had apparently been completed by mid-November, when Gray wrote, 'signifying that he

had finish'd it in a very substantial manner, and enclosing a drawing thereof.'[85] It was duly ordered 'that a letter be written to Mr. Gray to desire he will send his bill for building the beacon, and give credit therein for the materials of the former one' (LMA: MS 30010 vol. 18: 540–541).

Hasted (1799, 302) provides an early written description of the beacon, as a conical obelisk, including approximate dimensions:

> About half a mile to the right of the road from *St. Nicholas* to *Birchington*, and adjoining to the *summer road* from *Sarre* to *Margate*, is a *large obelisk*, about ten feet diameter and twenty-nine high, built with brick and capped with stone; it stands on the spot, where formerly stood a *windmill*, which was a *peculiar sea-mark*. On the north side is an inscription, shewing that it was erected *by the corporation of the Trinity House* in 1791, *for the safety of navigation* (Hasted 1799, 302).

Hasted's diameter for the base of the obelisk was broadly accurate; twentieth century pictures of the obelisk (Plates 382 and 383), however, suggest twenty-nine feet may have greatly underestimated its height, which looks to have been nearer forty. The base, diminishing ever so slightly and defined by a sharp weathering-in, accounted for about a quarter of this height. Above this, the obelisk may have tapered slightly more noticeably, and possibly with a slight *entasis*, before terminating in a stone conical cap. Possibly, the inscription Hasted mentions is the one shown in Plate 382, although this may, instead, be a replacement or unrelated later epigraphy. Monkton Beacon may well at some point, like other similar structures, have been rendered and painted to protect the brickwork, but we have, as yet, found no direct evidence for this.

The substantial, circular, foundation of the beacon, a little under eleven feet in diameter, in a tight, vertical-sided construction cut, was well attested in the excavation (Structure 59). It was formed in header-bond brickwork around a hollow centre. It has been suggested that this hollow provided a socket for a post; more likely, however, it was empty, and continued upwards, through much of the height of the structure, tapering away as the beacon diminished toward its crown. Such an arrangement would have saved on the expense of bricks, and, perhaps equally importantly, have avoided having to joint them together in the middle.

A very small late eighteenth- or early nineteenth-century depiction (Plate 382) suggests the obelisk may from an early date, have been surrounded by a simple cast-iron railing. This might, perhaps, account for the series of small pits (G6082), which were excavated, surrounding the base of the beacon; alternatively, these may relate to scaffolding used in

[85] Gray may well have been local, because one doubts it would have been worth removing a broken mast any great distance. The fact that Gray sent a drawing perhaps suggests, he may also have designed the beacon, although this is far from certain.

the Seamark's construction. Such railings do not feature in the twentieth century views of the structure.

The Monkton Seamark was built at a time when the number of beacons and buoys, provided and maintained by Trinity House, was increasing rapidly. Purpose-built beacons on land, such as this, were, however, always relatively rare compared with beacons out at sea and fortuitous seamarks in the landscape. Purpose-built beacons of masonry construction were probably rarer still, and the majority of these would have been lighthouses. Discussing the new buoys and beacons which had been added, in recent years, Cotton (1819, 152–157) noticed but few new beacons, as distinct from lighthouses, on shore: 'the NAZE, BAUDSAY, NORTH DOWN, and MONKHAM [*sic.*][86] TOWERS' along with the purchase and repair of the towers at Reculver (Austin and Seary 2010), and the acquisition of 'Nelson's pillar, on Post Down, near Portsmouth.' The North Down Beacon, or Whitfield Tower, just along the coast at Kingsgate (Plate 385), was rebuilt in 1818 as a polygonal obelisk divided into stages, and surrounded by a low railing.[87]

The Monkton Seamark and its various alignments seem to have been especially valuable in avoiding the edges of Margate Sand. Early nineteenth-century instructions show how the seamark could be used, by lining it up with other features nearer the shore.

> *Monckton Sea Beacon* marks the north spot of Margate Sand, as it stands upon high land, in a line with the Lower Hale Grove. *Upper Hale Grove*, rather more to the westward, points out to the pilot the west end of Margate Sand. (Cooke 1819, xvi)
>
> Monckton Sea Beacon, the mark for the north spit of Margate Sand, is upon high land in line with Lower Hale Grove and a mill near Birchington church; whilst [48] Upper Hale Grove, rather more to the westward, points out to the pilot the west end of Margate Sand, through a small farm at Upper Hale, to a buoy (No. 20 in Plate 380) moored on Pan Patch, at the south-east corner of Pan Sand, on the northern edge of the Queen's Channel (Watts 1819, 47).

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[86] No 'Monkham' beacon ever existed; this must be an error for 'Monkton.'

