

**Channel Tunnel Rail Link
Union Railways (South) Limited**

Project 440

**Archaeological Investigations at Saltwood Tunnel,
Near Folkestone, Kent**

**ARC SLT98
ARC SLT98C
ARC SLT99
ARC SFB99**

**DETAILED ARCHAEOLOGICAL WORKS
ASSESSMENT REPORT**

Volume 3 of 3: Specialist Appendices

**Contract no. S/400/SP/0009/P484A
Contract no. URS/400/ARC/0001**

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18th March 2002

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7 APPENDICES

7.1 Assessment of Prehistoric Pottery

Lorraine Mephram

Introduction

- 7.1.1 In total, 3281 sherds of pottery plus one complete vessel were recovered during the fieldwork events. All pottery was recovered from hand-excavation.
- 7.1.2 In terms of addressing fieldwork event aims, the recovery and assessment of pottery is primarily to establish the economic basis of agricultural communities by placing such evidence in a secure chronological framework.
- 7.1.3 The study of the prehistoric pottery assists with the following Fieldwork Event Aims:
- *To identify the nature of the prehistoric activity, determine its extent and place in the landscape,*
 - *To establish a dated sequence for the origin and development of settlement including associated enclosures and trackways, etc.*
 - *To identify the use of space within the burial landscape*
 - *Recovery of dated environmental and economic indicators if these are found to be present on site.*

Methodology

- 7.1.4 For this assessment, the pottery has been quantified (count and weight for WA fieldwork events, count only for CAT fieldwork events) on a context by context basis by broad fabric group (e.g. sandy, flint-tempered), with spot dates and the presence of diagnostic material recorded. Pottery from CAT sieved soil samples is not included here, but has been briefly scanned for pottery types not represented amongst the hand-excavated assemblage (no such material was found to be present).

Quantification

- 7.1.5 Pottery quantification by ware group is provided in **Table 11**. Where pottery from individual ware groups is recorded by both organisations, multiple entries exist to allow identification of that proportion of the assemblage that has been weighed (WA).

Table 11: Pottery quantification by Period and Ware group

| Period | Ware group | Count | Weight (kg) | Comments |
|---------|------------------------------|-------------|-------------|--|
| ENE | Flint-tempered | 44 | 0.422 | minimum 2 vessels |
| | Shelly | 4 | 0.028 | 1 rim sherd; min 1 vessel |
| ?MNE | Flint-tempered | 4 | - | ?Peterborough ware |
| EBA | Grog-tempered | 2 | 0.005 | body sherds, incised decoration |
| E/MBA | Flint-tempered | 86 | - | includes Deverel-Rimbury types |
| | Grog-tempered | 64 | - | + 1 vessel (Food Vessel); includes Beaker, FV and MBA urn |
| LBA-LIA | Flint-tempered | 1480 | - | finger-impressed shoulders; both coarsewares and finewares (few decorated) |
| | Predominantly flint-tempered | 224 | 0.925 | little diagnostic |
| | Predominantly flint-tempered | 392 | - | |
| | Grog-tempered | 442 | 2.648 | some rusticated, some scored; 4 IC; 2 complete carinated bowls |
| | Grog-tempered | 14 | - | includes ?'Belgic' types; some rusticated |
| | Predominantly grog-tempered | 180 | - | includes ?'Belgic' types |
| | Sandy | 67 | - | 1 red finished fineware |
| | Predominantly sandy | 110 | 0.728 | little diagnostic |
| | Predominantly sandy | 63 | - | |
| | Greensand-tempered | 17 | - | |
| | Calcareous | 10 | - | |
| | Organic-tempered | 1 | - | |
| | Shelly | 1 | - | |
| | Amphora | 1 | 0.064 | Dressel 1? |
| UN | Flint-tempered | 7 | 0.021 | |
| | Flint-tempered | 2 | - | |
| | Grog-tempered | 51 | 0.090 | |
| | Grog-tempered | 2 | - | |
| | Sandy | 9 | 0.025 | |
| | Shelly | 3 | 0.007 | |
| | Unidentifiable fabric | 1 | 0.001 | |
| | Totals | 3281 | n/a | |

- 7.1.6 The pottery assemblage (3281 sherds; 20.716kg, + 1 complete vessel) includes material of early Neolithic, possible Middle Neolithic, Early/ Middle Bronze Age, plus a large group broadly dated between the Late Bronze Age and Late Iron Age. A total of 75 sherds remain undated within the prehistoric period, largely due to poor condition (small and abraded) and the non-diagnostic nature of many fabrics.

NEOLITHIC

- 7.1.7 A total of 38 sherds, all from a single isolated pit (W136) have been identified as Early Neolithic. All are in a coarse, flint-tempered fabric, and could conceivably derive from one vessel. A further ten sherds from a second isolated pit (W175), have been more tentatively identified as of similar date. Six are in comparable coarse, flint-tempered fabrics, but with no diagnostic features, and four are in a leached ?shelly fabric, including one rim sherd from an open form with a slight carination below the rim.
- 7.1.8 Four sherds are potentially of Middle Neolithic date, although at this stage have not been positively identified. All four sherds are in fabrics sparsely tempered with coarse flint, which could be considered characteristic of Peterborough ware, although there are no other diagnostic features. All four sherds occurred with pottery of Early Bronze Age or later date (grave W29, ditch C3526, context C2769, and one unstratified piece provenanced to the 'main ring ditch' – C3766?).

EARLY/ MIDDLE BRONZE AGE

- 7.1.9 Two small sherds, from W81 and W222 respectively, have been tentatively identified as Early to Middle Bronze Age on the basis of fabric type (coarse grog-tempered) and decoration (incised horizontal lines), although ceramic tradition is uncertain (Beaker, Food Vessel or Middle Bronze Age urn).
- 7.1.10 Pottery of definite or possible Early/ Middle Bronze Age date was more numerous to the west of Stone Farm Bridleway (64 sherds + 1 vessel). These sherds are in predominantly grog-tempered fabrics, some with flint inclusions. Most of these, in the absence of diagnostic features, can only be broadly assigned to the period, and not to ceramic tradition (Beaker, Food Vessel or Middle Bronze Age urn), although the thicker-walled sherds (eg. a group of 15 sherds from context C3719) are more typical of the Food Vessel/ MBA urn traditions. One complete Food Vessel was excavated (context C4618). Nine sherds have been positively identified as Beaker on the basis of decoration – most of these are comb-impressed, but there is a small group (four sherds from context C4585) of finger-impressed ('rusticated') Beaker.
- 7.1.11 Found in similar quantities were coarse flint-tempered fabrics (86 sherds), some of which can be positively identified as belonging to the Deverel-Rimbury tradition (Middle Bronze Age), and some of which could equally be of post-Deverel-Rimbury type. No large groups were recovered, and many sherds occurred with material of definite Late Bronze Age date or later.
- 7.1.12 Perversely, none of the barrows considered to be Early/ Middle Bronze Age can be considered to be securely dated through ceramic evidence.

LATE BRONZE AGE TO LATE IRON AGE

- 7.1.13 The bulk of the assemblage (3002 sherds) comprises sherds in flint- (or chert-) tempered, sandy (some sandy/ greensand) and grog-tempered fabrics (or fabrics which contain combinations of these inclusions); there are also a few calcareous sherds and one organic-tempered. Some of the sand is glauconitic and some is beach sand; the range of inclusion types clearly demonstrates that a range of raw material sources was exploited. All of these fabrics have a broad potential date range from the Late Bronze Age to the Late Iron Age. Most of these are coarsewares, although a small but significant proportion can be defined as 'finewares' on the basis of fabric (finer, better sorted inclusions), surface treatment (burnishing or, in a few instances, red-finishing) and/ or the presence of decoration.
- 7.1.14 For much of this group, which consists largely of small, abraded body sherds, close dating is not immediately apparent. Some sherds at the coarser end of the flint-tempered (or flint/ grog-tempered) spectrum appear characteristic of the post-Deverel-Rimbury ceramic tradition of the Late Bronze Age/ Early Iron Age. Diagnostic features characteristic of this period include finger-tipping on rims and shoulders.
- 7.1.15 More typical of the Early/ Middle Iron Age period are carinated and shouldered vessels in predominantly grog-tempered or predominantly flint-tempered fabrics, with some sandy wares; these include a small proportion of well finished and/ or decorated 'finewares', a few of which carry incised decoration. This group is best exemplified by two almost complete vessels, both plain carinated bowls, from graves (W68 and W69 respectively).

- 7.1.16 Much of this group is, however, in notably poor condition and close dating is therefore hampered; with the exception of the almost complete vessels from W68 and W69, only four contexts produced more than 500g of pottery (grave W45, pit C6499, ditch C6027 and context C3097). It is not possible to isolate here specific Middle Iron Age context groups on the basis of either fabric or form, although it is possible that the date range of this part of the assemblage extends into this period. There are some rusticated sherds, for example (mainly in grog-tempered or grog/flint-tempered fabrics; e.g. a rusticated bowl from C1184). Many context groups have therefore been dated broadly to the Early/ Middle Iron Age, or allocated a non-specific Iron Age date.
- 7.1.17 The Late Iron Age is more readily identifiable here by the presence of a small quantity of finer, better made grog-tempered vessels, with beaded rims and frequently with scored decoration, and by the first appearance of 'Belgic' type grog-tempered wares. These are accompanied by a smaller quantity of sandy wares. The introduction of 'Belgic' wares into Kent is considered to be *c.*75 BC.

Provenance

- 7.1.18 The bulk of the assemblage (3245 sherds; 20,312g) derived from stratified feature fills or layers, with 37 sherds (404g) from unstratified contexts. Two almost complete Early Iron Age vessels came from graves, where they represent deliberately placed grave goods. Apart from the two almost complete vessels, overall condition is fair to poor, with many sherds small and abraded. Mean sherd weight overall is 6.3g (omitting complete vessels from totals).

Conservation

- 7.1.19 It is recommended that the entire prehistoric assemblage is retained. There are no conflicts between further analysis and long term storage. Although fragmented, the food vessel was substantially complete when excavated. It is proposed that the vessel is reconstructed for the purposes of illustration.

Comparative material

- 7.1.20 Neolithic pottery of any type is extremely rare in Kent, although find spots of Early Neolithic vessels (almost always isolated finds) are more common in the eastern part of the county (Dunning 1966). Within the CTRL project, another small group of Early Neolithic pottery has been recovered from Sandway Road (URS 2001a).
- 7.1.21 The later prehistoric assemblage (Late Bronze Age to Late Iron Age) falls within the sequence reviewed by Macpherson-Grant (1991), and a number of assemblages within this date range are known from east Kent. Within the CTRL project, the assemblage from Little Stock Farm (URS 2001b) is amongst the best comparable material.

Potential for further work

- 7.1.22 As a whole, the prehistoric assemblage underpins any further consideration of prehistoric activity at Saltwood, by providing a relatively secure chronological framework on which all other analyses will rely. As such it is critical to the study of the changing palaeo-environment through time, and establishing the relevant period economies therein. Potential placed-deposits will also contribute significantly to a consideration of the ritual/ ceremonial use of the Saltwood landscape.

- 7.1.23 In addition, the assemblage in its own right forms a significant addition to the ceramic sequence for east Kent, and detailed analysis and publication of selected (well stratified) context groups is recommended, involving full fabric and form analysis, following nationally recommended guidelines for the recording of prehistoric pottery (PCRG 1997). Fabric types will be correlated with the CAT regional fabric types series. A representative selection of vessels will be illustrated, in order to demonstrate the chronological sequence, and to illustrate particular feature groups.
- 7.1.24 The assemblage is of reasonable size, and the bulk of it is well stratified, although there is little in the way of vertical stratigraphy, and a relatively high degree of residuality. While the close dating of much of the assemblage is hampered by the lack of diagnostic sherds and by relatively poor condition, there are sufficient diagnostic forms to enable the characterisation of several ceramic phases, albeit with overlaps. Detailed analysis may refine the spot-dating of individual contexts undertaken as part of this assessment, but there are unlikely to be significant chronological changes within the overall sequence.
- 7.1.25 The small group of Early Neolithic pottery certainly warrants further analysis and publication, since pottery of this date is not common in Kent, as does the Early to Middle Bronze Age assemblage for the same reason (Beaker, Food Vessel and Middle Bronze Age urn, Deverel-Rimbury).
- 7.1.26 The later prehistoric assemblage (Late Bronze Age to Late Iron Age) is of significant size, and can enhance the information already reviewed for the Canterbury area (Macpherson-Grant 1991), although its potential is perhaps limited by its relatively poor condition. There is sufficient evidence to show a significant 'Early/ Middle Iron Age' presence and 'Late Iron Age' activity at a lower level (continuing into the Romano-British period). Preliminary examination of the fabrics has shown that there is variation within the broad fabric groups, some probably chronological and some (for example, the presence or absence of glauconitic sand) probably a reflection of different sources of supply. Detailed fabric analysis has the potential to examine this variation in order to track changes in the production and distribution of later prehistoric pottery in east Kent.

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7.2 Assessment of Late Iron Age and Roman Pottery

Malcolm Lyne

Introduction

- 7.2.1 The Late Iron Age and Roman pottery assemblages predominantly provenance from areas to the west of Stone Farm Bridleway, with the greatest concentration recovered from settlement C15. Further small assemblages were recovered from sieving of environmental samples.
- 7.2.2 Most of the pottery recovered from areas to the west of Stone Farm Bridleway originate from the LIA/ RB settlement site (C15) at the western end of the site, spanning the entire Late Iron Age and Roman periods. The sherds of this date from other areas further to the east are heavily biased towards the Late Iron Age and first one hundred or so years of the Roman occupation, are heavily abraded and almost entirely from field-marling. Some of these sherds are residual in later Anglo-Saxon graves and other features. As a result, this assessment will focus on the largely *in situ* assemblage recovered from settlement C15.

Methodology

- 7.2.3 All of the pottery assemblages from stratigraphically secure contexts were counted, weighed and spot-dating (**Table 12**). From the total, 58 contexts were selected as crucial for the dating of the various site phases and were further quantified by numbers of sherds and their weights per fabric. These key pottery groups account for 42% of the Late Iron Age and Roman stratified assemblages, 47% of the sherds and 69% of their total weight (the higher weight percentage is due to the inclusion of the cremation cemetery pots in these key pottery groups).
- 7.2.4 Fabrics were identified using a x8 magnification lens; finer fabrics were further examined using a x30 magnification pocket microscope, and all were classified using the CAT pottery type series where applicable (Macpherson-Grant *et al* 1995).

Table 12: Quantification of stratified LIA/ RB pottery from Settlement C15

| Context | Count | Weight (g) | Period | Comments |
|---------|-------|------------|-------------|--|
| C0002 | 19 | 188 | 0-270+ | |
| C0004 | 23 | 283 | 120-150 | |
| C0005 | 2 | 530 | 130-200 | |
| C0008 | 11 | 66 | Early Roman | Comminuted sherds B2,B8 and R16 |
| C0010 | 23 | 272 | LIA | Misc L.I.A. sherds |
| C0011 | 29 | 51 | 70-130 | |
| C0017 | 1 | 6 | 60-150 | |
| C0023 | 12 | 84 | 30-60 | Fabrics B2 and R109 |
| C0025 | 3 | 28 | LIA-AD300 | |
| C0027 | 4 | 66 | 70-300 | Incl many sherds BER15 salt containers |
| C0028 | 3 | 20 | 170-300 | Incl frag R1.2 |
| C0032 | 6 | 15 | 200BC-0 | |
| C0034 | 33 | 370 | 150BC-AD50 | |
| C0035 | 12 | 52 | 0-270+ | |
| C0049 | 21 | 284 | 60-80 | |
| C0050 | 4 | 34 | 150BC-AD200 | |
| C0052 | 1 | 88 | 60-80 | |
| C0053 | 6 | 110 | 60-80 | |
| C0054 | 1 | 224 | 43-70 | |
| C0055 | 1 | 12 | 270-300 | LR1.1 cooking-pot rim |
| C0056 | 1 | 148 | 50-80 | |
| C0057 | 1 | 118 | 50-80 | |

| | | | | |
|-------|----|------|--------------|---|
| C0059 | 2 | 2 | 43-70 | |
| C0060 | 1 | 510 | 43-60 | |
| C0061 | 1 | 386 | 43-70 | |
| C0062 | 1 | 304 | 43-60 | |
| C0063 | 2 | 92 | 10-60 | |
| C0065 | 4 | 22 | 270-400 | Incl fabric LR1.1 |
| C0067 | 2 | 152 | 70-130 | |
| C0068 | 1 | 244 | 70-130 | |
| C0069 | 2 | 6 | 70-130 | |
| C0083 | 1 | 104 | 50-80 | |
| C0086 | 1 | 198 | 50-70 | |
| C0087 | 3 | 17 | 0-100 | |
| C0089 | 21 | 355 | 170-300 | Incl R73.1 pie-dish and LR1.1 |
| C0094 | 6 | 26 | 300-0BC | |
| C0094 | 4 | 44 | 0-100 | |
| C0096 | 1 | 116 | 30-70 | |
| C0099 | 3 | 16 | 250-300 | Late R16 beaker |
| C0101 | 1 | 296 | 70-150 | |
| C0102 | 1 | 136 | 50-250 | |
| C0103 | 2 | 454 | 130-210 | |
| C0104 | 1 | 242 | 2nd c. | |
| C0105 | 5 | 14 | 200BC-0 | |
| C0109 | 11 | 46 | 150BC-AD50 | |
| C0111 | 5 | 25 | LIA | Fabrics B2,5 and 8 |
| C0123 | 30 | 418 | 70-270+ | Fabrics BER15,B2,R16, LR1 and R50 |
| C0124 | 62 | 749 | 200-270+ | Heavily comminuted |
| C0128 | 5 | 14 | LIA-70 | Comminuted Fabrics B2,3 and 9 |
| C0130 | 22 | 148 | LIA1 | |
| C0131 | 5 | 20 | 250-300+ | Incl. LR1.1 |
| C0134 | 4 | 58 | 270-400+ | High-fired LR1.1 type |
| C0135 | 4 | 18 | 270+ | Incl. LR1.1 |
| C0141 | 1 | 6 | 170-300 | Fabric R1 |
| C0143 | 45 | 323 | 270-300+ | |
| C0145 | 1 | 4 | 240-400 | LR10 sherd |
| C0146 | 8 | 90 | LIA-70+ | Fabrics B2,B9,R71 |
| C0160 | 10 | 90 | 550-50BC | |
| C0177 | 2 | 1 | Early Roman | Fabric R16 |
| C0179 | 1 | 22 | 50-100+ | Fabric B2 |
| C0180 | 25 | 263 | 50-200 | Incl.Fabrics R16 +R73 |
| C0188 | 13 | 66 | Late 1st-2nd | Incl.Fabrics R16,R17.1 |
| C0203 | 1 | 2 | Roman | |
| C0204 | 1 | 9 | LIA1 | |
| C0209 | 6 | 31 | 150-300 | Incl.Fabrics R1 + R73 |
| C0215 | 1 | 10 | 150BC-AD100 | |
| C0217 | 1 | 1 | LIA | ?B4/ B6 |
| C0219 | 5 | 104 | 100-300 | B2,R1.2 and R73 |
| C0232 | 1 | 6 | 170-300 | Fabric R1 |
| C0268 | 56 | 269 | 200-400 | R73 ev.rim jar,LR1 dog-dish,LR5 and LR10 sherds |
| C0269 | 7 | 44 | 240-400 | Inc.Fab.R1,LR1.1,LR10 |
| C0272 | 4 | 14 | LIA-Roman | |
| C0274 | 1 | 20 | LIA-100 | B2.2 sherd |
| C0282 | 2 | 19 | 70-200 | B2 and R71 sherds |
| C0300 | 1 | 12 | 170-270 | Fabric R3 |
| C0312 | 8 | 70 | 170-270+ | Inc.R1,R16,R73,LR1 sherds |
| C0315 | 22 | 280 | 50-100 | Fabrics B1,2 and B8 |
| C0317 | 4 | 8 | LIA-100+ | Fabric B2 |
| C0319 | 2 | 13 | LIA-100+ | Inc.Fabric B8 |
| C0328 | 5 | 40 | 70-200 | Inc.Fabs R17.1,R73 |
| C0336 | 50 | 1152 | LIA | |
| C0352 | 46 | 455 | 240-400+ | Inc.LR1 and LR10 |
| C0369 | 2 | 29 | LIA 1 | |
| C0381 | 2 | 10 | 170-300 | Fabrics R1 + R71 |
| C0383 | 5 | 87 | 300-400 | |
| C0385 | 3 | 35 | 43-100 | Incl.B2 bead-rim |
| C0391 | 1 | 10 | 250-400 | Fabric LR1.1 |
| C0425 | 1 | 2 | LIA-200 | Fabric B2 |
| C0474 | 2 | 10 | LIA 1 | |
| C0485 | 1 | 15 | LIA 1 | |
| C0489 | 2 | 4 | 0-100 | Fabric B9 |
| C0495 | 1 | 6 | LIA 1 | |

| | | | | |
|------------------|--------------|---------------|----------|-----------------------------------|
| C0530 | 1 | 3 | LIA 1 | |
| C0536 | 5 | 42 | LIA | Inc Fabric B9 |
| C0546 | 2 | 12 | LIA-100 | Fabrics B9 and B2.2 |
| C0547 | 1 | 6 | LIA-100 | Fabric B9 |
| C0561 | 4 | 30 | 70-100 | Fabrics B2 and R7 |
| C0573 | 9 | 58 | LIA 1 | |
| C0575 | 3 | 40 | 150BC-0 | |
| C0579 | 9 | 74 | 270-400 | Incl.Fabs LR1.1,LR2.1, and LR11 |
| C0580 | 3 | 24 | LIA-100+ | Fabrics B2 and B2.2 |
| C0582 | 6 | 56 | 100-150 | R16 poppyhead beaker |
| C0589 | 2 | 10 | LIA-100 | Inc.Fabric B2 |
| C0591 | 13 | 106 | LIA 2 | Inc.Fabrics B2 + B8 |
| C0593 | 42 | 598 | 150-200 | |
| C0601 | 25 | 264 | 270-400 | |
| C0611 | 98 | 1106 | 200-300 | |
| C0617 | 3 | 14 | LIA-100 | Inc.Fabrics B2 + B8 |
| C0621 | 9 | 106 | 240-400 | Inc.Fabrics LR1.1, LR5.1 and LR23 |
| C0622 | 10 | 172 | 150-300 | Inc.Fabrics R74.1, LR2.2 |
| C0623 | 5 | 59 | LIA-100 | Inc.Fabric B2 |
| C0629 | 2 | 216 | 270-400 | |
| C0635 | 15 | 261 | 150-300 | Inc.R1 and R43 |
| C0637 | 16 | 454 | 370-400+ | |
| C0643 | 7 | 95 | 43-100 | Inc.oxid.B1 flagon |
| C0686 | 1 | 1 | LIA 1 | |
| C0690 | 3 | 3 | LIA 1 | |
| C0694 | 1 | 3 | LIA 1 | |
| C0700 | 1 | 6 | 150-250 | Fabric R73.1 |
| C0702 | 37 | 304 | 150-270 | Inc.Fab.R1,17.1 and 74.1 |
| C0704 | 31 | 352 | 190-230 | |
| C0705 | 13 | 132 | 200-400 | Inc.R1,R73,LR1,LR10 |
| C0727 | 5 | 34 | 200-270 | Inc.late R16 beaker |
| C0729 | 2 | 12 | 270-300+ | Inc.LR1 |
| C0731 | 5 | 48 | 270-400 | |
| C0733 | 12 | 174 | 200-300+ | Inc.R14 pic-dish |
| C0735 | 19 | 386 | 200-300+ | Inc R14 pic-dish,LR1 |
| C0751 | 23 | 136 | 0-AD100 | |
| C0754 | 5 | 33 | 240-300+ | |
| C0759 | 13 | 262 | LIA | |
| C0771 | 2 | 66 | LIA | B2 bead-rim jar |
| C0804 | 13 | 362 | 70-200+ | |
| C0805 | 55 | 827 | 0-AD200 | |
| C0815 | 14 | 181 | 0-AD270+ | |
| C0818 | 74 | 2346 | 0-AD270 | |
| C0821 | 12 | 119 | 170-300 | Inc.R1,R74.1,LR1.1 |
| Subtotals | 1,412 | 21,506 | | |
| Unstratified | 408 | 5702 | - | - |
| Totals | 1,820 | 27,208 | | |

Quantification

- 7.2.5 The excavation of the main Late Iron Age and Roman occupation area C15 at the western end of the site yielded 1,412 stratified sherds (21.506kg) of pottery from 137 contexts and 408 sherds (5.702kg) unstratified from the top-soil: a further 1,301 sherds (10.822kg) were residual in later contexts. Sieving of environmental samples produced a further 1,083 small fragments (2.398kg) of Late Iron Age and Roman pottery. The sieved fragments are untabulated because of a complete lack of diagnostic sherds from the very comminuted material and their resultant inability to contribute any additional information towards the dating of contexts.
- 7.2.6 Across the remainder of the site to the east of the settlement centre, a further 1,824 sherds (10.533kg) of similarly dated pottery were recovered, 275 of which (3.738kg) came from three contemporary *in situ* contexts. The remainder were predominantly small abraded sherds and are likely to derive from field-marling, the majority recovered as residual material in later contexts.

- 7.2.7 **Table 13** gives the breakdown of the excavated pottery for all sites west of Stone Farm Bridleway by period. This suggests that there was a great increase in the volumes of pottery in use during the 200 years or so after AD 50 compared with during the 150 years or so before. The features belonging to the period *c.* AD 250-370 produced similar volumes of pottery when the shorter period of time is taken into account.

Table 13: Quantification of Late Iron Age and Romano-British pottery

| Event Code | Provenance | Provisional Date | No. of Contexts | No. | Wt. (g) |
|------------|--|--|-----------------|-------------|--------------|
| ARC SLT98 | Gullies C576, C273; Settlement C15 enclosure ditches | <i>c.</i> 2 nd – 1 st century BC | 6 | 24 | 117 |
| ARC SLT98 | Cremation C337 | <i>c.</i> 100 BC – 0 | 1 | 50 | 1152 |
| ARC SLT98 | Settlement C15 enclosure ditches | <i>c.</i> 0 – AD 50 | 4 | 44 | 416 |
| ARC SLT98 | Misc. Late Iron Age features | <i>c.</i> 2 nd century BC – AD 50 | 15 | 113 | 1127 |
| ARC SLT98 | Cremations C13, C14, C15, C16, C19, C20 and C21 | <i>c.</i> AD 50 – 80 | 12 | 40 | 2528 |
| ARC SLT98 | Early roadside ditches, pit C835 | <i>c.</i> AD 50 – 250 | 58 | 638 | 8712 |
| ARC SLT98 | Cremations C6, C12 and C22 | <i>c.</i> AD 70 – 200 | 10 | 49 | 2381 |
| ARC SLT98 | Occupation levels in hollow-way deposits, pits C755 and C896 | <i>c.</i> AD 250 – 370 | 23 | 379 | 3671 |
| ARC SLT98 | Oven C630/ C638 | <i>c.</i> AD 370 – 400+ | 2 | 18 | 670 |
| ARC SLT98 | RB miscellaneous material | - | 6 | 57 | 632 |
| ARC SLT98 | LIA/ RB unstratified material | - | - | 408 | 5702 |
| ARC SLT98 | RB residual material | - | - | 1301 | 10822 |
| | | <i>Subtotals</i> | 137 | 3121 | 37930 |
| ARC SLT98C | Oven C1385, upper fill of ring ditch C1041 | <i>c.</i> 0 – AD 100 | 7 | 29 | 146 |
| ARC SLT98C | LIA/ RB residual, unstratified and marling material | - | - | 1004 | 5003 |
| | | <i>Subtotals</i> | 7 | 1033 | 5149 |
| ARC SLT99 | Spread C3701 | <i>c.</i> 150 – 50 BC | 1 | 173 | 2494 |
| ARC SLT99 | Cremation in C4509 | <i>c.</i> 50 BC – AD 50 | 2 | 102 | 1244 |
| ARC SLT99 | LIA/ RB unstratified material | - | - | 43 | 172 |
| ARC SLT99 | RB marling and residual material | - | - | 211 | 1474 |
| | | <i>Subtotals</i> | 3 | 529 | 5384 |
| | | Totals | 147 | 4683 | 48463 |

- 7.2.8 As at Thurnham villa, after AD 370 Roman pottery assemblages are smaller and far fewer in number; the Saltwood pottery of this date was largely restricted to the fills of oven C630 and its flue beside the trackway. The few sherds from Early Anglo-Saxon corn-dryer C416 may also be post-370 in date.

- 7.2.9 **Table 13** also indicates the high level of destruction of Late Iron Age and Roman occupation horizons by both Anglo-Saxon and medieval activity and by ploughing. More than half of all of the Late Iron Age and Roman pottery by sherd count is either unstratified or residual in later features and nearly all of the cremation vessels are heavily truncated.

Provenance

PHASE 4/ 5: MIDDLE – LATE IRON AGE

- 7.2.10 Amounts of pottery are for the most part very small and residual in their contexts. A cremation in a simple bead-rim jar from Pit C337 probably belongs to this phase. The impression is given that either this phase of occupation was very short lived (which is unlikely) or the main focus of occupation lay beyond the limits of the excavated area. The pottery is largely made up of calcined flint tempered wares and those in grog and flint and grog-tempered ‘Belgic’ fabrics.

PHASE 5/ 6A: LATE IRON AGE – MID ROMANO-BRITISH

- 7.2.11 Most of the pottery assemblages from occupation features of latest Iron Age to pre-Flavian and the Early to Mid Romano-British periods incorporate material of both phases.
- 7.2.12 Some of the largest assemblages of pottery come from the fills of the roadside ditch on the north-west side of trackway C1. These fills produced pottery assemblages dominated by material dated *c.* AD 0-100 (predominantly the local soot-soaked sandy fabrics) but had 2nd and early 3rd century sherds as well. The lowest fill of ditch C816 also produced a number of sherds in a chaff-tempered salt-container fabric characteristic of Late Iron Age (to AD 70) assemblages from East Kent.
- 7.2.13 The thin layers of gravel metalling in the bottom of the trackway were part of a refurbishment of the road system within the settlement and can be dated, in part at least, to the early/ mid 3rd century - one such area of metalling seals a section of recut roadside ditch or drainage sump which produced a significant assemblage of late 2nd to early 3rd century pottery.
- 7.2.14 Ceramic evidence for actual buildings is fairly elusive but it is likely that the cluster of post holes (group C333) adjacent to the end of ditch C578 on the north-west side of trackway C1 mark the site of a Late Iron Age structure - five of them produced sherds of latest Iron Age to late 1st century character, as did ditch C525 immediately to the north-west. This latter feature drained into pit C924, which produced a large part of an unusual pedestalled bead-rim jar.
- 7.2.15 The site or sites of early Roman buildings are even more difficult to establish from the ceramic evidence, but one such structure may have lain in the comparatively pit free area immediately west of the post hole complex referred to above. This notion is supported by the fact that the highest concentration of second and early third century pottery from the four cuts across the north-west roadside ditch of the adjacent trackway came from cut C774 in front of this pit-free area.
- 7.2.16 The two groups of cremation burials on the north side of the eastern trackway span the period between *c.* AD 43 and 200. The earliest burial is probably that from C14 (*c.* AD 43-60) and consists of the truncated remains of two jars, a dish and a tazza in a local sandy fabric and a Gallo-Belgic whiteware butt-beaker. Cremations C15, C16, C19, C20 and C21 may be post AD 60 in date but earlier than AD 80. Cremations C15, C20 and C21 included white-slipped (Hoo fabric) butt-beakers and that from C19 includes a similar beaker in a local sandy fabric.
- 7.2.17 The Central Gaulish Samian Dr.27 cup and truncated Canterbury kilns flagon from cremation C6 date to *c.* AD 120-50: a less precise *c.* AD 70-130 date range applies to the two cremation vessels from C12. The latest cremation (*c.* AD 130-200) is that from C22 in the eastern group: the pots include a large poppyhead beaker in an Upchurch fabric and a Thameside grey ware dish.
- 7.2.18 Beyond the limit of settlement C15, a large number of abraded sherds were recovered which for the most part are probably from field marling. Of the 1,258 fragments attributable to such activity, only 3% can be safely attributed to later than the mid 2nd century and only two pieces to after AD 270. This can either be interpreted as indicating that arable cultivation came to an end during the 2nd century or that field-marling practices changed during the later Roman period.

PHASES 6B: LATE ROMANO-BRITISH/ 'SUB-ROMAN'

- 7.2.19 The lower layers above the metalling in trackway C1 produced pottery ranging in date from the Late Iron Age and early 4th century but with a predominance of post AD 200/ 250 material. This late material becomes increasingly significant towards the northern end of the trackway. None of the sherds can be dated specifically later than AD 350 and there is no certainty that any fragments are post AD 300 in date.
- 7.2.20 The lengths of drystone revetment along the sides of trackway C1 contained not only Roman but Middle Saxon sherds. The stratigraphic evidence from the various sections across these revetments do, however, suggest a date early in the Roman period.
- 7.2.21 The increasing quantities of late 3rd to early 4th century pottery towards the north-eastern end of trackway C1 suggest that the main focus of occupation for this period lay immediately beyond the limits of the excavated strip in that direction. Some of the cluster of post-holes and pits in the angle between trackways C1 and C2 may also belong to a structure of this period: Five pits on the western edge of this cluster produced post AD 250 pottery assemblages of which the largest and most significant comes from pit C612 and was probably deposited during the period *c.* AD 250-70. The somewhat smaller assemblages from the other pits can be dated no more closely than to the mid-late 3rd century, with nothing which need be later than AD 300.
- 7.2.22 Occupation spread C621 at the western end of the site produced a small assemblage dated to *c.* AD 270-400, including an Oxford mortarium and a very unusual handled bowl in oxidised grog-tempered ware – these two vessels suggest a late 4th to early 5th century element.
- 7.2.23 Oven C630, situated on the south-east side of trackway C1, and within the corner formed by C1 and trackway C2 produced a small, but fresh-looking, pottery assemblage of late 4th to early 5th century date; including a rouletted Argonne ware bowl, a Much Hadham Oxidised ware flagon and a Preston kiln cooking-pot.

Conservation

- 7.2.24 Further analysis of the pottery would not conflict with long term storage. All of the pottery should be retained. The only potential conservation treatment required is the reconstruction of the various cremation vessels, the Argonne ware bowl from oven C630 and the unusual Late Iron Age jar from pit C924, and this could be regarded as optional.

Comparative material

- 7.2.25 East Kent is far better served by publications on Late Iron Age and Roman pottery than the Medway valley further West. The best recent overview of Late Iron Age pottery from the region is still that by Thompson (1982), who identified the existence of a ceramic zone in south-east Kent where soot-soaked quartz-sand-tempered wares were prevalent: Pollard's more recent work on Roman pottery from the region (1988, 30-3) provides some additional general information.
- 7.2.26 A number of Late Iron Age and Roman sites have been excavated in the Folkestone area over the last 15 years; producing a large number of pottery assemblages. The Folkestone Transfer Pipeline sectioned sites at Capel le Ferne, Great Hougham (3 sites) and Church Hougham (Lyne forthcoming b), and further sites were excavated

at Dolland's Moor and Peene during work on the Channel Tunnel (Rady 1990). These will shortly be published (Rady forthcoming). The Kent Archaeological Rescue Unit has also carried out excavations on the site of the Folkestone Roman villa, but it is unlikely that information will be forthcoming about this work.

- 7.2.27 The most significant recent publications on Late Iron Age site assemblages are those from the Marlowe Car Park, Canterbury (Green, Pollard and Thompson in Detsicas and Tatton-Brown 1995) and the Deal Iron Age cemetery (Parfitt 1995).
- 7.2.28 The Roman pottery from the region is well served by Pollard's overview (1988) and by Philp's two volumes on the Dover excavations (1981; 1989). Willson's two pottery reports in the latter publications contain a total of 718 coarse-pot drawings spanning the period AD 70-280 and give a good picture of changing pottery supply to a Roman site only 34 kilometres up the coast from Saltwood.
- 7.2.29 Philp's volume on the Late Roman shore fort remains unpublished but this deficiency of published late 3rd and 4th century pottery from Dover is made up to a considerable extent by material in the five Richborough volumes (Bushe-Fox 1926; 1928; 1932; 1949; Cunliffe 1968) and the various Canterbury reports. The most significant Canterbury Roman pottery reports are from the Marlowe Car Park (Bird, Green, Redknap, Willson, Pollard *et al.* in Detsicas and Tatton-Brown 1995).
- 7.2.30 There are also a number of lesser pottery reports for sites in the area and a number of unpublished ones by the author. These latter include reports on the Ickham Roman assemblages (Lyne forthcoming a) and on the Late Iron Age and Roman pottery from sites along the line of the Folkestone Transfer pipeline (Lyne forthcoming b). The former report deals mainly with late 4th century pottery but also includes an early 5th century sequence. The pottery assemblages from the five sites along the Folkestone Transfer pipeline include pots from a small Late Iron Age and Roman cemetery which can be compared with those from the Saltwood one.
- 7.2.31 Other large unpublished Roman pottery assemblages come from Dolland's Moor and Peene, respectively 2.5 and 3.0 kilometres east of Saltwood. These sites were excavated by the Canterbury Archaeological Trust in 1987-89 (Rady 1990) and the material can be made available to compare with that from Saltwood.

Potential for further work

- 7.2.32 The Late Iron Age and Romano-British pottery from Saltwood has considerable potential to address the following research objectives.
- *Establish a dated sequence for the origin and development of settlement including associated enclosures and trackways etc.*
- 7.2.33 Examination of the composition of pottery assemblages from the settlement itself may also supply evidence for specialised activities taking place in discrete areas and for the social status of the site, although it has to be said that most of these pottery assemblages are far too small for detection of such specialised activities. Preliminary examination of the assemblages does, however, suggest that the site was of fairly low status; bearing out a similar impression given by the ephemeral natures of buildings and a paucity of ceramic building materials.
- 7.2.34 Examination of the published ceramic assemblages from these sites would enable us to observe any spatial fluctuations in pottery supply within a comparatively small

area brought about by variations in social status, communications, specialised activities and other unforeseen factors.

- *Establish a chronology and sequence of development for the cemetery if one is present.*
- *Recovery of information on Romano-British burial practice, palaeopathology and demographic studies.*

7.2.35 The pots from the cremation cemeteries at Saltwood also contribute to our knowledge of ritual activities associated with the interment of the dead during the Late Iron Age and Early Roman periods. The pots and the nature of their burial at Saltwood (ritual damage, omission of fragments etc) can be compared with the treatment of those at the contemporary cemetery at Great Hougham Court Farm and other Late Iron Age and Roman cemeteries in East Kent.

7.2.36 It is proposed that the 58 selected key context groups should be published in some detail, although none of them are large enough for quantification by Estimated Vessel Equivalents (EVEs) based on rim sherds (Orton 1975). The main emphasis in the pottery report, other than the use of assemblages to date the features from which they come, should be on the changing patterns of pottery supply from the Late Iron Age to the end of the Roman period, the types of vessel supplied by the various sources and comparison with similarly dated pottery assemblages from elsewhere in the region. Maps similar to those devised by Going to illustrate changing patterns of pottery supply to Chelmsford (1987, figs.52-9) should accompany this section of the report.

7.2.37 It is estimated that about 70 vessels will be illustrated, including 23 cremation vessels. Some of the fragments from occupation deposits are illustrated in Monaghan's corpus of Thameside and Upchurch industry vessel forms (1987) and will not therefore be replicated here.

7.2.38 It is also recommended that the pottery from the Oxford Archaeological Unit's 1997 assessment trenches on the site (OAU 1997) be incorporated in the report. The four pots from the cremation burial discovered at that time are included in the 23 cremation vessels for drawing referred to above.

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7.3 Assessment of Anglo-Saxon Pottery

Mark Davey

Introduction

7.3.1 A moderate assemblage of 764 sherds of Anglo-Saxon pottery weighing 4.781kg was recovered during excavations at Saltwood. This total does not include any pottery from the environmental samples, which were briefly scanned, only the hand-retrieved material being quantified and catalogued.

7.3.2 The study of the Anglo-Saxon ceramics assists with the following Fieldwork Event Aims:

- to establish a chronology for the Anglo-Saxon cemeteries;
- To establish the range of variation in burial rites and to view possible change in rite over time;

Methodology

7.3.3 All of the Saxon pottery included in this report has been catalogued by fabric code, number of sherds and weight per context. The codes employed (period codes: EMS = Early-Middle Saxon [c. AD 450-650]; MLS = Middle-Late Saxon [c. AD 650-850]; LS = Late Saxon [c. AD 850-1050]) are in conjunction with the CAT Fabric Reference Collection. All contexts containing Saxon pottery have been spot-dated and all items of interest have been noted for further reference.

Quantification

7.3.4 The total number of Anglo-Saxon sherds recovered is presented in **Table 14**.

Table 14: Quantification of Anglo-Saxon fabrics

| Fabric code | Count |
|--------------|------------|
| EMS1A | 42 |
| EMS1B | 14 |
| EMS1C | 2 |
| EMS1D | 48 |
| EMS1F | 1 |
| EMS1G | 21 |
| EMS2 | 23 |
| EMS3 | 11 |
| EMS4 | 15 |
| EMS4FG | 8 |
| EMS5 | 1 |
| EMS9 | 1 |
| LS14 | 2 |
| LS100 | 12 |
| Total | 201 |

(Accessory vessels in graves are counted as one sherd each).

7.3.5 A total of 20 fabrics are present, indicating the range of pottery types or wares present. No obvious collection bias was apparent. The early Anglo-Saxon ceramic vessels came almost entirely from the central cemetery, from eight different graves. A Frankish pottery bottle came from a grave within the western cemetery. Fourteen

different early Anglo-Saxon fabrics were provisionally identified, the majority of which came from the putative settlement area towards the western extent of the site.

- 7.3.6 Although there is a wide range of fabrics, six are represented by less than ten sherds and only four have more than twenty sherds. These are coarse and fine sandy wares, grog-tempered, and chalk-filled sandy ware. There are twenty sherds of Middle Saxon pottery, most of which may well be of seventh or early eighth century date. The vessel from SLT98C grave C37 can also be characterised as a Middle Saxon fabric, whilst accepting that it is certainly of seventh century date. The thirteen sherds of late Saxon pottery include five from SLT98C for which the identification needs to be checked (they could be Middle Saxon). The remainder are thinly scattered across contexts within SLT98.

Provenance

- 7.3.7 The overwhelming majority of contexts which contained Anglo-Saxon pottery produced only a single sherd or just a few fragments. Most of these sherds were distributed in small numbers within pit and ditch fills across the western part of the excavation area, although a few came from the central Anglo-Saxon cemetery and may originally have been placed in graves. There were no sherds of Anglo-Saxon pottery recovered to the east of Stone Farm Bridleway.
- 7.3.8 By contrast, the graves produced the highest sherd totals, accounting for 92% of the pottery from the central cemetery and 74% from the western cemetery, accounting for 71% of the overall Anglo-Saxon assemblage.
- 7.3.9 Not surprisingly, the graves also produced the only complete vessels and (with the exception of the unusual bowl in fabric LS1 from context 608) the only vessel profiles. According to the varying surviving conditions of the graves, the pots comprise either complete vessels or ones in numerous pieces. The overall condition of the sherds ranges from good to poor, with the inhumation vessels generally being in a better state of preservation than the smaller groups of pottery found away from the graves, which tend to be more worn and fragmented.

Conservation

- 7.3.10 Only the material from the graves warrants any conservation, namely the consolidation of any complete vessels and the reconstruction of vessel profiles for illustration. The remainder of the assemblage is quite small and, in certain cases, quite worn. It is recommended that the entire Anglo-Saxon ceramic assemblage is retained for future research.

Comparative material

- 7.3.11 The majority of the vessels recovered from the Saltwood excavations are hand-made domestic vessels with simple rims in a restricted range of forms, principally cooking pots and beakers. They cannot be closely dated, but can be placed generally within the sixth and seventh centuries, largely on typological grounds. The only imported vessel exception is a Frankish bottle from grave 117 in cemetery SLT 99. This can be compared with similar greyware vessels recovered from graves at Finglesham, Folkestone, Ozingell, Sarre and Sibertswold (Evison 1979, fig 1.d-g; fig 2.a). These have mainly been recovered from seventh century graves.

- 7.3.12 All of the grave vessels (other than a sand and glauconite-tempered pot from grave C32, SLT 98C) have been manufactured in a sandy, shelly or organic-tempered fabric. These have close parallels with finds from Canterbury and the early Anglo-Saxon settlement at Mucking, whilst the coarse sandy small beaker from grave C39 (SLT 98C) is similar to that recovered from a child's grave at Lyminge. Typologically, their fabrics and forms suggest that they are of seventh century date, although it should be noted that early Anglo-Saxon funerary ceramics from East Kent are not unduly common and they have been little studied (Myres 1969, 109-10; Mainman forthcoming).
- 7.3.13 The close proximity of the Channel Tunnel sites to the CTRL excavations at Saltwood provides an obvious source of comparative material. Here, EMS fabrics were, as at Saltwood, the predominant pottery type; at Saltwood, they account for 85% of the total Anglo-Saxon ceramic assemblage. The majority of this comparative material came from a settlement on Dollands Moor which was of early Anglo-Saxon date. Ceramic vessels have also been recovered from the cemeteries at Lyminge and Dover Buckland, as well as Mill Hill (Warhurst 1955, 37; Evison 1987, 92-3; Macpherson-Grant in Parfitt and Brugmann 1997, 244). There is a distinct contrast between the frequency of imported wares in these cemeteries, and the relative lack of locally-produced vessels. The latter can be seen within Buckland grave C87, Lyminge grave C42 and Mill Hill grave C67B. The majority of the vessels from Buckland, however, are wheel-thrown and Frankish.
- 7.3.14 The simple, plain forms seen at Saltwood can be compared with the vessels from Lyminge and Mill Hill, the former vessel also coming from the grave of a child, as is the case with several of the Saltwood vessels. No precise dating can be given to any of these vessels, however, given the simplicity of the form.
- 7.3.15 The unusual sand and glauconite-tempered vessel, although a rare form in Kent, does have parallels with a vessel from Pennyland (Williams 1993, fig.107.109) particularly for the presence of lugs on the exterior, whilst Myres has identified a pierced lugged vessel from Northfleet (Myres 1977, fig.77.349).

Potential for further work

- 7.3.16 The Anglo-Saxon pottery assemblage has the potential to address the following Fieldwork Event aims as follows:
- *to establish a chronology for the Anglo-Saxon cemeteries;*
- 7.3.17 The pottery assemblage may assist the establishment of a chronology for the dating of the cemeteries, both in association with, and independent of, any other grave goods. Although pots occurring with metalwork in the graves are already "dated" by association, there is still a need to examine the assemblages in each grave and to determine what relationships they share with each other, and to provide a dating sequence for each grave. As noted above, the chronology of early Anglo-Saxon ceramics from this part of East Kent is little researched and is not well-understood. Comparisons continue to be drawn with well-dated assemblages from Canterbury, but there are also possibilities of relating the Saltwood ceramics to groups from Dollands Moor and from the recent work at the Buckland cemetery.
- 7.3.18 The Saltwood ceramics derive both from settlement and cemetery contexts and they need to be viewed together and compared with published and unpublished material from the region. They form one of the most important groups for this period within

this region of East Kent and there is the potential to establish whether influences in potting traditions come from the continent, from West Sussex, or from the Canterbury area.

- *to establish the range of variation in burial rites, and to view possible change in rite over time;*

7.3.19 Variations in burial rites and the general development of the cemetery can be highlighted by a study of the pottery; do the vessels, for example, come from the graves of males or females, juveniles or adults? Provisional results suggest that they are found in burials of both males and females, without any obvious patterning; but that they are prominent in the graves of children and juveniles, and less apparent in the graves of adults. In addition, it may be possible to determine whether the pottery was deliberately made for burial in the grave, or whether vessels were re-used (*i.e.* evidence for wear, sooting and completeness).

- *To recover dated environmental and economic indicators*

7.3.20 The assemblage of Anglo-Saxon ceramics is not large and most of it is confined to the early Anglo-Saxon period. That material does have the potential to examine questions of trade, economy and exchange. It has already been noted that one of the complete vessels is Frankish, and that can be considered within the framework of trade relations between south-east England and northern France in the early Anglo-Saxon period. The local ceramics are also economic indicators, in terms of their relationship with other ceramic zones of east Kent and east Sussex. The influences on ceramic traditions of this period appear to derive more from east Sussex than from elsewhere in east Kent, a situation observed also for the Iron Age. There is the potential to examine these influences, by comparison both with material from other CTRL sites, and with published assemblages from Sussex and Kent.

7.3.21 A further research question can also be proposed. To date, little work has been done on the fabric types in the region, and it is suggested that a programme of scientific analysis could be undertaken in order to clarify the major fabric types. Bearing in mind the fact that the site is situated on a complicated geological zone, it is proposed that a series of thin section and possible ICPS (Inducto - Coupled Plasma Spectrography) samples be analysed, using fabric examples from Canterbury, Saltwood and the adjacent Channel Tunnel sites.

7.3.22 The sourced fabrics from both Saltwood and Canterbury are visually indistinguishable, and it is proposed that the fabrics are scientifically analysed in order to characterise their petrological differences. This would also help to categorise the sand and glauconite - tempered vessel from grave C32, a very unusual and rare form in Kent, the abundance of glauconite being more commonly seen with Roman ceramics. It would assist in determining ceramic sources with greater precision and that itself would help in the development of the understanding of ceramic zones and trade links.

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7.4 Assessment of Medieval and Post-Medieval Pottery

John Cotter

Introduction

7.4.1 The 450 post-Saxon sherds were recovered by hand excavation from 115 separate contexts (including those designated as unstratified or of uncertain provenance). In addition a small quantity of pottery came from the environmental samples. The latter material was briefly scanned but was not recorded in any detail.

7.4.2 The study of this material will assist in the following Fieldwork Event Aims:

- *to recovery artefact assemblages (especially pottery) to elucidate the sequence of site development;*
- *To recover environmental and other economic indicators if these are found to be present on the site.*

7.4.3 The early medieval pottery forms the major element of the dating framework for the later phases of activity on the site. It also provides some information relating to trade and exchange and has the potential to assist in research questions relating to the provenance and dating of certain locally-important ceramic traditions.

Methodology

7.4.4 All material has been catalogued with reference to the CAT Fabric Reference Series (**Table 15**), and by number and weight of sherds per context therein (**Table 16**).

Table 15: Fabric code summary

| Fabric code | Description | Date Range (AD) |
|-------------|---|---------------------|
| PR100 | PR unident | 450-1900 |
| EM1 | EM Cant sandy | 1050-1225 |
| EM2 | EM shelly | 1050-1225/ 50 |
| EM29 | EM Fine sandy with flint and sparse shell | 1125/ 50-1250 |
| EM30 | EM non-local coarse sand and shell-tempered | 1050/ 75-1175/ 1200 |
| EM32 | EM ?East Sussex flint and shell-tempered | 1050/ 75-1225/ 50 |
| EM33 | EM ?East Sussex shell and flint-tempered coarse sandy | 1075-1250 |
| EM41 | EM non-local mod. quartz sand with shell and flint temper | 1050-1175/ 1200 |
| EM45 | EM non-local coarse sandy | 1050/ 75-1175/ 1200 |
| EM100 | EM unident | 1050-1250 |
| EM.M5 | Ashford Potter's Corner-type shelly-sandy | 1125/ 50-1225/ 50 |
| M1 | Tyler Hill ware | 1225-1350 |
| M37 | ?Medway chalk-tempered sandy | 1225-1400 |
| M40B | Ashford/ Wealden sandy | 1200/ 25-1400 |
| M40C | Ashford/ Wealden pasty with chalk | 1250-1450 |
| M100 | Med. Unident. | 1200-1400 |
| LM1 | LM Tyler Hill | 1375-1525 |
| LM2 | LM fine earthenware | 1475-1525/ 50 |
| LM32 | Wealden orange-buff sandy | 1475-1550 |
| PM40B | Chinese porcelain 'famille rose' | 1725-1775/ 1800 |
| PM100 | PM unident. | 1550-1775 |
| LPM* | 'Modern' wares | 1775/ 1800 – 1925 |

7.4.5 Fabrics were identified by both visual inspection and with the aid of a microscope (x20 magnification). All contexts containing pottery have been spot-dated. Brief

notes and/ or sketches of significant items were made during the cataloguing process.

Quantification

- 7.4.6 The quantification of post-Saxon pottery by fabric per context is presented below (Table 16). A total of 36 fabric codes has been used, indicating the variety of pottery types or wares present. Some of these, however, come from the same general source area. The small but diverse collection of 19th century Staffordshire-type wares, for example, accounts for 15 codes. No collection bias was noted.

Table 16: Quantification of post-Saxon pottery by fabric per context

| Site Code | Context | Fabric | Sherds | Weight (g) | Comments |
|-----------|---------|--------|--------|------------|--|
| ARC SLT98 | C34 | EM1 | 2 | 54 | "2x rims, int bev. bowl & cpot. soot." |
| ARC SLT98 | C72 | EM1 | 2 | 14 | |
| ARC SLT98 | C78 | EM1 | 2 | 32 | "incl 1xrim, thickened flat-topped" |
| ARC SLT98 | C121 | M100 | 1 | 22 | Odd unglz handle. m40a related? |
| ARC SLT98 | C122 | EM1 | 3 | 42 | w-t body sherd |
| ARC SLT98 | C135 | EM1 | 2 | 18 | Incl 1x rim. ?or 1s1 |
| ARC SLT98 | C191 | EM1 | 1 | 10 | |
| ARC SLT98 | C238 | EM1 | 17 | 225 | 1 vess |
| ARC SLT98 | C238 | EM2 | 1 | 4 | |
| ARC SLT98 | C238 | EM30 | 1 | 8 | EM30/ 33 no shell. |
| ARC SLT98 | C243 | EM1 | 1 | 10 | |
| ARC SLT98 | C252 | LPM7 | 1 | 16 | |
| ARC SLT98 | C265 | EM1 | 3 | 34 | Incl 2xrims Late Saxon/ EM? |
| ARC SLT98 | C266 | EM1 | 3 | 70 | 2xrim i vess. int bev. unusually tall neck |
| ARC SLT98 | C276 | EM1 | 5 | 76 | Incl 1x bowl rim |
| ARC SLT98 | C277 | EM33 | 1 | 30 | Base cpot EM33/ 30 sparse chalk. sooted. |
| ARC SLT98 | C278 | EM1 | 1 | 38 | Bowl profile. sooted. ?illus. |
| ARC SLT98 | C280 | EM1 | 12 | 134 | Heavily sooted int/ ext. |
| ARC SLT98 | C283 | EM1 | 4 | 26 | |
| ARC SLT98 | C283 | M37 | 1 | 10 | Sooted bs. chalk-temp but prob EM? |
| ARC SLT98 | C288 | EM1 | 2 | 14 | Incl 1x int bev rim. |
| ARC SLT98 | C288 | EM30 | 1 | 4 | EM30/ 33 no shell. |
| ARC SLT98 | C288 | EM32 | 1 | 4 | Red flint |
| ARC SLT98 | C289 | EM1 | 3 | 22 | "incl 1x rim, thickened/ beaded" |
| ARC SLT98 | C289 | EM30 | 1 | 1 | EM30/ 33 no shell. |
| ARC SLT98 | C302 | EM45 | 1 | 6 | Firing resembles some nfr/ flimps. |
| ARC SLT98 | C314 | EM1 | 2 | 16 | |
| ARC SLT98 | C314 | EM29 | 1 | 8 | |
| ARC SLT98 | C321 | EM1 | 5 | 44 | |
| ARC SLT98 | C324 | EM1 | 12 | 152 | Incl 2x int bev rims |
| ARC SLT98 | C324 | EM33 | 2 | 52 | Incl 1x rim. 1 vess. illus? |
| ARC SLT98 | C330 | EM1 | 2 | 24 | Incl 1x d-bead rim. 1 vess |
| ARC SLT98 | C338 | EM1 | 5 | 58 | Incl 1x int bev rim. |
| ARC SLT98 | C338 | EM2 | 1 | 8 | |
| ARC SLT98 | C354 | EM1 | 3 | 90 | |
| ARC SLT98 | C361 | EM1 | 1 | 12 | 1x int bev rim |
| ARC SLT98 | C361 | M37 | 2 | 4 | EM-type. sooted bss. |
| ARC SLT98 | C362 | EM1 | 5 | 60 | |
| ARC SLT98 | C372 | M37 | 1 | 8 | EM-type. sooted cpot base. |
| ARC SLT98 | C373 | EM1 | 2 | 4 | |
| ARC SLT98 | C373 | EM30 | 1 | 1 | |
| ARC SLT98 | C388 | EM1 | 1 | 8 | |
| ARC SLT98 | C388 | M37 | 1 | 8 | EM-type |
| ARC SLT98 | C413 | EM1 | 1 | 28 | |
| ARC SLT98 | C413 | M37 | 3 | 10 | EM-type. prob upright perforated lug |
| ARC SLT98 | C413 | EM45 | 2 | 4 | ?applied/ pierced feature |
| ARC SLT98 | C421 | EM1 | 6 | 26 | |
| ARC SLT98 | C421 | M37 | 1 | 12 | EM-type |
| ARC SLT98 | C421 | EM29 | 1 | 2 | |
| ARC SLT98 | C421 | EM41 | 1 | 1 | |
| ARC SLT98 | C422 | EM1 | 2 | 26 | Incl 1x int bev rim. |
| ARC SLT98 | C427 | EM1 | 1 | 1 | |
| ARC SLT98 | C429 | EM1 | 2 | 6 | |

| | | | | | |
|------------|---------|--------|----|-----|---|
| ARC SLT98 | C431 | EM45 | 3 | 34 | Incl 1x cspot rim. oxd.surfs.EM45/ m40b. illus |
| ARC SLT98 | C431 | EM30 | 1 | 6 | EM30/ 33 no shell. |
| ARC SLT98 | C449 | EM45 | 1 | 4 | |
| ARC SLT98 | C503 | EM1 | 4 | 22 | Incl. ix int bev rim. |
| ARC SLT98 | C517 | EM1 | 2 | 12 | |
| ARC SLT98 | C517 | EM29 | 2 | 8 | EM29/ 30 no shell sparse flint grits |
| ARC SLT98 | C519 | EM1 | 3 | 26 | Incl 2x thicken/ bead rims |
| ARC SLT98 | C522 | EM30 | 1 | 4 | |
| ARC SLT98 | C538 | EM1 | 1 | 10 | Int bev rim |
| ARC SLT98 | C540 | PR100 | 1 | 12 | "bs, fettled ext. ?EM60a or roman??" |
| ARC SLT98 | C549 | EM1 | 13 | 198 | "incl 4x rims, int bev & d-bead " |
| ARC SLT98 | C550 | EM1 | 2 | 16 | |
| ARC SLT98 | C597 | EM1 | 10 | 80 | "incl 4x rims, int bev & d-bead " |
| ARC SLT98 | C597 | EM2 | 1 | 1 | |
| ARC SLT98 | C602 | EM1 | 2 | 60 | "2xrims, 1 vess, cspot, short clubby rim" |
| ARC SLT98 | C608 | EM1 | 2 | 4 | |
| ARC SLT98 | C609 | EM30 | 1 | 32 | EM30/ 33 no shell. |
| ARC SLT98 | C609 | M37 | 1 | 1 | EM-type |
| ARC SLT98 | C613 | EM1 | 5 | 28 | |
| ARC SLT98 | C613 | EM30 | 1 | 10 | Rim cspot. EM30/ 33 |
| ARC SLT98 | C636 | EM1 | 1 | 4 | |
| ARC SLT98 | C645 | EM1 | 1 | 20 | |
| ARC SLT98 | C645 | EM2 | 1 | 1 | Coarse shell |
| ARC SLT98 | C791 | EM2 | 5 | 46 | 2 vess. incl gastropod & ?barnacle |
| ARC SLT98 | C821 | EM1 | 1 | 22 | Bead rim |
| ARC SLT98 | Unstrat | EM1 | 11 | 92 | "incl. 1x rim, int bevel." |
| ARC SLT98 | Unstrat | EM45 | 3 | 26 | 1 poss lsax?. 2x bss to fabric ref. coll. |
| ARC SLT98 | Unstrat | EM1 | 2 | 34 | Tr.3 |
| ARC SLT98 | Unstrat | EM30 | 1 | 18 | t.t.15. rim. hybrid EM30/ 33/ 41 abund fl/ no shl |
| ARC SLT98 | Unstrat | EM1 | 1 | 18 | w. site |
| ARC SLT98 | Unstrat | EM30 | 1 | 4 | w. site. EM30/ 33. no shell |
| ARC SLT98 | Unstrat | EM32 | 5 | 38 | 366/ 957 v. coarse EM32/ 33/ 30 ?lsax. |
| ARC SLT98 | Unstrat | PM100 | 1 | 10 | 370/ 950 v. fine pm1/ lpm2 ?or roman. |
| ARC SLT98 | Unstrat | EM1 | 1 | 22 | 380/ 950 surface |
| ARC SLT98 | Unstrat | EM1 | 5 | 94 | 400/ 970 incl 1x int. bevel rim |
| ARC SLT98 | Unstrat | EM1 | 8 | 96 | 420/ 960 2x rims incl bowl |
| ARC SLT98 | Unstrat | EM29 | 1 | 14 | 420/ 960 cspot neck/ shoulder. ?early EM29 |
| ARC SLT98 | Unstrat | EM1 | 18 | 270 | 430/ 960 incl 5x cspot rims. sooted |
| ARC SLT98 | Unstrat | EM1 | 7 | 76 | 440/ 970 incl 1x int bevel rim |
| ARC SLT98C | C1046 | LPM14 | 1 | 14 | |
| ARC SLT98C | C1046 | LPM7B | 1 | 2 | |
| ARC SLT98C | C1046 | LPM10E | 1 | 8 | |
| ARC SLT98C | C1046 | LPM12D | 1 | 2 | |
| ARC SLT98C | C1046 | LPM5 | 3 | 44 | Mocha bowl = 1051/ 1065 |
| ARC SLT98C | C1046 | LPM1A | 2 | 8 | |
| ARC SLT98C | C1046 | PM40B | 1 | 6 | Footring dish/ plate. ?imari. ?burnt. |
| ARC SLT98C | C1046 | LM1 | 1 | 2 | |
| ARC SLT98C | C1046 | LM2 | 1 | 1 | |
| ARC SLT98C | C1046 | M1 | 1 | 2 | Rim cspot. worn. |
| ARC SLT98C | C1057 | LPM10A | 1 | 4 | |
| ARC SLT98C | C1061 | LPM14 | 1 | 2 | |
| ARC SLT98C | C1063 | LPM14 | 12 | 44 | l19/ e20c types |
| ARC SLT98C | C1080 | M40B | 1 | 2 | M40b ?or LM2-type |
| ARC SLT98C | C1102 | EM.M5 | 1 | 8 | Rim cspot.worn |
| ARC SLT98C | C1128 | LM1 | 1 | 2 | l14/ 15c glz jug bs with t.strip |
| ARC SLT98C | C1130 | M100 | 1 | 4 | ?m40b or tile? |
| ARC SLT98C | C1139 | EM32 | 2 | 8 | Cspot base. reduc. |
| ARC SLT98C | C1180 | LPM14 | 1 | 1 | |
| ARC SLT98C | C1180 | EM1 | 1 | 24 | |
| ARC SLT98C | C1187 | LPM5 | 1 | 4 | |
| ARC SLT98C | C1190 | M40B | 1 | 2 | Glz int. M40b/ LM32? |
| ARC SLT98C | C1190 | PR100 | 1 | 1 | ?cant. sdy. ?EMSL/ EM1? |
| ARC SLT98C | C1215 | M1 | 1 | 4 | ML/ LML? |
| ARC SLT98C | C1251 | LPM11A | 1 | 1 | |
| ARC SLT98C | C1380 | EM32 | 1 | 4 | |
| ARC SLT98C | C2608 | LM1 | 1 | 1 | |
| ARC SLT98C | C2700 | EM1 | 1 | 8 | |
| ARC SLT98C | C2700 | EM29 | 1 | 8 | Devel squared 12c cspot rim as at TWD96 |
| ARC SLT98C | C2700 | M1 | 2 | 12 | l13/ 14c |
| ARC SLT98C | C2752 | M100 | 1 | 1 | Scrap ?M40b |

| | | | | | |
|---------------|---------|--------|------------|-------------|--|
| ARC SLT98C | C2814 | PR100 | 1 | 4 | Underfired/ abraded scrap ?ph/ pr? |
| ARC SLT98C | C2851 | M1 | 1 | 8 | 14c? splash-glzd bs. |
| ARC SLT98C | C6620 | M40B | 1 | 12 | Rim cp0t. oxd. 112/ e13c. ?or oxd EM45? |
| ARC SLT98C | Unstrat | EM1 | 3 | 22 | u/ s zone c. |
| ARC SLT98C | Unstrat | LPM14 | 21 | 90 | 1051/ 1065 |
| ARC SLT98C | Unstrat | LPM10A | 2 | 226 | 1051/ 1065 |
| ARC SLT98C | Unstrat | LPM10 | 1 | 4 | 1051/ 1065 prob. electrical insulator |
| ARC SLT98C | Unstrat | LPM5 | 13 | 162 | 1051/ 1065 mocha bowl |
| ARC SLT98C | Unstrat | LPM12D | 3 | 4 | 1051/ 1065 |
| ARC SLT98C | Unstrat | LPM11A | 2 | 2 | 1051/ 1065 |
| ARC SLT98C | Unstrat | LPM15B | 1 | 22 | 1051/ 1065 |
| ARC SLT98C | Unstrat | LPM1A | 1 | 4 | 1051/ 1065 rim |
| ARC SLT98C | Unstrat | LM32 | 1 | 2 | 1051/ 1065 worn bs. |
| ARC SLT99 | C2040 | EM1 | 1 | 4 | |
| ARC SLT99 | C2040 | M40B | 1 | 7 | Part glzd jug |
| ARC SLT99 | C2115 | M40B | 1 | 1 | Fine lozenge rouletting. oxd. |
| ARC SLT99 | C2126 | M40B | 1 | 28 | Handle sherd. prob 13c |
| ARC SLT99 | C2134 | M40B | 1 | 2 | Glz specks. ?13c |
| ARC SLT99 | C2137 | LM32 | 8 | 179 | 1 vess. jar bss with glzd int floor |
| ARC SLT99 | C2150 | LM1 | 1 | 8 | Overfired |
| ARC SLT99 | C2150 | EM.M5 | 2 | 5 | Incl 1x cspot rim. squared. 13c |
| ARC SLT99 | C2158 | LPM2 | 3 | 26 | |
| ARC SLT99 | C2158 | LPM3A | 4 | 11 | 3x rims |
| ARC SLT99 | C2158 | LPM12A | 1 | 1 | |
| ARC SLT99 | C2181 | EM29 | 1 | 8 | Sagging base. unsooted. |
| ARC SLT99 | C2184 | M40B | 1 | 3 | Featureless bs. ?M40b/ 1A/ Rom??? |
| ARC SLT99 | C2211 | EM.M5 | 1 | 2 | |
| ARC SLT99 | C2237 | M1 | 1 | 1 | 113/ 14c?unusl. edge-wear ?reuse/ counter? |
| ARC SLT99 | C3000 | EM1 | 1 | 9 | |
| ARC SLT99 | C3000 | M40C | 1 | 14 | Deeply stabbed jug handl. ring&dot dec. |
| ARC SLT99 | C3000 | LPM1 | 1 | 22 | Bowl rim. ?High Halden |
| ARC SLT99 | C3000 | LPM14 | 1 | 2 | Rim |
| ARC SLT99 | C3000 | LPM12G | 1 | 1 | |
| ARC SLT99 | C3121 | EM45 | 1 | 8 | "worn bs. prob EM, otherwise Saxon?" |
| ARC SLT99 | C3147 | LPM14 | 1 | 6 | Burnt rim sherd. |
| ARC SLT99 | C3746 | EM1 | 2 | 8 | grave C113. prob EM1; def. Cant-type sandy |
| ARC SLT99 | C3746 | EM100 | 1 | 4 | grave C113. poss EM1? |
| ARC SLT99 | Unstrat | M1 | 1 | 32 | Haul. road.w. jug handle. |
| ARC SLT99 | Unstrat | LPM1 | 1 | 11 | ?high halden |
| ARC SFB99 | W15 | M1 | 3 | 21 | M1/LM1? |
| ARC SFB99 | W47 | EM.M5 | 1 | 32 | |
| ARC SFB99 | W47 | EM2 | 3 | 15 | |
| ARC SFB99 | W48 | EM2 | 7 | 160 | Jar rim; sooted |
| ARC SFB99 | W26 | M1 | 2 | 4 | M1/LM1? |
| ARC SFB99 | W75 | EM1 | 3 | 22 | 1xint. bev. rim |
| ARC SFB99 | W75 | EM2 | 1 | 5 | |
| ARC SFB99 | W150 | EM2 | 5 | 17 | |
| ARC SFB99 | W150 | EM2 | 1 | 44 | Jar rim |
| ARC SFB99 | W156 | EM2 | 4 | 7 | |
| ARC SFB99 | W198 | EM100 | 1 | 43 | ?Normandy Gritty |
| ARC SFB99 | W185 | EM1 | 2 | 2 | Combed |
| ARC SFB99 | W74 | EM1 | 3 | 29 | Combed; 1 rim |
| ARC SFB99 | W82 | EM2 | 3 | 7 | |
| ARC SFB99 | W117 | EM2 | 2 | 4 | |
| Totals | | | 450 | 4681 | |

Provenance

- 7.4.7 The pottery mostly came from ditch/ gully fills, pits and post-holes. A few sherds came from Anglo-Saxon graves, in which contexts they were presumably intrusive. Apart from 'unstratified' contexts, no single context produced more than 19 sherds of pottery. The largest concentrations of pottery came from the north-western area of the site within the system of enclosures demarcating the early medieval settlement C48 *et al*, particularly from the concentration of pits and other features in the central northern part of this area, close to the motorway. This probably represents rubbish dumping from nearby dwellings. Very little pottery was recovered to the east of Stone Farm Bridleway (ARC SFB99).

Conservation

- 7.4.8 The material has no special conservation or storage needs. It may be necessary however to reconstruct a small number of vessel profiles prior to illustration. It is recommended that all the ceramic material should be retained. In terms of degree of wear, the condition of the pottery is generally fair to good. Small isolated groups of sherds can be fairly small and worn. Those from pits are generally in fairly good condition and include two or three reconstructable vessel profiles.

Comparative material

- 7.4.9 Remarkably little early medieval pottery has been published from this general area of Kent (Saltwood/ Hythe) and, in general, known or published assemblages of early medieval pottery from the rural Weald of Kent are scarce. The most relevant published assemblage is merely an interim report, now out of date, which deals with a probable kiln site at Potter's Corner, Ashford, which probably dates to the early 13th century (Grove and Warhurst 1952). Both a sandy ware and a closely related shelly-sandy ware were produced at Potter's Corner and most probably at other unlocated production sites in the Ashford area. Both wares occur at the Saltwood site, though not in very significant quantities.
- 7.4.10 Ashford/ Wealden sandy ware (Fabric M40B), however, appears on this site to have an earlier antecedent dating from the later 11th century and signalling an earlier phase of the Ashford sandy ware tradition. This antecedent fabric is very like a rare non-local fabric occurring at Canterbury (Fabric EM45 'Non-local coarse sandy ware') which can now tentatively be assigned an Ashford area source. The same fabric code has therefore been used in the catalogue of early medieval pottery from Saltwood. Evidence for an earlier phase of both the Ashford sandy and shelly-sandy ware traditions has also been recognised from the other CTRL excavation sites at Westenhanger Castle (WSG98), Mersham (MSH98) and Parsonage Farm (PFM98), the last two lying close to Ashford itself.
- 7.4.11 As at nearby Westenhanger Castle, a more significant element in the Saltwood assemblage is the flint- or flint- and shell-tempered wares, whose chronology and typology is only very poorly understood. These are part of a widespread tradition of flint-tempered wares which were probably made at many locations along the coast of Sussex and south Kent. Comparable but slightly later flint-tempered wares occur at Dover in contexts of c.1150–1250 (Cotter forthcoming).
- 7.4.12 Early medieval Canterbury sandy ware (Fabric EM1) is the commonest early medieval pottery type occurring at Saltwood. This is well known from many sites in east Kent and provides a useful dating tool for less well known ceramic traditions when these occur in the same contexts. A few, mostly featureless, sherds of chalk-tempered ware also occur in early medieval contexts. Although these have been coded as the 13th/ 14th century Fabric M37 (?Medway chalk-tempered sandy ware), it seems unlikely that they could come from the same area. It is not impossible, furthermore, that they could be residual Saxon pieces.
- 7.4.13 There is a very small assemblage of 13th to early 16th century wares from the Ashford/ Wealden area and from Tyler Hill (Canterbury). None of these is very significant and could have arrived on the site in the course of muck-spreading/ manuring operations. A rather larger collection of 19th century wares probably represents casual rubbish-dumping. These equally are of very little significance.

Potential for further work

- 7.4.14 The early medieval material from Saltwood provides useful confirmation for observations made on nearby CTRL sites, particularly those at Westenhangar Castle and Mersham. Like these, the importance of the Saltwood assemblage is that it provides a window into the ceramics of an area of rural Kent where virtually no ceramic research has been conducted previously.
- 7.4.15 In terms of local and regional research priorities, in the Ashford/ east Wealden area, the assemblage is important in demonstrating that wares of the Ashford Potter's Corner tradition were in circulation well before the 13th century, which is the usual date assigned to these wares. The Saltwood assemblage thus provides useful information on the early medieval stage of the industry or tradition, intermediate in date between the earlier (i.e. Late Saxon/ early medieval) assemblage from Mersham and the later assemblage from the Ashford kiln site itself. A previously unsourced early medieval pottery fabric (EM45) known from Canterbury can now, in all probability, be identified as an Ashford area product. Although the Saltwood material thus contributes to our growing knowledge of Ashford area products, the relatively small quantities involved are less significant than those from Mersham and Westenhangar Castle. The Saltwood material is therefore more likely to be a source for comparative material associated with the publication analyses of these nearby sites.
- 7.4.16 Probably of more importance is the occurrence of local flint-tempered wares (Fabrics EM29, EM30, EM32 and EM33) in association with Canterbury early medieval sandy ware forms datable to the period c.1050–1125. This provides a rare opportunity to examine the fabrics and vessel typology of an early and well-dated assemblage of this locally important but poorly understood ceramic tradition. While smaller than the assemblage of similarly dated flint-tempered wares from Westenhangar Castle, the Saltwood group still has the potential to make a useful contribution to this area of research, although again, the Saltwood material is more likely to be a source for comparative material associated with the publication analysis for Westenhangar.
- 7.4.17 In terms of material worthy of illustration, there are few notable 'groups' and, in comparison with similar early medieval assemblages from Canterbury and east Kent, it could be said that there are no really notable 'groups' of pottery from Saltwood at all. Rather there are individual vessels from different contexts which are of typological interest in themselves and/ or whose illustration would complement the excavation narrative, particularly those sections of the report dealing with the dating of early medieval occupation on the site.
- 7.4.18 These include around a dozen vessels from contexts C266, C276, C278, C324, C413, C431, C602, C1102, C2115, C2237, C2700, C3000 and C6620, as well as some from unstratified contexts. These are mainly of relevance to the elucidation of site development by providing dating information and, furthermore, because they are generally the best preserved and hence the most diagnostic of the ceramics, they also relate to other research objectives such as trade and site status.
- 7.4.19 The post-Saxon pottery assemblage therefore has the potential to address a number of the Fieldwork Event Aims:
- *to establish a dated sequence for the origin and development of the settlement;*

- 7.4.20 The ceramic assemblage elucidates the sequence of site development by providing dating information. Analysis of the occurrence of cross-joining sherds from different contexts can also shed light on this point and can be used to establish the nature of the redistribution of discarded material across the site. A more considered dating can then be offered for site features and for the groups and sub-groups.
- *to recover dated environmental and economic indicators;*
- 7.4.21 The quality of the pottery provides a degree of information on the status and economy of the site. The utilitarian nature of the early medieval pottery, for example, together with the lack of imported wares, points to a degree of isolation and rural poverty. Furthermore, although cooking pots are easily the most dominant vessel form on the site, there is also a relatively high number of wide bowls present. These, in quantity, are usually considered to be associated with dairying practices and thus have the potential shed light on the economy of the site during this period. The ratio of cooking pots to bowls and other forms could be established more accurately by quantifying the assemblage by rim EVEs and rim sherd counts.
- 7.4.22 The post-Saxon pottery can also assist in the following new research aim:
- *to note developments in Kentish trading systems over time;*
- 7.4.23 The geographic sources of the pottery provide evidence for trade and exchange. The quantities of pottery from known or inferred sources can be compared by grouping fabrics into source groups. This should enable supply trends and hence the relative importance of different trade links to be established and compared. This can be achieved by tabulating the quantified data in terms of source groups. The post-Saxon pottery from Saltwood suggests one main phase of occupation during the period c.1050–1125 with Canterbury supplying the bulk of pottery used on site, and more local sources supplying the remainder. The pottery suggests that no significant occupation of the site occurred after this date, although one or two ‘casual loss’ pieces of later date are of some intrinsic interest.

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7.5 Assessment of Ceramic Building Material

Louise Harrison and Lorraine Mephram

Introduction

- 7.5.1 A total of 111 fragments of ceramic building material (CBM) (weighing 4.527kg) was recovered, including 53 fragments of Romano-British date (weighing 3.683kg) and 58 of medieval/ post-medieval date (weighing 0.844kg). All of the material was retrieved by hand excavation, none (to date) having been retrieved from soil samples.

Methodology

- 7.5.2 The assemblage has been examined in conjunction with the CAT fabric series, and been quantified (count and weight) by type per context. The presence of distinguishing marks or features (such as signature marks) and (in the case of *tegulae*) flange profile or cutaway has been recorded. After recording the building material from CAT fieldwork events with no diagnostic features has been discarded. All material from WA fieldwork events is currently retained.

Quantification

- 7.5.3 The ceramic building material recovered is presented in **Table 17**.

Provenance

- 7.5.4 To the west of Stone Farm Bridleway, all CBM with the exception of one fragment was recovered from deposits of Romano-British date or later. To the east of Stone farm Bridleway, one piece of medieval/ post-medieval was intrusive in Early Bronze Age ring ditch W33, and five others of the same date intrusive in Late Bronze Age/ Early Iron Age ditches W161 and W162, Late Iron Age/ Early Romano-British ditch W54 and an Early Saxon grave (W77) respectively. In the western part of the site CBM was retrieved from late Roman deposits consisting mainly of ditches and deposits relating to trackways C1 and C2.

Conservation

- 7.5.5 Ceramic building material is a stable material and does not require any form of conservation. It is recommended that the diagnostic material retained so far is retained for long term storage. CAT's retention and discard policy for CBM has been followed, as noted above. It is recommended that a similar policy is adopted for the CBM from WA fieldwork events.

Comparative Material

- 7.5.6 Little or no comparative material for the Roman CBM has been produced from other CTRL sites. Quantities of Roman brick and tile have, however, been recovered intermittently by CAT from *Sandtun*, West Hythe just south-west of Saltwood.

Table 17: Ceramic Building Material by context

| Site | Context | Context type | Count | Weight (kg) | Period | Type, Comments etc. |
|------------|-------------|------------------|------------|--------------|-----------|------------------------|
| ARC SLT98 | C2 | Ditch 36 | 2 | 0.560 | Roman | Brick |
| ARC SLT98 | C2 | Ditch 36 | 2 | 0.040 | Roman | Tile |
| ARC SLT98 | C2 | Ditch 36 | 1 | 0.100 | Roman | Tile, signature mark |
| ARC SLT98 | C121 | Trackway 814 | 1 | 0.045 | Roman | Tile |
| ARC SLT98 | C139 | Pit 140 | 1 | 0.002 | Post-med | Brick |
| ARC SLT98 | C139 | Pit 140 | 1 | 0.065 | Roman | Brick |
| ARC SLT98 | C143 | Pit 147 | 1 | 0.390 | Roman | Tegula |
| ARC SLT98 | C179 | Pit 178 | 1 | 0.005 | Roman | Tile |
| ARC SLT98 | C238 | Layer 352 | 1 | 0.020 | Roman | Imbrex |
| ARC SLT98 | C238 | Layer 352 | 4 | 0.105 | Roman | Tile |
| ARC SLT98 | C243 | Surface, Track 1 | 1 | 0.020 | Roman | Imbrex |
| ARC SLT98 | C243 | Surface, Track 1 | 1 | 0.185 | Roman | Brick |
| ARC SLT98 | C243 | Surface, Track 1 | 5 | 0.060 | Roman | Tile |
| ARC SLT98 | C243 | Surface, Track 1 | 1 | 0.020 | Roman | Tile, signature mark |
| ARC SLT98 | C276 | Feature 855 | 1 | 0.010 | Roman | Tile |
| ARC SLT98 | C288 | Layer | 1 | 0.005 | Medieval | Roof tile |
| ARC SLT98 | C312 | Pit 313 | 2 | 0.050 | Roman | Tile, signature mark |
| ARC SLT98 | C354 | Ditch 357 | 1 | 0.040 | Roman | Tile |
| ARC SLT98 | C421 | Ditch 795 | 1 | 0.010 | Roman | Tile |
| ARC SLT98 | C431 | Post hole 432 | 2 | 0.020 | Post-med | Roof tile |
| ARC SLT98 | C621 | Layer | 1 | 0.080 | Roman | Tile, nail hole |
| ARC SLT98 | C622 | Pit 896 | 3 | 0.010 | Roman | Tile |
| ARC SLT98 | C643 | Pit 644 | 3 | 0.005 | Post-med | Roof tile |
| ARC SLT98C | C1046 | grave C1048 | 2 | 0.030 | Medieval | Roof tile |
| ARC SLT98C | C1120 | grave C1138 | 1 | 0.005 | Medieval | Roof tile |
| ARC SLT98C | C1130 | grave | 1 | 0.010 | Medieval | Roof tile |
| ARC SLT98C | C1130 | grave | 1 | 0.010 | Post-med | Roof tile |
| ARC SLT98C | C1134 | grave C1132 | 2 | 0.003 | Medieval | Roof tile |
| ARC SLT98C | C1161 | grave C1163 | 1 | 0.015 | Medieval | Roof tile |
| ARC SLT98C | C1180 | Layer | 3 | 0.015 | Post-med | Brick |
| ARC SLT98C | C1187 | grave C1188 | 1 | 0.004 | Roman | Tile |
| ARC SLT98C | C1426 | Post hole 1427 | 5 | 0.005 | Post-med | Brick |
| ARC SLT98C | C1426 | Post hole 1427 | 1 | 0.004 | Roman | Tile, burnt |
| ARC SLT98C | C2602 | Ditch 2603 | 1 | 0.005 | Medieval | Roof tile |
| ARC SLT98C | C2725 | | 1 | 0.003 | Post-med | Roof tile |
| ARC SLT98C | C1037 | | 2 | 0.040 | Medieval | Roof tile |
| ARC SLT98C | C2719/ 2721 | | 1 | 0.010 | Post-med | Brick |
| ARC SLT98C | - | Unstratified | 1 | 0.015 | Medieval | Roof tile |
| ARC SLT98C | - | Unstratified | 3 | 0.048 | Post-med | Brick |
| ARC SLT98C | - | Unstratified | 2 | 0.015 | Post-med | Roof tile |
| ARC SLT98C | - | Unstratified | 3 | 0.855 | Roman | Tegula |
| ARC SLT98C | - | Unstratified | 2 | 0.010 | Roman | Tessera |
| ARC SLT98C | - | Unstratified | 15 | 0.995 | Roman | Tile (1 inc. sig mark) |
| ARC SLT99 | C2130 | | 1 | 0.010 | Medieval | Roof tile |
| ARC SFB99 | W1000 | Layer | 1 | 0.017 | Med/ pmed | Roof tile |
| ARC SFB99 | W1100 | grave C1101 | 1 | 0.016 | Med/ pmed | Roof tile |
| ARC SFB99 | W1355 | Ditch 1353 | 1 | 0.008 | Med/ pmed | Roof tile |
| ARC SFB99 | W1362 | Pit 1361 | 1 | 0.005 | Med/ pmed | Roof tile |
| ARC SFB99 | W1513 | Ditch 1512 | 3 | 0.233 | Med/ pmed | Roof tile |
| ARC SFB99 | W1598 | Ditch 1466 | 1 | 0.008 | Med/ pmed | Roof tile |
| ARC SFB99 | W1616 | Ditch 1615 | 1 | 0.006 | Med/ pmed | Roof tile |
| ARC SFB99 | W1651 | Ditch 1650 | 1 | 0.002 | Med/ pmed | Roof tile |
| ARC SFB99 | W1966 | Ditch 1496 | 1 | 0.027 | Med/ pmed | Roof tile |
| ARC SFB99 | W2001 | Subsoil | 1 | 0.006 | Med/ pmed | Roof tile |
| ARC SFB99 | W3001 | Subsoil | 8 | 0.208 | Med/ pmed | Roof tile |
| ARC SFB99 | W3511 | Ditch 3510 | 2 | 0.024 | Med/ pmed | Roof tile |
| ARC SFB99 | W3523 | Ditch 3522 | 1 | 0.013 | Med/ pmed | Roof tile |
| | | Totals | 111 | 4.527 | | |

Potential for further work

- 7.5.7 The small quantity of Roman brick and tile is both poor in quality and condition. Although the presence of the material suggests that there were substantial structures on or close to the site during the Roman period, the lack of large quantities of good

quality material from secure contexts and features suggests that any further work on the material is unlikely to contribute to the Land Zone Aims and The Fieldwork Event Aims. As a result, further dissemination of the results of this assessment should be achieved through a small note including the quantity, condition and location of the brick and tile in the final Saltwood publication. No further analysis is required.

- 7.5.8 No further work is recommended for the CBM of medieval/ post-medieval date.

7.6 Assessment of Ceramic Loomweights

Ian Riddler

Introduction

7.6.1 Four fragments of ceramic loomweights came from three separate contexts, all but one of which lay within the western part of the excavation area. The exception is a fragment of a loomweight which was recovered from a grave fill. All of the fragments were hand-recovered.

7.6.2 The study of these objects assists in the following Fieldwork Event Aims:

- *to establish a dated sequence for the origin and development of the settlement;*
- *To recover dated environmental and economic indicators.*

Methodology

7.6.3 All of the fragments have been examined to determine their original object form. No detailed work has been carried out on their fabrics and no sampling has been undertaken, given the small size of the assemblage.

Quantification

7.6.4 The fragments include three which are of Anglo-Saxon date and one piece which has no diagnostic features but is likely to belong to the same period. One of the Anglo-Saxon pieces is part of a loomweight of annular type, which is likely to be of Early Anglo-Saxon date. The identification of the other two pieces are a little less certain but one appears to come from a loomweight of intermediate or bun-shape and it should, therefore, be of Middle or Late Saxon date. The fragment from a grave within the central cemetery is part of a loomweight which is probably also of annular type, making it broadly contemporary with the burial.

Provenance

7.6.5 The loomweight fragments derived from two separate contexts within the western (occupation?) part of the site and from one grave C14 in the central Anglo-Saxon cemetery. The fabrics of each item have not been examined in any detail but it is likely that all of them were made locally. They all survive in reasonable condition, although they are fragmentary.

Conservation

7.6.6 All of the fragments have been examined and cleaned by a conservation assistant. They have been packaged and can be stored as a bulk commodity. Further analysis would be non-destructive and would not conflict with their storage requirements. It would principally involve the examination of fabrics, together with the reconstruction of the original sizes and weights of the objects.

7.6.7 Most of the fragments are not worthy of display but they may form the basis of future research into textile implements. On that basis, they should not be discarded.

Comparative Material

- 7.6.8 Early Anglo-Saxon loomweights have not been found in East Kent in any numbers. The absence of settlement traces of Early Anglo-Saxon date from East Kent means that loomweights are correspondingly scarce. Examples of annular, intermediate and bun-shaped loomweights have principally been found in Canterbury and annular loomweights are known also from Darenth and from *Sandtun* (Blockley *et al* 1995, 1173-7; Philp 1973, 155 and fig 46.462-3; Riddler forthcoming). A bun-shaped loomweight was recovered from previous work to the north of Saltwood Tunnel (Willson 1985, 234 and fig 2.30). Their distribution in East Kent has been described in the relevant specialist assessment text for ARC MSH98 (URL 2000).

Potential for further work

- 7.6.9 The small group of loomweights will assist in the following Fieldwork Event Aims:
- *to establish a dated sequence for the origin and development of the settlement;*
- 7.6.10 Although the loomweights are fragmentary, almost all of them can be identified to type, and placed within a broad dating framework. This assists in the phasing of the western part of the excavation area. They can also be related to the earlier find which, although described as an intermediate form of loomweight, is of bun-shape and is more likely to be of Late Saxon date. In conjunction with other broadly contemporaneous diagnostic artefacts, it may be valid to investigate the spatial arrangement of Early Anglo-Saxon items throughout the possible occupation site.
- *to recover dated environmental and economic indicators;*
- 7.6.11 Alongside a fragmentary bone or antler double-pointed pinbeater fragment and an iron weaving batten, the loomweights are indicators of weaving, which was being carried out at or near the excavated area. They can be viewed alongside the desiccated and mineralised textile remains found in a number of the graves from each of the cemeteries. Some of these textiles may have been imported, others made on site. The overall evidence is relatively sparse but it does consist of these various strands, which can be woven together. It is rare for all of these different elements to be present on the same site.
- 7.6.12 The study of the loomweights also assists in further research aim for the project:
- *Late Saxon Settlement at Saltwood;*
- 7.6.13 Early Anglo-Saxon and early medieval phases have been identified for this landscape but there may appear to be nothing much in between, other than a few sherds of Middle and Late Saxon pottery. Although unlikely, the ceramics and ceramic objects raise the possibility that there was also some form of very Late Saxon activity at Saltwood, possibly a precursor to the more coherent evidence for early medieval occupation of the site.

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7.7 Assessment of Fired Clay

Louise Harrison and Lorraine Mephram

Introduction

- 7.7.1 Most of the fired clay was hand-collected from excavated features, although a significant proportion of the total assemblage was retrieved from soil samples.
- 7.7.2 Due to both the small quantity and poor quality of the fired clay from well-stratified contexts, assessment indicates that the material is unlikely to address any of the Fieldwork Event Aims or Land Zone Aims. Its presence does, however, suggest that wattle- and daub-lined structures were present on the site, largely during the early medieval period.

Methodology

- 7.7.3 All the fired clay has been recorded by context and by number/ weight. From ARC SLT98 and ARC SLT98C, fired clay with diagnostic features such as wattle impressions and surviving surfaces has been kept for further study, while the remaining material has been discarded after recording. All fired clay from ARC SFB99 has been retained. This assessment deals only with the diagnostic, retained material.

Quantification

- 7.7.4 The total fired clay assemblage retrieved from Saltwood consisted of 954 fragments weighing 15.198kg. The discarded material (including all the fragments retrieved from soil samples), amounting to 667 fragments weighing 7.037kg, was abraded and had no diagnostic features. Thus, the retained assemblage includes 287 fragments (8.031kg) displaying features such as flat surfaces and wattle impressions.

Provenance

- 7.7.5 The retained fired clay presented in **Table 18** consist mainly of small to medium sized fragments. Although the majority of this material has wattle impressions and/or surfaces, its condition is generally poor.
- 7.7.6 The majority of the fired clay was derived from the Roman and early medieval settlement excavation (C15). It was retrieved mainly from deposits, pits and post-holes dating broadly from the Late Roman to early medieval periods. Very small quantities came from prehistoric features (Early Neolithic and Early Bronze Age) to the east of Stone Farm Bridleway, and from later features in the same area.
- 7.7.7 A brief scan indicates that the fired clay consists of the same clay type, varying in colour from cream through to an orange to red shade. It has a fine, unsandy texture with no other common inclusions present. With the exception of three fragments none of it shows any indication of being in contact with heat, such as vitrification or burning.