[87] 'Whitfield Tower (erected on the highest spot in Thanet), has also been lately rebuilt by the Trinity House. On the side nearest the sea is this inscription:
"The ground on which this beacon is raised, was liberally granted by J.P. Powell, esq. of Quex-hall, in this island in whose estate it stands." On the other: "This beacon was erected for the benefit of Navigation, by the Corporation of the Trinity House, AD 1818."
This new obelisk, when seen at even a short distance, appears as if it were ornamentally carved, which optical illusion (for it really is such) is wholly occasioned by the contrast of the stone and flints used, as the sides are quite flat' ('Nepos' in Gentleman's Magazine 1821: 319).

From the early nineteenth to early twentieth century (*e.g*. *Times* 25 October 1834; *Isle of Thanet Gazette* 13 January 1923) the beacon was also used, as a meet, by participants in various bloodsports, among them the Thanet Harriers.

Disuse and demolition of the seamark, 1922

Monkton Beacon was probably neglected during the late nineteenth- and early twentieth-centuries as such structures became less important to shipping. On 20 August 1920 it seems to have been examined, on behalf of the Trinity House Examination Board, and found to be in poor condition:

> Inspected Monkstone [*sic*.][88] beacon, the brickwork is cracked and bulging and bricks have fallen out in places, particularly on the southern face. It should be repaired (LMA: MS 30094 vol 6: 170).

The likely expense may have focused Trinity House's attention on the question of the beacon's continuing value to navigation; on 21 September 1920 their Examining Committee found that it was still 'used as a mark for a number of buoys,' but that such use was no longer essential (LMA: MS 30073 vol 19: 186).[89] On 5 September 1922 the Trinity House Light Committee inquired 'as to [the] length of notice required in regard to the permanent demolition of Monkton Beacon' and were told that 'no notice to mariners [was] considered necessary (LMA: MS 30073 vol 20: 232). The task of demolishing the Seamark seems to have been given to the Foad family of builders and undertakers, of St Nicholas-at-Wade; a photograph of the structure (Plate 384) may have been taken at this time. The beacon had been demolished by 25 October (LMA: MS 30073 vol 21: 26; MS 30010 vol. 94: 31) 'and the bricks scattered' (Igglesden 1932, 77).[90] News of its demolition reached the press early the following year:

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[88] Confusingly, 'Monkston' was the name of another beacon, in the Bristol Channel; but as the structure in question was inspected on the same day as, and written up immediately after the Reculver towers, almost certainly Monkton is meant.

[89] The use of the seamarks along the Thames seems, generally, to have declined by this time; Trinity House was, for example, already negotiating with the Ministry of Works to get the Reculver towers off their hands, and had, by February the following year, dropped their stipulation that they be maintained as a seamark (LMA: MS 30073 vol 21: 201).
Likewise, in July 1924 the 'North Down Tower Beacon' (*i.e*. Whitfield Tower), was declared 'of no further use to navigation' (LMA: MS 30010 vol. 95: 121); in that case, however, it was found that 'minor repairs [would] keep it for many years [and that the] expense of demolition [would] not [be] justified' (*ibid*.:130).

[90] The *Ordnance Survey* map of 1941 shows no trace of the beacon.

> The Seamark, Monkton, Thanet, for many years a guide to mariners, has been dismantled, as Trinity House considers that it is no longer needed (*Times* 8 January 1923).[91]

There may have been a sense, in some quarters, that Trinity House had overlooked the cultural value that the beacon had accumulated, alongside the decline in its usefulness to navigation. On 18 January 1923 one person wrote to the local newspaper, on the subject:

> Sir, – it was not without a little petulant regret that I noted during the Christmas holidays this old landmark of years had been removed. Your last issue contains the explanation that it was no longer needed by Trinity House, but that would seem hardly a positive reason for its demolition. One wonders that no protest has been heard from the Monkton inhabitants, whose presiding genius it must have reigned for generations. Or beneath the cold official explanation of "No longer needed," was there a hint of some subtle and sinister suspicion, as in the case of "The Column" of Mr Marriott's novel[92] – Yours faithfully
>
> IN MEMORIAM (*Isle of Thanet Gazette* 20 January 1923).

Such was some people's affection for the beacon that a relic of the structure was preserved: 'the cone which was perched at the summit of the obelisk' was re-erected 'in the rock garden of Monkton Court' (Igglesden 1932, 77). It would be interesting to know whether it survives.

[91] *Isle of Thanet Gazette* (13 January 1923) ran a rather fuller article on the subject; unfortunately, however, the MPL microfilm copy is virtually illegible.
[92] Charles Marriott's *The Column – a novel*, of 1901.