Table 18: Retained fired clay by context

| Site | Context | Context type | Count | Weight (kg) | Comments |
|-------------|---------|------------------------|------------|--------------|-----------------------------------|
| ARC SLT 98 | C238 | Layer, trackway C1 | 13 | 0.425 | |
| ARC SLT 98 | C280 | Fill of pit C281 | 12 | 1.685 | With surfaces/ wattle impressions |
| ARC SLT 98 | C302 | Occupation layer | 7 | 0.150 | With surfaces/ wattle impressions |
| ARC SLT 98 | C351 | Occupation layer | 1 | 0.030 | |
| ARC SLT 98 | C352 | Layer, trackway C1 | 2 | 0.130 | With wattle impressions/ surfaces |
| ARC SLT 98 | C405 | Fill of gully C404 | 2 | 0.095 | |
| ARC SLT 98 | C413 | Fill of pit C459 | 98 | 2.680 | |
| ARC SLT 98 | C415 | Fill of feature C384 | 1 | 0.065 | |
| ARC SLT 98 | C437 | Occupation layer | 8 | 0.195 | With impressions |
| ARC SLT 98 | C472 | Fill of post-hole C473 | 1 | 0.010 | With wattle impressions |
| ARC SLT 98 | C477 | Fill of post-hole C478 | 2 | 0.140 | With surfaces/ wattle impressions |
| ARC SLT 98 | C479 | Fill of post-pipe C480 | 4 | 0.130 | |
| ARC SLT 98 | C549 | Fill of gully C520 | 4 | 0.110 | With impressions |
| ARC SLT 98 | C569 | Fill of post-pipe C570 | 1 | 0.003 | |
| ARC SLT 98 | C583 | Fill of pit C584 | 1 | 0.060 | With wattle impressions |
| ARC SLT 98 | C606 | Fill of pit C607 | 6 | 0.160 | With wattle impressions/ surfaces |
| ARC SLT 98 | C608 | Occupation layer | 1 | 0.003 | With wattle impressions |
| ARC SLT 98 | C611 | Fill of pit C612 | 4 | 0.030 | With wattle impression |
| ARC SLT 98 | C690 | Fill of post-hole C691 | 1 | 0.015 | With surface |
| ARC SLT 98 | C791 | Fill of pit C792 | 26 | 0.365 | |
| ARC SLT 98C | C1262 | | 7 | 0.020 | |
| ARC SLT 98C | C1483 | | 1 | 0.003 | |
| ARC SLT 98C | C1483 | | 1 | 0.040 | With wattle impressions/ surfaces |
| ARC SLT 99 | C3717 | Fill of pit C3718 | 5 | 0.005 | |
| ARC SLT 98C | C6352 | | 2 | 0.595 | With wattle impressions/ surfaces |
| ARC SFB99 | W1010 | Ditch W1 | 1 | 0.003 | Undiagnostic |
| ARC SFB99 | W1041 | Ditch W8 | 1 | 0.005 | Undiagnostic |
| ARC SFB99 | W1130 | Ditch W7 | 1 | 0.004 | Undiagnostic |
| ARC SFB99 | W1139 | Ditch W7 | 1 | 0.004 | Undiagnostic |
| ARC SFB99 | W1226 | Ditch W1 | 1 | 0.004 | Undiagnostic |
| ARC SFB99 | W1310 | Pit W47 | 5 | 0.036 | Undiagnostic; 1 vitrified |
| ARC SFB99 | W1320 | grave W185 | 2 | 0.004 | Undiagnostic |
| ARC SFB99 | W1352 | Trackway W34 | 1 | 0.010 | Vitrified? |
| ARC SFB99 | W1404 | Pit W48 | 3 | 0.004 | Undiagnostic |
| ARC SFB99 | W1513 | Ditch W26 | 1 | 0.002 | Could be CBM |
| ARC SFB99 | W1515 | grave W38 | 1 | 0.006 | 1 surface |
| ARC SFB99 | W1598 | Ditch W66 | 5 | 0.025 | Undiagnostic |
| ARC SFB99 | W1659 | Ditch W54 | 3 | 0.002 | Could be CBM |
| ARC SFB99 | W1706 | grave W104 | 1 | 0.001 | Undiagnostic |
| ARC SFB99 | W1950 | Ditch W33 | 8 | 0.003 | Undiagnostic |
| ARC SFB99 | W3001 | Subsoil W15 | 1 | 0.001 | Undiagnostic |
| ARC SFB99 | W3280 | Pit W175 | 1 | 0.021 | Undiagnostic |
| ARC SFB99 | W3285 | Ditch W150 | 1 | 0.014 | Undiagnostic; burnt |
| ARC SFB99 | W3298 | Pit W175 | 2 | 0.009 | Undiagnostic |
| ARC SFB99 | W3493 | Pit W136 | 1 | 0.005 | Undiagnostic |
| ARC SFB99 | W3534 | Pit W156 | 1 | 0.004 | Undiagnostic |
| ARC SFB99 | W3540 | Ditch W150 | 2 | 0.002 | Undiagnostic |
| ARC SFB99 | W3542 | Ditch W153 | 3 | 0.067 | Undiagnostic |
| ARC SFB99 | W3616 | Trackway W170 | 3 | 0.057 | Undiagnostic |
| ARC SFB99 | W3644 | Ditch W170 | 1 | 0.003 | Undiagnostic |
| ARC SFB99 | W4001 | Subsoil W15 | 1 | 0.006 | Undiagnostic |
| | | Unstratified | 24 | 0.585 | |
| | | Totals | 287 | 8.031 | |

Conservation

- 7.7.8 The retained fired clay is in a relatively stable condition and no conservation work is appropriate. It has been stored in plastic bags with waterproof labels, placed in museum boxes.

- 7.7.9 The CAT's retention and discard policy for building materials has been adhered to, as described above. It is recommended that the same discard policy is adopted for the material from ARC SFB99, prior to archive deposition.

Comparative material

- 7.7.10 As a result of the general lack of research into fired clay, it is often difficult to find comparative material. The assemblages from two other CTRL sites at Mersham and Westenhanger, however, appear to be similar in terms of quality, and possibly date, to the Saltwood material (URL 1998; 2000).

Potential for further work

- 7.7.11 The fired clay was sparsely distributed over a large number of features varying in date from the Early Neolithic to the post-medieval periods, although concentrated in the Romano-British and medieval periods. Although wattle- and daub-lined structures were probably present at Saltwood in the latter periods, the limited size of the assemblage and the lack of well-stratified groups suggests that any further work on the material is unlikely to contribute to the Fieldwork Event Aims.
- 7.7.12 As a result, further dissemination of the results of this assessment should be achieved through a small note including the quantity, condition and location of the fired clay in the final Saltwood publication. No further analysis is required, and no illustrations are necessary.

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7.8 Assessment of Prehistoric Worked Bone

Ian Riddler

Introduction

7.8.1 A fragment of an antler tine and part of the beam was recovered from the fill of the ring ditch for the prehistoric burial within ARC SLT98C. It survives in poor condition, although it can be identified to species and element.

7.8.2 The object is relevant to the following Fieldwork Event Aim:

- *to identify the nature of the prehistoric activity and determine its extent and place in the landscape,*

Methodology

7.8.3 The object was recovered by hand excavation and was removed to Canterbury. It was examined there and identified. It was then transferred to the City of Lincoln Conservation laboratories, where it was stabilised and packaged. It has been examined both in Canterbury and Lincoln.

Quantification

7.8.4 The fragment consists of a section of antler beam with the accompanying brow tine. It survives in very poor condition, most of the antler having disappeared and been replaced by sand, which retains the shape of the original object. Details of wear patterns manufacturing marks are therefore obscured and cannot be seen.

7.8.5 No other objects of this type were recovered from the excavations. However, this particular example survived fortuitously and further implements of this material could easily have decayed rapidly in the acidic soil conditions.

Provenance

7.8.6 The object was recovered from the fill of the ring ditch for the prehistoric burial in ARC SLT98C. It came from a section taken towards the north-eastern part of the ring ditch and was well-stratified within that fill. It is likely to have come from the local area.

Conservation

7.8.7 The object has been stabilised and appropriately packaged in Lincoln, so that further handling is minimised. There is no requirement to radiograph the object and an examination of its surface suggests that it is now formed largely of sand, rather than antler. Details of wear patterns and manufacturing marks could not be seen during a simple, visual inspection, but may appear under microscopic examination in the laboratory. The elements of the antler which are present can, however, be recognised, and it can be identified as a fragment from a red deer antler.

7.8.8 The relative lack of bone within the surviving, mineral-replaced object means that it is unlikely to be useful for C¹⁴ dating, due to the lack of surviving collagen.

Comparative Material

- 7.8.9 Red deer antlers were widely used in prehistoric England as implements, notably within the flint mines at Grimes graves, but also elsewhere, principally as tools for the excavation of ditches and pits (Megaw and Simpson 1979, 99). As such, they are frequently found within ditch fills, or close to features that they were used to excavate, as is the case here. They are not common in Kent, in all probability because of the poor survival of bone and antler throughout the county.

Potential for further work

- 7.8.10 The object is relevant to the following Fieldwork Event Aim:
- *to identify the nature of the prehistoric activity and determine its extent and place in the landscape,*
- 7.8.11 The antler tool is likely to be of Late Neolithic or Early Bronze Age date, on typological grounds, although its poor state of survival makes any such statement a little tentative. It was presumably used to excavate the ring ditch, although being in effect a mineral-replaced fossil, it is unlikely that the contemporaneity of the antler with the ring ditch can be tested through radiocarbon dating. Detailed, microscopic analysis of the surface may help to identify wear patterns or details of manufacture, which are not visible from a simple, visual inspection. It is unlikely, however, that much will be forthcoming, given the poor survival of the object.
- 7.8.12 It is a useful indicator of the manner in which the ditches were excavated and, in this respect, it is unfortunate that it does not survive in good condition. It is not possible to determine whether it has been naturally shed (or was cut from the animal) but the former possibility is the most likely.

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7.9 Assessment of Worked and Burnt Flint

Phil Harding, Tania Wilson and Andrew Crockett

Introduction

- 7.9.1 Worked flint was recovered from a range of feature types attributable to all major chronological periods identified. Diagnostic artefacts include a Late Glacial burin, Mesolithic microliths and both leaf-shaped (Early Neolithic) and barbed-and-tanged (Early Bronze Age) arrowheads. As such, the worked flint assemblage provides evidence of human activity in the area from the Late Glacial period onwards, with the majority of the largely undiagnostic assemblage most probably attributable to the Late Bronze Age and Early Iron Age. The relatively high percentage of this assemblage (c. 84%) recovered as either residual finds in later contexts or from provisionally undated features will, however, detract from its potential with regard to detailed metrical analysis.
- 7.9.2 Burnt flint is intrinsically undatable without the use of sophisticated laboratory techniques (i.e. thermo-luminescence dating). However, it is generally considered to be indicative of prehistoric activity, and more specifically activity associated with settlement. As with the distribution of worked flint, if the majority of burnt flint recovered at Saltwood is considered to be prehistoric in origin, then the majority was recovered as residual material in later contexts.
- 7.9.3 The study of these objects assists in the following Fieldwork Event Aims:
- *To identify the nature of the prehistoric activity, determine its extent and place in the landscape,*
 - *To establish a dated sequence for the origin and development of settlement including associated enclosures and trackways, etc.*
 - *Recovery of dated environmental and economic indicators if these are found to be present on site.*

Methodology

- 7.9.4 All worked flint recovered has been assessed and quantified according to artefact type, as defined in *CTRL Section 1 Archaeology: Post Excavation Assessment Instruction* (URS 2000, 23). The burnt flint has been quantified, but no further assessment has been considered viable at this stage.

Quantification

- 7.9.5 Worked flint quantification by artefact type is provided in **Table 19**, burnt flint quantification by site is provided in **Table 20**. A total of 1579 pieces of worked flint was recovered from 541 contexts, giving an average of c. 3 pieces of worked flint per context, which is a very low density given the recorded prehistoric activity at the site. Overall, only c. 16% of the worked flint assemblage was recovered from features considered to be of Middle Iron Age or earlier date, with a further c. 11% recovered from features that are as yet undated. The remainder of the assemblage is therefore considered to represent residual material in later features.

- 7.9.6 With regard to the breakdown of worked flint categories, *c.* 12% of the assemblage were tools, *c.* 9% were the by-products of tool manufacture (i.e. cores, rejuvenation tablets etc.) and the remaining *c.* 79% comprising blades, flakes and debitage. Scrapers (*c.* 42%) and other miscellaneous retouched pieces (*c.* 48%) that could not be confidently attributed to a specific tool type dominated the tools. The frequency of blade/ let material, some of which may be Early Neolithic, accounts for only 8% of all flakes and blade/ lets, confirming that there is not a major Mesolithic component on the site.
- 7.9.7 Diagnostic pieces include a Late Glacial burin with a deep white patination, made on a truncated blade and recovered from Early Bronze Age ring ditch W33. The proximal end of a broken well-prepared flake from LBA/ EIA ditch W87, also patinated white, may be of the same date. Of the few possible Mesolithic artefacts from the site, a rod microlith from Saxon ditch W8 and an obliquely blunted point/ drill bit from a ploughsoil context are the perhaps the most diagnostic.

Table 19: Worked flint quantification by artefact type

| Artefact Type | Number | Group % | Total % |
|-------------------------------------|-------------|---------|---------|
| Scrapers | 79 | 42.25% | 5.00% |
| Piercers | 2 | 1.07% | 0.13% |
| Burins | 1 | 0.53% | 0.06% |
| Projectiles (arrowheads) | 5 | 2.67% | 0.32% |
| Denticulates (& micro den) | 4 | 2.14% | 0.25% |
| Fabricators | 4 | 2.14% | 0.25% |
| Microliths | 2 | 1.07% | 0.13% |
| Core tools (axes etc.) | 0 | 0.00% | 0.00% |
| Other tools | 28 | 14.97% | 1.77% |
| Misc. retouch | 62 | 33.16% | 3.93% |
| (Tools sub-total) | 187 | | 11.84% |
| Flake cores & core frags | 66 | 48.53% | 4.18% |
| Blade(let) cores & core frags | 2 | 1.47% | 0.13% |
| Rejuvenation tablets | 10 | 7.35% | 0.63% |
| Crested pieces | 2 | 1.47% | 0.13% |
| Microburins | 0 | 0.00% | 0.00% |
| Chips | 56 | 41.18% | 3.55% |
| (Production sub-total) | 136 | | 8.61% |
| Blades & bladelets (inc. no broken) | 107 | 8.73% | 6.78% |
| Flakes (inc. no. broken) | 1119 | 91.27% | 70.87% |
| (Blades & flakes sub-total) | 1226 | | 77.64% |
| Debitage | 30 | 100.00% | 1.90% |
| (Fragments sub-total) | 30 | | 1.90% |
| Total | 1579 | | |

Table 20: Burnt flint quantification by site

| Event code | No. | %age of total no. | Wt. (g) | %age of total wt. |
|---------------|------------|-------------------|-------------|-------------------|
| ARC SLT98 | 35 | 11.59% | 1554 | 38.80% |
| ARC SLT98C | 30 | 9.93% | 639 | 15.96% |
| ARC SLT99 | 3 | 0.99% | 22 | 0.55% |
| ARC SFB99 | 234 | 77.48% | 1790 | 44.69% |
| Totals | 302 | | 4005 | |

- 7.9.8 The earliest stratified groups of material on the site comprised 64 pieces of worked flint from Early Neolithic pits W136 and W175. The absence of cores and the high proportion of tools, including five well-made scrapers from pit W136, suggest that this material was derived from domestic (or possibly ritual) activity rather than tool production. Two pieces of a broken scraper from pit W175 refit, indicating that the

pit contains material from a single event. The composition of the tool assemblage (i.e. scrapers and microdenticulates) is in keeping with an Early Neolithic date, as is the inclusion of blades and bladelets. Some of the latter may represent unretouched knives.

- 7.9.9 Additional Early Neolithic artefacts were found elsewhere on the site as residual finds including a leaf arrowhead from a topsoil context, whilst some of the fabricators, scrapers, flakes and blades with abraded butts are also likely to be of Early Neolithic date. These, however, are less easy to date precisely and in the absence of corroborative ceramic material may be of Late Neolithic or Early Bronze Age date.
- 7.9.10 Although relatively few diagnostic artefacts were recovered, there is limited evidence to indicate Early Bronze Age activity in the vicinity of the ring ditch W33, a pattern reflected in the low density of material from the ditch itself. Individual diagnostic items include a pressure flaked knife from undated ditch W149 and barbed-and-tanged arrowheads from trackways W34 and W170. Flint from the ring ditch is restricted to 19 pieces of which 12 were from the upper secondary fills of the ditch. The appearance of these flakes suggests that they were removed from the same nodule, possibly indicating a single knapping event at the site following the initial silting of the ditch, probably in the Late Bronze Age.
- 7.9.11 A low density of worked flint was recovered from Late Bronze Age/ Early Iron Age features across the site. A single platform core showing many incipient cones of percussion resulting from miss hits (undated ditch W63) is typical of many Late Bronze Age cores. It may also be significant that miscellaneous retouched material forms the largest part of the retouched tool component from Late Bronze Age/ Early Iron Age features from the site. This is a period that is often associated with poorly made implements.
- 7.9.12 Most features which contain flint are of Iron Age or later date and it is safe to assume that most of this flint comprises redeposited material. It is however, of note that the largest group of worked flint from later contexts was recovered from the Saxon graves, and most notably those located adjacent to the Stone Farm Bridleway. It is of note that the main cluster is situated in the immediate vicinity of two Late Bronze Age settlement enclosures.
- 7.9.13 A total of 302 pieces of burnt flint weighing 4,005g was recovered at Saltwood Tunnel, the majority of pieces (264, equivalent to 87.41%) recovered in the vicinity of Stone Farm Bridleway. However, the distribution by weight demonstrates a significantly differing ratio between that recovered adjacent to Stone Farm Bridleway (60.65%) and the Late Iron Age/ Romano-British settlement site C15 (38.80%) to the west. The disparity between count and weight ratios cannot at this moment be explained; possible factors may include differing activities to generate and/or utilise the burnt flint, differing post-depositional effects between the two areas, or differing recovery techniques during excavation.

Provenance

- 7.9.14 Worked flint was recovered as both stratified finds within features and deposits and as unstratified artefacts recovered from topsoil and subsoil deposits. Although some of the worked flint was recovered *in situ* from relatively secure contexts (i.e. the Neolithic pits) the majority was recovered as residual finds in features of later date,

and most notably the Anglo-Saxon graves that focus on areas of earlier Bronze Age activity.

- 7.9.15 Very little worked flint was associated with the construction of the probable Early Bronze Age ring ditches, although two redeposited barbed and tanged arrowheads were found in late prehistoric (Iron Age) trackways. A small group of stratified core preparation waste from the upper silts of ring ditch W33 may relate to Late Bronze Age occupation of the site. Concentrations of redeposited flint in Anglo-Saxon graves throughout the site is also likely to be associated with Bronze Age activity in the general area. There are also 16 artefacts made on Bullhead flint, probably derived from the Chalk downland to the north.
- 7.9.16 The concentration of burnt flint (by number) located immediately to the east of Stone Farm Bridleway is probably associated with the Bronze Age settlement enclosures and field system(s) that were concentrated in this area. However, it is of note that by mean fragment size, the later Iron Age/ Romano-British settlement area further to the west (C15) produced virtually the same weight of burnt flint.

Comparative material

- 7.9.17 Evidence of Late Glacial activity is extremely rare; although isolated artefacts do occur to suggest early recolonisation of Britain soon after the glacial retreat. Mesolithic material is often recovered from the geological sands located along the base of the South and North Downs, a zone extending throughout the Weald of Kent and Sussex. Locally, these include a microlith from Heyne Barn Field, Saltwood (Wymer 1977, 155) and a number of items from the Folkestone area, including 18 blades and flakes from Caesar's Camp (*ibid.* 149).
- 7.9.18 With the exception of the Medway megaliths, Neolithic features to compare and contrast with the Stone Farm Bridleway pits are comparatively rare in Kent (Clarke 1982, 25). However, recent discoveries associated with the CTRL, such as at Sandway Road (URS 1999) and the White Horse Stone longhouse (Glass, 450-3) have revealed broadly contemporaneous activity that may combine to help characterise the Neolithic period in Kent.

Potential for further work

- 7.9.19 Apart from demonstrating a presence, there is no potential for further analysis of the few Late Glacial pieces recovered from Saltwood, although illustration may be considered worthwhile.
- 7.9.20 The small number of stratified flints recovered in two Early Neolithic pits, including a relatively high proportion of scrapers and microdenticulates, is significant. In association with the pottery and environmental data also recovered, the pit contents will therefore provide important evidence of short-term domestic or ritual activity in the area by the first farming communities. Other probable Early Neolithic artefacts, including a leaf arrowhead, scrapers and fabricators, were found as redeposited finds in later contexts. Therefore, in view of the scarcity of other well-stratified flint from the site it may be considered worthwhile to describe the pit assemblages in more detail, although there is insufficient material to justify detailed metrical analysis.
- 7.9.21 The quantity of Early Bronze Age material is very small and of limited potential for further analysis, likewise there is little potential for additional study of the Late Bronze Age/ Early Iron Age worked flint.

- 7.9.22 The disparity between concentrations by count and concentrations by weight for burnt flint is of note. It has been suggested that this may represent differing processes that are either producing or utilising the burnt flint. It is therefore considered appropriate to carry out detailed spatial analysis for this material (by both count and weight), and compare and contrast these results with similar distribution plots for worked flint.

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7.10 Assessment of Romano-British Coinage

Ian Anderson

Introduction

7.10.1 Twelve copper alloy coins were recovered. Eleven came from the Late Iron Age/Romano-British settlement C15 to the west, and one from Anglo-Saxon grave C5. All of the coins are of Roman date. Four came from stratified deposits and eight were recovered by metal-detecting.

7.10.2 The study of the coinage assists with the following Fieldwork Event Aim:

- *to establish a dated sequence for the origin and development of the settlement.*

Methodology

7.10.3 All of the coins have been cleaned by a conservation assistant, examined under a hand lens, identified to type and classified in accordance with the standard catalogues for Romano-British coinage.

Quantification

7.10.4 Details of the coins are provided in **Table 21**. All of the coins from settlement C15 are of Late Roman date. They span a fifty year period from late Constantinian issues onwards, *c.* AD 330-380 and may have been in circulation up to and around AD 400.

7.10.5 The one exception is the coin from the central Anglo-Saxon cemetery (grave C5), which is an issue of Commodus (AD 184).

Table 21: Roman coinage by context

| Site | Context | Type | SF no. | Denomination | Emperor/ King/ House | Early Date (AD) | Late Date (AD) |
|------------|---------|--------------|--------|--------------|----------------------|-----------------|----------------|
| ARC SLT98 | - | Unstratified | C2 | Copy of ae3 | House of Constantine | <i>c.</i> 355 | <i>c.</i> 365 |
| ARC SLT98 | - | Unstratified | C391 | Ae 3 | Gratian | 367 | 375 |
| ARC SLT98 | - | Unstratified | C392 | Ae 3 | Valens | 367 | 375 |
| ARC SLT98 | - | Unstratified | C390 | Ae 3 | Valentinian I | 364 | 375 |
| ARC SLT98 | - | Unstratified | C572 | Ae 3 | Gratian | 367 | 378 |
| ARC SLT98 | - | Unstratified | C577 | Ae 3 | Constantine II | 332 | 333 |
| ARC SLT98 | C354 | Surface find | C393 | Ae 3 | Valentinian I | 367 | 375 |
| ARC SLT98 | C608 | Layer | C579 | Ae 3 | House of Constantine | <i>c.</i> 355 | <i>c.</i> 365 |
| ARC SLT98 | C677 | Layer | C580 | Ae 3 | Valens | 364 | 367 |
| ARC SLT98 | C677 | Layer | C581 | Ae 3 | Constans | 348 | 350 |
| ARC SLT98 | C677 | Layer | C582 | Ae 3 | House of Theodosius | 378 | 383 |
| ARC SLT98C | | grave C5 | C826 | Ae 3 | Commodus | 184 | 184 |

Provenance

7.10.6 The Late Roman coinage was widely distributed across the site to the west of Stone Farm Bridleway, although three coins were found in the same layer. They represent issues spread across a fifty year period and there is no suggestion of a dispersed hoard either here or elsewhere on the site. Rather, the coinage indicates activity around the road and accompanying features during the middle and later part of the

4th century. The coin from grave C5 is rather different, representing a late 2nd century issue that may originally have been placed within or near the mouth of the deceased (the bone from this grave did not survive).

Conservation

- 7.10.7 All of the coins are in reasonable condition and they can all be identified. The coins have been stabilised and packaged appropriately; no further conservation should be necessary. All of the coins should be retained.

Comparative Material

- 7.10.8 Late Roman coinage is common in East Kent, both at Canterbury and elsewhere. Over 4,000 coins, principally of Late Roman date, were recovered from Ickham and around 4,500 have come from excavations in Canterbury. The essential characteristics of this coinage, and particularly Late Roman issues, have been considered in the context of the Ickham assemblage (Casey and Brigstock, forthcoming).

Potential for further work

- 7.10.9 No further analysis is proposed, given that the coins have been identified and catalogued. The current database, prepared to CAT standards for coinage, is considered sufficient.
- 7.10.10 The coin assemblage will assist with the following Fieldwork Event Aims:
- *to establish a dated sequence for the origin and development of the settlement;*
- 7.10.11 The coinage is heavily centred on the Late Roman period and suggests activity during the middle and latter part of the 4th century. This ties in with the evidence from the ceramics and some of the other artefact categories, enabling a Late Roman phase to be identified in association with the stratigraphic evidence.
- 7.10.12 The coin from Anglo-Saxon grave C5 assists with the following Fieldwork Event Aim for that cemetery:
- *to establish the range variation in burial rites, and to view possible change in rite over time;*
- 7.10.13 It is the only coin from an Anglo-Saxon grave and one of the few pieces of Roman spolia to have been recovered from the cemeteries. Roman coins are occasionally found within early Anglo-Saxon burials in East Kent, as at Dover Buckland for example, where they may have been kept for amuletic value. In this case, however, there is a greater sense of symbolism in the deposit (Evison 1987, 122).

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7.11 Assessment of Roman Brooches

Don Mackreth, Christopher Sparey Green and Ian Riddler

Introduction

7.11.1 Nine Roman brooches, all made from copper alloy, were recovered by hand-excavation. Eight were found within the area of Late Iron Age/ Romano-British settlement C15 to the west, six derived from four cremation burials (cremations C12, C14, C15 and C16). A ninth brooch was discovered in the fill of the penannular ditch surrounding Anglo-Saxon grave C7 in the central cemetery.

7.11.2 The study of the brooches is relevant to the following Fieldwork Event Aims:

- *to establish a dated sequence for the origin and development of the settlement;*
- *To recover information on Romano-British burial practice, palaeo-pathology and demographic studies.*

Quantification

7.11.3 The brooches, all of which are of Early Roman date, are listed in **Table 22**. Six can be identified to type, and two others can be placed broadly in the Late Iron Age/ Early Roman period. The ninth piece consists merely of a small fragment.

Table 22: Roman Brooches

| Site | Context | Context type | SF no. | Extent | Type | Early Date (AD) | Late Date (AD) |
|------------|---------|--------------------------------------|--------|------------|-----------------|-----------------|----------------|
| ARC SLT98 | C49 | Cremation | C4 | Incomplete | | 25 | 45 |
| ARC SLT98 | C49 | Cremation | C71 | Fragment | | | |
| ARC SLT98 | C59 | Cremation | C72 | Fragment | Langton Down | 35 | 55 |
| ARC SLT98 | C59 | Cremation | C73 | Fragment | Langton Down | 33 | 55 |
| ARC SLT98 | C67 | Cremation | C166 | Fragment | | | 70 |
| ARC SLT98 | C85 | Cremation | C74 | Incomplete | | | 70 |
| ARC SLT98C | C1076 | Ring ditch for grave C7 | C894 | Incomplete | Harlow | 40 | 75 |
| ARC SLT98 | - | Deposits associated with trackway C1 | C272 | Incomplete | Kent Colchester | 40 | 55 |
| ARC SLT99 | C2710 | Fill of ditch C2741 | C1851 | Fragment | Harlow | 40 | 75 |

Provenance

7.11.4 Of the eight brooches from the western part of the settlement area, two fragments (neither of which was particularly diagnostic) came from one cremation (context (49)). A further brooch, clearly of Late Iron Age/Early Roman type but also fragmentary, came from another burial (context (67)). Two brooches of the same Langton Down type came from the same context in a third burial (context (59)). Another was recovered as a surface find in the same general area; this brooch, however, was almost certainly not from a cremation burial. A fifth brooch, again fragmentary, also came from a cremation burial in the same cemetery. Another brooch, of Harlow type, survives as three fragments and was recovered from a feature in the SLT 98C cemetery, to the south of the ditch [2710] which surrounded grave C7.

- 7.11.5 The group of five brooches from cremation burials is of interest because, even though fragmentary, they can be dated with some precision. In addition, they are virtually the only grave goods to have come from these cremation burials.

Conservation

- 7.11.6 All of the brooches have been conserved and have been packaged to limit the need for further handling. The fragmentary nature of most of the brooches stems from the cremation process and, despite conservation, they remain fragile.
- 7.11.7 They have been recorded by the CAT and have also been placed on Don Mackreth's database of 15,000 Romano-British brooches.
- 7.11.8 Further analysis would largely be comparative and would not involve scientific analyses. There is the *caveat*, however, that Justine Bayley's forthcoming volume on the scientific analysis of Romano-British brooches may influence future decisions about sampling for metal content. Even so, this sampling is liable to be non-destructive.
- 7.11.9 All of the brooches, however fragmentary, should be retained for future study.

Comparative Material

- 7.11.10 All of the brooches appear to be of Late Iron Age/ Early Roman date. They can be compared with the extensive series from Canterbury, as well as with nearby discoveries at Dollands Moor and cremation groups from Church Hougham (Mackreth in Blockley *et al* 1995, 955-82; Mackreth in Parfitt forthcoming). Further brooches of this date have been found elsewhere within CTRL Section 1 sites, the types being relatively common in Kent. Most of the frequently-encountered types (which includes all of those seen here) have been outlined in detail in the Canterbury publication, and in forthcoming work (Mackreth forthcoming). The series from Saltwood can be described as absolutely typical for the period and the location.

Potential for further work

- 7.11.11 The study of the brooches is relevant to the following Fieldwork Event Aims:
- *to establish a dated sequence for the origin and development of the settlement;*
- 7.11.12 The brooches can be dated with some precision, even though they are fragmentary. They are extremely useful, therefore, in establishing the dating framework for the western part of the site as a whole. The presence of a single example in an Early Anglo-Saxon penannular ditch fill is difficult to explain. It does not appear to represent the Anglo-Saxon collection of Roman *spolia*, which is, in any case, very rare at Saltwood. Although therefore potentially a residual find, there is little or no activity broadly contemporaneous with the brooch recorded in the immediate vicinity, and would therefore have to be considered a stray loss.

- *to recover information on Romano-British burial practice, palaeo-pathology and demographic studies.*

7.11.13 Five of the brooches come from four cremation burials in the western area of the CAT excavations, permitting the burials to be phased, in conjunction with associated ceramics and stratigraphy. The deposition of brooches in such cremation burials can also be considered in the light of both regional practices and of burials within East Kent as a whole. This has been made easier by research carried out by Beverley Still on Iron Age burials from Kent, and by the collation of data on burials of this period by Keith Parfitt. A broader view of Late Iron Age/ Early Roman burial practice can therefore be formulated, which also encompasses burials elsewhere on the line of the high-speed rail link.

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7.12 Assessment of Roman Copper Alloy and Silver Objects

Ian Riddler

Introduction

7.12.1 Thirty-three Roman copper alloy and silver objects were hand-retrieved from Saltwood Tunnel, all within the vicinity of Late Iron Age/ Romano-British settlement C15. The copper alloy objects include a strap-end, two bracelets and several mirror fragments. In addition, there are several corroded and shapeless pieces of copper alloy that may possibly represent detritus from non-ferrous metalworking carried out in the vicinity of trackway C2. A silver pin was also recovered.

7.12.2 The study of the copper alloy and silver objects assists with the following Fieldwork Event Aim:

- to establish a dated sequence for the origin and development of the settlement

Methodology

7.12.3 Each of the objects has been examined and identified to type where possible. They have all been treated by a conservation assistant, stabilised and packaged appropriately. They are maintained in environmentally-controlled conditions. The overall assemblage is small and all of the objects have been examined for this assessment.

Quantification

7.12.4 The 33 copper alloy and silver objects are listed in **Table 23**. Most of them consist of small indistinct fragments representing either objects either burnt in the cremation process or waste from non-ferrous metalworking. The identifiable objects include two bracelets, two mirrors, a silver pin and a strap-end.

Table 23: Objects of Copper Alloy and Silver

| Context | SF no. | Sample | Context type | Material | Object | Count | Type |
|---------------|--------|--------|----------------------|----------|------------|-----------|-----------------------------|
| - | C829 | | Unstratified | Cu Alloy | Sheet | 1 | Small fragment |
| - | C785 | | Unstratified | Cu Alloy | Strap | 1 | Undecorated; 2 pointed ends |
| - | C590 | | Unstratified | Cu Alloy | Strap-end | 1 | Amphora-shaped |
| C23 | C198 | | Cremation C24 | Cu Alloy | Strap-end? | 1 | Small cremated fragments |
| C23 | C3 | | Cremation C24 | Cu Alloy | Waste? | 1 | Metallurgical Waste ? |
| C23 | C197 | | Cremation C24 | Cu Alloy | Waste? | 1 | Metallurgical Waste ? |
| C35 | C1 | | Fill of ditch C74 | Cu Alloy | Mirror | 1 | Heavily decorated |
| C59 | C100 | 11 | Cremation C14 | Cu Alloy | Object | 6 | Small indistinct fragments |
| C59 | C980 | 11 | Cremation C14 | Cu Alloy | Object | 1 | Small indistinct fragments |
| C67 | C982 | 10a | Cremation C12 | Cu Alloy | Strip | 1 | Small fragment |
| C85 | C983 | 12 | Cremation C16 | Cu Alloy | Object | 9 | Small indistinct fragments |
| C109 | C101 | | Fill of ditch C110 | Cu Alloy | Waste? | 1 | Metallurgical Waste ? |
| C160 | C168 | | Fill of feature C323 | Cu Alloy | Waste? | 1 | Metallurgical Waste ? |
| C169 | C209 | | Fill of ditch C193 | Cu Alloy | Waste? | 2 | Metallurgical Waste ? |
| C238 | C986 | 29 | Layer | Cu Alloy | Bracelet | 1 | Late Roman strip bracelet |
| C352 | C404 | | Layer | Cu Alloy | Bracelet | 1 | Late Roman strip bracelet |
| - | C569 | | Unstratified | Cu Alloy | Mirror | 1 | |
| C455/ C972 | C213 | | Post-hole C456 | Cu Alloy | Sheet | 1 | Small fragment of a mount |
| C637 | C993 | 81 | Fill of feature C638 | Silver | Pin | 1 | Undecorated discoidal head |
| Total | | | | | | 33 | |

Provenance

- 7.12.5 The small lumps of formless copper alloy waste were largely recovered from the vicinity of trackway C2 towards its junction with trackway C1 to the north-west. Several fragments, however, came from four of the cremation burials and may represent parts of unidentifiable objects. Cremation C24 also produced fragments of a strap end, whose type cannot be identified. The other strap-end from the site, however, is clearly of amphora-shape and is an important addition to the corpus of late Roman belt fittings, although in this instance it is as an unstratified surface find.
- 7.12.6 Most of the mirror fragments came from the fill of a ditch, although one piece, conceivably from the same object, was recovered from metal-detecting in a nearby area.
- 7.12.7 The identifiable objects survive in good condition, whether fragmentary or complete. The waste material is abraded and powdery and cannot be readily distinguished by eye from small indistinct fragments of cremated objects. Most of the latter are too small to be identifiable.
- 7.12.8 Excavation methodology and associated metal-detecting makes it unlikely that many other objects of copper alloy or silver were not retrieved, despite the fact that excavations in the western area took place during the winter months.

Conservation

- 7.12.9 All of the objects have been examined by a conservation assistant. They have been stabilised and packaged and are retained in environmentally-controlled conditions. The smaller, indistinct and unidentifiable fragments could be discarded once photographed for archive purposes.

Comparative Material

- 7.12.10 The largest of the mirror fragments is elaborately decorated on one face with ring-and-dot designs surrounding a hatched floral pattern. It belongs to Lloyd-Morgan's type X, a comparatively rare type in this country, which is likely to be of Early Roman date (Lloyd-Morgan 1983; Lloyd-Morgan in Blockley *et al* 1995, 1010). The bracelets conform with common Late Roman strip forms. Both examples are decorated, largely with parallel grooves, allowing them to be assigned to Mould type 12 (Mould and Riddler forthcoming). The amphora-shaped strap-end is also of late Roman date, and is comparable with examples from Ickham (Ager forthcoming).
- 7.12.11 The silver pin has a discoidal head, which allows it to be placed within Cool's Group 4 (Cool 1990, 156 and fig 3.6). Copper alloy pins of this type are not common in East Kent and silver examples are even more rare.

Potential for further work

- 7.12.12 The study of the copper alloy objects assists with the following Fieldwork Event Aim:
- *to establish a dated sequence for the origin and development of the settlement*
- 7.12.13 Most of the identifiable copper alloy and silver objects can be dated in broad terms, at least. They include both objects of Early and Late Roman date. Set against the evidence from other materials, they enable a dated sequence to be compiled for the origins and development of the settlement. Further work is required to confirm the identifications described above and to correlate the objects more closely with the provisional phasing for the site. The identifiable objects also include rare types and are biased towards dress accessories, a situation observed in other assessments of the Roman cultural material. They strongly suggest that a domestic settlement lay nearby, and that there was activity here in the Early and Late Roman periods, if not necessarily in between.
- 7.12.14 The amphora-shaped strap-end is a Late Roman dress fitting which undoubtedly has official connotations, if not military ones. It is virtually the only object from this site with any possible military connotations, tending to confirm the domestic nature of occupation.
- 7.12.15 Unfortunately, the object fragments from the cremations cannot be confidently identified to specific object types, and cannot therefore contribute significantly to a consideration of Romano-British burial rites.

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7.13 Assessment of Roman Iron Objects

Ian Riddler

Introduction

7.13.1 Two hundred and nineteen iron objects were recovered from investigations to the west of Stone Farm Bridleway, predominantly from the vicinity of the Late Iron Age/ Romano-British settlement C15. Most of these, however, are nails (100 of the sample) or indistinct, small fragments of objects which have not been identified (93 of the sample). The number of objects, other than nails, is very modest.

7.13.2 The study of the iron objects from Roman contexts assists in the following Fieldwork Event Aims:

- *to establish a dated sequence for the origin and development of the settlement.*

Methodology

7.13.3 The objects have been examined in association with radiographs, which have been taken for selected items, excluding the nails. The overall number of identifiable objects is relatively low and they have all been considered in this assessment.

Quantification

7.13.4 Details of the Roman iron objects are presented in **Table 24**. The majority is either nails or are not readily identifiable, often consisting of small fragments of corrosion, or of fragmentary shafts which probably derive from nails. These objects have not yet been radiographed, however, to confirm this situation.

7.13.5 The few objects which are not nails include two fragments of bars, five strap fittings, an implement, a knife and a possible pin.

Provenance

7.13.6 A few items came from cremation burials, including a nail, a strip of iron and an unidentified fragment. The remainder were widely dispersed across the settlement area. A number of objects were retrieved during the course of metal-detecting in this area. They are noted in the table by the grid-squares in which they were found.

Conservation

7.13.7 The identifiable objects have been radiographed, but the nails and nail-like objects have been excluded from this process. A limited amount of further radiography will take place shortly, to confirm some identifications. The objects have been examined and packaged appropriately in environmentally-controlled storage conditions.

7.13.8 The smaller, unidentifiable fragments could be discarded, as long as a radiographic record has been made of them. The fragmentary nails (almost all of the nails are fragmentary) could also be discarded, once recorded in archive.

Table 24: Roman Iron Objects by context

| Context | Provenance | Object | Count |
|---------|----------------|--------------|------------|
| C10 | Pit C9 | Object | 15 |
| C23 | Cremation C24 | Object | 3 |
| C23 | Cremation C24 | Strip | 1 |
| C23 | Cremation C24 | Nail | 1 |
| C43 | Pit C44 | Lump | 1 |
| C43 | Pit C44 | Nails | 39 |
| C43 | Pit C44 | Strip | 2 |
| C48 | Pit C44 | Object | 60 |
| C67 | Cremation C12 | Object | 1 |
| C143 | Pit C147 | Nail | 1 |
| C146 | Ditch C58 | Object | 1 |
| C191 | Ditch C221 | Fitting | 1 |
| C238 | Trackway C1 | Fitting | 1 |
| C238 | Trackway C1 | Nail | 1 |
| C243 | Trackway C1 | Bar | 1 |
| C243 | Trackway C1 | Nails | 3 |
| C243 | Trackway C1 | Object | 1 |
| C252 | Pit C253 | Nail | 19 |
| C261 | Pit C260 | Strip | 1 |
| C265 | Layer | Fitting | 3 |
| C265 | Layer | Nail | 1 |
| C268 | Trackway 814 | Nail | 1 |
| C269 | Trackway 814 | Nail | 1 |
| C272 | Ditch C273 | Knife | 1 |
| C280 | Pit C281 | Pin ? | 2 |
| C336 | Cremation C337 | Nail | 1 |
| C352 | Trackway C1 | Hobnails | 2 |
| C352 | Trackway C1 | Nail | 2 |
| C427 | Post-hole C428 | Nail | 3 |
| C472 | Post-hole C473 | Strip | 1 |
| C593 | Ditch C835 | Fitting | 1 |
| C613 | Pit C614 | Nail | 1 |
| C632 | Grubenhaus | Object | 1 |
| C660 | Ditch C661 | Nail | 1 |
| C717 | Pit C718 | Nail | 1 |
| C754 | Pit C755 | Sheet | 2 |
| C791 | Pit C792 | Cylinder | 1 |
| 791 | Pit 792 | Nail | 1 |
| C800 | Cut C809 | Nail | 1 |
| - | Metal-detected | Implement | 1 |
| - | Metal-detected | Nail | 8 |
| - | Metal-detected | Object | 1 |
| - | Metal-detected | Sheet | 1 |
| - | Unstratified | Bar ? | 1 |
| - | Unstratified | Lumps | 2 |
| - | Unstratified | Nails | 14 |
| - | Unstratified | Objects | 10 |
| | | Total | 219 |

Comparative Material

- 7.13.9 The knife has an angled back and is relatively short. It belongs to the Roman series of angled-back knives, examples of which have come from Canterbury and Ickham (Manning 1985, figs 28 and 29; types 14 and 20). The possible pin is relatively small and appears to have a circular cross-section and a globular head, being readily distinguished from the extensive series of nails. Iron pins occur both in the Roman and Anglo-Saxon periods and this example cannot be closely dated. The implement may be a chisel; unfortunately it is a surface find, although it does appear to be of Roman date.

Potential for further work

7.13.10 The study of the iron objects from Roman contexts assists in the following Fieldwork Event Aim:

- *to establish a dated sequence for the origin and development of the settlement;*

7.13.11 In this respect, the iron objects from the site have a very limited potential - none of them can be dated, other than in broad terms. There is a distinct absence of agricultural implements, which might have been expected in this rural environment. The knife, although near-complete, is of a common Roman type. The pin is of interest, because it may possibly be of post-Roman date. The remaining objects, however, have little potential to assist in this Fieldwork Event Aim.

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7.14 Assessment of Roman, Medieval & Post-Medieval Lead Alloy Objects

Ian Riddler

Introduction

7.14.1 Eighteen fragments of lead alloy were recovered from Saltwood tunnel. Eight pieces are lead melt (waste from lead alloy working), one is a section of sheet and the remaining items consist mainly of weights, alongside a vessel repair or seal and two plumb-bobs, one of which is Roman. Only half of the pieces are stratified, the remainder were discovered during metal-detecting or from an examination of spoil heaps.

7.14.2 The study of the lead alloy objects assists with the following Fieldwork Event Aim:

- *to recover dated environmental and economic indicators.*

Methodology

7.14.3 All of the objects and waste have been examined and identified to type. They have also been examined by a conservation assistant and recommendations have been made about further investigative cleaning.

Quantification

7.14.4 Details of the objects are provided in **Table 25**. The assemblage is dominated by lead melt and by the sequence of Roman objects, including a spacer, a vessel repair and a plumb-bob, which is the most interesting object within the assemblage. Half of the items were recovered from metal-detecting or from spoil heap collection. They are effectively unstratified, although four can be located to specific grid squares. Four of the items are of Roman date and the remainder are modern, with the exception of a fragment of a medieval plumb-bob and a post-medieval cloth-seal.

Table 25: Objects of lead alloy by context

| Context | Context type | SF no. | Object | Count | Extent | Period |
|--------------|----------------|--------|---------------|-----------|------------|--------|
| - | Unstratified | C573 | Plumb-bob ? | 1 | Fragment | MD ? |
| - | Unstratified | C576 | Cloth-Seal | 1 | Incomplete | PM |
| - | Unstratified | C622 | Disc | 1 | Fragment | MO |
| - | Unstratified | C574 | Object | 1 | Incomplete | MO |
| - | Unstratified | C575 | Weight | 1 | Complete | UN |
| - | Metal-detected | C570 | Plumb-bob | 1 | Incomplete | RO |
| - | Surface | C571 | Weight | 1 | Complete | MO |
| - | Metal-detected | C389 | Sheet | 1 | Complete | RO ? |
| - | Metal-detected | C401 | Vessel Repair | 1 | Complete | RO |
| C43 | Pit C44 | C202 | Melt | 2 | Fragment | MO ? |
| C43 | Pit C44 | C206 | Melt | 1 | Fragment | MO ? |
| C48 | Pit C44 | C978 | Melt | 4 | Fragment | MO ? |
| C252 | Pit C253 | C400 | Melt | 1 | Fragment | MO ? |
| C677 | Layer | C583 | Spacer | 1 | Incomplete | RO |
| Total | | | | 18 | | |

Provenance

7.14.5 The objects are widely dispersed across the western area of the excavation. The lead melt, in contrast, is concentrated in three contexts, all of which included modern

material in their fills. The completely unstratified material is of post-medieval or modern date and the small collection of Roman objects is largely metal-detected.

Conservation

- 7.14.6 The objects and waste are stable and have been stored in appropriate packaging and environmental conditions. The alloys used for the Roman objects do not merit analysis as they do not form a homogeneous group suitable for comparative study and there is little to compare them with for this period. Work on lead alloys from Ickham was centred around groups of pendants and other dress accessories.
- 7.14.7 To determine whether the lead sheet is inscribed with a curse it could be unfolded and returned to its flattened state by a conservator. However, as an unstratified find, although recommended prior to discard, such action will not significantly contribute to further research at Saltwood Tunnel.
- 7.14.8 The overall sample is small but the modern material could be discarded.

Comparative Material

- 7.14.9 Lead plumb-bobs have been found previously in Roman contexts in Canterbury, although they are not common in East Kent. Lead vessel repairs are rather more common. The cylindrical lead spacer is almost certainly a fishing implement, used either with a net or a line. Similar objects are known from late Roman contexts at Ickham (Riddler, Lyne and Mould, forthcoming). The lead sheet is complete and has been folded at one end. It is unlikely that this is a curse tablet, although this can only be confirmed by unfolding it.
- 7.14.10 A fragment of lead which curves and tapers towards its apex originally formed part of a simple plumb-bob of medieval date. It forms an interesting contrast with the Roman example, although it is fragmentary and relatively little of it survives. The cloth-seal includes a crudely-stamped mark on the obverse, indicating that it is of post-medieval date.

Potential for further work

- 7.14.11 Although of limited potential, the study of the lead alloy objects will assist with the following Fieldwork Event Aim:
- *to recover dated environmental and economic indicators;*
- 7.14.12 The small assemblage of Roman items cannot be closely dated, particularly as only one of them came from a securely stratified context. Nevertheless, the line spacer is a welcome addition to the corpus of Romano-British fishing implements and it provides some indication of the diet enjoyed on the site at that time. The plumb-bob is a craftsman's implement and is one of only a few tools of Roman date to have been recovered from Saltwood. Neither object extends the range of the assemblage of Roman small finds noticeably beyond the domestic and small-scale industrial character seen in other material categories.
- 7.14.13 No further work is required on the objects of lead-alloy, other than a publication of a brief note concerning these items in the final Saltwood publication, the source for which would be this assessment report.

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7.15 Assessment of Roman Metalworking Waste

Lynne Keys

Introduction

7.15.1 Just over 1kg of metalworking waste, initially identified as ‘slag’, was recovered from Saltwood Tunnel, exclusively in the vicinity of the Late Iron Age/ Romano-British settlement C15. Most was recovered by hand although a small amount (in particular the micro-slugs) was retrieved from soil samples.

7.15.2 The study of metalworking waste assists with the following Fieldwork Event Aim:

- *to recover dated environmental and economic indicators.*

Quantification

7.15.3 A total of 1.121kg of material was recovered from three separate features (grave C24, ditch C246 and pit C260). The slag types present in each context are listed in **Table 26**. All three features were of Late Roman date (Phase 6b).

Table 26: Metalworking Waste by context

| Context | Provenance | Slag identification | Wt. (kg) | Comment |
|--------------|------------|---------------------------------------|----------------|-------------------------|
| C23 | grave C24 | Vitrified hearth lining | 0.048 | |
| C23 | grave C24 | Undiagnostic | 0.032 | |
| C23 | grave C24 | Fuel ash slag | 0.008 | |
| C23 | grave C24 | Crucible/ mould frag | 0.004 | |
| C23 | grave C24 | Undiagnostic | 0.004 | |
| C23 | grave C24 | Vitrified hearth lining | 0.108 | |
| C23 | grave C24 | Undiagnostic | 0.036 | ?smithing hearth bottom |
| C23 | grave C24 | Smithing hearth bottom | 0.102 | 80 x 55 x 20mm |
| C23 | grave C24 | Undiagnostic | 0.002 | |
| C23 | grave C24 | Hammerscale - flake | 0 | |
| C23 | grave C24 | Hammerscale, flake & sphere | 0 | |
| C23 | grave C24 | Undiagnostic | 0.001 | |
| C247 | Ditch C246 | Vitrified hearth lining | 0.082 | |
| C247 | Ditch C246 | Undiagnostic | 0.170 | ?smithing hearth bottom |
| C247 | Ditch C246 | Undiagnostic | 0.062 | |
| C247 | Ditch C246 | Smithing hearth bottom | 0.174 | 65 x 60 x 35mm |
| C247 | Ditch C246 | Crucible frags | 0.014 | |
| C261 | Pit C260 | Vitrified hearth lining | 0.050 | |
| C261 | Pit C260 | Burnt daub | 0.050 | |
| C261 | Pit C260 | Smithing hearth bottom | 0.106 | 75 x 50 x 25mm |
| C261 | Pit C260 | Hammerscale, mainly flake, one sphere | 0.000 | |
| C261 | Pit C260 | Vitrified hearth lining | 0.068 | |
| Total | | | 1.121kg | |

7.15.4 Some iron slags are diagnostic of the process being carried out (smelting, primary smithing or secondary smithing), others are not. Undiagnostic slags may derive from either iron smelting or smithing and the process can only be determined in the light of any diagnostic evidence from the site. Other types of debris may be the result of various kinds of high temperature activities - including domestic fires - and do not by themselves indicate ironworking was taking place.

7.15.5 Much of the slag assigned to the undiagnostic category for this site is there because it was broken and generally so small in size it could not be assigned to either iron

smelting or iron smithing. Dimensions for pieces unbroken during recovery are provided where appropriate (length x breadth x depth).

- 7.15.6 No slags diagnostic of iron smelting were present in the assemblage.
- 7.15.7 Slags diagnostic of iron smithing take two main forms: bulk slags and micro slags. Of these the smithing hearth bottom is the one least likely to be confused with slags produced by smelting. Its characteristic plano-convex-shape was formed as a result of high temperature reactions between the iron, iron-scale and silica from either a clay furnace lining or the silica flux used by the smith. The predominantly fayalitic (iron silicate) material produced by this reaction dripped down into the hearth base forming smithing slag which, if not cleared out, developed into the smithing hearth bottom. Three smithing hearth bottoms were present amongst the slag - one in each of the three features represented.
- 7.15.8 Iron smithing also produces micro-slugs (hammerscale) of two types: flake and spheroidal. Flake resembles silvery fish scales and is the product of the ordinary hot working and hammering of a piece of iron where fragments of the oxide/ silicate skin flake off from the iron and fall to the ground. Spheroidal are small solid droplets of liquid slag expelled from within the iron during the primary smithing of a bloom or the fire welding of two pieces of iron. Grave C24 and pit C260 produced mainly flake hammerscale and a little spheroidal.
- 7.15.9 grave C24 and ditch C246 contained copper alloy working crucible fragments which implies this may have been taking place in the same area as the ironworking, before the waste was dumped.

Provenance

- 7.15.10 The largest group of slag came from the fill of an isolated inhumation burial (grave C24). It appears the grave may have cut through a pit containing metalworking debris. The other two contexts containing metalworking waste were Late Roman deposits, both of which may have derived from the remnants of road metallurgy associated with trackway C1 (ditch C246).
- 7.15.11 It was common for iron slag to be dumped on Roman roads to help form a compact and resilient surface. Slag produced as a result of the smelting industry in the Weald was used on the Roman roads there and was a useful way of disposing of quantities of this waste. If this was the case at Saltwood, then any disturbance to the road after the deposition of the slag could have resulted in its redistribution into the adjacent features as residual finds.

Conservation

- 7.15.12 Iron slag, being fayalitic (an iron silicate), does not deteriorate and needs no special storage. Any decision on disposal of the material should be based on the likelihood of further work but otherwise there seems no other reason to retain the material after publication.

Comparative material

- 7.15.13 Small amounts of iron smithing slag, thrown into cut features after being cleared out of the forge, or further redeposited should the initial dumping area be disturbed, are ubiquitous all over Britain. They form the most common assemblages of iron slag.

Potential for further work

- 7.15.14 The study of the slag assists with the following Fieldwork Event Aim:
- *to recover dated environmental and economic indicators;*
- 7.15.15 The fragments of crucible may demonstrate that both iron- and copper alloy-working were taking place together within or just outside the Roman settlement. The crucible fragments of crucible (one may be part of a mould) should be examined by the relevant specialist and could be test to determine the alloy involved.
- 7.15.16 There is no recommendation for further work on the iron slag since such small amounts discarded in pits and disturbed by burials and later cutting merit no further attention. It if appears that slag was being deliberately dumped on roads as metalling, this should be mentioned in any publication, as should the fact that the dump also contained non-ferrous waste.

7.16 Assessment of Romano-British Worked Stone

Ian Riddler

Introduction

- 7.16.1 The four stone objects of Roman date were hand-recovered from the Late Iron Age/Romano-British settlement (C15) towards the western end of the site, and include two incomplete shale bracelets, part of a hone and a fragment from a quern stone.
- 7.16.2 The study of the Roman stone objects assists with the following Fieldwork Event Aim:
- *to recover dated environmental and economic indicators if these are found to be present on site.*

Methodology

- 7.16.3 The objects have been examined with the aid of a hand lens and have been cleaned, stabilised and packaged. They have been identified to type and the raw materials have been checked against the comparative collection of stone types at the CAT.

Quantification

- 7.16.4 The four stone objects consist of two incomplete shale bracelets, part of a hone and a fragments of a quern. The hone has been cut from micaceous Kentish ragstone and is unusually thin, with two broad, flat faces. The quern fragments do not include any original faces or measurable dimensions; the quern is made from basalt lava. No bias is evident in the collection of the material.
- 7.16.5 All of the objects survive in good condition and are relatively unaffected by the acidic soil conditions and it is therefore unlikely that further objects of this type have been lost or damaged in this way.

Provenance

- 7.16.6 The hone came from the same context as the silver pin (sf C993) and was produced from a local Kentish stone. The raw material for the shale bracelets almost certainly came from Dorset; the basalt lava is likely to be of Rhenish origin.

Conservation

- 7.16.7 The objects have been cleaned and packaged by a conservation assistant. The shale bracelets were placed in water on site and have been gradually dried in laboratory conditions. They are now stable although they are maintained in environmentally-controlled conditions.

Comparative Material

- 7.16.8 Shale bracelets are not particularly common in East Kent, although examples have been published recently from Maidstone and Canterbury, and another example is known from nearby at Church Hougham (Houliston 1999, 108-9; Blockley *et al* 1995, 1188-90; Riddler in Parfitt forthcoming). They occur throughout most of the

Roman period and although many can be placed in the middle or late Roman centuries, they cannot be dated on intrinsic characteristics alone.

- 7.16.9 Fragments of basalt lava querns are frequently found in Roman and post-Roman contexts. Usually, as here, insufficient survives to allow them to be closely dated.
- 7.16.10 The hone is made from a local stone and, like the other objects, it cannot be closely dated.

Potential for further work

- 7.16.11 The study of the Roman stone objects is relevant to the following Fieldwork Event Aim:

- *to recover dated environmental and economic indicators if these are found to be present on site.*

- 7.16.12 All four objects are made from stone types which are not found at Saltwood itself. The hone may have been made in the immediate locality, although the other objects came from some distance. Both form part of the trade network in stone objects established for East Kent in the Roman period and they extend known distributions of these stone types. The objects themselves cannot be closely dated but they do come from stratified and phased deposits of Late Roman date. They are directly relevant, therefore, to the stated Fieldwork Event Aim.
- 7.16.13 The fragments of the quern have the potential to develop the understanding of trade networks in south-east England during the late Roman period. It has been stated that basalt lava querns were imported into Kent and London in the early Roman period, but not in the late Roman period. The Saltwood evidence tends to contradict that assertion (as does evidence from elsewhere in Kent) and it could be collated with the evidence from other sites, including other CTRL excavations, to revise this outdated understanding of late Roman trade with the continent.
- 7.16.14 Comparisons can also be drawn between different types of site (rural, urban, villa, ritual etc) and the occurrence of this material in the late Roman period. It is also clear now that the lower greensand quern production centre at East Wear Bay, Folkestone, continued in use into the late Roman period. But neither the querns from Saltwood nor from Church Hougham are made of that material, although those from Cheriton are lower greensand. The Saltwood material, therefore, has the potential to assist in the understanding of regional preferences for quern manufacture and use in east Kent in the late Roman period.

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7.17 Assessment of Anglo-Saxon Swords

Barry Ager and Janet Lang

Introduction

7.17.1 Eleven swords and associated fittings were found in graves excavated at the Saltwood Anglo-Saxon cemeteries. The study of this material will assist the following Fieldwork Event Aims for these sites:

- to establish the chronology of the cemeteries;
- To establish the range and variation in burial rites and to view possible changes in rites over time;

Methodology

7.17.2 Six of the swords, together with associated weaponry and other fittings, were visually examined alongside their radiographs, and a magnet was employed to assess the extent of the corrosion, although a thorough inspection was hampered by sandy concretions and, in a couple of cases, soil blocks. Associated weaponry from the same graves was also seen together with x-radiographs in most cases (excluding shields and spears). The remaining five swords were undergoing stabilisation and conservation at the time of assessment and therefore could not be examined in detail.

Quantification

7.17.3 Six swords out of a total of 11 were assessed (**Table 27**), from graves C5, C7, C15, C19, C127 and C158 (the swords not seen were from graves W41, C121, C124, C129 and C200).

Table 27: Swords from the Saltwood Cemeteries

| Event Code | Grave | Cemetery | Examined | Pommel | Pattern | Magnet response |
|------------|-------|----------|----------|-----------------|---------|-----------------|
| ARC SLT98C | C5 | Central | Yes | 'T'-shaped | ? | - |
| ARC SLT98C | C7 | Central | Yes | Ag "cocked" hat | yes | Yes |
| ARC SLT98C | C15 | Central | Yes | Ae pyramidal | - | - |
| ARC SLT98C | C19 | Central | Yes | Button | yes | Yes |
| ARC SFB99 | W41 | Eastern | Not seen | | | |
| ARC SLT99 | C121 | Western | Not seen | | | |
| ARC SLT99 | C124 | Western | Not seen | | | |
| ARC SLT99 | C127 | Western | Yes | Ring-sword | ? | - |
| ARC SLT99 | C129 | Western | Not seen | | | |
| ARC SLT99 | C158 | Western | Yes | Button | ? | not tested |
| ARC SLT98C | C200 | Central | Not seen | | | |

7.17.4 The condition of the material is as good as can be expected from burials in sandy soil, where ironwork is often heavily accreted and the loss of some traces of the organic materials of the hilt and scabbard is typical. The metal hilt-fittings and blades have substantially survived, except for a number of the sheet metal guards on the hilts (although the x-radiographs suggest some of these may be preserved in the concretions, while the blades are very corroded). Subsequent assessment of Mineralised Leather (see below), carried out when all 11 swords were available for examination, demonstrated that in general the preservation of organic remains was better on the five swords not examined here (Riddler pers. comm.).

- 7.17.5 From the forms of the pommel, five different sub-types of the broad, double-edged sword are represented. There was no observable collection bias in the assemblage.
- 7.17.6 On stylistic grounds the swords can be broadly ascribed for the purposes of this assessment to the 6th to early 7th centuries. At least one example may have been of continental origin on the basis of the decoration of the pommel (grave C7) although, as hilt-fittings could be added to blades of different origin, this needs to be checked against the assessment of construction and technology of the blade (see **Appendix 7.41**).
- 7.17.7 In terms of technology, curving elements, thought to be more characteristic of continental swords (Lang and Ager 1989), can be seen (rather indistinctly) on the blade from grave C7. Interestingly, they do not appear on radiographs of the swords from the Dover Buckland cemetery, a cemetery that is generally thought to include considerable quantities of imported objects. The sword from grave C19 also exhibits a chevron pattern with a superimposed wavy strip, which is unusual and may also be continental in origin. Ypey (1973) has shown that these patterns, found more frequently on the continent, were achieved by either grinding or cutting away the surface layers.

Provenance

- 7.17.8 The majority of the swords were from the central (graves C5, C7, C15, C19 and C200) and western (graves C121, C124, C127, C129 and C158) cemeteries. Only one example (grave W41) was recovered from the earliest eastern cemetery.
- 7.17.9 Early Anglo-Saxon swords consist of several distinct elements, including the blade, hilt, pommel and scabbard. Each component could be re-used on a different sword and there is good evidence to suggest that blades, in particular, were highly treasured and re-used. The scabbards, where they survive, do not therefore necessarily accompany the sword for which they were originally made, although it would be extremely difficult to test this hypothesis. Accordingly, they are regarded as part of an ensemble in respect of questions of rank, social status, ethnicity, etc.

Conservation

- 7.17.10 In general, cleaning and conservation of the swords will greatly assist identification of the components of the hilts and the patterns of the blades. Most dimensions can be obtained from the existing radiographs, with the notable exception of blade thickness, for which either further conservation or additional 'edge-on' radiographs would be required. Cleaning of the surviving hilt-fittings and laboratory analysis of their metals and any remaining organic materials of hilts and scabbards is also necessary, especially as they relate to questions of provenance and status. There may be surface features or decoration on any scabbard remains. Further radiography after cleaning, including stereopairs would assist in determining the pattern-welded designs.
- 7.17.11 In the case of the sword from grave C7, the radiograph shows both that an upper guard is present in the concretion, which it might be possible to retrieve. Niello may be present on the pommel. No guards are currently visible on the grave C15 sword, although again the radiograph indicates the possible survival of a lower guard of thin sheet metal. The radiograph of the sword from grave C19 shows what appears to be a small button pommel and possibly a sheet metal lower guard.

- 7.17.12 It is not possible to identify the metals of the hilt-fittings of the ring-sword from grave C127 with certainty by eye and the metals of the various components all require analysis, including the rivets; there may also be gilding present on the pommel and guard. The metal fittings and pendants visible in the radiographs have been removed and conserved without damaging the integrity of any component. The sword from grave C158 has a wide button pommel, although no other fittings are obvious from the radiograph.
- 7.17.13 All the swords with their associated fittings should be retained for future research and potential display purposes.

Comparative material

- 7.17.14 The primary sources of comparative Kentish material are the swords from the type-site at Dover (Buckland), and also from Howletts, Faversham and Broadstairs, all accessible in the British Museum. There is a published report for the first part of the cemetery found at Dover (Evison 1987) and a radiographic study of the swords from all these sites (except Broadstairs), and others, has been published (Lang and Ager 1989). A small group of swords from the cemetery at Mill Hill, Deal, has also been published (Parfitt & Brugmann). The typological and decorative aspects of continental Frankish swords have been dealt with mainly by Behmer (1939) and Menghin (1983), whilst the blade patterns of the large number of early medieval swords from the Frankish cemetery near Schretzheim are illustrated in Koch (1977).
- 7.17.15 Five of the swords from the recently excavated cemetery at Dover (Buckland) are currently being examined metallographically by Lang and will be available for a technical comparison with the Saltwood material.

Potential for further work

- 7.17.16 Study of the swords will contribute to the primary Fieldwork Event Aims of the excavation of the Anglo-Saxon cemeteries at Saltwood:
- *to establish a chronology for the Anglo-Saxon cemeteries;*
- 7.17.17 The swords have been broadly dated for this preliminary assessment to the 6th to earlier half of the 7th centuries (or possibly later), but further work (including a consideration of the associated grave goods) will enable closer dating of the more elaborate examples. The main comparisons will be with swords from the Anglo-Saxon cemeteries of East Kent, such as Buckland (Dover), Mill Hill and Faversham.
- *to establish the range variation in burial rites, and to view possible change in rite over time;*
- 7.17.18 Study of the relative positioning of the swords and associated fittings and other material in the graves will help establish the range and variation in both burial rites and grave structures over time.
- 7.17.19 Analysis of the swords can be expected to contribute to the following new research aims:
- *to determine the range and provenance of imported objects within the Early Anglo-Saxon cemeteries, and to determine the means of trade or exchange by which they came to East Kent;*

7.17.20 The swords may be compared with those from the Anglo-Saxon cemeteries at Buckland (Dover) and Mill Hill. At least one of the blades has fittings of a type usually associated with continental swords and further information on the pattern welding and the metallographic structure might help in provenancing the blades, which would have implications for trade and the movement of people. There is potential for further research, too, in determining whether the Anglo-Saxons imported some of their swords, either as blades to which they added locally made hilt-fittings, or as complete swords. The answer will contribute to the continuing debate about Anglo-Saxon exchange and political links across the Channel with the Franks during the 6th and 7th centuries. The other weaponry, like some of the belt-fittings, and the female costume jewellery from Saltwood, may also reflect and reinforce such contacts.

- *To examine technology & production centres;*

7.17.21 Coherency in the technology would imply a common technological tradition, but differences, perhaps suggesting a different ore source, or variations in workshop practice, might be discernible. The use of curving patterns, achieved by removing the surface of the blades selectively, seems to have been more prevalent on swords found on the continent. An indication of the effectiveness of the blades in use is shown by the soundness of the construction and the toughness and hardness of the metal. All swords are sufficiently well preserved to allow a small sample to be cut from the blade for metallographic examination, to be replaced by almost indistinguishable colour-matched resin. These samples would not only allow a determination of blade effectiveness, but also provide information on the state of technological development of the smithing involved in making the swords. For example, the type of metal used, use of fluxes, hardening of the metal by working with carburising, the use of quenching or quenching and tempering. Although non-destructive techniques can be employed (i.e. radiographs), these will not allow detailed metallographic comment, with the exception of whether more than one metal has been employed in blade manufacture.

- *To explore the implications for social status & deposited wealth.*

7.17.22 Further conservation work and metal analysis are required to reveal hidden components of the swords and their associated scabbards and fittings, and to enable detailed study of decoration, dimensions and worth as indicators of status. Conservation work would comprise cleaning away of sand and accretions from sections of the blades to allow both those sections to be radiographed in detail, and determine any further scabbard and sword fitting details. Swords with more elaborate hilt-fittings or finely pattern-welded blades need to be considered to see whether they are themselves indicators of high rank, as might be assumed. This applies especially in the case of the ring-sword from grave C127. Similarly, the swords with simpler hilts may possibly reflect lower rank, though not necessarily social status, as swords are usually taken to indicate relatively high status.

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7.18 Assessment of Anglo-Saxon Spears

Axel Kerep

Introduction

7.18.1 Thirty-one spears have been identified to date from the three Anglo-Saxon cemeteries, the majority recovered from the central cemetery (21), with nine examples from the western cemetery and a single example from the eastern cemetery. There are no spear ferrules from any of the graves, nor graves containing more than one spear. Almost all of the spearheads were block-lifted on site, and all have subsequently been transferred to the City of Lincoln Conservation laboratories. Block-lifts have been excavated in the laboratory and a full photographic archive of this process has been produced.

7.18.2 The study of the spearheads assists in the following Fieldwork Event Aims:

- *To establish a chronology for the Anglo-Saxon cemeteries;*
- *To establish the range variation in burial rites, and to view possible change in rite over time;*
- *To indicate the general development of each cemetery and their relationship to each other;*
- *To identify the use of space within the burial landscape.*

Methodology

7.18.3 The spearheads have been examined in association with radiographs of each object and the photographic archive of their laboratory excavation. The study has concentrated on those spearheads that were available for examination, representing a sub-sample of 26 examples (**Table 28**). It is considered unlikely that the remaining five spearheads will be significantly alter the conclusions drawn from this sub-sample.

7.18.4 The 26 spearheads have been assigned to type, and broad typological dating has been applied, where possible, based on the system devised by Swanton (1973; 1974). In seven cases the precise type could not be assigned with certainty and two options are presented, the first option being considered the most likely. To differentiate between Swanton 'C'-type spearheads and CAT 'C'-prefixed reference numbers, Swanton-type references are *italicised*.

Quantification

7.18.5 As noted above, none of the 31 graves contained multiple spearheads. The quantity of spearheads per type is summarised below (**Table 29**). The absence of common forms like C2 is interesting and as yet unexplained, although there was only one example from Dover Buckland. There are one or more examples of C3, a later development of the same form, and one of the possible examples of this type comes from a grave in the western cemetery (grave C127).

Table 28: Spearheads by context

| Event Code | Cemetery | Grave | Context | Find No. | Quantity | Type |
|--------------|----------|-------|---------|-------------|-----------|--------------|
| ARC SLT98C | Central | C3 | C1039 | C786 | 1 | D2/ F2 |
| ARC SLT98C | Central | C5 | C1117 | C864 | 1 | G2 |
| ARC SLT98C | Central | C12 | C1074 | C895 | 1 | H2 |
| ARC SLT98C | Central | C15 | C1145 | C1094 | 1 | E4 |
| ARC SLT98C | Central | C18 | C1158 | C1183 | 1 | E3 |
| ARC SLT98C | Central | C19 | C1348 | C1160 | 1 | D1 |
| ARC SLT98C | Central | C22 | C1211 | C1106 | 1 | F1/ F2 |
| ARC SLT98C | Central | C23 | C1203 | C1247 | 1 | E2 |
| ARC SLT98C | Central | C26 | C1355 | C1232 | 1 | C3 |
| ARC SLT98C | Central | C28 | C1120 | C1120 | 1 | F3/ D3 |
| ARC SLT98C | Central | C29 | C1253 | C1111 | 1 | D1 |
| ARC SLT98C | Central | C30 | C1275 | C1129 | 1 | D1 |
| ARC SLT98C | Central | C31 | C1282 | C1133 | 1 | D1 |
| ARC SLT98C | Central | C32 | C1347 | C1161 | 1 | E4 |
| ARC SLT98C | Central | C34 | C1324 | C1238 | 1 | E3/ G2 |
| ARC SLT98C | Central | C39 | C1351 | C1172 | 1 | F2 |
| ARC SLT98C | Central | C81 | C2815 | C1698 | 1 | D1 |
| ARC SFB99 | Eastern | W104 | W1747 | W263 | 1 | Not assessed |
| ARC SLT99 | Western | C121 | C3778 | C2005 | 1 | F2 |
| ARC SLT99 | Western | C127 | - | C2065 | 1 | C3/ H3 |
| ARC SLT99 | Western | C129 | C3884 | - | 1 | Not assessed |
| ARC SLT99 | Western | C143 | C4649 | C2242 | 1 | D1 |
| ARC SLT99 | Western | C150 | C4681 | C2149 | 1 | H3 |
| ARC SLT99 | Western | C154 | C4687 | C2130/C2220 | 1 | H3 |
| ARC SLT99 | Western | C157 | C4705 | C2148 | 1 | Not assessed |
| ARC SLT99 | Western | C173 | C6208 | C2405 | 1 | E1/ F1 |
| ARC SLT99 | Western | C174 | C6229 | C2406 | 1 | C3/ D2 |
| ARC SLT98C | Central | C176 | C6405 | C2423 | 1 | H1 |
| ARC SLT98C | Central | C178 | C6642 | C2490 | 1 | C1 |
| ARC SLT98C | Central | C186 | C6531 | C2508 | 1 | Not assessed |
| ARC SLT98C | Central | C200 | C6654 | C2457 | 1 | Not assessed |
| Total | | | | | 31 | |

Table 29: Spearhead totals (assessed) by type

| Type | No. | Known Kentish Form |
|--------------|-----------|--------------------|
| C1 | 1 | ■ |
| C3 | 1 | ■ |
| C3/ D2 | 1 | ■ |
| C3/ H3 | 1 | ■ |
| D1 | 6 | |
| D2/ F2 | 1 | ■ |
| E1/ F1 | 1 | |
| E2 | 1 | |
| E3 | 1 | ■ |
| E3/ G2 | 1 | ■ |
| E4 | 2 | ■ |
| F1/ F2 | 1 | |
| F2 | 2 | ■ |
| F3/ D3 | 1 | ■ |
| G2 | 1 | |
| H1 | 1 | |
| H2 | 1 | |
| H3 | 2 | ■ |
| Total | 26 | |

Provenance

- 7.18.6 All of the graves are considered to be secure contexts, which have not been contaminated by later disturbances.
- 7.18.7 In four cases spears were the only weapons recovered from graves, with 21 graves producing spear and knife combinations. In 11 cases spears were accompanied by shields, and in five of those cases by swords as well. Only three weapon graves did not include spears, all of which did contain swords (**Table 30**). Spears are present,

therefore, in a succession of weapon graves extending probably from the middle of the 6th century to the second part of the 7th century.

Table 30: Weapon grave combinations

| Event Code | Cemetery | Grave | Spear | Knife | Sword | Shield | Angon | Arrow-Head | Horse Harness |
|------------|----------|-------|-------|-------|-------|--------|-------|------------|---------------|
| ARC SLT98C | Central | C15 | ■ | ■ | ■ | ■ | | | |
| ARC SLT99 | Western | C127 | ■ | ■ | ■ | ■ | | | |
| ARC SLT99 | Western | C121 | ■ | ■ | ■ | | | | |
| ARC SLT98C | Central | C19 | ■ | ■ | | ■ | | | |
| ARC SLT98C | Central | C26 | ■ | ■ | | ■ | | | |
| ARC SLT98C | Central | C32 | ■ | ■ | | ■ | | | |
| ARC SLT99 | Western | C150 | ■ | ■ | | ■ | | | |
| ARC SLT98C | Central | C12 | ■ | ■ | | | | | |
| ARC SLT98C | Central | C18 | ■ | ■ | | | | | |
| ARC SLT98C | Central | C22 | ■ | ■ | | | | | |
| ARC SLT98C | Central | C23 | ■ | ■ | | | | | |
| ARC SLT98C | Central | C28 | ■ | ■ | | | | | |
| ARC SLT98C | Central | C29 | ■ | ■ | | | | | |
| ARC SLT98C | Central | C30 | ■ | ■ | | | | | |
| ARC SLT98C | Central | C31 | ■ | ■ | | | | | |
| ARC SLT98C | Central | C34 | ■ | ■ | | | | | |
| ARC SLT98C | Central | C39 | ■ | ■ | | | | | |
| ARC SLT98C | Central | C81 | ■ | ■ | | | | | |
| ARC SLT99 | Western | C154 | ■ | ■ | | | | | |
| ARC SLT99 | Western | C157 | ■ | ■ | | | | | |
| ARC SLT99 | Western | C173 | ■ | ■ | | | | | |
| ARC SLT99 | Western | C174 | ■ | ■ | | | | | |
| ARC SLT98C | Central | C176 | ■ | ■ | | | | | |
| ARC SLT98C | Central | C186 | ■ | ■ | | | | | |
| ARC SLT98C | Central | C5 | ■ | | ■ | ■ | ■ | ■ | ■ |
| ARC SLT99 | Western | C129 | ■ | | ■ | ■ | | | |
| ARC SLT98C | Central | C200 | ■ | | ■ | ■ | ■ | | |
| ARC SLT98C | Central | C3 | ■ | | | ■ | | | |
| ARC SLT98C | Central | C178 | ■ | | | ■ | | | |
| ARC SFB99 | Eastern | W104 | ■ | | | | | | |
| ARC SLT99 | Western | C143 | ■ | | | | | | |
| ARC SLT99 | Western | C124 | | ■ | ■ | ■ | | | |
| ARC SLT98C | Central | C7 | | | ■ | ■ | ■ | | ■ |
| ARC SLT99 | Western | C158 | | | ■ | | | | |

Conservation

- 7.18.8 All of the spearheads survive in a reasonable condition, although there is unlikely to be much metal remaining, and they are heavily corroded. A number include traces of mineralised textile on their blades and sockets; these have been separately assessed. Nearly all of the spearheads are complete or near-complete and there are no obvious signs of damage either during use or subsequent to deposition.
- 7.18.9 Further analysis may involve a study of the technology of the blades. If this includes sampling of the blades themselves, then sections would be cut from them. These, however, can be replaced and repaired and the objects can be stabilised and displayed, if thought appropriate.
- 7.18.10 The spearheads have been radiographed and are packaged in such a way as to reduce future handling to a minimum. They have been stabilised and a detailed photographic archive has been produced for each object. It is not recommended that any of the objects should be discarded.

Comparative material

- 7.18.11 Spearheads are the most common weapon type to be found in early Anglo-Saxon weapon graves. The Saltwood series can be compared with those from Holborough,

Polhill, Dover Buckland, Mount Pleasant and Mill Hill Deal, as well as with earlier Kent discoveries (Evison 1956, 97-100; 1987, 26-30; Hawkes 1973, 187-8; Parfitt and Brugmann 1997, 83-5; Riddler and Haith forthcoming). Research into specific Kentish forms, and their relationship to those on the continent, is currently being undertaken by Axel Kerep.

- 7.18.12 The absence of the *C2* form is compensated by the presence of *D1* blades, which are common in Kent (Swanton 1973, fig 19). *D2* blades were much more common at Dover Buckland (Evison 1987, table II), with only one possible example at Saltwood (grave C3).
- 7.18.13 The possible *E1* blade from central cemetery grave C173 would be unusual in a Kentish context, the type being more common in central and south-western England (Swanton 1973, 79-80 and fig 24). Spearheads of types *E2*, *E3* and *E4* are, however, common in Kent. Type *F2*, like *D2*, is a predominantly Kentish form as also (if less certainly) is the *F3* type. *G2*, although widespread, is also a familiar East Kent type. The *H* series is, like the *E1* form, more common in central and south-western England, with the exception of *H3* blades, which are well-represented in Kent (Swanton 1973, fig 42). The *H1* and *H2* blades are unusual forms for Kent.
- 7.18.14 Most of the types represented, therefore, conform with the distributions outlined previously by Swanton, and with the revised summary system used by Parfitt and Brugmann (1997, 84). The spearheads provide few independent indications of dating, most types apparently being long-lived and not closely-dated.
- 7.18.15 The spearhead from grave C23 has a mark on the blade that includes a cross and a circle. Such marks are comparatively rare, although other examples are known, both from England and the continent, and they have a long Germanic tradition (Evison 1956, 97-100; 1987, 29).
- 7.18.16 The Saltwood sequence of spearheads is one of the largest to have been excavated under modern conditions in Kent and is surpassed only by the assemblages from Dover Buckland and Finglesham, neither of which have been fully published. Swanton's work on early Anglo-Saxon spearheads remains fundamental to any future study. Härke has updated his distributions and corrected some anomalies (Härke 1992, 85-7) and work in progress on regional patterning in Kent will be centred on the larger, modern collections, for which all of the blades have been radiographed.

Potential for further work

- 7.18.17 The study of the spearheads can assist in the Fieldwork Event Aims, as follows.
- *To establish a chronology for the Anglo-Saxon cemeteries;*
- 7.18.18 The spearheads themselves cannot be closely dated as individual objects, but they can be set within a broad typological framework on the basis of a closer study of regional trends within East Kent. They assist in the chronology of weapon graves from Saltwood from the 6th to the later 7th centuries, particularly as almost all of those examined to date can be assigned to type. Even with the reservations placed on the Swanton typological system, it is clear that almost all spearheads can be placed within his type series. A closer study of those for which the evidence is equivocal at present should resolve them into clear types and into additional and new sub-types if necessary.

7.18.19 It is interesting to note that the two examples of 6th century *E4* spearheads both come from graves within the central cemetery (graves C15 and C32). It is too early to say whether this actually suggests that burial within that cemetery began before the large weapon graves were deposited there in the early 7th century, but this is clearly possible.

- *To establish the range variation in burial rites, and to view possible change in rite over time;*

7.18.20 With the weapon graves placed in a sequence, it will be possible to examine the changes in deposition across cemeteries over time. Härke has rightly noted that some spearheads were buried with the young, rather than adults; it may be difficult to determine this in some cases at Saltwood. On the other hand, most spearheads are buried with adults and social issues may not, therefore, be a major determinant (Härke 1992, tab 30). The position of each spearhead in the grave has been noted for all of the graves. Variation in burial rite can be established on this basis and compared with the results from other cemeteries in the region. The spearhead from grave C5 was pointing towards the foot of the grave, in a fashion attributed more to the Franks than the Anglo-Saxons.

- *To indicate the general development of each cemetery and their relationship to each other;*

7.18.21 The spearheads come mainly from the central cemetery although there is a reasonable sample also from the western cemetery, and the two cemeteries can be usefully compared. The earlier type of *H3* spearhead is confined to the western cemetery but, as noted above, the *E4* forms occur in the central and not in the western cemetery. The transformation in weapon burials during the second half of the 7th century can also be observed within both cemeteries and the presence and absence of spearheads is important in this respect also. The relative lack of spearheads from the eastern cemetery is of interest. Although the few weapon graves from that (earliest) cemetery may be considered in terms of developments in the burial rite over time, little work on the weapon graves of Kent has so far been carried out to confirm this hypothesis.

- *To identify the use of space within the burial landscape;*

7.18.22 It has been noted that graves with shields tend to cluster together, and similar spatial studies are possible for spearheads in relation to male graves in general and to weapon graves as a subset of those burials. The lack of human remains means that gender will, in a number of cases, be determined by grave goods alone, but even so it is possible to look at the use of space and the grouping of weapon graves over time, in relation to the development of the various cemeteries.

7.18.23 The spearheads also assist in the following new research aims:

- *To examine ethnicity, and foreign and external influences*

7.18.24 As noted above, current research into spearheads from East Kent and their relationship with those from the continent should assist in placing the Saltwood assemblage within a regional and international framework. It should allow the spearheads to be considered in the same terms as the swords and shields, and other weapon types. The Frankish and Scandinavian components in weapon graves can then be considered. In the case of spearheads, the location of the spear in the grave,

and in particular whether it points to the head or feet, is also considered to be indicative of ethnic origin.

- 7.18.25 Equally, the system employed by Brugmann, under which spearheads are placed into three categories in relation to their distribution in Kent, allows several forms to be identified which would be more commonly seen in central or south-western England. These forms can also be securely identified, with the aid of some investigative conservation, and checked against the corpus of material from those regions. They can also be viewed within the context of the overall burial rite to be observed in those graves. However, it should be pointed out that the origin of objects, in isolation or combination, does not necessarily indicate the ethnic origin of the buried individual that they accompany.

- *To critically examine spearhead technology*

- 7.18.26 Comparatively little work has been undertaken on the technology of spearheads. This stands in direct contrast to the studies of swords, seaxes, knives and shields. Studies have been undertaken on the wood types present in sockets, and that be compared and contrasted with the Saltwood examples. The metal of the blades could also be analysed using the same semi-destructive technique as proposed for swords and knives. This would undoubtedly assist in determining variability in manufacture and thereby highlighting technological distinctions. It would also be of interest to know why one of the blades (grave C23) carries a 'signature' and whether that example differs in any other respect from the other spearheads. At the same time, it would not be possible to make any broader comparisons, unlike for instance swords and knives, due to the current lack of research carried out on comparable assemblages elsewhere. With reference to ferrous object technology, see also **Appendix 7.41**.

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7.19 Assessment of Anglo-Saxon Angons

Axel Kerep and Ian Riddler

Introduction

7.19.1 Three iron angons were recovered from conspicuously wealthy weapon graves (graves C5, C7 and C200) in the central cemetery. Each is complete or nearly complete, and their original form and measurements can be reconstructed. Detailed radiographs have been taken of the angons from graves C5 and C7.

7.19.2 They are relevant to the following Fieldwork Event Aims:

- *To establish a chronology for the Anglo-Saxon cemeteries;*
- *To establish the range variation in burial rites, and to view possible change in rite over time;*
- *To indicate the general development of each cemetery and their relationship to each other.*

Methodology

7.19.3 Each angon has been examined visually and compared with the series of radiographs for the object. In each case, the angon was block-lifted from the grave and there are radiographs both of the block and of the object in detail. A comprehensive photographic and conservation archive has been compiled for each of the angons. Radiographs have yet to be completed for the angon from grave C200 (which, however, appears to be very similar to the remaining pair) and the assessment is therefore focused on the remaining two examples.

Quantification

7.19.4 A single angon came from each of the three wealthy male graves within the central cemetery: graves C5, C7 and C200. One example includes copper alloy bindings around and beyond the cleft socket. Similar bindings have been seen on angons from Sarre and Taplow (Swanton 1973, 33).

Provenance

7.19.5 The angons from graves C5, C7 and C200 were each located towards the edge of the grave, facing towards the feet of the deceased. The angon from grave C7 lay outside of the coffin but within the chamber. The remaining two examples lay in a similar position, but not within a chamber; each was accompanied by a spear.

7.19.6 They are a Germanic weapon form which, like the seax, was imported into Early Anglo-Saxon England and may also possibly have been copied and produced in this country. From formal characteristics alone it is not possible to tell at present whether these examples are of Frankish or Anglo-Saxon origin. It is worth noting, however, that the form of each head resembles other examples found in Anglo-Saxon contexts, particularly for the long, square-sectioned tips, which generally differ from continental pyramidal forms.

Conservation

- 7.19.7 Each angon has been removed from its soil block, following initial radiography. They have been placed in purpose-built packaging and have been radiographed in detail, which should greatly reduce the need to handle them in the future.
- 7.19.8 If considered necessary, future analysis could seek to identify the wood type used for the haft in each case. This is a non-destructive process that would not affect the long-term conservation requirements of the objects. The radiographs produced to date are very detailed and they provide a reasonable insight into the survival of metal and the technology of manufacture. Further conservation cleaning of the angons is not thought to be likely.

Comparative material

- 7.19.9 Angons form a distinctive and easily identifiable weapon type. The Kentish series includes examples from Temple Farm (near Cuxton), Sarre and Sibertswold. Angons are also known from rich male graves at Sutton Hoo and Taplow (Smith 1912, 359 and 377; Swanton 1973, 28-37; Bruce-Mitford 1978, 259-64). Virtually all of these graves can be assigned to the later 6th and early 7th centuries (Kentish Phase V) suggesting that the object type was fashionable for a relatively short period. Its distribution is centred on Kent, with outliers in rich male graves of the early 7th century elsewhere in eastern and central England. This mirrors the distribution of other imported object types.
- 7.19.10 Angons may have been used more for display than as functional implements, in the manner of the display shields also seen in graves C5, C7 and C200. They are more common in Merovingian graves (Bertram 1995, 59; Franken 1996) and they were used there as a form of throwing spear, in a manner described in detail by a number of Frankish and Byzantine authors (Swanton 1973, 29). The English series has yet to be studied in detail as an object type.

Potential for further work

- 7.19.11 The Anglo-Saxon series has not been studied in any detail and would certainly repay further analysis, particularly in the context of the contemporary Merovingian weapon rite. The Saltwood assemblage has practically doubled the number known from Kent and it represents the only group to have come from a Kent cemetery excavated under modern conditions. Each angon survives in relatively good condition and radiographs indicate the form of their barbs and the presence of copper alloy binding wires on one example.
- 7.19.12 The angons are relevant to the following Fieldwork Event Aims:
- *To establish the range of variation in burial rites, and to view possible change in rite over time;*
- 7.19.13 As corroborative dating evidence, angons occur only in graves of Kentish Phase V, dating to the late 6th and early 7th centuries, confirming the dating of graves C5, C7 and C200, and potentially relate these three graves together. They lay in similar positions in the graves, pointing towards the foot, as was also the case at Taplow, although not at Sarre. They represent a rare and distinctive element of the upper echelon of weapon graves in Kent during Phase V, and conceivably during that phase alone.

- 7.19.14 The angons come from weapon graves within the central cemetery and these graves are noticeably different from those seen in the other cemeteries, or at a later date within the same cemetery. The sequence of weapon graves extends from the first part of the 6th century to the late 7th century, the angons forming a weapon type that only occurs during a specific and relatively short-lived phase.
- 7.19.15 New research aims to which they may contribute include:
- *The presence and significance of display weapons in early Anglo-Saxon graves;*
- 7.19.16 Further research into the angons in relation to those from other early Anglo-Saxon graves in England, and in respect of their occurrence on the continent, should allow their specific function and practicality to be examined. If they are ‘display’ weapons of ostentation, then their distribution and deposition in the burial rite should indicate that they were not entirely functional.
- *Merovingian influence on the early Anglo-Saxon weapon rite, and*
 - *To examine ethnicity, and foreign and external influences*
- 7.19.17 Frankish weapons do occur in early Anglo-Saxon graves both in East Kent and elsewhere. The angons may be a prime example of that situation although it is also possible that they were produced in England in emulation of a Frankish weapon type. Both possibilities can be examined in the light of comparative studies of Merovingian weapon rites, and of the collection of English examples.
- *To critically examine angon technology*
- 7.19.18 Virtually no work has been undertaken on the technology of angons to date, the majority of which are housed in the British Museum. The metal of the blades could be analysed using the same semi-destructive technique as proposed for swords, knives, spears etc., this may assist in determining any variability in manufacture. However, the absence of any comparative data for the remaining angons recovered in England would make it virtually impossible to source the Saltwood examples on the basis of such analysis. With reference to ferrous object technology, see also **Appendix 7.41**.

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7.20 Assessment of Anglo-Saxon Arrowheads

Axel Kerep

Introduction

7.20.1 A set of approximately twelve iron arrowheads was retrieved from grave C5 (central cemetery). They lay together in an accreted bundle with their blades pointing towards the head of the grave. They have been radiographed and currently remain accreted together, in appropriate packaging.

7.20.2 The arrowheads are relevant to the following Fieldwork Event Aim:

- *to establish the range of variation in burial rites, and to view possible change in rite over time.*

Methodology

7.20.3 The bundle of arrowheads was block-lifted as a single group and transferred to the City of Lincoln laboratories. The arrowheads have been examined in Lincoln, in relation to the plan of the grave, and in conjunction with the radiographs.

Quantification

7.20.4 The accreted group of approximately 12 arrowheads from grave C5 represents the only set of arrowheads to have come from the site. If the arrowheads were hafted when buried, the shafts may have been up to 0.7m long based on the available space in the grave adjacent to the arrowheads when recovered. It appears that the majority of the arrowheads are complete or near-complete; following investigative conservation, it should be possible to obtain an accurate count, identify to type and to measure dimensions.

Provenance

7.20.5 The original provenance of the arrowheads is not known and could not easily be established. Arrowheads are known from other Early Anglo-Saxon graves but too few have been recovered for any work to have been carried out, as yet, on their form and technology in relation to those from continental contexts.

Conservation

7.20.6 It is necessary to carry out further investigative conservation on the objects to establish the original total of arrowheads and to clarify the range of forms present. This conservation would comprise separating a sample of the arrowheads from the accreted group, cleaning this sub-sample and taking detailed radiographs. Detailed microscopic investigation of their sockets will determine whether they were originally secured to wooden shafts, as is suspected. It would also be useful to examine the technology of their manufacture; in particular to determine whether they represent a homogeneous group, manufactured in the same manner.

7.20.7 They are currently retained in environmentally controlled conditions at Lincoln. They have been packaged so as to avoid excessive handling in the future. It is

recommended that they are all retained, particularly as they represent a comparatively rare object type for this period.

Comparative Material

- 7.20.8 Arrows cannot always be readily distinguished from spears, given that they represent a smaller version of the same essential form of object (Manley 1985, 223; Evison 1987, 30-1; Härke 1992, 87). Several descriptions of those from Anglo-Saxon contexts have been produced recently and these include a number of examples from East Kent cemeteries: at Bifrons, Buttsale, Chartham Down, Chatham Lines, Dover Buckland, Eccles, Kingston Down, Mount Pleasant, Ozengell, Sibertswold and Wingham (Arnold 1982, 66-7; Evison 1987, 30-1; Riddler and Haith forthcoming; Manley 1985, 232-4; Härke 1992, 87 and 186 note 261). The majority of these are graves of the 7th century, although the object type is known, in effect, across the entire Anglo-Saxon period (Manley 1985).
- 7.20.9 In most cases, only a single example has come from each grave, although Evison has noted that some burials include sets of three, and that this is commonly seen on the continent (Evison 1987, 30). The set from Saltwood can be compared with the assemblage from Chessell Down, Isle of Wight, where around 24 arrowheads were found in an auspicious male grave, together with remains of the bow, and with Buttsale in Kent, where 23 came from a single burial (Arnold 1982, 67; Payne 1893-5, 182-3).
- 7.20.10 Few, if any arrowheads have come from the graves of male adults and most have been retrieved from those of young children which, interestingly, is not the case here. Indeed, Härke has argued that those retrieved from stratified contexts are limited to the graves of children or juveniles (Härke 1992, 186). They include two graves at Dover Buckland (Evison 1987, 30). This raises the possibility that the majority of arrowheads were interred as miniatures, either as smaller symbols of spears, or as children's implements. In the case of grave C5, however, they are laid out as a group, alongside a series of weapons, and it is more likely that they functioned as utilitarian objects in life, used in hunting or warfare.

Potential for further work

- 7.20.11 The arrowheads are relevant to the following Fieldwork Event Aim:
- *To establish the range of variation in burial rites, and to view possible change in rite over time.*
- 7.20.12 It is important to note that this is a group of arrowheads, rather than a single example; only single examples have come from the majority of contemporary East Kent graves. Here, however, a tightly-packed group of around twelve arrowheads was deposited in the grave, possibly still attached to their wooden shafts, and comparisons can be made with several other graves where arrowheads were also deposited in groups. The type of burial rite does appear to be similar and relates to ostentatious male weapon burials of the later 6th and early 7th century.
- 7.20.13 New research aims to which the study of arrowheads can contribute include:
- *Merovingian influence on the early Anglo-Saxon weapon rite; and*
 - *To examine ethnicity, and foreign and external influences*

- 7.20.14 Frankish weapons do occur in early Anglo-Saxon graves both in East Kent and elsewhere. The angons, for instance (see **Appendix 7.19**), may be a prime example of that situation although it is also possible that they were produced in England in emulation of a Frankish weapon type. Arrowheads are found more frequently in continental cemeteries and Böhner identified eight distinct types (Böhner 1958, 162-4 and taf 29.7-14). Closer study of the Saltwood group, following investigative conservation, will allow them to be assigned to type, and comparisons can then be made with continental assemblages.

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7.21 Assessment of Anglo-Saxon Shields

Stephanie Spain

Introduction

7.21.1 Shield fittings were recovered from 15 graves. The majority was removed in soil blocks that were later excavated under laboratory conditions. The study of the shield fittings will assist the following Fieldwork Event Aims:

- *To establish a chronology for the Anglo-Saxon cemeteries;*
- *To establish the range and variation in burial rites, and to view possible changes in rite over time;*
- *To indicate the general development of the cemeteries.*

Methodology

7.21.2 All the relevant material was considered for assessment, with the exception of a shield boss from grave W41 (eastern cemetery), which remained in a soil block and had yet to be radiographed at the time of assessment.

Quantification

7.21.3 Details of the range and abundance of shield remains, comprising bosses, board studs and grips are presented below (**Table 31**). No bias was observed due to the collection of the material.

Table 31: Typology and description of shield remains

| Cemetery | Grave | Boss Type | Grip Type | Board Studs | Date |
|----------|-------|-----------|--------------|--|--|
| Eastern | 1705 | 6 | | ? Possibly rivet from boss | 7 th century |
| Eastern | 1767 | Unid. | Unid. | | |
| Western | C124 | - | | Set of 3 silver studs | |
| Western | C127 | 3b | Ia1 | | 7 th century |
| Western | C129 | 6 | Ia1 (Narrow) | Yes | 7 th century |
| Western | C150 | 3 or 3b? | III | Pair of studs | 6 th or early 7 th century |
| Central | C3 | 6 or 7 | I | Set of medium-sized convex disc board appliqué | Mid-late 7 th century |
| Central | C5 | 3bii | | Domed, plated rivets | Late 6 th / early 7 th century |
| Central | C5 | 3 or 3/6? | Narrow | Double-rivet board appliqué | 7 th century |
| Central | C7 | 6 | | Small disc board stud | 7 th century |
| Central | C7 | 3bii? | III | Domed, copper-alloy plated rivets | Late 6 th / early 7 th century |
| Central | C15 | 6 | | | 7 th century |
| Central | C19 | 3/6? | | | Late 6 th or 7 th century |
| Central | C26 | 6 | Narrow | Set of medium-sized disc board appliqué | 7 th century |
| Central | C32 | 6 | | Set of 3 studs | 7 th century |
| Central | C178 | 3/6 | | Set of 3 studs | Late 6 th or 7 th century |
| Central | C200 | 3bii | Ia1 | ? Possibly rivet from boss or grip | 7 th century |
| Central | C200 | 7 | Narrow | Pair of small board studs | Mid-late 7 th century |
| Central | C200 | 3 or 3b? | Ia1 | Large disc board appliqué | 6 th century |

Provenance

- 7.21.4 The shield remains derive from nine burials in the central cemetery, four in the western cemetery and two in the eastern cemetery (**Table 32**).

Table 32: Quantification of shield remains by cemetery

| Cemetery | No. of Bosses | No. of Grips | No. of Studs | No. of Shields | No. of Graves |
|---------------|---------------|--------------|--------------|----------------|---------------|
| Eastern | 2 | 1 | 1 | 2 | 2 |
| Western | 3 | 3 | 7 | 4 | 4 |
| Central | 13 | 7 | 30 | 13 | 9 |
| Totals | 18 | 11 | 38 | 19 | 15 |

- 7.21.5 Regional variation in the distribution of Anglo-Saxon shield boss types implies local manufacture. Shield bosses of Dickinson's group 3 were dominant in 6th century Kent and the earliest examples, accompanied by long grips of Härke's type III were almost certainly imported. Later examples with the more common strap grips of Härke's type I suggest that the type had been adopted and was being produced by the Anglo-Saxons. These bosses developed into Dickinson's group 6 and 7 types, but recent research has identified distinct group 3 sub-types in Kent, provisionally labelled 3bi and 3bii, which do not fit this general pattern (Spain 2000). The evidence suggests that these bosses, which were associated with a re-appearance of Merovingian long grips of Härke's type III, were imported prestige pieces of continental and Scandinavian provenance.
- 7.21.6 Preliminary assessment of Saltwood shield fittings indicates that the majority comprise Spain's group 3/6, 6 and 7 shield bosses, strap grips of Härke's type I and shield board studs, and were probably manufactured locally. The group 3b bosses, however, along with their associated long grips and domed, plated rivets, are almost certainly of Frankish provenance.

Conservation

- 7.21.7 The shield remains are iron, although a number of shield boss rivets and shield board studs are plated with copper alloy or silver. All shield bosses and fittings should be retained for further analysis.
- 7.21.8 The shield remains fall within the overall statement for iron and iron composite objects prepared for this assessment programme.

Comparative material

- 7.21.9 Evison has outlined the development of the Early Anglo-Saxon shield boss in an article on the sugar-loaf form that featured in a number of Kentish examples (Evison 1963). More recently, Dickinson's shield boss typology, based on an Upper Thames region study, has been published in a volume on Early Anglo-Saxon shields with contributions based on a national sample of Anglo-Saxon weapon burials by Härke, including classifications for shield grips and other fittings (Dickinson and Härke 1992).
- 7.21.10 Recent research on the Early Anglo-Saxon shield in Kent has refined Dickinson's shield boss typology, identifying several hitherto unrecognised group 3 sub-types and establishing finer date ranges for boss types in Kent (Spain 2000). As a result, shield bosses and other fittings can now be linked to Brugmann's Kentish phase system (Parfitt and Brugmann 1997, Brugmann 1999).

- 7.21.11 The larger group 3 bosses, often associated with long grips, are absent from the Saltwood cemeteries. The earliest bosses, of transitional group 3/ 6, date to the later 6th century and the latest, of group 7, to the second half of the 7th century. Comparable group 3/ 6, 6 and 7 shield bosses have been found in Kent at Faversham, Sittingbourne, Sarre, Bifrons, St Peters Tip, Buckland (Evison 1987) and Mill Hill (Parfitt and Brugmann 1997). The Saltwood cemeteries have also produced several type 3bii bosses, which can be paralleled with closely similar examples from Broadstairs I graves 66 and 74, dating to c. AD 600 (L Webster, pers. comm.).
- 7.21.12 Preliminary assessment of other shield fittings from the Saltwood cemeteries has revealed a range of board stud and grip types, also paralleled at Broadstairs I, Buckland and St Peter's Tip.

Potential for further work

- 7.21.13 The study of the shield fittings will assist the following Fieldwork Event Aims:
- *To establish a chronology for the Anglo-Saxon cemeteries;*
- 7.21.14 The shield fittings will be highly significant in establishing a chronology for the Anglo-Saxon cemeteries and will be especially important for dating the less richly-furnished male burials, since Swanton's spear-types are not closely datable (Swanton 1974). Preliminary assessment of Saltwood shield material indicates the presence of a range of chronologically diagnostic types and associations.
- *To establish the range and variation in burial rites, and to view possible changes in rite over time;*
- 7.21.15 The shield remains will also help establish the range and variation in burial rite at the Saltwood cemeteries, particularly the changing use of the weapon burial rite of which shield burial formed an important element. Preliminary assessment indicates that shields were buried throughout the period c. AD 550 to 700, giving a good chronological range. Further, three cases of multiple shield burial present a rare opportunity to establish the meaning behind this poorly understood high-status burial rite.
- *To indicate the general development of the cemeteries.*
- 7.21.16 As shield distribution and position in the grave often cluster within cemeteries, the identification and dating of such patterning should be undertaken in order to establish general cemetery development at Saltwood. It is also possible that this data would shed light on the relationship between prehistoric features and the Anglo-Saxon cemeteries and the use of space within the burial landscape.
- 7.21.17 The Saltwood type 3bii shield bosses constitute the first opportunity to study this imported boss-type and its use in the Anglo-Saxon burial rite since, of the few other examples so far identified, the Sarre boss is unassociated and the Broadstairs I and St Peter's Tip burials remain unpublished. The Saltwood 3bii bosses are especially important as they occur in the multiple shield burial in the central cemetery. As this material has the potential to advance understanding of high-status Kentish burial strategies and Frankish-Kentish relations and exchange mechanisms at about the end of the 6th/ start of the 7th century, it is clearly of national and potentially international importance.

- To critically examine shield technology

7.21.18 Shield technology could be analysed using the same semi-destructive technique as proposed for swords, knives, spears, angons etc., this may assist in determining any variability in manufacture. With reference to ferrous object technology, see also **Appendix 7.41**.

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7.22 Assessment of Anglo-Saxon Horse Harness

Angela Care Evans and Ian Riddler

Introduction

7.22.1 Two sets of horse harness were recovered from early Anglo-Saxon burials within the central cemetery. A group of fittings including a bridle bit, several strap distributors and a buckle came from grave C7, and elements of harness, including strap distributors, were found in grave C5. Both sets were hand-excavated on site. In addition, several cleats were also found in grave C12 within the same cemetery, although these appear to be structural ironwork, and are not considered further here.

7.22.2 The study of harness and related fittings assists in the following Fieldwork Event Aims:

- *To establish a chronology for the Anglo-Saxon cemeteries;*
- *To establish the range of variation in burial rites, and to view possible change in rite over time.*

Methodology

7.22.3 The elements of harness from both graves C5 and C7 are corroded together, and have been identified from radiographs taken after excavation. They have been described largely from the radiographs, and all harness objects have been considered in this assessment.

Quantification

7.22.4 Details of the objects are provided in **Table 33**. A full set of harness for a horse may be present in grave C7, including a bridle bit, several strap distributors, a buckle and additional mounts. Traces of silver inlay are also visible on some of the elements in grave C7, suggesting that they were originally decorated. Elements of a set, including strap dividers but lacking the bridle bit, were found in grave C5. The harness in grave C121 (western cemetery) probably formed part of a baldric arrangement and appears to be complete.

Table 33: Summary of Anglo-Saxon Horse Harness items

| Grave | Context | Material | Object | Count | SF |
|-------|---------|----------|--|-------|------|
| C5 | 1117 | Iron | Harness with Divider and Looped elements | 1 | 871 |
| C5 | 1117 | Iron | Harness Fittings with Divider | 1 | 874 |
| C5 | 1117 | Iron | Strap Divider | 1 | 870 |
| C5 | 1117 | Iron | Strap Divider with Copper Alloy rivets | 1 | 868 |
| C7 | 1081 | Iron | Harness Fittings | 1 | 1142 |
| C7 | 1081 | Iron | Harness Fittings | 1 | 1143 |
| C7 | 1081 | Iron | Harness Fittings | 1 | 1144 |
| C7 | 1981 | Iron | Bridle Bit | 1 | 1141 |

Provenance

7.22.5 The horse harness occurs only in two of the three richly furnished male graves within the central cemetery. These graves can be compared for most of their contents with grave C200 and it is interesting to note that the harness fittings are one area where these graves differ from each other.

- 7.22.6 The harness in grave C5 was recovered to the left of the skeleton, close to the angon and spear, and one of the shields, and the arrangement in grave C7 appears to have been similar.
- 7.22.7 The harness from grave C121 is unparalleled in early Anglo-Saxon England and could possibly be of Scandinavian origin, although its provenance has yet to be investigated in any detail. The horse harness from graves C5 and C7 could possibly be of Merovingian origin; this too, has yet to be investigated.

Conservation

- 7.22.8 All of the objects have been radiographed, examined, stabilised and packaged. The harness from grave C121 has been separated from its soil block and accompanying sword, during which a detailed photographic record was kept. Further investigative conservation will be required to determine the full nature of the harness from graves C5 and C7, including selective cleaning and additional radiography and digital photography.
- 7.22.9 The copper alloy elements survive in good condition, with evidence for decoration, gilding and the original presence of leather straps. The iron harness in graves C5 and C7 are heavily corroded and little metal may now survive. The individual elements can, however, be identified.
- 7.22.10 Non-destructive analysis of the copper alloy harness from grave C121 would assist in determining the nature of its construction and details of its technology. Therefore, further cleaning is proposed to determine the nature and extent of the decoration.
- 7.22.11 All elements should be retained for future research and potential display.

Comparative material

- 7.22.12 Horse harness is noticeably rare in early Anglo-Saxon graves and its nature and significance have only been determined in recent years. It was not considered in Härke's work, but a useful (if now outdated) survey is provided by Vierck (1971-2). Recent discoveries at Lakenheath and Sutton Hoo have led to a reassessment of subject. The Saltwood harness elements fall into the traditions exemplified by East Anglian burials, closer resemblances lying with the Sutton Hoo material.
- 7.22.13 The copper alloy fittings from grave C121 are unparalleled. Extensive consultation with continental specialists in particular may be necessary to determine the nature and original provenance of these fittings, and to reconstruct how they were worn.
- 7.22.14 The burial with harness in grave C5 may be accompanied by the burial of a horse in adjacent grave C27. This juxtaposition may be paralleled with the situation in Sutton Hoo grave 17, where the horse was adjacent to the male burial.

Potential for further work

7.22.15 The study of harness and related fittings assists in the following Fieldwork Event Aims:

- *To establish a chronology for the Anglo-Saxon cemeteries;*

7.22.16 The elements of horse harness from graves C5 and C7 cannot be closely dated but they can be compared with other examples, both in England and the continent, from the middle of the 6th century onwards. They are likely to be of later 6th or early 7th century date. The harness from grave C121 is unparalleled and is correspondingly difficult to date independently. The dating for this grave depends on other objects and criteria. Nevertheless, the decoration on the fittings may allow them to be dated in broad terms.

- *To establish the range of variation in burial rites, and to view possible change in rite over time.*

7.22.17 The three richly furnished graves within the central cemetery, only two of which contained horse harness, are undoubtedly broadly contemporaneous and are likely to lie within the same generation. No attempt has been made, as yet, to place them within a sequence and to relate them to the other burials within the same cemetery. The potential exists, however, to attempt this on the basis of a large number of criteria, including the presence and absence of horse harness.

7.22.18 The proposed baldric in grave C121 can be compared with the situation in other male weapon graves both within the same cemetery and in the central cemetery. Other male weapon graves within the central cemetery certainly included suspension elements for the carrying of leather or textile belts across the body, in relation to the wearing of the sword. None, however, includes anything as elaborate as the fittings in grave C121. This burial can be set within a dating framework, and in the context of the weapon burial in East Kent in the 6th and 7th centuries.

7.22.19 Further research aims can also be proposed:

- *To determine the range and provenance of imported objects within the Early Anglo-Saxon cemeteries, and to determine the means of trade or exchange by which they came to East Kent;*

7.22.20 The probable Scandinavian origin for the Saltwood harness can be added to those other objects from graves at Saltwood that are considered to be continental in origin. In each case, however, they represent objects whose continental origins have, as yet, been little explored. As with other object types from Saltwood, they broaden the range of imported grave goods in East Kent.

- *The horse in early Anglo-Saxon England*

7.22.21 Recent discoveries of Anglo-Saxon horse burials have allowed a better-developed representation of the horse and its place in the weapon burial rite to be presented, such as the apparent juxtaposition of rider with horse, as seen at Sutton Hoo as well as Saltwood.

- *The use of space in grave layouts*

7.22.22 As with other items within graves, particularly the richly furnished examples within the central cemetery, harness appears to be specifically located in relation to the skeleton to convey meaning and/or significance. It may have been placed there as a symbol of weaponry the individual carried or used when mounted. That area of the grave, extending along the left side, appears to have represented the 'symbols of office' of a warrior. Objects on the right side of the grave, however, symbolised functions beyond warfare (recreation and possibly ritual cleansing). The arrangement in grave C7 may have been similar, although a distinction was made between objects inside and outside of the coffin. An earlier form of rite is seen with grave C121, where there is, perhaps, less of a sense of the functional arrangement of space in the burial.

- *To critically examine harness technology*

7.22.23 The technology of the harness from the various graves can be investigated using several different techniques. For the copper alloy assemblage from grave C121 non-destructive X-ray fluorescence analysis is recommended on cleaned sections of the metal. This could occur alongside a conservation assessment of the presence of other metals (gilding etc.) and other substances, like leather or textile.

7.22.24 For the iron assemblages from graves C5 and C7, investigative conservation work, comprising selective cleaning of parts of the harness and some additional radiographs is recommended. As with other iron artefacts (c.f. swords, knives etc.), sections could be cut from the harness elements to allow a determination of the metal composition and to directly compare the technology of the two assemblages. Similar comparable analysis has already been carried out on the Sutton Hoo and Lakenheath harness.

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7.23 Assessment of Anglo-Saxon Jewellery

Tania M Dickinson

Introduction

7.23.1 For the purposes of this assessment, jewellery has been defined as metal fastenings from the dress (pins and especially brooches in copper alloy, silver or gold) and other adornments of the dress (metal fittings from necklaces and finger-rings and bracelets). Belt fittings, including buckles and items suspended from the girdle, and beads are being assessed separately, but as components of the complete burial dress they must eventually be studied together in order to extract their full chronological and social context. This will assist with the following Fieldwork Event Aims:

- *To establish a chronology for the Anglo-Saxon cemeteries;*
- *To establish the range of variation in burial rites, and to view possible change in rite over time.*

Methodology

7.23.2 Since dress fittings are such a diagnostic and significant component of Anglo-Saxon burial assemblages, the entire assemblage would normally be assessed. However, due to conservation requirements not all the material has been available for individual or equal examination. The following discussion separates the material by functional type into brooches and other jewellery (pins, fittings from necklaces, finger-rings and bracelets, and miscellaneous, that is uncertain or currently excluded items).

Quantification

7.23.3 A total of 15 brooches was recovered from the three cemeteries, but they come from only six graves, two in each cemetery. Graves W60 and W40 in the eastern cemetery contain four brooches each, graves C113 and C117 in the western cemetery contain three and two brooches respectively, whilst graves C11 and C190 in the central cemetery contain single examples. Eight graves within the western and central cemeteries contained pins, mostly fragmentary, five of which were copper alloy and three iron.

7.23.4 The total number of graves with metal ornaments from necklaces remains uncertain, pending excavation of some block-lifts. However, grave C156 (western cemetery) and graves C190 and C195 (central cemetery) had necklaces ornamented with between one and three pendants apiece: a coin-pendant was also recovered from grave C190, which like the other two graves also included looped cabochon pendants. A further six graves included either silver (graves W84 and W125 – central cemetery; grave C117 – western cemetery) or copper alloy wire rings (grave W40 – eastern cemetery; graves 25 and 178 – central cemetery), though it is not certain that all of the latter were on necklaces. In addition, grave C117 (western cemetery) contained other silver fragments, which may have been suspended from the necklace.

7.23.5 In addition, a silver finger-ring was recovered from grave C170 (western cemetery), a copper alloy example from the central cemetery and a copper alloy bracelet from

grave C25 (central cemetery). It is of note that the position that these items were recovered from in each grave might suggest that they were not worn on the hand, but due allowance should be made for post-depositional processes.

Provenance

- 7.23.6 Six main types of brooch have been identified, of which four are typically Kentish: Kentish square-headed brooches (six examples); Kentish bird-brooch (one example), Kentish keystone-garnet disc brooches (two examples) and Kentish composite brooch (one example). There is further a single annular brooch and four continental imports, probably from France and the Rhineland.
- 7.23.7 Five of the six graves with brooches feature combinations of Kentish and/ or continental brooches which allow them to be integrated with (and contribute further to) Brugmann's new phasing for Kentish cemeteries (Parfitt and Brugmann 1997; Brugmann 1999). Graves W60 and W40 and graves C113 and C117 belong to Brugmann's Kentish Phases II/ III and III respectively (c. 500 - 570), while grave C190, which itself contained a coin-pendant datable to the very end of the 6th century, belongs to her Phase V (c. 580 - 630).

Conservation

- 7.23.8 The brooches and other jewellery items will require cleaning and appropriate conservation treatment, including examination for redeposited textile remains on the brooches. The fragmentary nature of the pins precludes the need for further cleaning, except for grave W84 and grave C175. The necklace fittings and silver finger-ring require completion of their removal from soil blocks, cleaning and stabilisation.

Comparative material

- 7.23.9 The brooches are typical of the heterogenous range of women's dress fastenings found in 6th to early 7th century east Kentish cemeteries, including the nearby cemeteries of Lyminge (Warhurst 1955) and Dover Buckland (Evison 1987; Parfitt 1995). Brugmann's analysis of Mill Hill, Deal (Parfitt and Brugmann 1997; Brugmann 1999), including her characterisation of three 6th century phases in Kentish cemetery archaeology, is particularly important for dating the Saltwood brooches and brooch-combinations and for placing them in a social context. The other jewellery items can also be readily related to assemblages from elsewhere in eastern Kent, but also more widely in England, since much of it (i.e. pendants and some pins) is typical of late 6th to 7th century burials when dress fashions became inter-regional (Geake 1997, 37-105; Ross 1991).
- 7.23.10 Brugmann's work at Mill Hill allows the suggestion that the four-brooch combinations of Kentish and continental brooches found in the two eastern cemetery graves at Saltwood may be the earliest, overlapping her Phases II and III (c. AD 500 - 530/ 40 and c. AD 530/ 40 - 560/ 70 respectively). The three- and two-brooch combinations with Kentish keystone-garnet disc brooches from the western cemetery then follow on as Phase III (c. AD 530/ 40 - 560/ 70). Brugmann's Phase IV (c. 560/ 70 - 580/ 90) is not apparently represented, but the single composite brooch from the central cemetery typifies Phase V (c. AD 580/ 90 onwards). The annular brooch is less obviously datable, but may prove to be late 6th or 7th century rather than earlier (Dickinson 1990).

Potential for further work

7.23.11 The study of the jewellery will assist with the following Fieldwork Event Aims:

- *To establish a chronology for the Anglo-Saxon cemeteries;*

7.23.12 Further study is important to establish the Saltwood sequence and social complexion; as a by-product it will test and enhance Kentish and national chronology. The generally later dating of the other jewellery means that it complements the contribution of the brooches to understanding the overall sequence and social complexion of the cemeteries.

7.23.13 While the poor condition of the pins means that they have limited potential for further work, the necklace-fittings and possible necklace fittings represent the most important sub-group after the brooches. Of these, the coin-pendant must be the most important, providing an absolute date *terminus post quem* for the rich grave C190, and hence, through topographical inference, a datable stage in the chronological and social evolution of the central cemetery.

- *To indicate the general development of the cemeteries.*

7.23.14 Too few brooches were recovered to allow meaningful statistical analysis, and their potential for social analysis is diminished by the poor survival of human bone. However, the brooch-graves remain of the utmost importance, representing key moments in the deposition of significant females within their respective cemeteries. By relating them topographically and in terms of their assemblages to the other graves, it should be possible to propose models for the nature and development of the Saltwood burial grounds.

7.23.15 A further research aim can also be proposed:

- *To examine the nature of female costume over time, in terms of regional styles and the emulation of continental fashion.*

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7.24 Assessment of Anglo-Saxon Beads

Sue Hirst & Lorraine Mephram

Introduction

7.24.1 A total of 834 beads of varying type were recovered during excavations at Saltwood, of which 813 derived from grave contexts. The total includes not only those extracted through hand-excavation, but examples subsequently recovered during post-excavation sieving of grave-fills.

7.24.2 The study of this material will assist in the following Field Event Aims:

- *to establishment a chronology for the Anglo-Saxon burials,*
- *To indicate the general development of the cemetery,*
- *To establish the range in burial rites, and to view possible change in rite over time.*

Methodology

7.24.3 All recovered material has been used in this assessment, approximately 75% of the assemblage having been examined in detail, with the remaining material receiving more cursory attention. The manageable number of beads retrieved meant that little or nothing would have been gained from sub-sampling the group.

7.24.4 The beads have yet to be catalogued. This will be achieved during analysis using standard form types, relying largely on the typologies established in the Buckland and Mucking excavation reports, as detailed by Hirst (Hirst 1999).

Quantification

7.24.5 Total quantities by cemetery/ feature and the major relevant bead classifications are shown on **Table 34** (representing total material recovered). In instances where the material is in very poor condition (finely powdered on excavation and recovery), an estimate of quantity and type has been made (indicated thus ‘*’ in **Table 34**). An unknown number of additional beads remain in an unexcavated soil-block.

7.24.6 Of the total of 834 beads, 21 examples came from ditch fills or were unstratified finds (comprising 19 from ARC SFB99 and 2 from ARC SLT99). The remaining 813 beads were recovered from 32 grave contexts. The common bead-forms, in the expected quantities, appear to be well-represented at Saltwood.

Provenance

7.24.7 The vast majority of beads were recovered from grave-fills, the majority (40%) deriving from the central cemetery. The beads were subject to detailed planning on site, with position within the grave and probable location on the body noted.

Table 34: Beads by site

| Event code | Feature | Monochrome glass | Polychrome glass | Amber | Other | Totals |
|---------------|--------------|------------------|------------------|------------|----------|------------|
| ARC SLT98C | Grave C9 | 9 | 1 | 0 | 2 | 12 |
| ARC SLT98C | Grave C11 | 20 | 0 | 0 | 0 | 20 |
| ARC SLT98C | Grave C16 | 113 | 3 | 2 | 2 | 120 |
| ARC SLT98C | Grave C25 | 10 | 8 | 1 | 1* | 20 |
| ARC SLT98C | Grave C38 | 132 | 1 | 0 | 0 | 133 |
| ARC SLT98C | Grave C41 | 0 | 0 | 9 | 0 | 9 |
| ARC SLT98C | Grave C55 | 1 | 0 | 0 | 0 | 1 |
| ARC SLT98C | Grave C70 | 8 | 1 | 0 | 0 | 9 |
| ARC SLT99 | Grave C112 | 0 | 0 | 1 | 0 | 1 |
| ARC SLT99 | Grave C113 | 0 | 0 | 60 | 0 | 60 |
| ARC SLT99 | Grave C114 | 0 | 0 | 2 | 0 | 2 |
| ARC SLT99 | Grave C117 | 10 | 3 | 25 | 0 | 38 |
| ARC SLT99 | Grave C129 | 6 | 0 | 1 | 0 | 7 |
| ARC SLT99 | Grave C134 | 3 | 0 | 0 | 0 | 3 |
| ARC SLT99 | Grave C136 | 0 | 1 | 0 | 0 | 1 |
| ARC SLT99 | Grave C141 | 1 | 0 | 0 | 0 | 1 |
| ARC SLT99 | Grave C146 | 80 | 0 | 0 | 0 | 80 |
| ARC SLT99 | Grave C151 | 0 | 1 | 0 | 0 | 1 |
| ARC SLT99 | Grave C155 | 11 | 0 | 0 | 0 | 11 |
| ARC SLT99 | Grave C156 | 3 | 0 | 0 | 2 | 5 |
| ARC SLT99 | Grave C170 | 0 | 0 | 9 | 0 | 9 |
| ARC SLT99 | Ditch 2278 | 0 | 0 | 1 | 0 | 1 |
| ARC SFB99 | Ditch W3 | 3 | 0 | 1 | 0 | 4 |
| ARC SFB99 | Ditch W8 | 1 | 0 | 0 | 0 | 1 |
| ARC SFB99 | Grave W17 | 2 | 0 | 0 | 0 | 2 |
| ARC SFB99 | Grave W18 | 0 | 1 | 0 | 0 | 1 |
| ARC SFB99 | Grave W23 | 0 | 1 | 0 | 0 | 1 |
| ARC SFB99 | Grave W38 | 1 | 0 | 1 | 0 | 2 |
| ARC SFB99 | Grave W40 | 5 | 0 | 25 | 0 | 30 |
| ARC SFB99 | Ditch W44 | 0 | 0 | 1 | 0 | 1 |
| ARC SFB99 | Grave W57 | 8 | 1 | 0 | 0 | 9 |
| ARC SFB99 | Grave W60 | 38 | 1 | 164 | 2* | 205 |
| ARC SFB99 | Grave W84 | 11 | 0 | 0 | 0 | 11 |
| ARC SFB99 | Grave W111 | 2 | 0 | 1 | 0 | 3 |
| ARC SFB99 | Grave W125 | 2 | 0 | 0 | 0 | 2 |
| ARC SFB99 | Grave W126 | 4 | 0 | 0 | 0 | 4 |
| ARC SFB99 | Unstratified | 0 | 0 | 13 | 0 | 13 |
| ? | Unstratified | 0 | 1 | 0 | 0 | 1 |
| Totals | | 484 | 24 | 317 | 9 | 834 |

* denotes estimate of quantity, item(s) too degraded for precise identification/ quantification

Conservation

- 7.24.8 The general condition of the material is good, allowing for easy identification of colour and bead-type. The amber items, as expected, required immediate conservation care and those intact upon excavation have survived their removal from their burial environment well.
- 7.24.9 The glass and amethyst beads appear to be in fairly stable condition, having survived the sandy environment very well. These items should require little by way of further conservation. The stabilisation of the amber beads is almost complete at the time of writing. As a whole, the assemblage needed little attention other than basic mechanical cleaning.
- 7.24.10 Further conservation of the monochrome glass material will be minimal, as these beads appear clean and stable. The polychrome glass items are similarly in good condition, though one bead in particular (a millefiori type recovered from grave C151) which is heavily chipped and worn, may need further analysis in order to establish both its colour and method of manufacture. The amber objects are currently being stabilised.

- 7.24.11 The amethyst items require little further work. Although the amethyst intaglio bead or setting (grave C156) may justify further study, this is not a conservation issue.
- 7.24.12 The conserved state of the material is unlikely to be compromised by further analysis. It is recommended that all bead material be retained, as even the drastically fragmented items can be identified in terms of material and colour and a reasonable estimate of numbers and size can be made.

Comparative material

- 7.24.13 Locally, the main cemetery sites that have produced valuable comparative material are Buckland (Dover; Evison 1987), Mill Hill (Deal; Parfitt & Brugmann 1997) and Lyminge (Warhurst 1955). At Buckland, 45 graves (from a total of 170) produced a total of 1,442 beads of which 1,116 were glass, 275 amber, and 51 of other material. At Mill Hill, 25 graves (from a total of 76) produced a total of 1,724 beads, of which 1,019 were glass, 698 amber, and 7 of other material. At Lyminge, 7 graves (from a total of 44) produced 174 beads in total. Although no detailed breakdown of beads is available for the Lyminge site, it is noteworthy that one grave produced 105 beads - more than half the site total. Whilst producing less material than the other cemeteries, the Lyminge site is significant due to its proximity to Saltwood, lying some 4km to the north.

Potential for further work

- 7.24.14 In the past, beads have often been overlooked and only sketchily referred to in reports, deferring to more obvious displays of wealth and craftsmanship such as ornamented buckles and swords. Having been excavated to current professional standards, the Saltwood beads (which provide some of the best-preserved artefacts recovered) offer the opportunity to add to the existing body of knowledge, both regionally and nationally.
- 7.24.15 The Anglo-Saxon beads from Saltwood have the potential to address a number of the Field Event Aims:
- *to establish a chronology for the Anglo-Saxon cemetery;*
 - *To establish the range variation in burial rites, and to view possible change in rite over time;*
- 7.24.16 The bead assemblage will assist in the establishment of a chronology of each cemetery as indicated by the study of period-specific bead-forms, in conjunction with other artefact chronologies and typologies. The material may also assist in shedding light on the similarities and differences in burial practice over a given period within each cemetery by reinforcing the evidence provided by other recovered material.
- *to indicate the general development of the cemetery.*
- 7.24.17 The use of the bead data is important to assist in the understanding of how the Saltwood cemeteries relate to other Anglo-Saxon burial sites in East Kent. This will aid discussion of the general development of the cemetery as a whole and its context within the historical funerary landscape. Despite the overall differences between the grave-goods recovered at Saltwood and Lyminge, the close proximity of these two

burial sites suggests that further comparative study would be both positive and productive.

7.24.18 The study of the Anglo-Saxon beads from Saltwood will also assist in the following further research objective:

- *To examine the nature of female costume over time, in terms of regional styles and the emulation of continental fashion.*

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7.25 Assessment of Anglo-Saxon Gold Strip

Penelope Walton Rogers

Introduction

7.25.1 Lengths of gold strip were recovered from grave C112 (western cemetery). This is the only gold thread/ strip to be recovered from any of the Saltwood Early Anglo-Saxon cemeteries. The presence of gold of any sort is a symbol of wealth/ status and if this is from a head-band (to be established) it will almost certainly indicate a woman's grave.

7.25.2 The gold will assist with the following Fieldwork Event Aim:

- *to establish the range of variation in burial rites, and to view possible change in rite over time.*

Methodology

7.25.3 Several lengths of gold strip were provided for assessment. Further pieces are still held in a soil block.

Quantification

7.25.4 This is the only item of its type from Saltwood. Further fragments of it are still in the soil-block around the skull.

7.25.5 Gold strip of this sort is generally found as the brocading thread in tablet-woven bands, where it forms a tight zig-zag with frequent kinks where it has been held down by the binding threads (Crowfoot and Hawkes 1968). In the Saltwood example, is very nearly straight, although it retains enough bends and kinks to show it was once used in this way.

7.25.6 Gold-brocaded bands of this period are mostly found in women's graves around the head, where they represent a 'fillet' or headband. These headbands are peculiarly Kentish and have clear Roman antecedents. Gold-worked textiles had been introduced into western Europe from the eastern mediterranean during the Roman imperial period, and Roman and Byzantine sumptuary laws make it clear that gold-brocaded garments were fashionable among the wealthier classes inside the empire at least from the 4th century onwards (Crowfoot and Hawkes 1967, 55).

7.25.7 Only rarely are gold-brocaded bands found in men's graves, where they run diagonally across the body, as ornament on a baldrick, or the front opening of a jacket.

Provenance

7.25.8 The gold comes from around the head of the body in grave C112. It is in good condition, which suggests that it is relatively pure. It has the appearance of having been unravell'd and straightened out, although whether this was pre- or post-deposition is uncertain.

Conservation

- 7.25.9 The gold strip on the skull is at present being X-rayed, in order to establish its path across the skull. Further analysis will involve examination by quantitative XRF, in order to determine the purity of the gold. During the course of the 6th and 7th centuries the purity of gold declined over time, as it was recycled from coinage (mostly Merovingian but also Anglo-Saxon) that included increasing amounts of other alloys. The purity of gold in an object can therefore be used as a broad guide to its date. The weight of gold is also important, as it can be used as a rough measure of the amount of coin used (a Byzantine tremissis of full weight, for example, weighs 1.5g).
- 7.25.10 The gold will need little treatment, being very stable, but if further kinks and bends are found, they should be retained, so that the pattern of the weave can be established.

Comparative material

- 7.25.11 Most of the Early Anglo-Saxon comparative material has been summarised in Crowfoot and Hawkes 1968, but there are further examples from Buckland II (Walton Rogers in prep.). The pieces of gold strip supplied for assessment (at 800-1,200 microns width) are wider than any of those from Buckland II, mainly 300-400 microns and rather irregular (although one of the Buckland examples, from grave 354 was also irregular and up to 700 microns in places). It is important to investigate the quality of the gold for comparison with the Buckland II gold, to establish whether the coarser strips are less pure.
- 7.25.12 A survey of Anglo-Saxon gold thread, including Middle and Late material, appears in Walton 1989. This includes XRF results.

Potential for further work

- 7.25.13 This is an important and rare item and should be examined in detail. Study of the gold will assist with the following Fieldwork Event Aim:
- *To establish the range of variation in burial rites, and to view possible change in rite over time.*
- 7.25.14 The role of the gold thread in the burial needs to be established: is it a headband and why are some of the pieces unravelled? If a headband, the significance of this in terms of costume needs to be investigated. Why would this particular woman be wearing a Roman-style gold headband?
- 7.25.15 The corpus of graves containing such items from England currently stands at roughly 25 examples and of those 21 were 19th century discoveries, all of which were not recorded in any detail. In essence, therefore, only the braids from Saltwood and Dover Buckland II have been recorded in modern circumstances, as well as one example from Holywell Row (excavated in the 1930's). Saltwood and Dover represent the only examples to have been recorded in detail, and Saltwood is the only case where the braid was block-lifted, allowing it to be recorded in the grave in its precise position.
- 7.25.16 Detailed examination of the braid, in association with the excavation record, will allow the head-dress itself to be reconstructed. Aside from Dover, it is the only

occasion that this has been possible. Moreover, the preliminary examination for assessment (made before the remainder was fully revealed in Lincoln) indicated that it contained relatively few kinks and this is in contrast to some of the 19th century discoveries, where it appears that the gold braid was more obviously woven into an existing fabric.

7.25.17 A further research aim can also be proposed:

- *To examine the nature of female costume over time, in terms of regional styles and the emulation of continental fashion.*

7.25.18 The social context is of interest. Crowfoot and Hawkes emphasised that braid came from richly-furnished graves, but that is not the case here, and the reason for this contrast must be explored. It is a question that can be answered to some extent by placing this grave within the broader context of the cemetery landscape in terms of its dating (and comparing the dating of the gold against the typological dating) and its relationship with other (presumed) female graves. It is fortunate that the material can also be compared against the Dover Buckland II sample, to provide some insight into social context. It is recognised at the same time that the absence of human remains means that we can say nothing much about the person who wore the braid.

7.25.19 Since Crowfoot and Hawkes's research in 1967 more can now be said about why these headbands were worn. This is partly because of more recent discoveries (both in England and on the continent) some of which extend into the Middle and Late Saxon periods; and partly because of a better understanding of the Roman and Byzantine background.

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7.26 Assessment of Anglo-Saxon Stone Object

Ian Riddler

Introduction

7.26.1 The spherical rock crystal came from western cemetery grave C117. It was hand-excavated and packaged for transportation at Canterbury, before being removed to the City of Lincoln Conservation laboratories.

7.26.2 The object is relevant to the following Fieldwork Event Aims:

- *to establish a chronology for the Anglo-Saxon cemeteries;*
- *To establish the range of variation in burial rites, and to view possible change in rite over time;*

Methodology

7.26.3 The extremely fragile nature of the object means that it had not been handled at the time of assessment and it had remained within its packaging. It was examined with the assistance of a conservator and the photographic record for the object has also been consulted.

Quantification

7.26.4 Only one spherical rock crystal was retrieved from the Saltwood excavations. It presumably lay between the legs of the deceased in grave C117, although no human bone was recovered from this grave. It was originally in a leather pouch, traces of which could be seen during excavation as a black soil in the vicinity of the object. The sphere is confined within a fragile silver frame, which includes a mount for suspension.

Provenance

7.26.5 The spherical rock crystal was found in a burial that probably dates to *c.* AD 525-575 and can be assigned to Kentish Phase III.

7.26.6 Rock crystal is not native to this country. The nearest mainland source would be Scotland, which in this context is very unlikely, and the established trading links with Europe suggest that it almost certainly came from there. Precise provenance is very difficult to establish because the principal source areas are all quite close to each other and are all part, in effect, of the Alps. It may, therefore, have been shaped and assembled in Germany, Switzerland or northern Italy. It is, however, difficult to provenance and there are other possible (if less likely) locations in Europe.

7.26.7 To confidently determine its provenance the crystal would need to be examined by a specialist at the Natural History Museum, who can initially determine whether provenancing is even feasible (depending on the type of rock crystal utilised). If so, a sliver of the crystal can be subjected to X-ray fluorescence (XRF) analysis.

7.26.8 Furthermore, the 'cage' for the crystal is made of silver and that could be examined by XRF to determine its purity, again with the removal of a small and

unobtrusive sample (usually from an inconspicuous part of the object). For silver the same principals of purity apply as with the gold coinage (see **Appendix #00**) and there is a reasonable sample (from coinage and other sources) against which it could be compared, including the two crystal ball settings from Dover Buckland II.

Conservation

- 7.26.9 The sphere is complete and survives in excellent condition. Its silver frame is extremely fragile and has been cleaned and packaged for long-term storage in such a manner as to reduce the likelihood of handling in the future, given its fragility. Both components of the object are stable and are kept in appropriate environmental conditions.
- 7.26.10 Further analysis is non-destructive and would not conflict with any issues of storage or display. The object should be retained, given its rarity value.

Comparative Material

- 7.26.11 Just under forty spherical rock crystals are known from Early Anglo-Saxon England. The majority of these have come from East Kent cemeteries (Meaney 1981, 82-8; Huggett 1988, 71-2). Single examples are known from a wide range of cemeteries, with larger collections from Bifrons and Dover Buckland. Examples from cemeteries near to Saltwood include those from Lyminge and Folkestone, Dover Hill. They were often (but not invariably) accompanied by sieve spoons; although this was not the case at Saltwood. continental examples come from graves of the middle of the 6th century to the early 7th century and a broadly similar date range may also apply to East Kent (Hinz 1966; Meaney 1981, 84). From the later 6th century onwards they are also found outside Kent in small numbers.
- 7.26.12 Their precise function remains unclear and numerous suggestions have been offered, ranging from personal ornaments to magical, ritual devices, amulets, medical implements and coolants for wine (crystal balls for divination were a Renaissance introduction to the culture of western Europe).

Potential for further work

- 7.26.13 The Saltwood spherical rock crystal is a useful addition to an Early Anglo-Saxon object series which, although discussed on a number of occasions, has not been considered in any detail since the important work of Meaney (1981). Meaney's summary remains invaluable but does not include recent discoveries from Mill Hill Deal and Dover Buckland, or subsequent continental literature. The recent discoveries (including Saltwood) come from well-excavated graves whose objects have been examined by a range of specialists, allowing questions of dating, gender associations and social issues to be better considered.
- 7.26.14 The spherical rock crystal has the potential to assist in the following Fieldwork Event Aims:
- *To establish a chronology for the Anglo-Saxon cemeteries;*
 - *To establish the range of variation in burial rites, and to view possible change in rite over time.*

- 7.26.15 The rock crystal itself suggests provisionally that the objects within grave C117 were deposited between c. AD 525 and 575 (within Kentish Phase III), where most of the well-recorded graves of this type can be placed (Parfitt and Brugmann 1997, tables 9 and 10). Further research needs to be undertaken on East Kent graves with crystal balls in relation to Kentish phasing, in order to review their dating in the light of recent discoveries which tend to suggest that the continental dating is broadly followed in East Kent as well. The range of grave goods in grave C117 is sufficiently wide and well-studied to provide the potential to achieve this objective.
- 7.26.16 The spherical rock crystal comes from a rich female grave that can be placed within a sequence of rich female interments within this landscape extending across almost two centuries. The rock crystal forms a part of the range of variety in grave goods within this rich burial sequence and is characteristic of a particular phase of burial. Both the presence and absence of spherical rock crystals in particular graves can be used (alongside other grave goods) in determining the changes of burial rite in female graves.
- 7.26.17 The spherical rock crystal assists in the following additional research questions:
- *To determine the range of imported objects within the Early Anglo-Saxon cemeteries; to establish their original provenance and to determine the means of trade or exchange by which they came to East Kent;*
- 7.26.18 The trade routes can be examined by consultation with recent European literature and with colleagues there, who can provide updated information on the distribution of crystal balls. Detailed measurements of the object (i.e. the crystal itself) and its translucence (some examples are very ‘misty’) will allow for comparisons with the existing corpus. Many of the existing examples from Kent remain in Maidstone Museum and it would be useful to make direct comparisons with these, always bearing in mind the fragility of the Saltwood example (it may have to travel with a conservator). The existing corpus of literature will allow the object to be placed in a context in terms of how it was worn and its dating can be established from the accompanying grave goods. The mechanisms of the distribution of such items in Europe have been considered (Hinz 1966; Martin 1984) and possible trade routes can be identified. As noted above, the function of these objects is unclear, although their association with rich female interments is unequivocal.
- *To examine the nature of female costume over time, in terms of regional styles and the emulation of continental fashion.*
- 7.26.19 The spherical rock crystal is not a specific item of women’s costume and is more of an adjunct, suspended either from the waist or from the arm (Owen-Crocker 1986, 58). In England they are only associated with women; on the continent, some occur with men. Further comparative research, specifically on the associations visible in East Kent costume, particularly from recent discoveries, has the potential to place rock crystals within a better framework with respect to the manner in which they were worn or (as here) were deposited in the grave.
- 7.26.20 In order to achieve the Fieldwork Event Aims and additional Research Objectives, a comparative study could be undertaken, centred in particular on Saltwood grave C117 and other recent discoveries, both in England and on the continent.

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7.27 Assessment of Anglo-Saxon Buckles and Belt Fittings

Sonja Marzinzik

Introduction

- 7.27.1 During excavations at Saltwood a total of 48 buckles were recovered, six from the eastern cemetery, 19 from the western cemetery and 23 from the central cemetery. Additionally, there are four belt fittings from the central cemetery and two fittings from the western cemetery.
- 7.27.2 The buckles and belt fittings have the potential to address the following Fieldwork Event Aims:
- *to establish a chronology for the Anglo-Saxon cemetery;*
 - *To establish the range variation in burial rites, and to view possible change in rite over time;*
 - *To indicate the general development of the cemetery.*

Methodology

- 7.27.3 For assessment all 48 buckles have been examined, with radiographs available for 28 of these. In three cases, it was only possible to examine the radiograph as the buckle was not available. Customised *pro forma* recording sheets (Marzinzik 2000) were used to document the 17 most important buckles; the remainder noted in the form of a summary table.
- 7.27.4 Key features of each buckle were noted (i.e. shape, presence of a plate or of additional fittings, basic measurements, form and type of rivets and any distinctive features). These allowed the allocation to Types and Typegroups developed for doctoral research (*ibid.*). This allocation allows for a three-fold system that provides a broad grouping first of all (i.e. Typegroups I, II, III etc) and then a sub-grouping or 'Type' within that first group (i.e. II.23). Finally, sub-types within each Type can be identified, i.e. 23a etc. The occurrence of each type can then be described within her typological system, which allows for patterns of distribution, dating etc to be understood. These allocations as well as preliminary dates are presented below (**Table 35**).

Quantification

- 7.27.5 The complete data are presented in **Table 35**. In summary, 18 buckles were of copper alloy, 29 were iron, whilst one item is probably not a buckle and will not be considered further here. Of the 47 copper alloy and iron examples, 16 were with buckle plates and 31 without. Gilding was confirmed in one case (ARC SLT99, Find No. 2002), the buckle tongue also inlaid with two garnets set on gold foil. The accompanying buckle loop (ARC SLT99, Find No. 2003) has a possible whitemetal finish.
- 7.27.6 Other features of note from the assemblage include wire-inlay (which could be silver in at least two and perhaps four cases), a pair of drop-shaped rivets (ARC SFB99, Find No. 1762) that retain traces of gilding, and three buckle plates are

likely to have rivets with filigree collars. Such collars are occasionally made from gold wire, such as examples recovered from Ford, Wiltshire (Musty 1969).

Provenance

- 7.27.7 The assemblage of buckles recovered compares favourably with contemporaneous cemeteries excavated in Kent (see below). It is a mix of locally-produced buckle types and pieces which were either brought over from the continent, mainly Francia, or which were at least produced by craftsmen who came from there.
- 7.27.8 The date range of these buckles covers almost the whole early Anglo-Saxon period. Three of the six buckles from the eastern cemetery are typical for the earlier 6th century, whilst those from the central cemetery appear to have started slightly later (based on the diagnostic buckles present at each). There is, however, one buckle from the central cemetery that could date to the late 5th or early 6th century (Find No. 801), while the emphasis is on pieces which date to the 6th century in general and especially to the "Final Phase" (Types II.22, II.23, II.24). The western cemetery produced a number of 6th century pieces, the earliest perhaps originating in *c.* AD 530 (Types I.2, I.3), although late forms are, however, also present (Types II.24).

Condition

- 7.27.9 As far as can be seen, the buckles are all in reasonable condition. The copper alloy pieces are well preserved and degree of corrosion on the iron pieces is unremarkable. The spectrum of buckle types and degree of preservation are as expected, making any major bias of the analysis unlikely.

Conservation

- 7.27.10 The buckles are currently stored in appropriate packaging and environmental conditions for metallic objects. Future research will not affect their long-term storage, and will merely involve the study of their dimensions and non-destructive confirmation of their material. They should be retained for future study and should not be discarded.

Comparative material

- 7.27.11 For the simple iron loops (Typegroups I.10, I.11) parallels from numerous sites in England can be found. The simple copper alloy loops of Type I.9 are more restricted in their distribution, occurring mainly in the south.
- 7.27.12 continental (or continental-related) pieces of Type I.2 with shield-tongue are also found in other cemeteries of the region, e.g., Mill Hill (Parfitt and Brugmann 1997), Dover Buckland (Evison 1987). Type I.4 is much rarer and mainly occurs in Kent, with occasional pieces from Sussex (Welch 1983) or the Midlands (Timby 1996).
- 7.27.13 There are, however, a few noteworthy unexpected buckles. For example, Find No. 801 (ARC SLT98C), although typical for East Anglia, is unknown until now from Kent. Likewise, the loop form of Find No. 1165 (ARC SLT98) strongly resembles Italo-Byzantine buckle types (Ricci 1997), and the stamped decoration in shape of a cross supports an ultimately Mediterranean origin; there are no comparable pieces from Anglo-Saxon England.

- 7.27.14 Although typical for Frankish cemeteries, late 6th and 7th century buckles with wire-inlay on the plate are extremely rare in Anglo-Saxon England; the only published pieces are from Updown/ Eastry (Hawkes 1981).

Potential for further work

- 7.27.15 The buckles and belt fittings have the potential to address the following Fieldwork Event Aims:

- *to establish a chronology for the Anglo-Saxon cemetery;*

- 7.27.16 Some of the buckle types are known from other Kentish cemeteries and can therefore contribute to our understanding of regional chronology and Kentish costume. The continental or continental-related pieces, however, are particularly important for establishing a chronology, as secure chronological schemes exist for such continental objects. These are based on contemporary coins and dendro-chronological analyses, neither of which are readily available for Anglo-Saxon England.

- *to indicate the general development of the cemetery.*

- 7.27.17 Preliminary assessment has indicated the presence of a buckle types dating from the late 5th to the early 7th century. In conjunction with other closely datable artefact types, such as the jewellery, they will help to draw up a chronological grid and trace the development of the cemeteries.

- 7.27.18 In addition, the buckles assist in the following additional research aims:

- *to determine the range and provenance of imported objects within the Early Anglo-Saxon cemeteries, and to determine the means of trade or exchange by which they came to East Kent;*
- *To examine the nature of female costume over time, in terms of regional styles and the emulation of continental fashion.*

- 7.27.19 The relatively high proportion of continental and continental-related buckles is important in view of trade and exchange and the mobility of people. The buckle of potentially Mediterranean origin is particularly interesting in this respect. Full analysis would therefore aim to provide an overview of costume on a local and regional level, and a chronological evaluation considering Anglo-Saxon and continental comparative material.

- 7.27.20 Full analysis would consist of the recording of every buckle, rather than a sample, for type and dimensions. Selected buckles of copper alloy show some resemblances by type and this could be tested in terms of the metal content also by quantitative XRF. Some investigative cleaning of the iron buckles may also be required, where it is thought likely that traces of silver inlay can be observed on the radiograph, and where these traces are not clear from the radiograph itself. In this case, the sand and stones would be removed from the object, as these can blur the radiograph image in some circumstances, and new radiographs would then be taken.

- 7.27.21 There is no substantive corpus of metal technology against which the iron buckles could be compared and most are too small and fragile to allow any metal to be cut from them. In addition, it is not entirely clear as to where on the object the sample

would be removed. Therefore, no destructive analysis of the iron buckles is recommended.

- 7.27.22 There is a relatively substantial corpus of buckles from England and the continent and continental examples can be distinguished very easily, copies of continental buckles can also be identified.

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Table 35: Classification of Buckles

| Event code | Grave | Context | Find No. | Material | Preliminary Date | Type/Typegroup | X-Ray no. | Location | Comments |
|------------|-------|---------|----------|--------------|--|-------------------------|-----------|------------------|-----------------------------|
| ARC SFB99 | W40 | W1801 | W303 | Copper Alloy | 6 th century | I.3 | | | |
| ARC SFB99 | W41 | W1956 | W304 | Copper Alloy | Earlier 6 th century | I.4 | | | |
| ARC SFB99 | W60 | W1457 | W44 | Copper Alloy | Earlier 6 th century | I.4 | | | |
| ARC SFB99 | W77 | W1100 | W390 | Iron | | I.10/I.11 | | | |
| ARC SFB99 | W83 | W1295 | W30 | Copper Alloy | | I.10 | | | |
| ARC SFB99 | W185 | W1320 | W388 | Iron | 6 th century | I.9/I.11 | | | |
| ARC SLT99 | C112 | C3740 | C1967 | Copper Alloy | Early/ Mid 6 th century | I.2 | | Shield-on-Tongue | |
| ARC SLT99 | C117 | C3758 | C2016 | Copper Alloy | Early/ Mid 6 th century | I.2 | | Shield-on-Tongue | |
| ARC SLT99 | C119 | C3756 | C1992 | Iron | | II.7 (await radiograph) | | | |
| ARC SLT99 | C122 | C3780 | C1996 | Copper Alloy | | Buckle? | | | |
| ARC SLT99 | C122 | C3780 | C1998 | Copper Alloy | Late 6 th / 7 th century | II.24b-i | | | Attached to 1995 |
| ARC SLT99 | C122 | C3780 | C1999 | Copper Alloy | | I.11 | | | |
| ARC SLT99 | C123 | C3822 | C2021 | Iron | | ? (await radiograph) | | | |
| ARC SLT99 | C124 | C3825 | C2002 | Copper Alloy | | Tongue | | | Part of 2003 |
| ARC SLT99 | C124 | C3825 | C2003 | Copper Alloy | Early 6 th century | I.3 | | | Garnet-inlaid, Part of 2002 |
| ARC SLT99 | C127 | | C2083 | Iron | | I.z | | | frag. |
| ARC SLT99 | C131 | C3952 | C2072 | Copper Alloy | Late 6 th / 7 th century | II.24a | | | |
| ARC SLT99 | C136 | C4583 | C2132 | Iron | | ? | 257 | | |
| ARC SLT99 | C144 | C4654 | C2169 | Copper Alloy | 6 th century | I.5a | | | |
| ARC SLT99 | C151 | C4678 | C2178 | Iron | | ? (await radiograph) | | | |
| ARC SLT99 | C154 | C4687 | C2221.1 | Iron | | I.11 | | | |
| ARC SLT99 | C155 | C4691 | C2170 | Copper Alloy | 6 th century | I.5a | | | |
| ARC SLT99 | C157 | C4705 | C2171 | Iron | | Prob. II.24a | | | |
| ARC SLT99 | C171 | | C2389 | Copper Alloy | Late 6 th / 7 th century | II.24a + 2 fittings | 214 | | |
| ARC SLT99 | C171 | | C2391 | Copper Alloy | | | 214 | | |
| ARC SLT99 | C174 | G6229 | C2401 | Iron | | ? (await radiograph) | | | |
| ARC SLT98C | C3 | C1039 | C800 | Iron | Late 6 th / 7 th century | II.21/ II.24 | 7 | | |
| ARC SLT98C | C4 | C1044 | C801 | Iron | Late 5 th / 6 th century | I.8 | 7 | | |
| ARC SLT98C | C5 | C1117 | C876 | Iron | | II.z/ II.19a | 31 | | |
| ARC SLT98C | C5 | C1117 | C883 | Iron | | I.11 | 45 | | |
| ARC SLT98C | C8 | C1028 | C781 | Iron | Late 6 th / 7 th century | II.24 | 7 | | |
| ARC SLT98C | C12 | C1074 | C900 | Iron | 7 th century | II.23a | 16 | | Good s71 type |
| ARC SLT98C | C15 | C1145 | C1096 | Iron | 7 th century (?) | II.18a | 15.113 | At waist | |
| ARC SLT98C | C16 | C1166 | C1114 | Copper Alloy | 6 th century (?) | ?1.7c | 60.76.102 | | |
| ARC SLT98C | C18 | C1158 | C1231 | Iron | Late 6 th / 7 th century | II.22/ II.23 | 67 | | |
| ARC SLT98C | C18 | C1158 | C1236 | Iron | Late 6 th / 7 th century | II.24a | 67 | | |
| ARC SLT98C | C19 | C1348 | C1159 | Iron | Late 6 th / 7 th century | II.24b/ II.22a | 57 | Below sword | |
| ARC SLT98C | C19 | C1348 | C1158 | Iron | | I.10 | 62.149 | | From shield boss |
| ARC SLT98C | C26 | C1355 | C1186 | Iron | Late 6 th / 7 th century | II.24a | 67 | | |
| ARC SLT98C | C29 | C1253 | C1105 | Copper Alloy | Late 6 th / 7 th century | II.24b-ii | 33 | Waist area | |
| ARC SLT98C | C30 | C1275 | C1131 | Iron | | I.10 | 62 | Just above waist | |

| | | | | | | | | | |
|------------|------|-------|---------|--------------|-------------------------|----------------|---------|-------------------|--------------------------|
| ARC SLT98C | C31 | C1196 | C1135 | Iron | 6 th century | I.9 | 53 | Waist area | |
| ARC SLT98C | C32 | C1346 | C1152 | Iron | | I.11 | 54 | At waist | |
| ARC SLT98C | C33 | C1331 | C1146 | Iron | | I.11 | 51 | Waist area | |
| ARC SLT98C | C34 | C1324 | C1191 | Iron | | I.10 | | Waist area | |
| ARC SLT98C | C41 | C1356 | C1165 | Iron | 7 th century | II.15a variant | 50 | Chest/ Waist area | Inlaid with cross design |
| ARC SLT98C | C44 | C1378 | C1230.2 | Iron | | I.10 | 67 | | |
| ARC SLT98C | C184 | C6649 | C2503 | Copper Alloy | 6 th century | I.9 | 292.293 | | |

7.28 Assessment of Anglo-Saxon Glass

Win Stephens

Introduction

7.28.1 Four glass vessels and one fragment of glass were recovered from four separate graves within the Saltwood Anglo-Saxon cemeteries. The cone beaker from eastern cemetery grave W104 has been considered in a previous assessment and this report deals with the remaining vessels. These consist of a bell beaker from western cemetery grave C118, as well as a palm cup and another bell beaker from grave C151. In addition, a sherd of Roman vessel glass was recovered from central cemetery grave C53.

7.28.2 The study of the glass vessels is relevant to the following Fieldwork Event Aims:

- *to establish a chronology for the Anglo-Saxon cemeteries;*
- *To establish the range variation in burial rites, and to view possible change in rite over time;*
- *To indicate the general development of each cemetery and their relationship to each other.*

Methodology

7.28.3 All of the glass vessels have been inspected during the conservation process. Radiographs have also been consulted, alongside photographs and slides of the objects in their respective graves. At the time of writing, the glass vessels from the western cemetery are still being cleaned and packaged by conservation assistants. They will be inspected again when this process has been concluded.

Quantification

7.28.4 The Anglo-Saxon glass vessels consist of bell beakers from grave C118 and grave C151, which was accompanied in that grave by a palm cup. The bell beakers are both in blue-green naturally-coloured glass and are complete. The example from grave C118 belongs to Harden's Group Viii, of early or middle 6th century date (Harden 1956). The bell beaker from grave C151 belongs to Group Vb, of the same date. The palm cup from the same grave appears to have been produced in a white, cloudy glass. The form is not listed in Harden's scheme.

7.28.5 The fragment of vessel glass from grave C53 is merely a small body sherd and it cannot be securely attributed to any particular vessel type, although it is undoubtedly Roman. It is naturally-coloured.

Provenance

7.28.6 All of the glass vessels, including the example from the eastern cemetery are broadly contemporary and can be dated to the first half of the 6th century. Their original provenance is unknown, although it is generally considered that they were not made in England and had been imported from the continent. Some forms of glass vessel may have been made in Kent, in emulation of those produced on the

continent, but these do not include bell beakers or palm cups (Evison 1987, 94 and 98).

- 7.28.7 The provenance of glass of this period is complicated by the lack of known production sites and the proposed movement of raw glass across Europe. Only one production site is known for the early Anglo-Saxon period, and only two for the Middle Saxon period. It has been argued that quantities of raw glass, which existed as large, heavy slabs, were traded from the eastern Mediterranean at this time, and that this may explain the very 'Roman'-like constituents of early Anglo-Saxon glass from some Kent sites, and from Sutton Hoo. Equally, it could be remelted Roman vessel glass.

Conservation

- 7.28.8 The conservation of these vessels is currently ongoing and is for site archive level, and not for display. The complete but cracked vessels are not, therefore, undergoing restoration at this stage. They have been stabilised and are being gently cleaned. The contents of the vessel from grave C118 have been removed by excavation within the laboratory and can be sieved if required. There is no requirement to discard any of these objects, all of which are of considerable value.
- 7.28.9 All of the glass vessels are complete, with the exception of the Roman sherd, which was almost certainly reduced to a fragment at the time that it was deposited in the grave. They have suffered from the acidic soil conditions and there is some lamination of the original surface, but they remain substantially complete, if cracked in two cases. Their original profiles can be reconstructed and in each case the vessels themselves could be returned to their original form with the aid of a conservator.

Comparative Material

- 7.28.10 A variety of glass vessels from Kent cemeteries were listed by Harden and have been placed within a typological system (Harden 1956). Subsequently, new discoveries have been made. For bell beakers of type Vaih, for example, only three examples were known, one of which has subsequently been shown to have come from Italy, and not from Kent.
- 7.28.11 New examples have come, however, from Howletts, Ozengell, Monkton, Mill Hill and Dover Buckland, bringing the overall total to ten, including the Saltwood example. Harden recorded four vessels of group Vb; three of which came from Kent. Subsequently, only one new addition can be made to this list (from Dover Buckland) and the Saltwood beaker brings the total to six. A further example from Faversham is lost and was never included in Harden's list, but it may have been very similar to the Saltwood example. A new survey of glass vessels from Anglo-Saxon England has been published recently (Evison 1999).
- 7.28.12 The palm cup is comparable to an example from St Peters, Broadstairs. The colour of the vessel is rare in Kent and will be reassessed when conservation work is complete.
- 7.28.13 The placing of two glass vessels in the same grave is not unusual, but in most cases the vessels are of the same type. It is less usual for two vessels of different varieties to be found in the same grave and the only other examples are Howletts grave 27 (a cone beaker and a bowl) and Kingston grave C6 (a pouch bottle and a squat jar).

Grave 250 at Dover Buckland provided three different vessels, including two bell beakers and a bowl.

- 7.28.14 Fragments of Roman glass vessels have been found in a number of early Anglo-Saxon graves, including three of those from Dover Buckland (Evison 1987, 98-9). They have also been found at Chatham Lines, Kingston, Barfreton, Sibertswold, Stowting and Sarre in Kent, as well as in other counties. Glass was a rare commodity at this time and Meaney has suggested that it may have been kept for its colour and intrinsic interest, as fire-makers, or for cauterising wounds (Meaney 1981, 227-8).

Potential for further work

- 7.28.15 The study of the glass vessels is relevant to the following Fieldwork Event Aims:

- *to establish a chronology for the Anglo-Saxon cemeteries;*

- 7.28.16 The fabrication of the glass vessels can be dated reasonably well, within a time frame of 50 years or less. In grave C118, the only other objects recovered were iron nails and the glass is therefore considered to date the burial. In grave C151 the two glass vessels were accompanied by a bead, a buckle, keys and a knife. No dating has yet been established for the buckle, and the knife and keys cannot be dated closely, so that here again the glass vessels are very important in establishing the date of the grave.

- *to establish the range of variation in burial rites, and to view possible change in rite over time;*

- 7.28.17 A broader view of the deposition of glass vessels in Kent graves assists in establishing the nature of the burial rite. This is particularly evident with the examination of burials excavated under modern conditions, as at Dover Buckland (where glass vessels are abundant) and Mill Hill Deal. The lack of corroboratory evidence from the human bone at Saltwood is to be regretted and assignments of gender have usually to be made on the basis of the grave goods. Those clearly indicate the burial of a woman in grave C151, and the glass alone provides the evidence for grave C118. Most of the graves with glass vessels from the recent excavations at Dover Buckland were those of females, and those with fragments of Roman glass are usually female graves as well.

- 7.28.18 Variation in rite extends to the number of glass vessels in each grave, and to the types of vessels. Palm cups and bell beakers, for example, may have been used for different functions. Change of rite over time is not possible with the sample of glass vessels, because all of them come from a fairly narrow date range of the early and middle 6th century.

- *to indicate the general development of each cemetery and their relationship to each other;*

- 7.28.19 The glass vessels are useful for dating purposes within the western cemetery and they corroborate the evidence from other objects, which suggests that this cemetery was in use by the middle of the 6th century, if not earlier.

7.28.20 The glass vessels are also relevant to a further research aims:

- *trading systems in Early Anglo-Saxon England;*

7.28.21 Glass vessels have been considered by Huggett's review of imported grave goods in Early Anglo-Saxon England (Huggett 1988, 72-4 and fig 7). He noted Harden's suggestion that the majority of glass imported into England came in to Kent, and was re-distributed from there (Harden 1956, 148; Huggett 1988, 72). Bell-beakers and early forms of palm cups are considered to have been imported into England, rather than being produced in Kent, and they are well-represented at Dover Buckland as well as Saltwood, where most of the glass also consists of imported forms. The glass vessels should be considered alongside other imported objects in relation to trade routes and mechanisms for the period. We do not know precisely where the glass was being made, and whether it was in the Rhineland or northern or eastern France. It is possible, however, to establish the range and dating of material and to examine the trade routes across different periods of use of the site.

- *To critically examine Anglo-Saxon glass technology*

7.28.22 The Saltwood glass could be analysed by energy dispersive Xray analysis with a scanning electron microscope. This is a destructive technique, for which a small sample of each vessel would be required (usually smaller than 1mm³). It would enable the constituents of the vessels to be compared with the samples studied to date from Kent. No wider comparisons, beyond the Anglo-Saxon series, could really be made

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7.29 Assessment of Anglo-Saxon Knives

Ian Riddler

Introduction

- 7.29.1 Knives are one of the most common object types to have been recovered from the early Anglo-Saxon graves at Saltwood. In total, 84 have been retrieved and recorded to date, and there are also three stray finds from cemetery areas. Several more knives are likely to be identified in material currently undergoing conservation.
- 7.29.2 The sample of knives from Saltwood is one of the largest to have come from an East Kent cemetery complex. It can be compared with totals of 130 from Finglesham, 131 from Dover Buckland I, 109 from Dover Buckland II, 57 from Polhill and just over 50 from Mill Hill, Deal. Both Finglesham and Dover Buckland are larger cemeteries, from which therefore a greater number of graves have been excavated.
- 7.29.3 The study of the knives may assist in the following Fieldwork Event Aims:
- *To establish the range variation in burial rites, and to view possible change in rite over time;*
 - *To indicate the general development of each cemetery and their relationship to each other;*

Methodology

- 7.29.4 The knives have been catalogued in accordance with the type series devised by Härke and by Drinkall (Härke 1992, 90-1; Drinkall and Foreman 1998, 279-84). Drinkall's system is based on Evison's work for the Buckland cemetery (Evison 1987, 113-5), where the diagnostic attribute is the shape of the blade. Evison has also incorporated the Härke scheme of knife sizes, however, thereby providing an integrated typological system. Definitions of knives and seaxes follow those outlined by Härke (1992, 89-90).

Quantification

- 7.29.5 Seventy-six knives are complete or nearly complete (if lacking their original handles) and can be ascribed to type; eight are fragmentary. All of the knives have been radiographed from which measurements of blades and tangs have been taken for quantification purposes. At the time of assessment a considerable proportion of the knives were undergoing conservation. Therefore, for the purposes of this assessment, a sub-sample has been taken from the original assemblage of 84, comprising 41 examples from the central cemetery and 13 from the western cemetery.

Provenance

- 7.29.6 In almost all cases only a single knife was recovered from each grave, with the exception of grave C15, which contained two examples. Interestingly, knives were absent from the large weapon graves C5, C7 and C200 within the central cemetery, but were otherwise present in many of the graves of both sexes (where gender is known).

- 7.29.7 The original provenance of the knives cannot be ascertained. The largest knives from Saltwood are relatively small in comparison with the sequence of seaxes from the continent, and lack any inlay or blade grooves, which might indicate Merovingian provenance. Therefore, there must be a presumption that the knives were made locally, at no great distance from the cemeteries themselves. Certainly, none can be said to be obviously continental in type, except for the short seaxes.
- 7.29.8 Knives of Härke type 4 have blade lengths in excess of 180mm and these can be defined as 'short seaxes' (Härke 1992, 89-90). Two examples came from graves C17 and C34 (central cemetery). Both graves can plausibly be regarded as late weapon graves (of c. AD 650 or later) for which only large knives or seaxes are present (*ibid.* 90). No other, larger forms of seax are present (*ibid.* 89). These knives may be continental, or may have been produced in emulation of continental forms.

Conservation

- 7.29.9 Most of the knives survive sufficiently well for their original dimensions to be reconstructed. Knife handles and sheaths are present only as mineral-replaced organic remains, but these can still be analysed. Metal survival is generally poor, as would be expected in sandy soil conditions, but details of knife technology are clearly visible on radiographs.
- 7.29.10 Further analysis may have repercussions on the condition of the knives, if sections are removed from the blades. This issue is considered within the assessment of Ferrous Object Technology (see **Appendix 7.41**). All of the knives have been radiographed and packaged for long-term storage. Most of them have corroded to the extent that little metal remains. They are kept in appropriate storage conditions for iron objects.
- 7.29.11 Although in effect all of the knives are composite objects (given that they originally included handles of horn, bone or wood), no other materials survive today apart from mineral-replaced organic traces. The knives can therefore be stored as iron objects. It is not recommended that any of them should be discarded. They may form a viable subject area for future research and potential display.

Comparative material

- 7.29.12 Other than the comparative collections from sites previously mentioned, smaller collections are also known from Eccles, Sarre, Monkton and Mount Pleasant. The assemblages from Bekesbourne, Broadstairs and Finglesham are currently unpublished. Material from Eastry is in preparation, and Hawkes' work at Bifrons is to be published shortly.
- 7.29.13 All of these cemeteries included graves with knives, and there is certainly the potential to look at regional studies, which are discussed below. Although some excellent work has also been carried out on knives from Merovingian cemeteries, the tendency there has been to rely on the earlier system of classification by Böhner, which is much broader in its remit than those of Härke or Drinkall.
- 7.29.14 Knives from early Anglo-Saxon cemeteries in Kent have not been widely published or discussed. The first text to deal with Kent knives was provided by Hawkes, although a more exhaustive analysis by Evison has largely supplemented that work (Hawkes 1973, 199; Evison 1987, 113-5). Härke's work was concerned with weapon graves from Anglo-Saxon England as a whole, but dealt with Kent

cemeteries at Bekesbourne, Broadstairs, Finglesham, Holborough, Lyminge, Polhill and Sarre (Härke 1992, 242-87). Knives were considered there in the context of male weapon graves, but also in broader terms, with an emphasis on the lengths of blades, rather than their shapes.

Potential for further work

- 7.29.15 Knives can be used to provide a range of information relating to chronology, technology and social issues. The principal aspects of knives considered in this assessment are size, type, chronology and gender of the deceased. Further areas of importance, including blade length in relation to age at death, technology, knife sheaths, handles and the location of the knife in the grave, can also be considered.
- 7.29.16 As such, the study of the knives may assist in the following Fieldwork Event Aims:
- *To establish the range variation in burial rites, and to view possible change in rite over time; and*
 - *To indicate the general development of each cemetery and their relationship to each other;*
- 7.29.17 Although phasing of some of the graves may be possible on the basis of knife forms, particularly if viewed in conjunction with other evidence, the knives are not, in their own right, particularly chronologically distinctive. However, at Saltwood they come from three separate cemeteries, which are known (on the basis of other diagnostic indicators) to span the period from the early 6th century to the late 7th century. The potential exists, therefore, to establish regional and temporal distinctions in knife forms, relative distributions and the associated burial rite across a period of two centuries.
- 7.29.18 For instance, knives of type 3 came from two graves in the central cemetery and five from the western cemetery. These are thought to have been placed in the graves of males alone and date to the late 6th and 7th century (Härke 1992, 90). Furthermore, it may be possible to examine differences in deposition between knives in male and female graves over time, particularly if the scant human remains are subject to DNA analysis to provide corroboratory gender information.
- 7.29.19 The knives are also relevant to the following new research aims:
- *Regionality in object design during the early Anglo-Saxon period*
- 7.29.20 The large sample of knives can be compared with those from the nearby cemetery at Dover Buckland, as well as cemeteries at some distance, including Cuxton, Polhill and Eccles (all of which are reasonably close to each other), and Finglesham. This may enable regional patterning to be identified across the county during the early Anglo-Saxon period. Regional distinctions are evident in East Kent at other periods and may also be evident here.

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7.30 Assessment of Anglo-Saxon Keys and Girdle Hangers

Ian Riddler

Introduction

7.30.1 Keys were found in a number of graves within each of the cemeteries. This included six graves from the western cemetery, three from the eastern cemetery and 20 from central cemetery. Almost all of the keys are made of iron and are large forms suitable for chests and doors, rather than smaller boxes. There is one example of a small padlock key, however, from central cemetery grave C6.

7.30.2 The study of the keys assists in the following Fieldwork Event Aim:

- *To establish the range of variation in burial rites, and to view possible change in rite over time;*

Methodology

7.30.3 Almost all of the sets of keys were removed as block lifts from each cemetery. These have been radiographed as blocks, and excavated under laboratory conditions. The assessment has involved the examination of these radiographs in relation to the grave plans and catalogues. Several of the objects themselves have also been examined.

Quantification

7.30.4 Keys were found both as single items and (more commonly) in pairs or greater numbers, across a range of graves in each of the cemeteries (**Table 36**). The exceptions include a single, small padlock key in grave C6 and single keys with T-shaped terminals in graves C14, C20 and C21 (all from the central cemetery).

Table 36: Quantification of Keys and Girdle Hangers

| Site | Grave | Find No. | No. | Type of Key | Location in grave |
|------------|-------|---------------------|------------|----------------------------|------------------------|
| ARC SLT98C | C6 | C824 | 1 | Small Padlock key | Bottom corner of grave |
| ARC SLT98C | C8 | C780, C782, C784 | 2 | T-shaped ward | At waist |
| ARC SLT98C | C14 | C898 | 1 | T-shaped ward | At waist |
| ARC SLT98C | C16 | C1108 | 6+ | Group of rods | At waist |
| ARC SLT98C | C20 | C971 | 1 | Latchlifter | At waist |
| ARC SLT98C | C21 | C1138, C1139 | 1 | Latchlifter | At waist |
| ARC SLT98C | C25 | C1182 | 2 | Latchlifters | At waist |
| ARC SLT98C | C38 | C1164 | 4+ | Group of rods | At waist |
| ARC SLT98C | C41 | C1181 | 4 | Latchlifter, L-shaped ward | At waist |
| ARC SLT98C | C102 | C1848, C1849 | 2 | Latchlifter | At waist |
| ARC SLT98C | C177 | C2488 | 3 | L-shaped wards | At waist |
| ARC SLT98C | C188 | C2512 | 4+ | Group of rods | At waist |
| ARC SLT98C | C192 | C2431 | 5 | Latchlifter; L-shaped ward | At waist |
| ARC SLT99 | C141 | C2350, C2352 | 2 | Latchlifters | At waist |
| ARC SLT99 | C151 | C2158, C2159, C2162 | 2 | Latchlifter | At waist |
| ARC SLT99 | C156 | C2517 | 2 | Latchlifter | At waist |
| ARC SFB99 | W17 | W11 | 2 | Latchlifters | ? |
| ARC SFB99 | W18 | W391 | 1 | Latchlifter | ? |
| ARC SFB99 | W57 | W318 | 4 | Group of keys | ? |
| | | Total | 49+ | | |

7.30.5 Almost all of the examples are complete or nearly complete and very few have suffered post-depositional damage or disturbance. Mineralised textile remains are

present on a considerable number of examples, stemming in all probability from the costume of the deceased.

- 7.30.6 There are several examples of groups of relatively short iron rods, occurring in one case (grave C188) in association with several keys of longer form. All of the keys are accompanied by one or more iron rings, from which they were clearly suspended. The girdle hanger from grave C188, however, also included several copper alloy rings. With the exception of the small padlock key from grave C6, all of the groups of keys were found at or around the waist area of the deceased, at the centre of the grave, sometimes close to its edge.

Provenance

- 7.30.7 Keys were commonly found in the central cemetery, and are less frequent in the other cemeteries. No chronological distinction is necessarily implied by this situation, and it has been observed elsewhere that keys occur in graves across the entire early Anglo-Saxon period (Evison 1987, 116). It has also been noted that groups of more than two keys may be typologically later (Evison 1987, 117; Parfitt and Brugmann 1997, 68) and on that basis a number of the central cemetery graves could tentatively be placed well into the 7th century. All of the key assemblages are likely to be of Anglo-Saxon origin, and were probably made locally.

Conservation

- 7.30.8 The keys are made of iron, with the exception of the copper alloy rings in grave C188. They have all been radiographed and have been packaged and stored as iron objects, with appropriate supports where necessary, to avoid handling as much as possible. There is no requirement to discard any of the keys.

Comparative material

- 7.30.9 Keys are widespread in early Anglo-Saxon graves, both in East Kent and further afield. All of the types seen at Saltwood can also be observed within the assemblages from Dover Buckland, Polhill and Sarre (Evison 1987, 116-8; Hawkes 1973, 195-6; Perkins 1991, 157). They are rare at Lyminge (Warhurst 1955) and Mill Hill Deal, the latter a cemetery predominantly of 6th century date. This tends to substantiate the suggestion that they increase in number and elaboration in the 7th century.
- 7.30.10 Hawkes noted that for the Polhill cemetery the graves with keys did not include jewellery and the two forms of object were distinct, implying for her that ‘the key-bearer was not the lady of the house but the housekeeper’ (Hawkes 1973, 195). Without necessarily accepting that conclusion, similar patterns of distribution are observed at Saltwood, i.e. the graves with keys are generally not the graves with jewellery (with the exception of grave C156).

Potential for further work

- 7.30.11 The acidic, sandy sub-soil has preserved the elements of the key assemblages well, and many show evidence for mineral-replaced textile on one or more surfaces. Although individual elements have been fractured, the shape and dimensions of each assemblage can be reconstructed, and the manner in which they were worn can be established, even if the skeletal remains have now disappeared.

7.30.12 The study of the keys assists in the following Fieldwork Event Aims:

- *To establish the range of variation in burial rites, and to view possible change in rite over time;*

7.30.13 Keys and girdle hangers form a noticeable component of female grave assemblages and at Saltwood it is possible to view their deposition over time in relation to the Kentish Phases. It appears, for example, that they are not common before Kentish Phase IV. The sample of female graves is sufficiently large to be able to examine correlations between keys and other objects in female graves, as noted above. The relative lack of skeletal remains, however, means that it is not possible to correlate them with the age of the deceased. They tend to be found with adult females (Crawford 1999, 31) but this suggestion cannot be easily tested at Saltwood.

7.30.14 Steuer (1982) has considered the potential value of keys as amulets, but it is more common to view keys as indications that the women who were buried with them occupied a position of domestic responsibility within the community (Hawkes 1973, 195). However, Hawkes argued that, since the graves with keys were not those with jewellery, then they were the graves of housekeepers. Burials with keys at Saltwood are generally not those of the wealthiest women, but they were buried with jewellery in grave C156, and with two glass vessels in grave C151 from the same cemetery. The Saltwood assemblages would allow Steuer's ideas concerning the symbolism of keys in graves to be tested against a sample of a reasonable size, stemming predominantly from 7th century graves.

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7.31 Assessment of Anglo-Saxon Mineralised Leather

Esther Cameron

Introduction

- 7.31.1 Among iron artefacts recovered from the excavations are swords and knives upon the blades of which are preserved the mineralised remains of scabbards and sheaths. Of these, the swords appeared to retain the best examples of mineralised leather, and as such are considered in detail below.
- 7.31.2 In addition, a fragment of skin or leather was found within the Byzantine bowl from central cemetery grave C5. It belongs to a small group of leather objects surviving from 6th/ 7th century contexts (Cameron 2000, 2-5).
- 7.31.3 The study of the leather and mineralised remains is relevant to the following Fieldwork Event aims:
- *To establish a chronology for the Anglo-Saxon cemeteries;*
 - *To indicate the general development of each cemetery and their relationship to each other;*

Methodology

- 7.31.4 For the purposes of this assessment, five swords were examined (from graves C5, C7, C15, C19 in the central cemetery and grave C127 in the western cemetery); the remainder of the swords were undergoing conservation at the time of assessment. Radiographs of the knives have been examined.

Quantification and provenance

- 7.31.5 Mineralised wood and textile remains are visible on the five assessed swords and it may be that further organic remains, such as animal hair and skin, leather and vegetable fibres, are concealed beneath the outer layers. The quantity of mineral preserved organic remains is abundant; the quality cannot be vouched for without detailed examination, but appears to be good. Mineral-preserved organic remains from this site show considerable potential for study and analysis.
- 7.31.6 Of the 84 knives recovered, radiographs of some show evidence of mineralised sheath remains (e.g. central cemetery graves C30, C31 and C33). It is likely that these were of skin product, but knives from the earliest contexts at Saltwood may be of wood and skin.
- 7.31.7 One piece of leather in three fragments from grave C5, preserved by contact with the copper Byzantine bowl in which it lay, may still have a high organic content.

Conservation

- 7.31.8 To examine the mineralised leather in detail some ‘unrelated’ traces of textiles in the outermost layers originating from burial wrapping and/ or other deposits within the grave need to be removed. As this is a destructive process, it is suggested that a textile specialist record these traces prior to removal.

- 7.31.9 The application of consolidants to mineralised and copper-preserved organic remains prevents proper examination and analysis and it would be helpful if this was avoided until study is complete.
- 7.31.10 Further analysis will involve the taking of samples - approximately 5mm² - from all of the swords and from a 10% sample of the knives, for examination by scanning electron microscopy. Four samples per scabbard and one sample per sheath are allowed for. The use of scanning electron microscopy is standard practice for the study of mineralised organic remains (Cronyn *et al* 1985; Watson 1988). The samples are prepared by plasma-coating in gold and are not replaced on the swords or knives afterwards.
- 7.31.11 The leather will be examined, photographed and described. A sample (1g) will be removed from the leather fragment to assess degree of organic survival through analysis of carbon/ nitrogen (C/N) and stable isotope levels, and a further sample (3mm²) will be removed for scanning electron microscopy to allow the condition of the leather to be assessed.

Comparative material

- 7.31.12 Some details of scabbards and sheaths from the Anglo-Saxon cemetery at Buckland, Dover are published in Evison (1987). All known references to sheaths, scabbards and Anglo-Saxon leatherwork in England (except shoes) are contained in Cameron (2000), including details of sheaths and a scabbard from the 6th/ 7th century cemetery at Snape, Suffolk (Filmer-Sankey and Pestell forthcoming); Frankish parallels are published by Menghin (1983).

Potential for further work

- 7.31.13 Evidence for the use of leather in Britain in the 5th and 6th centuries is extraordinarily scarce and it may be that untanned skin products were normally utilised instead. Whether or not this was so, it would seem that in the late 6th/ early 7th century a change took place, marked by the introduction of 'Rhenish-type' leather sheaths into eastern Britain and more frequent use of leather in artefact production. This collection therefore has a high potential to add to our knowledge of the use of leather in the early Anglo-Saxon period. The potential for chemical analysis might therefore be good but this will need to be verified (by C/N ratios) before further analysis is attempted.
- 7.31.14 The leather items will contribute to the following Fieldwork Event Aims:
- *to establish a chronology for the Anglo-Saxon cemeteries;*
 - *To indicate the general development of each cemetery and their relationship to each other;*
- 7.31.15 Details of swords and scabbards often contribute to the dating of graves, and some scabbards from Saltwood are already known to possess key dating features, such as a particular style of braid binding. Bindings of braid, occurring on scabbards in Kent, Essex, London, Buckinghamshire and Suffolk only, are characteristic of the late 6th and early 7th centuries. The significance of this feature, only recently identified (Cameron 2000, 39-40, 75), and reasons for its geographical and chronological boundaries are not yet fully understood. Fresh evidence recovered

from Saltwood could throw new light on this aspect of Saxon material culture and the political background that influenced it.

- 7.31.16 Following study and sampling procedures, a report will be produced in which mineralised remains of sheaths and scabbards from Saltwood will be characterised, described and compared to other known examples of similar date. This will also require the dating of each sword burial both by its context and by considering the contents of each grave in total, including the swords. The unidentified (as yet) leather object from grave C5 will be described, compared to other known pieces from Pagan Saxon contexts, and its significance assessed.

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7.32 Assessment of Anglo-Saxon Textile Remains

Penelope Walton Rogers

Introduction

- 7.32.1 At the time of assessment only material from the central cemetery was available for examination, although further textile remains were evident in the other cemetery groups and will be dealt with separately. Out of 582 objects examined from the central cemetery, 51 objects from 27 graves were identified as having mineral-preserved textile on or near them.
- 7.32.2 The textiles mostly represent clothing on the body (or sometimes wrapping and binding fabrics). They will further the following Fieldwork Event Aims:
- *To indicate the general development of each cemetery and their relationship to each other;*
 - *To establish the range of variation in burial rites, and to view possible change in rite over time.*

Methodology

- 7.32.3 Of the 51 objects identified for this assessment, previous research has shown that further allowance should be made for *c.* 10% more items emerging during conservation. This assessment is therefore based on an anticipated total of *c.* 60 items for study from the central cemetery alone.
- 7.32.4 Lengths of gold thread/ strip from grave C112 in the western cemetery is assessed separately (see **Appendix 7.25**).

Quantification

- 7.32.5 Of the objects assessed, several have more than one textile in association. As a result, it is anticipated that the assessed sub-sample will yield approximately 75 different textiles. Examination of the remaining unassessed textile remains will undoubtedly add to this total.
- 7.32.6 The fabric-types identified so far are mostly the usual ones for an Anglo-Saxon cemetery, namely 2/ 2 twill, 2/ 2 diamond twill and tabby; some have yarn spun Z x Z and some are Z x S. Of particular interest is the fine tape binding on the sword-scabbards in graves C5 and C7 and the wool diamond twill with a tablet-woven border on the sword from grave C15.
- 7.32.7 Most of the objects with mineral-preserved textile are iron (it is understood that there are more copper-alloy objects with textile from the other cemeteries). This may have introduced a bias into the material (see below).

Provenance

- 7.32.8 All objects are from sealed burials and are therefore considered securely dated.
- 7.32.9 The textiles are mineral-preserved (preserved by association with metal) and include fully mineralised (mineral-replaced) and partially mineralised. None of the material is preserved in its original state.
- 7.32.10 In one case (grave C7) most of the textile has been preserved as lines of iron corrosion in the sand, sometimes arranged in folds and layers. No technical details concerning the textile structure can be achieved, but the position of the folds of the clothing in relation to the body and the artefacts should be recorded very carefully, as few if any examples of such evidence have been previously recorded.
- 7.32.11 The recovery of different textile-types depends on (i) soil conditions (acid or alkali), (ii) the metal of the object with which the textile is associated (iron or copper alloy), (iii) the date of the burial, and (iv) the social status of the dead person. Saltwood appears to be on acid sand and most of the objects are iron. It is likely (but not yet proven) that acid soils and iron objects will over-emphasise wool at the expense of linen.
- 7.32.12 All evidence from Anglo-Saxon cemeteries is being recorded on a computerised database, so that the four variables listed above can be examined statistically through basic quantification. The sample from Saltwood is sufficient to provide useful comparanda for other cemeteries in Kent on different soil types.

Conservation

- 7.32.13 Some of the items still have substantial amounts of sandy soil adhering (**Table 37**) and need to be cleaned by a conservator so that the textile can be studied. The remainder can be studied before or after conservation, as convenient.

Table 37: Mineral-replaced objects requiring conservation

| Grave | SF number | Object no./ type |
|-----------|-----------|------------------|
| Grave C7 | C1142 | Object C7 |
| Grave C15 | C1101 | Object C13 |
| Grave C17 | C896 | Seax |
| Grave C25 | C1235 | Object C11 |
| Grave C31 | C1133 | Small spearhead |
| Grave C31 | C1134 | Object C2 |
| Grave C32 | C1152 | Object C4 |
| Grave C40 | C1174 | Object C1 |
| Grave C41 | C1165 | Object C12 |

- 7.32.14 The textiles should be left on the object and not cleaned away, unless there is some research objective to be achieved. The layers of textile in grave C7 will need to be recorded in collaboration with the conservator who dismantled the soil-block (and perhaps with the aid of field notes).
- 7.32.15 The identification of the fibre (wool or flax/ hemp) is an essential part of the textile record and also the most difficult to achieve where textiles are mineral-preserved. Where possible, the identification will be done by transmitted-light microscope. Some fully mineralised samples may be selected for Scanning Electron Micrographs. This selection will be based on the state of preservation of the textile and the likelihood of achieving a useful result. Allowance should be made for 30 SEMs.

7.32.16 No attempt will be made to identify dyes, or the fleece-types of the wool, because the material is not well enough preserved to allow this.

7.32.17 The storage of the textiles will be whatever is suitable for the objects to which the textiles are attached.

Comparative material

7.32.18 The author has all textiles from Anglo-Saxon cemeteries on a computerised database. Of the 120 cemeteries included on this database, 22 are from Kent. The Kent entries include 270 textiles and the large collection from Buckland II will be added to this in the near future, when the catalogue entries have been finalised.

7.32.19 Regional and chronological patterns in this material have been tentatively identified, although there are problems of bias in the evidence which need to be addressed. Saltwood has an important role to play in this respect, in providing a block of reliable data on a discrete group of iron artefacts of a known date-range on a known soil-type.

7.32.20 This is a relatively small group of material and all items will be examined and recorded using the system published in Walton and Eastwood (1988). The costume evidence will be compared with that gathered from other cemeteries (e.g. Owen-Crocker 1986; Walton Rogers 1998 and 2001).

Potential for further work

7.32.21 The textiles from this cemetery will further the following Fieldwork Event Aims:

- *To indicate the general development of each cemetery and their relationship to each other;*

7.32.22 The chronology provided by the dating of the metal objects will allow us to discern changes in use of textiles over the period of the cemetery. This will be done by charting the proportion of linen to wool (linen tabby is thought to increase with time) and changes in weave structures (in more northerly Anglo-Saxon cemeteries, there seems to be increasing standardisation in the later 6th and 7th centuries).

7.32.23 Although the possibility of a bias in the sample through differential preservation has been noted, this can still be taken into consideration when compiling information about the proportion of linen to wool as a means of differentiating weave structures through time. There is considerable data from a number of cemeteries, Dover Buckland II being particularly important in this respect because it was excavated under modern conditions, as also has the much smaller Mount Pleasant sample. These two cemeteries lie on chalk and both include burials known to be contemporary with those at Saltwood, facilitating a direct comparison of survival rates for linen and wool. The scale of the bias can therefore be calculated with some precision.

- *To establish the range of variation in burial rites, and to view possible change in rite over time.*

7.32.24 The textiles vary in quality, and some will help identify high-status burials. The fine tape bindings on scabbards, for example (see below), have only been seen before in

barrow burials of warriors, such as Taplow, Kent, and Sutton Hoo and Broomfield Barrow, Essex.

7.32.25 The mineralised textiles are also relevant to the following new research aim:

- *To examine the nature of female costume over time, in terms of regional styles and the emulation of continental fashion.*

7.32.26 This will be done by producing a catalogue of all textile items, including fibre identifications wherever possible, and plotting the textile information on the grave plans, so that some conclusions can be drawn concerning the styles of clothing worn and the fabric-types used for individual garments. This information will be compared and contrasted with not only that gathered from the other 23 Kent cemeteries with textile, but also with the evidence from Anglo-Saxon cemeteries outside Kent.

7.32.27 The analysis will explain how the material contributes to the national study of Anglo-Saxon textiles (outlined above), describe the likely styles of clothing worn by the buried people, and highlight the high-status features of individual graves such as the scabbard bindings in graves C5 and C7.

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7.33 Assessment of Anglo-Saxon Textile Implements

Ian Riddler and Penelope Walton Rogers

Introduction

- 7.33.1 A fragmentary bone or antler double-pointed pinbeater was recovered from context C376 and a complete iron weaving batten came from western cemetery grave C117. Further textile manufacturing implements are represented by the ceramic loomweights, which have been considered in a separate assessment.
- 7.33.2 The study of implements used in textile manufacture assists in the following Fieldwork Event Aims:
- *to establish a chronology for the Anglo-Saxon cemeteries;*
 - *To establish the range variation in burial rites, and to view possible change in rite over time;*
 - *To establish a dated sequence for the origin and development of the settlement including associated structures and trackways etc*

Methodology

- 7.33.3 The pinbeater fragment has been examined in Canterbury, both for its type and its material. The iron weaving batten has been analysed at the City of Lincoln Conservation laboratories and radiographs of the object have been consulted. Conservation work continues on this object at the time of writing. Radiographs have been taken of the block-lift, but not of the object itself in any detail. Nonetheless, it is possible to examine the original form of the object.

Quantification

- 7.33.4 Sufficient survives of the pinbeater (virtually the only bone or antler object to have come from Saltwood) to identify it as of double-pointed form (Riddler forthcoming; Walton Rogers 1997, 1755).
- 7.33.5 The iron weaving batten is complete and extends to 0.6m, with the characteristic blade knop at one end and a tang for a handle at the other. It is not clear at this stage whether mineralised remains of the handle survive on the tang.
- 7.33.6 Although other bone or antler pinbeaters may have been placed in graves within any of the cemeteries (and most likely within the latest central cemetery) none have survived. Similarly, although antler spindle-whorls would also not have survived, there are, however, no Anglo-Saxon examples in any other materials (ceramics or stone) recorded from the site.

Provenance

- 7.33.7 The fragmentary pinbeater came from the fill of a post-hole (C869, group C48), forming part of a structural complex to the west of the site, dating to the early medieval period.

- 7.33.8 The weaving batten was discovered within grave C117. It lay to the left of the deceased, adjacent to a spread of beads, at the level of the upper body, with the handle close to the head.
- 7.33.9 Both objects survive in good condition. The pinbeater is fragmentary but it was broken in antiquity and was probably discarded as a result of this fracture. The weaving batten is complete, although it lacks its organic handle.

Conservation

- 7.33.10 Conservation work continues on the weaving batten. It was recovered in a block-lift, which has been radiographed on large format plates. The batten has been removed from the block and is currently being radiographed in detail. In part, the intention here is to reveal whether any traces of pattern-welding are present (see below). It is maintained in environmentally-controlled conditions and will be placed in purpose-built packaging.
- 7.33.11 The pinbeater has been cleaned and assessed for its conservation requirements. It has been packaged and is maintained in appropriate conditions. Further analysis of the pinbeater is limited to determining whether it is made of bone or antler. A preliminary examination suggests that it is antler; more detailed analysis is non-destructive.
- 7.33.12 The iron weaving batten may possibly be cut down from a sword blade. Detailed radiographs suggest that it is pattern-welded, and this certainly does relate it to the swords from Saltwood and elsewhere. A technological examination of the blade, using the same technique as for the swords, will allow it to be compared directly with them. Broader comparisons can also be made with the Dover Buckland battens, at least one of which is currently undergoing detailed analysis.
- 7.33.13 Further analysis of the weaving batten would be centred on determining whether its blade is pattern-welded and, if so, whether the pattern is similar to that on any of the swords from Saltwood. In addition, any traces of the original material of its handle can be analysed, to determine whether it was made of bone, ivory or wood. These processes are non-destructive. Both objects should be retained.

Comparative Material

- 7.33.14 Double-pointed pinbeaters are found in Roman contexts (although they are rare in this country) and occur throughout the Anglo-Saxon period. They are associated with the warp-weighted loom (Walton Rogers 1997, 1755; Riddler forthcoming). At some sites, including London, Winchester and York, the double-ended variant is not seen beyond the 10th century. At Canterbury, however, it appears that this trend is not maintained, although the small quantity of double-ended pinbeaters from 11th century contexts may well be residual (Blockley *et al* 1995, 1173-4; Elder and Riddler 1988, 135-8 and figs 26.94 and 27.95). At the present time, there are few examples of Middle Saxon or later double-ended pinbeaters from East Kent, outside of Canterbury itself. Current evidence suggests that they were used during the 5th to 10th centuries, with some slight changes in formal design over that period (Riddler forthcoming).
- 7.33.15 Several summaries have been produced of iron weaving battens, the majority of which come from excavations carried out before the Second World War, or in the immediate post-War period (Evison 1987, 111-2; Chadwick Hawkes 1958, 30-5;

Millard *et al* 1969, 17-22; Koch 1969, 187-9). They are known from East Kent graves at Bifrons, Dover Buckland, Finglesham, Ozengell and Sarre (Chadwick Hawkes 1958, 30-5; Evison 1987, 111). Most examples have come from rich female graves. Previously they were thought to have been deposited between the late 6th and mid-7th centuries but more recent finds indicate that they go back to the middle of the 6th century at least. Hawkes (in Millard *et al* 1969, 20) has suggested that ‘none can confidently be dated much before 550’ and this may have a bearing on the dating of the example from grave C117, although it was a statement of the 1960’s.

- 7.33.16 The Saltwood example is relatively large, with an overall length of around 0.6m, which places it alongside the longest examples from Kent, where the majority of examples have been found. It should be noted that they are not common in Frankish graves, and have generally come from Alamannic, Thuringian or Langobardic burials (Evison 1987, 111-2; Koch 1969, 187-9 and 193).

Potential for further work

- 7.33.17 The study of implements used in textile manufacture assists in the following Fieldwork Event Aims:

- *to establish a chronology for the Anglo-Saxon cemeteries;*

- 7.33.18 Iron weaving battens occur in Kent graves from *c.* AD 550 to 625 and the example from grave C117 appears to be one of the earliest (and one of the largest) of the series. Its size may, however, relate to the fact that it could have been cut down from a pattern-welded sword, as has been suggested for other examples, although this is debateable (Millard *et al* 1969, 21). There are only around twenty examples from Anglo-Saxon graves in England, the majority of which have come from Kent. The dating evidence for the series as a whole assists in the dating of this grave, which is currently thought to have been deposited *c.* AD 525-550, only just within the range for this object type. Further analysis, particularly on the dating of examples from the continent (which now seem to pre-date AD 550, contrary to previous suggestions), may assist in dating this example. A review of the dating of the Kent graves would also be useful, given that the relative and absolute dating of most of those burials was undertaken several decades ago, and may now need to be revised slightly.

- *to establish the range variation in burial rites, and to view possible change in rite over time;*

- 7.33.19 The weaving batten comes from one of the richest graves within the western cemetery and this emphasises their deposition within auspicious female burials, as with Dover Buckland graves 20 and 38, Finglesham graves D2 and 203, and Sarre grave 4. The position of the batten in the grave is similar to that in Dover Buckland grave 20. Textile production was undoubtedly important at this period, as also was fashion. Many of the rich female burials of the 6th century in East Kent, for example, may well have been wearing Frankish or Frankish-influenced costume (Walton Rogers forthcoming). Contemporary settlement evidence suggests that spinning was carried out in most households, but it is not certain that every one also included a loom. The significance of the iron weaving batten may lie in its continental origins (if the majority were imported) rather than in its presence in the grave. They may have been relatively common, with the majority produced in wood rather than metal. A pattern-welded iron example, whether custom-made or cut down from a sword, could have been seen as a luxury object, which does not necessarily define its owner merely as a weaver.

- to establish a dated sequence for the origin and development of the settlement including associated structures and trackways etc

7.33.20 The double-pointed pinbeater is almost certainly of post-Roman date and, given the comparative evidence gathered above, it is likely to date to the Early or Middle Saxon periods. It provides further corroboratory evidence of Anglo-Saxon settlement within this area.

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7.34 Assessment of Anglo-Saxon Byzantine ('Coptic') Bowls

Ian Riddler

Introduction

7.34.1 Three copper alloy bowls of Eastern Mediterranean origin were recovered from the central cemetery at Saltwood. Each came from a large and conspicuous male burial (graves C5, C7 and C200). The study of the Byzantine bowls is relevant to the following Fieldwork Event Aims:

- *To establish a chronology for the Anglo-Saxon cemeteries;*
- *To establish the range variation in burial rites, and to view possible change in rite over time;*

Methodology

7.34.2 Two of the bowls were block-lifted on-site, and one (Find no. C1090, grave C7) has subsequently been radiographed and excavated under laboratory conditions, whilst the second bowl (Find no. C2471, grave C200) awaits excavation. The latter has been radiographed, providing details of its form and general nature. The third bowl (Find no. C804, grave C5) was discovered during machine stripping, and has hence suffered some damage. It has been stabilised in the laboratory and extensively radiographed.

Quantification

7.34.3 The three bowls each came from separate graves. All of them appear to be complete and in reasonable condition when deposited in the grave. They are all of the same form, with openwork pedestal bases, cast, lathe-turned bowls with thickened rims and drop handles of semi-circular or rectangular shape. The bowl from grave C7 has been repaired during antiquity. This was so subtle and proficient, however, that it is only visible to any extent on the radiographs of the object.

Provenance

7.34.4 The example from grave C5 lay on its side on the right-hand side of the grave, towards its middle point. It contained 45 gaming pieces and fragments of a leather shoe. The bowl from grave C7 lay in a similar, near-vertical position outside of the coffin but within the chamber. The bowl from grave C200 lay towards the foot of the grave, at or beyond the feet of the deceased and close to the iron-bound wooden bucket.

7.34.5 All of the bowls are of eastern Mediterranean origin. The precise place of manufacture has not been determined for any of the bowls of this series, although various suggestions have been made, including Alexandria, without a great deal of justification. More recent work on their origins has broadened the possibilities, rather than reducing them (Dannheimer 1979; Carmela Carvetta 1982).

Conservation

- 7.34.6 Further research could include an examination of the metal content of each bowl using Xray fluorescence spectrometry (XRF), which is non-destructive. Equally, atomic absorption spectrometry has been used in the past on a series of Coptic vessels, and this process involves the drilling of samples from various locations on the vessel (Oddy and Craddock 1983).
- 7.34.7 Two of the bowls have been stabilised, radiographed and packaged for long-term storage; work continues on the third example. The packaging is designed to minimise handling of the object in the future. They are stored in environmentally-controlled conditions suitable for non-ferrous metals. The bowls should be retained for future research and potential display.

Comparative material

- 7.34.8 Cast and lathe-turned Byzantine bowls of this type (generically known as “Coptic [sic] bowls”) were produced in the eastern Mediterranean during the 6th century, and possibly also in the 7th century. They were widely disseminated throughout northern Europe and they may have reached England through Italy and the Rhineland (Conway 1917-8; Werner 1961; Hawkes 1982, 76 and fig 33; Welch 1992, fig 84).
- 7.34.9 Almost all of the examples found in England have come from graves in Kent. They have not been studied in any detail since the publication of the example from Sutton Hoo Mound 1, although discoveries outside of Kent have been described (Bruce-Mitford 1983; West 1999; Hawkes 1982, 76). In 1983 only twenty were known from England, and the Saltwood group therefore makes a significant contribution to the overall assemblage.
- 7.34.10 The Kentish series includes examples from Coombe, Sarre, Faversham, Wingham, Gilton, Canterbury and Wickham. They form a homogeneous group, almost all of which (including the three examples from Saltwood) can be assigned to Werner’s type B1, characterised by their openwork pedestal bases. Examples from graves in Kent and elsewhere are not common and most were deposited during the second half of the 6th century and the first third of the 7th century. They occur in both male and female graves. Several others, including an example from Sarre and one of the bowls from Gilton, have been repaired, but more noticeably than with the Saltwood example.
- 7.34.11 In comparison to the gaming pieces recovered from one of the Saltwood bowls, elsewhere one bowl is said to have contained cremated human bone and another contained the bones of sheep and cattle. A bowl from Faversham contained hazelnuts.

Potential for further work

- 7.34.12 The bowls should be recorded in detail, without compromising their integrity in any way. The complete vessel from grave C7 includes large fragments of mineralised wood within its bowl. Although not contributing to the study of the bowls *per se*, the wood is thought to have come from the side of the adjacent coffin, and should therefore be sampled to determine the wood type.
- 7.34.13 The study of the Byzantine bowls is relevant to the following Fieldwork Event Aims:

- *To establish a chronology for the Anglo-Saxon cemeteries;*
- 7.34.14 Byzantine bronze bowls may not have been made in the eastern Mediterranean after c. AD 550, and they occur in Anglo-Saxon graves from c. AD 575-625. They form part of the dating evidence for graves C5, C7 and C200, and they confirm their wealthy nature.
- *To establish the range of variation in burial rites, and to view possible change in rite over time;*
- 7.34.15 The three male graves are broadly contemporary and it may not be possible to place them in a sequence of burial. Nonetheless, they can be contrasted with earlier and later male graves both within the same cemetery (where all of the male graves may be later) and in the other nearby cemeteries. The bronze bowls form part of a conspicuously wealthy ritual of male burial that may occur in Kent before it is seen elsewhere in Anglo-Saxon England. Its origins may lie in the Frankish realms, where chamber graves are more common and where similar burial arrangements can be seen.
- 7.34.16 The bronze bowls also assist in further research aims:
- *The use of space in grave layouts*
- 7.34.17 Each of the bowls lay in a different part of the grave. The arrangement for grave C200 can possibly be regarded as ‘typical’ of large weapon graves of the period, comparable with graves at Taplow, Broomfield and Sutton Hoo Mound 1. The layouts for the other two graves can also be paralleled elsewhere, particularly between grave C5 and Sutton Hoo grave C17. As with other burials of this period, the arrangement of grave goods *in toto* is of interest in terms of rituals for the afterlife and the symbolism of functional spaces. It has been suggested, for example, that Byzantine bronze bowls were used for the washing of hands, and this may explain their position in some graves.
- *to determine the range and provenance of imported objects within the Early Anglo-Saxon cemeteries, and to determine the means of trade or exchange by which they came to East Kent;*
- 7.34.18 The origins of ‘Coptic’ bowls remain uncertain, although their dating is fairly clear. In terms of their relatively homogeneous composition, the B1 bowls recovered from Anglo-Saxon contexts may have been produced during a relatively short time frame. They should be considered in two ways: alongside Merovingian and Italian examples (where B1 bowls also occur) and in terms of providing a single, central publication of the Kentish examples in relation to other traded goods of this period. The presence of other forms of Byzantine container in early Anglo-Saxon England should also be noted, alongside the Italo-Byzantine buckle from the central cemetery.

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7.35 Assessment of Anglo-Saxon Iron-bound Containers

Jean Cook and Ian Riddler

Introduction

- 7.35.1 Iron-bound wooden buckets were recovered from central cemetery graves C7, C190 and C200. In addition, the handle for a metal-bound wooden bucket came from the upper area of grave C15 in the same cemetery, close to the area where the head of the body would have lain.
- 7.35.2 The iron-bound containers were block-lifted on site. The container from grave C7 has been excavated from its block and work is in progress on the other examples. The container handle from grave C15 was hand-excavated on site.
- 7.35.3 The study of the iron-bound containers assists in the following Fieldwork Event Aim:
- *To establish the range variation in burial rites, and to view possible change in rite over time.*

Methodology

- 7.35.4 Only the iron hoops survived from the wooden buckets from graves C7, C190 and C200, each of which was recorded in the grave prior to lifting. The soil from the block-lift containing the hoops from grave C7 has been sieved. The block-lifts from graves C190 and C200 await excavation, but have been radiographed.

Quantification

- 7.35.5 Four wooden buckets are represented at Saltwood, three iron-bound examples (from graves C7, C190 and C200) and one for which only the bucket handle and accompanying escutcheons appear to be of iron (from grave C15). The iron hoops from grave C7 belong to a large bucket approximately 0.6 m in diameter, and up to 0.7 m high. The hoops were held in place relative to each other with the aid of vertical strips of iron on either side.
- 7.35.6 The buckets from graves C190 and C200 are smaller, with diameters of only 0.35 – 0.4 m and heights of less than 0.6 m, it is not entirely clear from the radiographs whether they too were held together by vertical support strips. It is more likely for the example from grave C190, but not for grave C200, where the hoops have collapsed and been compressed in the grave.
- 7.35.7 The curved fragments of iron from beside the head of the internment in grave C15 represent two conjoining parts of a bucket handle, together with one associated escutcheon. A mass of dark soil in that area might represent a part of the decayed wood of the container itself. No further fittings for that bucket could be seen.

Provenance

- 7.35.8 The presence of iron-bound wooden buckets in graves C7, C190 and C200, represents grave goods associated with three of the four richest graves from that cemetery, all dating to *c.* AD 575-625 (Kentish Phase V). It may be of note,

however, that there was no bucket in the fourth rich burial (grave C5). The bucket handle in grave C15 suggests that there was originally a wooden container in that grave as well, although no traces remained of any further fittings.

- 7.35.9 The iron-bound buckets were located in the lower corner of the two graves, beyond the coffin and within the chamber space. The smaller bucket from grave C190, however, was located above the head of the deceased, in an upper corner, possibly again beyond the coffin space.

Conservation

- 7.35.10 The iron hoops survive in reasonable condition, although there is not a great deal of iron left on any of them, and they are heavily corroded. Few wood traces could be seen on the interior of the hoops from grave C7, but there may be sufficient to be able to identify the wood type.
- 7.35.11 The buckets with iron-bound hoops were removed to the City of Lincoln Conservation laboratories, and the example from grave C7 has been excavated in the laboratory. A full photographic record has been produced of all stages of the excavation. The material from within the container has been sieved at Canterbury, without however revealing anything of the nature of the original contents.
- 7.35.12 All of the iron elements of the containers should be retained for future study. There is no requirement to discard any of this material.

Comparative material

- 7.35.13 Iron-bound containers are quite rare, in comparison with those bound by copper alloy. In total, around 40 are currently known from early Anglo-Saxon England, and are not found in England before the middle of the 6th century (East 1983, 587). The Saltwood examples are rimless, a feature comparable with Frankish examples (Böhner 1958, 69-70).
- 7.35.14 It remains difficult to establish the precise significance of the presence of iron-bound containers in early Anglo-Saxon graves. The series from Saltwood can be compared with others from wealthy graves of the early Anglo-Saxon period, including Broomfield, Sutton Hoo Mound 1, Sutton Hoo Mound 2, Sutton Hoo grave 17, Swallowcliffe Down and Taplow (East 1983; Carver 1998, 110-3 and fig 66; Speake 1989, 22-4).
- 7.35.15 Although single examples have been associated with female burials at Dover Buckland (Evison 1987, 104-5, fig 72 and pl 10d) and Bourne Park in Kent (Meaney 1964, 110), in general the presence of these containers is associated with male burials and usually placed at the foot of the grave.

Potential for further work

- 7.35.16 The study of the iron-bound containers assists in the following Fieldwork Event Aim:
- *To establish the range of variation in burial rites, and to view possible change in rite over time.*

- 7.35.17 Further analysis will potentially enable reconstruction of the buckets to be made, allowing an accurate determination of their original capacities to be made. Unless mineralised wood survives on the iron hoops it will not be possible to determine the wood type used in their construction, although comparisons with other containers would suggest yew.
- 7.35.18 At Saltwood, the iron-bound containers are a prominent feature of three of the four conspicuously wealthy graves of Kentish Phase V, all of which are considered to be late 6th to early 7th century in date. The Saltwood examples, therefore, appear to emphasise the association of containers with wealthy graves, as well as the division between smaller vessels, placed at the head of the grave and larger vessels, placed at the feet. The larger vessels may have served for a community, by virtue of their size, whilst the smaller were suitable for individuals (Werner 1983; 1992, 8-11). The larger examples were, in effect, beer buckets (Ellmers 1964-5, 39). The detailed recording of the Saltwood examples allows this proposition to be tested.
- 7.35.19 A further research aim also emerges from the study of these containers:
- *The use of space in grave layouts*
- 7.35.20 The buckets assist in examining the possible division of the grave spaces from the wealthier graves into functional areas. Is there further evidence, for example, that objects relating to feasting and drinking were placed at the foot of 7th century graves, and can distinct 'functional' areas be identified within these graves? Can any patterning by function be seen in earlier, 6th century graves, or is it a phenomenon of the 7th century?

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7.36 Assessment of Anglo-Saxon Box Fittings

Ian Riddler

Introduction

7.36.1 The copper alloy and bone fittings for a box were found at the foot of western cemetery grave C117. Unfortunately, these were not block-lifted, although they were recorded in the ground at 1:1 scale and individually removed from the grave. A lock mechanism was also recovered from central cemetery grave C38, the burial of a child.

7.36.2 The box fittings are relevant to the following Fieldwork Event Aims:

- *to establish a chronology for the Anglo-Saxon cemeteries;*
- *To establish the range of variation in burial rites, and to view possible change in rite over time.*

Methodology

7.36.3 The box fittings from grave C117 have been examined at the City of Lincoln Conservation laboratories. The detailed plan of their layout in the grave has also been consulted. The iron lock mechanism has also been viewed in Lincoln and its radiographs (no.s 62 and 149) have been examined.

Quantification

7.36.4 Both graves may originally have contained boxes. In each case, the wood no longer survives, however some retain traces of wood on them. Approximately thirty separate fittings, mostly of copper alloy, survived from the box in grave C117, spread over an area of 0.4 x 0.5m. These include hinges and a catch plate, as well as elements of a lock mechanism which, when reconstructed, may prove to be complete. A hasp, possibly the carrying handle for the box, is also amongst the fittings to be identified.

7.36.5 Only the lock mechanism survives in grave C38. It was located towards the foot of the grave. A ceramic vessel, an iron knife and a set of 132 glass beads were also recovered from this grave.

Provenance

7.36.6 The large collection of box fittings from grave C117 was found at the foot of the grave, beyond the crystal ball. This is a wealthy female grave that also included an amber and glass bead necklace, two brooches, a buckle, silver wire (possibly from a finger ring) and a weaving batten, amongst other items. The association of the crystal ball and the brooches suggests a date of burial in the first half of the 6th century, possibly AD 525-550.

7.36.7 The fittings from this grave survive in reasonable condition. The copper alloy pieces, in particular, remain accreted to small fragments of bone, suggesting that the box was inlaid with bone strips, and was perhaps elaborately decorated. Traces of wood are also visible. Although a block-lift of this area would have provided more

information about the original nature and arrangement of the box, allowing it to be excavated in the laboratory, it was nonetheless excavated with some care and meticulously recorded.

- 7.36.8 The lock mechanism in grave C38 lay at the foot of the grave. This was a small grave, suitable only for a young child. The presence of 132 beads and a set of keys suggests that it is the burial of a young girl, and with only one of those beads polychrome, probably indicating that the burial belongs to the 7th century, a date broadly contemporaneous with an associated ceramic vessel.
- 7.36.9 At the time of excavation, the nature of this iron object was not realised, and its identity was only revealed following radiography. No block-lift was taken of this area and no particular attention was paid to the surrounding soil, in terms of the possible preservation of organic remains. No other fittings are likely to have been missed, however.

Conservation

- 7.36.10 All of the fittings, of copper alloy and iron, have been stabilised. The iron lock mechanism has been radiographed and appropriately packaged. Work continues on the copper alloy fittings from grave C117, which are very fragile and include numerous organic traces, leading to a requirement for detailed archival recording during conservation.
- 7.36.11 Further analysis would include an examination of the wood type of the box, which can be correlated with the database currently held by Jacqui Watson at the Ancient Monuments Laboratory. Detailed, microscopic recording of the direction of wood grains would assist in the reconstruction of the original form of the box from grave C117, which could then be compared with those from Dover Buckland, in particular (Evison 1987, text figure 18). The potential for reconstructing the original shape and nature of this box is very high.

Comparative Material

- 7.36.12 Boxes are mainly found in Kent graves and most are of late 6th century or later date. The box from grave C117 is unusual both because it is relatively early (from a grave dating to around the early part or middle of the 6th century) and because it is so elaborate, with a considerable range of fittings, using both copper alloy and bone, as well as wood.
- 7.36.13 The larger boxes are generally associated with the graves of females, and the smaller examples with males (Geake 1997, 81-2; Lucy 2000, 57-8). At least ten were recovered from Dover Buckland and they were made from a variety of wood types. Examples are known also from a range of Kent cemeteries, including Kingston, Sarre and Gilton. These are all 19th century discoveries, and only those from Dover Buckland have been retrieved in modern conditions, as at Saltwood, greatly enhancing the amount of information to be gained from them.
- 7.36.14 Eight examples from Dover Buckland included lock mechanisms (known also as bolt-plates) similar to the example from Saltwood grave C38. The Saltwood lock mechanism, however, retains a twin iron spring plate, confirming earlier suggestions that these were indeed made from doubled strips of iron (Evison 1987, 101). It is possible that one of the keys found within the same burial may have been used with this lock mechanism; this possibility can be examined during future analysis.

- 7.36.15 Similar boxes are known also from the continent, where the decorated examples generally have a greater reliance on Christian imagery, although some can still be secular. An example from a rich female grave under Cologne cathedral survived reasonably well, and is made of wood (Doppelfeld 1959, taf 7.3). Bone inlaid examples have been considered exhaustively by Elbern (1972).

Potential for further work

- 7.36.16 The box fittings are relevant to the following Fieldwork Event Aims:
- *to establish a chronology for the Anglo-Saxon cemeteries;*
- 7.36.17 Previous research on wooden boxes with metal fittings from East Kent graves has suggested that they are first found towards the end of the 6th century. The example from Saltwood grave C117 appears to be somewhat earlier, dating to the middle of the 6th century at the latest. The wide range of objects from that grave allows it to be dated with some precision. This therefore extends the chronology of wooden boxes.
- 7.36.18 Iron lock mechanisms similar to that from grave C38 are relatively common and most of those from Dover Buckland belong to Phase 3 there, of c. AD 575-625, which accords well with the evidence from Saltwood.
- *to establish the range of variation in burial rites, and to view possible change in rite over time;*
- 7.36.19 The two boxes from Saltwood both come from female graves, one of which was certainly the burial of a child. In both cases the box lay at the foot of the grave, the most common position for such objects. Neither box appears to have had any contents, although any organic materials would have perished and, in the absence of laboratory excavation, it is no longer possible to check for traces of such materials. It is not unusual for boxes to contain few, if any, objects and in a number of cases the contents are amuletic, as with the presence of cowrie shells, for example, which would not have survived at Saltwood (Meaney 1981, 125-7). Amulets appear, in general, to be comparatively rare at the site.
- 7.36.20 Boxes have been described as ‘a cross between a modern woman’s jewel case and her work-box’ (Meaney 1981, 125). There is a contrast between the fact that few contain many if any items, but they are intrinsically large and important objects that, in Kent at least, come from rich and auspicious graves. The situation may be slightly different with the graves of children but, as with grave C38, many do emulate adult burials in terms of their grave-goods, and grave C38 may have been a burial of some status for its period.
- 7.36.21 The two boxes may be separated in date by as much as a century and they do show the development in forms between earlier boxes with a significant number of fittings, and the later, simpler type. At the same time, the presence of bone inlays on the box from grave C117 aligns it with a series of boxes which go back to the Roman period, and continue into medieval times (MacGregor 1985, 197-203). Such boxes are quite rare in the Early Anglo-Saxon period, further emphasising the high status of the example in grave C117.
- 7.36.22 The potential exists to reconstruct the box in grave C117 and to relate it to contemporary and later examples. This would essentially be a reconstruction carried out in the laboratory and based on a detailed examination of the surviving traces of

wood and bone, in relation to the grave plan. The box is spread over a wide area, implying that its sides fell outwards after burial. It is clearly a very early and important addition to the corpus of such objects.

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7.37 Assessment of Anglo-Saxon Gaming Pieces

Ian Riddler

Introduction

- 7.37.1 A small number of antler gaming pieces were recovered during the removal of the Byzantine bowl from central cemetery grave C5. Others were noted within the bowl, which was on its side, and several more observed in an area beneath the bowl, apparently associated with mineralised leather and wood. This area of the grave was block-lifted and excavated under laboratory conditions.

Methodology

- 7.37.2 The soil block was radiographed (plates 24-31) prior to laboratory excavation, in part to facilitate recovery of the *in situ* counters. Plans were produced of the counters in the soil block and in two separate layers within the bowl.
- 7.37.3 The counters have been assessed, cleaned, stabilised and packaged by a conservator. Each counter and fragment has been viewed under low magnification.

Quantification

- 7.37.4 A total of 45 counters was recovered, their quantification and provenance is tabulated below (Table 38).

Table 38: Quantification and Provenance of Counters

| Find no. | Count | Location |
|----------------|-----------|------------------|
| C803 | 2 | Beneath the bowl |
| C823 | 2 | Near the bowl |
| C804 (Layer 1) | 20 | Within the bowl |
| C804 (Layer 2) | 5 | Within the bowl |
| C804 | 3 | Within the bowl |
| C866 | 13 | Beneath the bowl |
| Total | 45 | |

- 7.37.5 Although it is impossible to determine the precise number originally placed in the grave, comparisons with other assemblages would suggest that few have been lost. There are two distinct sizes present, as well as decorative elements on the plano-convex surfaces, and no base marks. No traces of a board were seen, although traces of organic remains also noted in the vicinity may indicate that a board was originally present.

Provenance

- 7.37.6 The counters were originally within a leather container (fragments of which also survived) placed within the Byzantine bowl. Their survival is due to proximity to the Byzantine bowl, which neutralised the acidity of the surrounding soil.
- 7.37.7 It is not known where the gaming pieces were originally produced, although it is likely that it was in the local area.

Conservation

- 7.37.8 The counters remain extremely fragile. They are currently stored in appropriate packaging and environmental conditions for organic remains. Future research will not affect their long-term storage, and will merely involve the study of their dimensions and non-destructive confirmation of their material.
- 7.37.9 They should be retained for future study and potential display.

Comparative material

- 7.37.10 The Saltwood counters can be broadly compared with similar sized assemblages from later 6th and early 7th century inhumations at a range of sites across south-east England, including burials from Faversham, Keythorpe Hall, Shudy Camps, Taplow, Sutton Hoo and Carisbrooke, as well as from contemporaneous continental burials. In those cases where sufficient data was retrieved they are generally associated with wealthy male burials. It is perhaps noteworthy that saga references indicate that accomplishment at board games was one of the skills to be learnt by nobility (Gabriel 1988, 233-6).
- 7.37.11 Specifically relevant to Kent, similar gaming pieces have come from Sarre graves 6 and 198, Kingston grave 299, Northfleet, Bishopsbourne grave 3 and Dover Buckland grave 14. With the exception of the Sarre graves, which produced similar quantities to Saltwood, only one or two counters were recovered from the other sites listed (Brent 1866, 157; Youngs 1983, 874 and pl 15e; Perkins 1992, 108 and 116).
- 7.37.12 The presence of patterning on the upper surfaces and the absence of base marks suggests that the Saltwood set is more likely to belong to the first half of the 7th century.

Potential for further work

- 7.37.13 As is demonstrated, sets of this type are rare in Anglo-Saxon England with only a handful from inhumation graves. This set appears to follow the general pattern of distribution, i.e. within male graves of conspicuous wealth. The set is broadly similar in size to the largest sets recovered elsewhere, suggesting few, if any, counters are missing.
- 7.37.14 As such, the Saltwood set is an important collection for the study of early medieval board games, and detailed analysis may, for instance, determine if the Saltwood set represents gaming pieces for one or perhaps more players. Without an associated board it will not be possible to determine the nature of the game for which these were intended, although comparisons with other sets recovered elsewhere may provide some possible suggestions.
- 7.37.15 In terms of the Fieldwork Event Aims, this assemblage is relevant to the dating of grave C5 and the chronology of the central cemetery. It also provides indications both of status and social behaviour.

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7.38 Assessment of Anglo-Saxon Structural Ironwork

Ian Riddler

Introduction

7.38.1 Objects of structural ironwork were recovered from seventeen graves within the three cemeteries. The ironwork includes nails, clench nails, double cleats and staples. Most of these objects were associated with coffins placed within the graves.

7.38.2 The study of the structural ironwork is relevant to the following Fieldwork Event Aims:

- *To establish the range of variation in burial rites, and to view possible change in rite over time;*

Methodology

7.38.3 All of the iron objects have been examined, together with all available radiographs and grave plans. The overall total of objects is relatively small, and no sampling was considered to be necessary.

Quantification

7.38.4 Details of the structural ironwork are provided in **Table 39**. In summary, the assemblage consists of seven clench nails, five double cleats, 12 nails and seven staples. All of the clench nails come from a single grave (ARC SFB99, grave W22). A rivet from ARC SFB99 grave W104 may in fact be another fragment of a clench nail. The nails occur in small numbers within five graves and the same can be said for the staples, which occur in just three graves, all within the central cemetery.

7.38.5 The double cleats came from central cemetery graves C5 and C12, both of which are male weapon burials of the first half of the 7th century, located in the northern part of that cemetery. A range of structural ironwork was also recovered from grave C200 but at the time of writing this has not been radiographed and its full nature is uncertain. It appears to include both staples and single cleats or angle-irons.

Table 39: Structural Ironwork

| Event code | Grave | Object | Location |
|------------|-------|------------------------|---|
| ARC SLT99 | C118 | Nail | Western part of grave, beyond the head |
| ARC SLT99 | C134 | Nail | Western part of grave, close to edge, near glass beads |
| ARC SLT98C | C34 | Nail | South-western corner of the grave, with wood traces |
| ARC SLT98C | C172 | Nail | Western part of grave, beyond the head |
| ARC SLT98C | C200 | ?Cleats or angle-irons | Corners of the grave, with wood traces |
| ARC SLT98C | C8 | Staple | With knife and key, in centre of grave |
| ARC SLT98C | C178 | Staples | One at the western end, two in the centre, one at the centre but close to the northern edge |
| ARC SFB99 | W22 | Clench nails | Single line down side of grave. |
| ARC SFB99 | W104 | ?Rivet/ clench nails | - |

Provenance

7.38.6 The provenance of the material, where known, is provided in **Table 40**. A further two nails came from the area of the central cemetery but are not associated with specific graves. The clench nails in grave W22 lay in a single line down the grave and are likely to have fastened two sections of wood together. Clench nails do not

necessarily entail any association with ships, they were commonly used to fasten overlapping or scarf-jointed sections of wood together in a variety of different situations. The double cleats and nail in grave C12 lay down the left side of the grave, close to traces of wood. Those in grave C5 lay in a similar position, but on the right side of the grave, to the west of the Coptic bowl. In general, the remaining elements of structural ironwork were also found at the edges of their respective graves.

- 7.38.7 The exception lies with the staple from grave C8, which lay in the centre of the grave, with a knife and a key.
- 7.38.8 The ironwork survives in poor condition although almost all of it has now been radiographed and the original form of objects can be seen on those radiographs. Structural ironwork is readily identifiable within graves, however, and it is unlikely to have been missed during excavation. Several of those iron objects that are currently unidentified may turn out to belong to this category.

Conservation

- 7.38.9 Traces of wood have accreted to the clench nails and other objects and future analysis would involve the identification of the wood type. This can be compared with the evidence from fragments of wood itself, which were recovered from graves C5, C7, C15, C21, C186 and C190 within the central cemetery, and graves C122, C155 and C156 within the western cemetery. This analysis would enable the choice of wood to be established for coffins within the cemetery. This is not normally possible within Anglo-Saxon cemeteries, but there are a number of examples of the fortuitous survival of structural wood at Saltwood.
- 7.38.10 Further analysis would also include an examination of the dimensions of the nails, which provides some indication of the thickness of wood used in each case. None of these analyses would conflict with the long-term storage of the iron objects. They are retained in environmentally-controlled conditions at the City of Lincoln Conservation laboratories. Structural ironwork is not common within early Anglo-Saxon cemeteries in Kent, and it is not recommended that any of these objects are discarded.

Comparative Material

- 7.38.11 The various forms of structural ironwork seen within the early Anglo-Saxon graves from Saltwood can all be paralleled both in East Kent and further afield, although not in any quantity in any case.
- 7.38.12 The fittings from grave C200 may well be angle-irons, which are recorded from graves at Finglesham, Gilton and Kingston, and are a comparatively rare form of structural ironwork, as also are cleats. Single cleats are recorded only from Chartham Downs, Dover Buckland, Lyminge, Kingston and Sibertswold, within Kent, and few are known from outside of the county. Double cleats (seen in Saltwood graves 5 and 12) are even more rare. They occurred within the Swallowcliffe Down burial in Wessex, and also at Winklebury Hill and Woodyates (Speake 1989, 98-115).
- 7.38.13 Structural fittings, of whatever type, tend to be centred on 7th century graves, although they are found in burials from the middle of the 6th century onwards.

Potential for further work

- 7.38.14 The range of structural ironwork from Saltwood extends to clench nails, angle irons, double cleats, nails and staples. Radiographs of the assemblage from grave C200 may yet reveal other types of structural ironwork. Aside from one publication currently in press, the range and significance of the material from Kent cemeteries has not been discussed in print, and publications have been centred on specific types of structural ironwork. The Saltwood assemblage therefore provides the opportunity to examine the different forms of ironwork in their specific contexts and to correlate their occurrence against grave types, gender and dating. Previously, this has only been possible for the Dover Buckland cemetery, where there was comparatively little structural ironwork.
- 7.38.15 It will be possible to examine why such ironwork was used so sparingly. For example, there appears to have been little requirement for nails to fasten coffins or grave structures in early Anglo-Saxon burials. Yet several burials include small quantities of nails, and the reasons for this can be explored. Grave W22, with its assemblage of clench nails, can be compared with other discoveries from Kent, England and the continent, most of which were excavated in the 19th century. The Saltwood assemblage retains wood traces, which, if examined, will allow the species of wood in that grave to be determined and to be compared with the wood traces from other burials, as noted above.
- 7.38.16 The nature and use of double cleats is not entirely clear although useful information was provided by the burial at Swallowcliffe Down in Wessex. Both these objects and the angle irons and staples come from the conspicuous male ‘founder’ graves of the central cemetery, but each of these male graves is different in this respect, and this variability can be examined. Grave structures from south-east Kent are known to differ from those on the Isle of Thanet. By comparing Saltwood with Lyminge (where structural ironwork was also found) an understanding of the regional preferences for structural ironwork over time can be developed.
- 7.38.17 The study of the structural ironwork is therefore relevant to the following Fieldwork Event Aim:
- *To establish the range of variation in burial rites, and to view possible change in rite over time;*
- 7.38.18 A range of different iron fittings can be seen within the Saltwood burials. There is clear variation over time, with clench nails, nails, staples and double cleats occurring within different cemeteries during the later 6th and 7th centuries. There have been no detailed studies of structural ironwork within east Kent cemeteries, although individual elements have been published (Evison 1979; 1980; Riddler forthcoming). Reasons behind the adoption of particular forms of ironwork within specific graves are not yet well understood, although most fittings should be seen within the context of the reinforcement of coffins. Certain forms of ironwork, like the clench nails, are relatively common within Kent whilst others, and the double cleats in particular, are much more common in Wessex and East Anglia.
- 7.38.19 The structural ironwork is also relevant to a further research aim:
- *The nature of coffins, chambers and cists within East Kent graves*

- 7.38.20 Clear evidence for a chamber was recorded with central cemetery graves C7 and C200, and a wooden bier appeared to have been placed in grave C15. Grave C1 was stone-lined as were graves C34, C55, C171, C176, C186, C199, C204, C117, C124, C129 and C138, and graves C21, C174, C177 and C139 included pillow stones. A footstone occurred with grave C123. A wide variety of burial practices can therefore be seen within the various cemeteries and it is clearly worth attempting to view these practices for their spatial distribution and in relation to the phasing of the cemeteries and the identification of groups and subsets of burials within each cemetery. Whilst no form of structural ironwork appears to be specific to one gender, cleats and angle-irons are mainly found in female burials.

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7.39 Assessment of Anglo-Saxon Miscellaneous Objects

Ian Riddler

Introduction

7.39.1 Twenty-four fragments of copper alloy are described here. At this stage of the assessment, half can be assigned to specific object categories, the remainder have yet to be identified. The identified material includes four fragments of drinking vessel mounts, six further mounts, a small piece of copper alloy sheet and a staple. The unidentified material includes an enigmatic rectangular object found close to the ring sword in western cemetery grave C127.

7.39.2 The study of these objects is relevant to the following Fieldwork Event Aims:

- *to establish a chronology for the Anglo-Saxon cemeteries;*
- *To establish the range variation in burial rites, and to view possible change in rite over time;*

Methodology

7.39.3 All of the objects have been examined at the City of Lincoln Conservation Laboratories. However, as noted above in some cases objects are still undergoing conservation, and they have yet to be identified. This assessment is concerned therefore with those objects that have been identified.

Quantification

Table 40: Quantification of miscellaneous Anglo-Saxon objects

| Event Code | Grave | Context | Object | Quantity |
|--------------|----------|---------|-----------------------|-----------|
| ARC SFB99 | Ditch W6 | W1091 | Object | 1 |
| ARC SFB99 | W1279 | W1283 | Object | 1 |
| ARC SFB99 | W1453 | W1561 | Object | 1 |
| ARC SFB99 | W1762 | W1763 | Object | 1 |
| ARC SLT98C | C9 | C1109 | Object | 1 |
| ARC SLT98C | C16 | C1166 | Mount | 1 |
| ARC SLT98C | C39 | C1351 | Object | 1 |
| ARC SLT98C | C101 | C3037 | Mount | 1 |
| ARC SLT99 | ? | C3744 | Mount | 1 |
| ARC SLT99 | C117 | C3758 | Object | 1 |
| ARC SLT99 | C129 | C3884 | Drinking Vessel Mount | 1 |
| ARC SLT99 | C129 | C3884 | Drinking Vessel Mount | 1 |
| ARC SLT99 | C129 | C3884 | Drinking Vessel Mount | 1 |
| ARC SLT99 | C129 | C3884 | Drinking Vessel Mount | 1 |
| ARC SLT99 | C130 | ? | Object | 1 |
| ARC SLT99 | C154 | C4687 | Staple | 1 |
| ARC SLT99 | C155 | C4691 | Object | 1 |
| ARC SLT99 | C170 | C4725 | Mount | 3 |
| ARC SLT99 | C170 | C4725 | Object | 1 |
| ARC SLT99 | C172 | C6200 | Object | 1 |
| ARC SLT99 | C172 | C6200 | Sheet | 1 |
| ARC SLT99 | C173 | C6205 | Object | 1 |
| Total | | | | 24 |

7.39.4 A list of all of the copper alloy objects is provided in **Table 40**. They include four drinking vessel mounts, all of which come from the same grave, six other fragments of mounts from a variety of graves, a small piece of undecorated copper alloy sheet,

and a staple. In addition, an enigmatic rectangular object, which appears to be decorated, was found close to the ring sword in ARC SLT99 grave C127.

Provenance

- 7.39.5 The four fragments of drinking vessel mounts all come from ARC SLT99 grave C129. They lay close to the centre of the grave, in the presumed position of the upper legs of the deceased.
- 7.39.6 The remaining fragments of mounts were found in ARC SLT98C graves 16 and 101, and ARC SLT99 grave C170. Two further fragments are not associated with specific graves. The small fragment of undecorated sheet came from ARC SLT98C grave C172 and the staple came from ARC SLT99 grave C154.

Conservation

- 7.39.7 Further analysis is likely to involve two elements:
- *Identification of mineralised wood and/ or traces of organic material associated with the drinking vessel mounts, other mounts and staple;*
 - *Detailed analysis of the drinking vessel mounts, to establish whether they were decorated and gilded.*
- 7.39.8 Neither process should affect the integrity of the existing fragments; it is more a question of whether the surviving traces visible on these objects are suitable for further analysis. This can be determined by discussion with conservators.

Comparative Material

- 7.39.9 Complete drinking vessels (other than those of glass) are comparatively rare in Anglo-Saxon England, but there are several examples of the survival of metal mounts from their apertures, notably at Sutton Hoo and Taplow (Care Evans 1983, 316-408). Glass drinking vessels are more common on the continent than examples in other materials (Evison 1955) but there, as in England, the survival of mounts and their identification is a comparatively recent phenomenon.
- 7.39.10 Further examples are known from Broomfield, Castledyke, Little Wilbraham, Loveden Hill and Holywell Row, suggesting that they were originally quite common, and may not have been confined to princely graves. Most examples are, however, associated with male graves. The small mounts from Saltwood resemble those from other Kent sites at Chartham Down, Dover Buckland, Faversham, Sarre and Sibertswold for the presence of clips attached to a circular frame.
- 7.39.11 Triangular 'vandykes' are not apparent within the Saltwood assemblage, although they do occur in contemporary burials in Suffolk. The drinking vessel mounts from Saltwood appear to be less auspicious than the Suffolk assemblages, and they may represent burial of a lower status, although there are other possible explanations for these differences.
- 7.39.12 The small collection of copper alloy mounts includes a variety of pieces, some of which are simple repair clips (*cf* Evison 1987, 105) whilst others may have formed part of bead strings (as copper alloy loops) as with the example from ARC SLT98C grave C16. In most cases, conservation work is continuing on these objects, and

they have yet to be conclusively identified. The range of mounts known from this period is extensive (Hinton 1996, 50-5).

- 7.39.13 Small copper alloy staples like example from ARC SLT99 grave C154 are relatively common finds, both in Kentish graves and elsewhere. They can be distinguished from structural ironwork in terms of both their material and their size. Some were certainly used as part of the fittings for boxes, but that does not appear to be the case here. All of the objects in this grave, the burial of a young child, were deposited down the right side, close to where the coffin would have been situated, and they may have acted as structural fittings, or as parts of a wooden object which lay down this side of the grave.
- 7.39.14 The enigmatic mount from grave C127 is, as yet, unparalleled in Anglo-Saxon England. It appears to be a decorative mount of rectangular shape with rivets for attachment. It may have formed a part of a baldric for the deceased in this grave. The decoration is not yet apparent, and the object is still undergoing conservation, and has yet to be radiographed. It is likely, however, to be of considerable importance when its full detail is revealed.

Potential for further work

- 7.39.15 The study of these objects is relevant to the following Fieldwork Event Aims:
- *to establish a chronology for the Anglo-Saxon cemeteries;*
- 7.39.16 The drinking vessel mounts from grave C129 stem from an object type largely of late 6th or early 7th century date. This grave has not, as yet, been phased in any detail. The other grave goods include an unusual (but not unique) mixture of sword, shield, spear with glass beads, possibly from a second occupant of the same grave. The sword has yet to be dated with any precision, but the shield is thought to be a 7th century type. Weapon burial of this sort appears to have gone out of fashion in the second half of the 7th century, and this burial can tentatively be placed in the first half of that century at present.
- 7.39.17 The drinking vessel mounts can be examined in detail, under a low-powered microscope, to determine their original form and method of fixing, and to assess whether traces of gilding or other metals are present. Their forms can then be compared with those from other burials and this should assist in determining their relative dating. That dating can be compared with the evidence from other objects within the same graves.
- 7.39.18 All of these indicators suggest that this grave belongs to the first part of the 7th century and that it is broadly contemporary with the 'princely' burials found further to the east. This is interesting (if tentative) confirmation that burial continued at the western cemetery whilst the central cemetery was also in use. Furthermore, the western cemetery may have been used for a relatively long and unbroken period of time from the middle of the 6th century through to the second half of the 7th century.
- 7.39.19 The enigmatic mount from grave C127 may form part of a baldric for the deceased in that grave. Changes in the arrangement of weapons on the body, in terms of buckle forms and the means of suspension, can be seen between the earlier male burials like this one, and the later series of 7th century graves. This contrast has seldom been seen in East Kent within the same burial landscape. The careful, laboratory-based excavation of the block around the sword in grave C127 will

enable the nature of the fittings there to be identified, and their original positions to be reconstructed. Possible continental affiliations can then be explored.

- *to establish the range variation in burial rites, and to view possible change in rite over time;*

- 7.39.20 The drinking vessel mounts form another element of male burial of the later 6th and early 7th centuries. Such mounts might have been expected within graves C5, C7 and C200, but they are found only within grave C129, which appears to be broadly contemporary with them. The symbolism of drinking containers is not confined to male graves and these vessel mounts should be viewed in association with glass vessels and with the large iron-bound buckets found in several auspicious graves, all relating to feasting and drinking.
- 7.39.21 The mount from grave C127 needs to be cleaned by a conservator and assessed for the traces of metals present. It may also have been gilded, and may include inlay. It is clearly decorated, but the nature of that decoration is not yet apparent. Study of the style of the decoration will enable the provenance of the object to be determined. Careful excavation of the block-lift, currently in progress, will allow the arrangement of objects here to be reconstructed, so that it will be possible to see how the sword was placed on the body, and whether it was worn within a baldric arrangement. That arrangement can then be compared with the evidence from the other sword burials within the various cemeteries, allowing an interesting view of weapon deposition over time, in the context of weapon burial within this part of east Kent.
- 7.39.22 Various graves within the cemeteries show indications of a display of feasting, or so it seems. This may be simple ostentation during the funeral itself, or a structured deposition in preparation for the afterlife. Although it may not be possible to come to any firm conclusions about these different possibilities and the symbols of burial seen here, there are clearly a range of vessels, of ceramics, iron and wood, and glass, which have been placed in male graves, and possibly also in female graves. The original contents of these containers (if there were any) have disappeared and there are no surviving residues worthy of analysis; but a comparison of these different depositions, in terms of their structure within each grave, may assist in describing the nature of this burial rite.

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7.40 Assessment of Anglo-Saxon Non-Ferrous Object Technology

Catherine Mortimer

Introduction

7.40.1 Individual Anglo-Saxon non-ferrous items have been assessed in terms of their form, function and possible symbolic value by the relevant material and/or artefact type specialists. Here, they are assessed *en masse* for their technological aspects. The study of technology assists in the following Fieldwork Event Aims:

- *To establish a chronology for the Anglo-Saxon cemeteries;*
- *To establish the range variation in burial rites, and to view possible change in rite over time;*
- *To indicate the general development of each cemetery and their relationship to each other;*

Methodology

7.40.2 This assessment was carried out in November 2000, further areas for study may emerge at later stages of work, as many artefacts at that time were undergoing conservation and were not available for assessment. A more comprehensive understanding of the range of objects will be possible once the initial conservation work is completed.

7.40.3 The objects were reviewed at the City of Lincoln Conservation laboratories and were discussed with conservators there. Discussions have also taken place with Tania Dickinson and Ian Riddler.

Quantification

7.40.4 A total of just over 80 objects of copper alloy were retrieved from Early Anglo-Saxon graves at Saltwood, alongside five silver and/or gold brooches. The copper alloy objects include three Coptic bowls, approximately thirty fittings for a box, two bracelets, eleven brooches, eighteen buckles, several coins, four drinking vessel mounts, six other mounts, three pins and a quantity of sundry items. In addition, silver wire finger rings were recovered, alongside gold strip from a headband and several gold and silver pendants.

Provenance

7.40.5 All of the objects assessed comprised Anglo-Saxon grave goods, the majority recovered from the central cemetery and to a lesser extent, western cemetery. Comparatively few non-ferrous metal artefacts were recovered from the earliest late 5th to mid/ late 6th century eastern cemetery.

Conservation

7.40.6 Most of the copper alloy objects survive in a reasonable condition. They have not been cleaned, with a few exceptions, and this may allow technological details (particularly inlays) to be examined before they are commissioned for display or

other purposes. The silver and gold items also survive in good or excellent condition and are suitable for analyses. It is important to schedule this work in collaboration throughout with the conservation staff and to be aware of their own particular requirements for the objects.

- 7.40.7 Technological analyses will largely be non-destructive and would not conflict with any long-term storage requirements. Further details of proposed analyses are outlined below. Any samples taken would be retained for future research, and would not be discarded.

Potential for Further Work

- 7.40.8 The study of the technology of these objects assists with the following Fieldwork Event Aims:

- *To establish a chronology for the Anglo-Saxon cemeteries;*
- *To establish the range variation in burial rites, and to view possible change in rite over time;*
- *To indicate the general development of each cemetery and their relationship to each other;*

- 7.40.9 Technological research was not amongst the primary aims of the excavation, but there are two aspects of the artefact research which will require technological analysis:

MATERIAL IDENTIFICATION

- 7.40.10 This is required for accurate descriptions in the catalogue, as well as for the typological research by other specialists. In the main, non-destructive surface analysis, such as X-ray fluorescence (XRF), will confirm which materials are present. For example, there are currently about 13 objects whose bulk material or surface coating is unknown or not positively identified. In addition, there are about five objects with inlays that, if XRF results are inconclusive, will probably require the removal of tiny samples (about the size of a pin-head) for analysis by X-ray diffraction (XRD). Further areas of query may emerge after conservation, or during analysis by other specialists.
- 7.40.11 It is possible that some of this analysis may be need to be carried out at an early stage of study, i.e. during conservation of the pieces to allow appropriate treatments, but as a stand-alone study. The material identification phase would take about three days and would require access to a suitable research laboratory.
- 7.40.12 The relative purity of the gold objects should be analysed and viewed critically against earlier suggestions that gold becomes less pure over time during this period (Hawkes et al 1966; Brown and Schweizer 1973). The objects of gold from Saltwood are relatively well-dated, facilitating such a study.
- 7.40.13 A further area of study lies with the white material present on the composite disc brooch from grave C190. The precise nature of such material is still not well-understood (Evison 1951) and an excellent opportunity exists here to apply scientific techniques to the problem.

- 7.40.14 For further, broader based comparisons, access would be required to the objects from the Lyminge cemetery, which are currently held at Maidstone Museum. With the agreement of the curators of that museum it would be possible to carry out comparative analyses, which would serve to place the Saltwood objects into a wider, regional perspective, although it is accepted that analysis of the Lyminge assemblage may be beyond the remit of the Saltwood assessment.
- 7.40.15 The Lyminge objects include several brooches which are directly comparable with Saltwood (principally square-headed and radiate brooches), as well as an excellent collection of buckles. The composition of the Saltwood jewellery could then be directly compared with the Lyminge assemblage. In addition, technical data relating to the Dover Buckland cemetery would be made available by the British Museum (Ian Riddler pers. comm.) and would also form a useful set of comparanda. Further analyses could also be carried out on material from other Early Anglo-Saxon cemeteries in Kent encountered in the course of the Rail Link excavations.

CONSTRUCTION INFORMATION

- 7.40.16 Investigative conservation techniques will undoubtedly provide fascinating insights into construction techniques. Most objects should not pose any particular difficulties and the artefact specialists should be able to cull enough information from the conservation records and X-rays to make brief comments, such as 'cast, with three rivets in attachment at end,' for the catalogue. However, the most complicated items (eg buckle SF900, disc brooch SF2413, pendant SF2411) will require more work, with the possibility of additional X-raying and microscope work. For example, it will be useful to determine the designs of the gold backing foils of the garnet inlays, in order to compare them with other examples of the period. The method of cell construction could be studied using detailed microscope study, backed up with X-radiography.
- 7.40.17 The Coptic bowls will also require careful study, for example, to examine the mend on the example from grave C7. A stand-alone technical study of these items would take up to 4 days, but this will depend somewhat on how much of this type of work the artefact specialists themselves carry out. Analyses carried out on the Coptic bowls would allow their metal contents to be compared with each other, and also with the earlier analyses of the 1980's carried out on examples held in the British Museum. Although the latter are not entirely easy to reconcile with modern techniques, it is nonetheless possible to make some valid comparisons. Access will also be available to examinations carried out on similar bowls from some continental cemeteries.
- 7.40.18 Both the above types of information would provide essential details for the catalogue and for the discussion texts. Higher levels of technical analysis can also be proposed, which again may be considered beyond the remit of the Saltwood assessment. For example, the technical data could form the basis for a technological summary, with reference to other relevant collections, to put the technological findings in context.

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7.41 Assessment of Anglo-Saxon Ferrous Object Technology

Brian Gilmour

Introduction

- 7.41.1 The potential for the technological investigation of a large group of broadly contemporaneous iron finds from Anglo-Saxon burials such as those from Saltwood tends to be much underestimated largely because of the very corroded condition in which objects like this usually survive. Iron objects also tend to be viewed by modern observers as largely utilitarian and therefore inherently not as interesting as objects of precious metal. Both these views are mistaken, particularly for Saltwood that is so rich in ironwork, including very high status objects such as swords and angons.
- 7.41.2 Unlike other metals of antiquity the alloys of iron were smelted as a solid spongy mass known as a bloom (deriving from old English - *bloma* or flower, most probably because of its appearance). The two main consequences of this are firstly that the iron itself (of whatever alloy) is heterogeneous in composition, and secondly that many iron objects are of composite manufacture, that is they are made of different pieces of iron or steel hammer-welded together.
- 7.41.3 Not only is there a large number of iron finds from Saltwood but also a wide range of objects is represented. Whether utilitarian or high status or somewhere in between there is a large enough number of objects of different types for the potential for the recovery of valuable archaeological information to be extremely high. Also the unusual properties of iron mean that a much broader range of information can be recovered than is possible for most objects, whether metal or not. Research over the past 20 years has shown that the iron industry in the Anglo-Saxon period was much more developed in various ways than had previously been thought.
- 7.41.4 The study of the technology of the iron objects assists in the following Fieldwork Event Aims:
- *To establish a chronology for the Anglo-Saxon cemeteries;*
 - *To establish the range variation in burial rites, and to view possible change in rite over time;*
 - *To indicate the general development of each cemetery and their relationship to each other;*

Methodology

- 7.41.5 This assessment has been carried out using information supplied by Ian Riddler and Michelle le Mairie on the iron objects from Saltwood. At this stage, the objects have not been inspected, but a great deal of discussion has taken place with the City of Lincoln Conservation Laboratories in terms of the nature and condition of the objects, and all of the the radiographs have been examined. This represents a sample of approximately 90% of the objects.

Conservation

- 7.41.6 The proposed methodology for analysis is as follows:

- 7.41.7 In each case, once the conservation work has been carried out - particularly the removal from the object's loose encrusted material from the ground - a sample would be cut from part of the object where the metal (as seen from X-ray etc) is known to survive better under the corrosion. For the most part the clean metal is vital for the success of this analytical work although some information can be retrieved from *in-situ* iron corrosion products especially in the case of swords.
- 7.41.8 Samples need to be representative of the object as a whole and therefore, in the case of swords it means taking a narrow wedge-shaped section extending half way across the blade. This is done using a rotating diamond tipped cutting disc so as to minimise damage to the rest of the object. Where required, and as a matter of course for swords, the original appearance of the object is restored by filling the gap left by the sampling. This is done using an inert resin, coloured and contoured to match the surrounding corroded appearance.
- 7.41.9 All samples are mounted in a resin block to enable metallographic analysis to take place. Polished and etched sections of all these objects are examined by microscope to determine the overall structure that is then recorded (briefly) and photographed at low magnification to produce photo-macrographs which form part of the subsequent report. Routine use of (Vickers) micro-hardness testing should also be made to help recover additional information relating to the observed structures. Electron-probe micro-analysis should also be employed for all the sword sections, and a proportion of the other sections, in order to identify and measure the proportions of the minor and trace elements present in the iron, and also to analyse the slag still trapped in the metal.
- 7.41.10 Elemental maps should also be made to show how the distribution of minor elements in the iron varies across the sections that may be highly significant, particularly in the case of pattern-welded swords. To a large extent this will also reveal the distribution of these minor elements in their original positions in the iron corrosion products where the iron metal has corroded away. This is very helpful in reconstructing the original appearance of very complex composite objects like pattern-welded swords. Where useful these maps should be reproduced alongside reconstruction diagrams in the final reports.

Comparative Material

- 7.41.11 It will be possible to compare the results for the swords with those examined from certain other Kentish cemeteries, notably many of those from Sarre and Bifrons, and also scattered examples from several other cemeteries. Very few comparable (Kentish) spearheads, knives or other iron artefacts have yet been examined, which should be done in order to record the range and variations in the types of iron used.
- 7.41.12 This analysis may also determine how the objects were used, and as far as possible to suggest the extent to which the production might be fairly local, or which iron alloys might have been brought in from further afield or imported. The new studies, currently underway, of spearheads from Kentish cemeteries provide the impetus for this technological work to take place. With this in mind, some objects like the angons may be identifiable as having been imported.

Potential for Further Work

- 7.41.13 The Saltwood ironwork (the largest material category group of finds from the site) should provide the basis for the recovery of a great deal of valuable technological

information. This should compliment the information gained from the examination of other finds as well as greatly enriching the database of archaeological evidence from the site.

- 7.41.14 Sourcing the iron could be difficult, but not impossible. Ironstone was present at Saltwood and was collected. It would be advantageous to analyse that, particularly against samples from the Weald, and those from France. For smithing styles there is limited potential, particularly in examining the quantity of re-used iron seen in different types of object over time. Without the furnaces, however, it is not possible to provenance the styles, although it is likely that different styles will be identified.
- 7.41.15 If technological studies are undertaken on the swords, knives and spears, the principal classes of edged implement, then it will be possible to build up a very comprehensive picture of manufacturing techniques over time, and to view any significant technological changes. Work has been carried out in recent years on ferrous metallurgy in northern France and there is also a certain amount of work in progress. Vincent Goustard has published a study of a 9th century ironworking furnace from Compiègne (east of Beauvais) and a Merovingian iron smelting site at Boécourt has also been published, together with some articles on the broader questions of ironworking in the Merovingian period. There is quite a burgeoning amount of new French literature on this subject, including some work on objects from cemeteries, forming a useful body of comparative data.
- 7.41.16 The study of the technology of the iron objects assists in the following Fieldwork Event Aims:
- *To establish a chronology for the Anglo-Saxon cemeteries;*
 - *To establish the range variation in burial rites, and to view possible change in rite over time;*
 - *To indicate the general development of each cemetery and their relationship to each other;*
- 7.41.17 The main aim of the study of a large group of objects like this is not only to identify the iron alloys used to make individual artefacts but also to compare how the different types of iron available were combined in the different classes of objects represented. Many iron objects are likely to be composite in their construction with more than one iron alloy used. Unlike other early metals iron and its alloys were produced in the solid state. This plus the unusual properties of iron, especially with respect to the ways it combines with carbon at different temperatures, means that not only the composition but much information about the smithing history and any subsequent heat-treatments can also be revealed by technological examination.
- 7.41.18 The Saltwood assemblage offers the opportunity to examine a wide range of material that extends across the entire Early Anglo-Saxon period. The examination of specific object types, therefore, can be placed within a chronological framework, in an attempt to view and to explain change over time. Variation can be examined within individual objects and object types, and also across the different cemeteries, in order to consider whether the study of technology can add to the information provided by typological and social analyses.

7.41.19 The potential of each object type can be briefly summarized here:

SWORDS

- 7.41.20 All 11 swords (and scabbards) came from well-stratified graves. They should be sampled and examined technologically and the results compared internally (i.e. with the results across the group) and with any technological results from other nearby groups of swords and with those from further afield, principally at Dover Buckland. The potential of swords to yield extremely valuable and exciting technological information cannot be over-emphasized.
- 7.41.21 The variability of sword manufacture will clearly be of interest. It may be possible to group the swords by various technological criteria, and to compare these groups with those from Dover Buckland, where similar work has been carried out. The broader question of schools of manufacture and different production centres could be examined to some extent, particularly if some of the sword blades turn out to be obviously Frankish. Closer attributions (to regions of Francia) may be difficult, and the interpretation of the variability may itself be unclear. It will nonetheless be possible to recognise and to comment on that variability.
- 7.41.22 A large group of swords like this also means that it should be possible to gain a good impression of the types of sword designs that would have been popular among the elite sword-bearing people buried at Saltwood. Comparisons with the swords in graves C5, C7 and C200 are particularly interesting, in this respect. Apart from being able to work out the range of designs present, the iron alloys used and the ways they were combined to produce the finished blades and their subsequent heat-treatments, the number of swords present means that a comparison of the standard of production quality can also be made.
- 7.41.23 It is clear from X-ray work to date that most of the swords are fairly heavily mineralized but with some core metal surviving. Technological work would be focused on the parts of the blades where the metal survives better under the corroded surface. The results would also be compared to those of the spearheads, angons and some of the larger knives.
- 7.41.24 Preliminary X-ray work suggests that all 11 swords may be found to be pattern-welded and therefore will be very elaborately made with a variety of intricate weld patterns that would have been visible on the surface of the original blades. It is not known for certain what was the main purpose of pattern-welding but the way they have so far been found to have been made suggests that these were primarily display weapons, very likely designed to show just how good the swordsmiths art could be.
- 7.41.25 Display weaponry can be identified in a number of ways. For example, comparisons of the pairs of shields from the large male graves will determine which confirm with existing types and which show ostentation, usually in terms of their size (making them heavy and unwieldy to use in combat) or in terms of the additional decorative fittings placed on them. For the swords and knives, it is possible to identify whether they had been used in most cases (depending on how well they survive) and to create a broad scale of use, from 'none' to 'extensive'. Technological analysis will assist greatly in this respect, in concentrating on the edges of the blades and examining traces of wear, which are correlated with the evidence from the radiographs. It should therefore be possible to determine which swords have been used, and which have not; and to establish whether the unused swords were for display or combat. The technology of the blades should allow this to be seen: a

combat sword will have been produced in a particular way, to combine lightness, durability and flexibility. These characteristics are not necessarily present on a display weapon, which may also be of different dimensions.

- 7.41.26 As display weapons, swords of this kind may have been primarily a mark of the prestige of the owner rather than having been a standard weapon of war. The investigation of the sword blades from Saltwood would aim to look at the ways in which these swords stood out as a group, to look at the quality that was achieved for (and possibly was demanded by) this particular group of people. Also the swords that appear to be earliest should be compared with those that are later to see if any technological change occurs over the hundred years or so represented in the cemetery. The swords from the 'princely' graves, for example, may turn out to be display weapons, but this is not necessarily the case with those from other graves.

SPEARHEADS

- 7.41.27 Of the 32 spearheads excavated it would appear from initial X-ray work that about half of these are too heavily mineralized to make technological analysis worthwhile. It would be very useful to analyse the remainder and to compare the results with those of the swords. Although comparatively few Anglo-Saxon spearheads have yet been examined in this way, the technological evidence that has been recovered (i.e. number and type of metals used in manufacture) suggests that these weapons were relatively utilitarian in their construction, reflecting their probable role as the actual standard fighting weapon. However there are signs that pattern-welding – which for centuries had been developing for swords – was starting to be used for spearheads as well.
- 7.41.28 We can also expect composite construction to have been used to make better quality weapons (most probably by exploiting the physical properties of steel or phosphoric iron). Even where spearheads are found to have been made of an apparently single grade of iron the evenness of the metal will give us a good guide of whether or not, or the extent to which the iron used has been processed. The less it has been processed the more likely the iron is to have been made locally unless there were any specialized iron producers operating locally, which is unknown as yet. The proximity of the site to Wealden ore supplies and ironworking centres is of considerable interest in this respect.
- 7.41.29 Signs that specialist iron-makers were operating in the area will be looked for in any subsequent analysis of the ironwork from this site. The evidence may boil down to the extent to which the full variety of iron alloys were used in more utilitarian iron objects - most things apart from swords.

ANGONS

- 7.41.30 Angons - the narrow form of spear resembling (and possibly derived from) the Roman *pilum* - are a typically Frankish form of weapon and all three examples found at Saltwood should be analysed, given the likelihood that these are Frankish imports. This would be confirmed if they are found to be different compositionally from other objects. If, however, the background iron structure and its trace element and slag compositions are all found to be the same as other comparable objects - mainly spearheads - then there may be good grounds for thinking these to be (probably local Kentish) copies of this Frankish form of weapon.

KNIVES

- 7.41.31 Although approximately a hundred knives were found in the Saltwood cemetery the proportional effects of corrosion have clearly been greater due to the smaller size of the knives compared to the spearheads. X-radiography would suggest that about a quarter of the knives survive in good enough condition for technological examination to be worthwhile. The knives should be sampled and analysed to identify their structure, determine what heat-treatments have been used, and look for possible examples of decorative welding techniques.
- 7.41.32 Particular attention should also be paid to the possibility of recycling - the incorporation of scrap iron (or steel) into the blades. The results will help assess the overall quality of the knives from the site and will also help in judging the results obtained for the spearheads and in comparing these to the technology of the swords.

WEAVING BATTEN

- 7.41.33 This would be well worth examining to investigate the possibility that it might have been made from a cut down sword (which is often the case). If so it will effectively raise the number of sword blades to 12 and could therefore be investigated as such. If it has been made as a weaving batten then its construction and the type of iron used is likely to be very simple and would provide a very useful benchmark for judging much of the rest of the ironwork from the site.

7.42 Assessment of Charred Plant Remains and Charcoal

Michael J. Allen, Enid Allison and Sarah F. Wyles

Introduction

- 7.42.1 A full sampling programme was conducted during excavation for the retrieval of charcoal and charred plant remains to provide information and interpretation of the economic and palaeo-environmental aspects of the site.
- 7.42.2 The recovery and assessment of the samples was undertaken in accordance with the Fieldwork Event Aims for the site. The sampling programme aims to allow general questions concerning the diet and economy of the site, and of land-use for the site, as well as more specific information about the function and nature of individual features, building or activities, to be addressed. On a wider, regional level it was hoped to gain information at varying levels from the Bronze Age to Saxon economy and lifestyle of Kent, and to look at the development of the economy and land-use through time.

Methodology

- 7.42.3 Site sampling strategy ensured that a range of features from all phases were sampled. Within each defined phase the sample suite included a range of different feature or context types, and ensured a spatial array. Priority was given to samples from features or contexts that were dated, or datable, over those that were unlikely to be dated/ datable, except where specific or unusual activities were indicated by the field evidence. Where environmental sampling methodologies differ between Canterbury Archaeological Trust (CAT) and Wessex Archaeology (WA), these are indicated appropriately in text.
- 7.42.4 Standard processing methods were used. Flotation of bulk samples facilitated the retrieval of flot on 500 µm (WA) or 250 µm (CAT) mesh sieves, with residues retrieved on 1mm mesh sieves. The fractionated residues greater than 5.6mm were sorted, recorded and discarded. Residues of 2mm and 1mm from all flotation samples (WA) were dried and are retained. Artefact samples from which charcoal was retrieved were sieved to 1mm and fractionated on 1mm, 2mm and 4mm/ 5.6mm meshes.

Quantification and Provenance

- 7.42.5 A total of 547 bulk samples were taken of which 462 were processed (comprising all 353 samples taken by CAT and 109 samples taken by WA), including a representative sample of all feature types and phases. In addition a series of 59 samples were taken for artefact and charcoal recovery. A further 353 samples were taken and processed from the Anglo-Saxon cemetery and grave-related contexts.
- 7.42.6 The samples processed were from a range of Neolithic, Early Bronze Age, Late Bronze Age/ Early Iron Age, Early Iron Age, Romano-British, Early to Mid Saxon, medieval and undated features, for the recovery and assessment of charred plant remains and charcoal.
- 7.42.7 The majority of the bulk samples were 10 litres, but varied between 0.5 and 110 litres and artefact samples were up to 800 litres. The volume of the flots was

obviously highly variable due to the range in sample size, but in general flots were average for the sampled contexts, (average flot size is c. 60ml per 10 litre of sample) with between 1 – 70% rooty material and low to high numbers of uncharred weed seeds, which may be indicative of stratigraphic movement. **Table 41** quantifies the assessment data.

- 7.42.8 Charcoal fragments of greater than 5.6 mm were recovered from 73 of the samples. Eight of the Neolithic samples, nine of the Late Bronze Age/ Early Iron Age samples, one of the Late Iron Age/ Early Romano-British, one of the Saxon samples and six of the undated samples contained large quantities of charcoal. The charcoal was mainly large wood fragments.

NEOLITHIC

- 7.42.9 The ten Neolithic samples from pits W136 and W175 contained charred grain fragments in seven samples, with high numbers in one of them, charred weed seeds, including hazelnut fragments in all samples, with large amounts in seven of these. A few charred chaff fragments were recorded in the sample from W175. Burnt bone fragments were recorded in five of the flots.

EARLY BRONZE AGE

- 7.42.10 The Early Bronze Age samples from the ring ditch W33 and ditch C4744 produced very few, if any charred remains in the flots.

MIDDLE BRONZE AGE

- 7.42.11 Only one sample has been defined as Middle Bronze Age and this pit (C6253) produced good quantities of grain and charcoal.

LATE BRONZE AGE/ EARLY IRON AGE

- 7.42.12 The Late Bronze Age/ Early Iron Age samples produced charred grain fragments in 29 samples, with high numbers in 15 of them, and charred chaff fragments in 21 of the samples, with large amounts in 10 of them. Charred weed seeds, including hazelnut fragments, were observed in 24 of the samples, with large quantities in 5 samples.
- 7.42.13 The three samples from W207 contained exceptional quantities of charred pea/ bean fragments, with a few pea/ bean fragments present in a sample from W208. Very good preservation and quantities were also noted in pits and especially in pit C2805. The remains from ditches were typically poorer but occasional concentrations (e.g. the sample from C124) were richer. A number of samples were from cremation-related features from which charcoal was generally very good and plant remains largely poor as they were incidental to the pyre firing. Burnt bone fragments were present in six of the flots, bone fragments in a single flot and small mammal bones in one flot. Molluscs were observed in a single flot.

Table 41: Quantification of ecofacts

| Period | Feature | Context | Sample | Size | Flot size | Roots | Grain | Chaff | Unburnt weed seeds | Burnt weed seeds | Charcoal | Other | Residue |
|--------|-------------------|---------|--------|------|-----------|-------|-------|-------|-----------------------|---------------------|----------|-------------|---------|
| PHIST | ?Pit C2157 | 2156 | 36 | 20 | 70 | 10 | C | C | c | - | A | | C |
| PHIST | Crem/p-hole C6359 | 6358 | 940 | 10 | 5 | | - | - | c | - | - | | C |
| PHIST | Crem/p-hole C6353 | 6352 | 942 | 30 | 10 | | A | - | - | C | - | | B |
| PHIST | Crem/p-hole C6363 | 6362 | 941 | 10 | 10 | | - | - | c | C | C | | - |
| PHIST | Ditch | 2181 | 38 | 10 | 5 | 2 | C | - | - | - | C | | - |
| PHIST | Ditch | 3765 | 810 | 10 | 10 | 3 | - | - | c | - | B | | - |
| PHIST | Ditch | 2289 | 39 | 10 | 5 | | - | - | - | - | C | | C |
| PHIST | Ditch C2178 | 2179 | 37 | 10 | 60 | 10 | C | - | - | - | A | | C |
| PHIST | Ditch C2276 | 2277 | 30 | 10 | 30 | 5 | - | - | c | - | B | | C |
| PHIST | Ditch C2292 | 2290 | 41 | 10 | 5 | 3 | - | - | - | - | C | | - |
| PHIST | Ditch C2292 | 2291 | 35 | 10 | 10 | | - | - | - | - | C | | - |
| PHIST | Ditch C2306 | 2305 | 33 | 10 | 5 | 2 | - | - | - | - | C | | C |
| PHIST | Ditch C2308 | 2307 | 34 | 10 | 10 | 5 | - | - | - | - | C | | - |
| PHIST | Feat C3720 | 3719 | 802 | 10 | 10 | 3 | - | - | b | - | C | Snails | - |
| PHIST | P-hole/pit C6347 | 6346 | 943 | 10 | 5 | | C | C | - | - | - | | C |
| PHIST | Pit C6351 | 6350 | 944 | 10 | 5 | 3 | - | - | - | - | - | | - |
| PHIST | Pit C6489 | 6488 | 904 | 10 | 20 | | A* | B | - | B | B | | C |
| PHIST | Pit C6489 | 6514 | 905 | 10 | 5 | | A | C | - | - | - | H | - |
| PHIST | Pit C6489 | 6521 | 909 | 10 | 5 | | C | C | - | - | C | | - |
| PHIST | Pit C6489 | 6658 | 907 | 10 | 5 | | - | - | - | - | - | | - |
| PHIST | Pit C6489 | 6659 | 906 | 10 | 15 | | A** | C | - | - | C | | - |
| PHIST | Pit C6489 | 6660 | 908 | 10 | 5 | | - | - | - | - | - | | - |
| PHIST | Pit C6499 | 6431 | 900 | 10 | 10 | | A* | A | cc | C | B | | - |
| PHIST | Pit C6499 | 6498 | 948 | 20 | 50 | 5 | A* | A | - | C | A | Fruit stone | C |
| PHIST | Pit C6499 | 6499 | 899 | 10 | 80 | 20 | A** | A* | a | A | A | | - |
| PHIST | Pit C6499 | 6655 | 901 | 10 | 5 | | A | - | - | - | C | | C |
| PHIST | Pit C6499 | 6656 | 902 | 10 | 5 | | C | - | c | - | - | Burnt bone | - |
| PHIST | Pit C6499 | 6657 | 903 | 20 | 10 | | C | C | - | - | B | Smb | - |
| PHIST | Post hole C6305 | 6304 | 911 | 10 | 10 | | A | - | - | A | B | H | - |
| PHIST | Post hole C6307 | 6306 | 913 | 10 | 5 | | A* | - | - | - | C | | - |
| PHIST | Post hole C6309 | 6308 | 917 | 10 | 5 | 3 | - | - | - | - | C | | - |
| PHIST | Post hole C6317 | 6316 | 925 | 10 | 5 | | C | - | - | - | - | | C |
| PHIST | Post hole C6319 | 6318 | 928 | 10 | 5 | | C | C | c | - | - | | - |
| PHIST | Post hole C6323 | 6322 | 930 | 10 | 5 | 3 | C | - | c | C | - | | - |
| PHIST | Post hole C6329 | 6328 | 932 | 10 | 10 | 5 | C | - | - | - | B | | - |
| PHIST | Post hole C6339 | 6338 | 927 | 10 | 5 | | - | - | c | - | C | | C |
| PHIST | Post hole C6341 | 6340 | 926 | 10 | 10 | | B | - | - | - | B | | - |
| PHIST | Post hole C6349 | 6348 | 945 | 10 | 5 | 2 | C | - | - | - | - | | C |
| PHIST | Post hole C6355 | 6354 | 947 | 10 | 5 | | C | - | - | - | C | | - |
| PHIST | Post hole C6357 | 6356 | 946 | 10 | 5 | | A | - | - | C | - | | - |

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|---------|--------------------|------|------|----|-----|------|----|---|---|-------|----|-----------------|
| PHIST | Post hole C6395 | 6394 | 936 | 10 | 5 | C | - | - | - | - | - | C |
| PHIST | Post hole C6397 | 6396 | 938 | 10 | 10 | - | - | - | - | - | - | C |
| PHIST | Post hole C6401 | 6400 | 939 | 10 | 20 | B | C | - | - | - | - | B |
| PHIST | Post hole C6409 | 6408 | 933 | 10 | 10 | 3 | B | C | - | - | - | B |
| PHIST | Post hole C6414 | 6413 | 934 | 10 | 5 | 1 | A | C | - | - | - | C |
| PHIST | Post hole C6445 | 6444 | 912 | 10 | 10 | 3 | A* | C | - | - | - | B |
| PHIST | Post hole C6447 | 6446 | 918 | 10 | 10 | - | B | C | - | - | - | C |
| PHIST | Post hole C6451 | 6450 | 914 | 10 | 5 | C | - | - | - | - | - | C |
| PHIST | Post hole C6453 | 6452 | 916 | 10 | 5 | - | - | - | - | - | - | - |
| PHIST | Post hole C6455 | 6454 | 915 | 10 | 5 | - | C | - | - | - | - | C |
| PHIST | Post hole C6457 | 6456 | 920 | 10 | 5 | - | - | - | - | - | - | - |
| PHIST | Post hole C6459 | 6458 | 921 | 10 | 5 | C | - | - | - | - | - | C |
| PHIST | Post hole C6461 | 6460 | 922 | 10 | 5 | - | - | - | - | - | - | - |
| PHIST | Post hole C6462 | 6463 | 923 | 10 | 5 | - | - | - | - | - | - | - |
| PHIST | Post hole C6465 | 6464 | 919 | 10 | 10 | 3 | C | C | - | - | - | C |
| PHIST | Post hole C6467 | 6466 | 924 | 10 | 5 | C | - | - | - | - | - | C |
| PHIST | Post hole C6472 | 6473 | 937 | 10 | 10 | C | - | - | - | - | - | B |
| PHIST | Post hole C6487 | 6486 | 910 | 10 | 5 | B | - | - | - | - | - | C |
| PHIST | Post hole C6585 | 6584 | 935 | 20 | 30 | A | - | - | - | - | - | A |
| ENE | Pit W136 | 3371 | 245 | 20 | 250 | 12.5 | A | - | b | A(h)* | A | - |
| ENE | Pit W175 | 3278 | 237 | 7 | 50 | 2 | C | - | c | A(h) | A | - |
| ENE | Pit W175 | 3279 | 238 | 4 | 60 | 1.8 | - | - | c | C(h) | A | Some burnt bone |
| ENE | Pit W175 | 3280 | 239 | 3 | 60 | 3 | C | - | c | A(h) | A | Some burnt bone |
| ENE | Pit W175 | 3281 | 240 | 4 | 35 | 3.5 | B | C | a | A(h) | B | Some burnt bone |
| ENE | Pit W175 | 3297 | 244 | 5 | 50 | 5 | C | - | c | B(h) | A | - |
| ENE | Pit W175 | 3298 | 243 | 6 | 130 | 4 | C | - | c | A(h) | A | - |
| ENE | Pit W175 | 3299 | 242 | 5 | 60 | 6 | - | - | c | A(h) | A | Some burnt bone |
| ENE | Pit W175 | 3300 | 241 | 5 | 60 | 3 | B | - | c | A(h) | A | Some burnt bone |
| BA | Barrow ditch C4744 | 3827 | 834 | 20 | 20 | - | - | - | c | - | B | - |
| BA | Barrow ditch C4744 | 3919 | 831 | 10 | 5 | 2 | - | - | - | - | - | - |
| BA | Barrow ditch C4744 | 3921 | 832 | 10 | 5 | - | - | - | c | - | C | - |
| BA | Barrow ditch C4744 | 3930 | 825 | 10 | 10 | 5 | - | - | - | - | B | Snails |
| BA | Barrow ditch C4744 | 3931 | 826 | 10 | 10 | - | - | - | - | - | C | - |
| BA | Ring ditch C6221 | 6220 | 894 | 10 | 40 | C | C | - | c | - | A | - |
| EBA | Ditch W33 | 1882 | 233 | 4 | 1 | 0.5 | - | - | c | - | - | - |
| EBA | Ditch W33 | 1886 | 234 | 5 | 2 | 0.5 | - | - | c | - | - | - |
| MBA | Pit C6153 | 6152 | 1046 | 50 | 40 | 5 | A | - | a | - | A* | Snails |
| LBA/EIA | Pit | 1499 | 93a | 10 | 20 | A* | A* | - | - | - | B | - |
| LBA/EIA | Pit | 1499 | 93b | 10 | 10 | A* | A* | - | - | - | B | - |
| LBA/EIA | Pit | 1499 | 93c | 10 | 10 | A* | A* | - | - | - | B | - |
| LBA/EIA | Pit | 1499 | 93 | 22 | 10 | A* | A* | - | - | - | B | - |
| LBA/EIA | Pit C2805 | 2802 | 210 | 20 | 35 | 10 | A* | C | c | - | A | Snails |
| LBA/EIA | Pit C2805 | 2802 | 248 | 20 | 25 | 5 | A* | A | - | - | B | Snails |
| LBA/EIA | Pit C2805 | 2802 | 255 | 10 | 10 | B | - | - | b | - | B | Snails |

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|---------|------------|------|-----|-----|------|------|----|----|---|------|----|---|---|
| LBA/EIA | Pit C2805 | 2803 | 211 | 10 | 15 | | B | C | c | - | B | Snails | C |
| LBA/EIA | Pit C2805 | 2803 | 256 | 10 | 30 | 5 | C | C | - | - | A | Snails | C |
| LBA/EIA | Pit C2805 | 2804 | 212 | 20 | 20 | 5 | A* | C | c | B | B | Snails | - |
| LBA/EIA | Pit C2805 | 2804 | 249 | 10 | 20 | 5 | A | A | c | C | B | Snails | C |
| LBA/EIA | Pit C2805 | 2804 | 257 | 10 | 20 | | B | C | c | - | B | - | - |
| LBA/EIA | Pit C2805 | 2813 | 213 | 20 | 20 | 5 | A | A* | - | B | B | Snails | C |
| LBA/EIA | Pit C2805 | 2813 | 250 | 10 | 10 | 3 | B | C | c | - | B | Snails | - |
| LBA/EIA | Pit C2805 | 2813 | 258 | 10 | 30 | 5 | C | C | - | - | B | - | - |
| LBA/EIA | Pit C2805 | 2814 | 214 | 20 | 10 | 3 | B | B | b | B | C | - | - |
| LBA/EIA | Pit C2805 | 2814 | 251 | 20 | 15 | | C | C | c | - | B | Snails | - |
| LBA/EIA | Pit C2805 | 2814 | 259 | 10 | 30 | 5 | A | A | - | A | A | - | - |
| LBA/EIA | Crem W100 | 1727 | 120 | 0.5 | 10 | 1.5 | - | - | c | - | - | Some burnt bone | - |
| LBA/EIA | Crem W100 | 1727 | 121 | 1.5 | 25 | 5 | - | - | b | C | C | Some burnt bone | - |
| LBA/EIA | Crem W101 | 1729 | 122 | 1 | 10 | 2 | - | - | c | - | C | Some burnt bone | - |
| LBA/EIA | Crem W101 | 1729 | 123 | 1 | 15 | 2.25 | - | - | b | - | C | Some burnt bone | - |
| LBA/EIA | Crem W102 | 1700 | 109 | 1 | 10 | 1 | - | - | c | - | C | - | - |
| LBA/EIA | Crem W102 | 1700 | 113 | 1.5 | 10 | 1.5 | - | - | b | - | C | - | - |
| LBA/EIA | Crem W102 | 1700 | 110 | 3 | 25 | 5 | C | - | b | - | C | - | - |
| LBA/EIA | Crem W102 | 1700 | 112 | 3.5 | 30 | 4.5 | C | - | c | C | C | - | - |
| LBA/EIA | Crem W102 | 1701 | 114 | 1.5 | 5 | 2 | C | - | c | - | C | - | - |
| LBA/EIA | Crem W102 | 1701 | 115 | 3 | 5 | 1.5 | C | - | c | - | C | - | - |
| LBA/EIA | Crem W102 | 1701 | 111 | 3.5 | 10 | 4 | - | - | c | C | - | mollusc (C) | - |
| LBA/EIA | Crem W106 | 1723 | 116 | 4 | 20 | 4 | - | - | c | C | C | - | - |
| LBA/EIA | Crem W107 | 1725 | 117 | 3 | 10 | 2 | - | - | b | - | C | - | - |
| LBA/EIA | Crem W223 | 3603 | 277 | 10 | 500 | 5 | C | - | c | C | A* | Some burnt bone | - |
| LBA/EIA | Crem W223 | 3608 | 278 | 10 | 250 | 5 | - | - | c | C | A* | Some burnt bone | - |
| LBA/EIA | Crem W223 | 3609 | 279 | 10 | 650 | 6.5 | - | - | c | C | A* | Some burnt bone | - |
| LBA/EIA | Crem W223 | 3610 | 280 | 10 | 1100 | 11 | - | - | c | C | A* | Some burnt bone | - |
| LBA/EIA | Crem W223 | 3611 | 281 | 10 | 1500 | 15 | C | - | c | C | A* | Some burnt bone | - |
| LBA/EIA | Crem W99 | 1704 | 118 | 2 | 10 | 2 | C | - | c | - | C | - | - |
| LBA/EIA | Crem W99 | 1704 | 119 | 0.5 | 10 | 2 | - | - | c | C | C | - | - |
| LBA/EIA | Ditch W165 | 3152 | 219 | 10 | 10 | 1 | A | B | b | C | C | - | - |
| LBA/EIA | Ditch W165 | 3646 | 287 | 10 | 60 | 3 | A | - | b | C | B | Some burnt bone | - |
| LBA/EIA | Ditch W165 | 3646 | 288 | 10 | 60 | 3 | C | - | c | C | A | - | - |
| LBA/EIA | Ditch W3 | 1023 | 6 | 20 | 10 | 1 | C | - | c | C | - | - | - |
| LBA/EIA | Ditch W62 | 1698 | 108 | 10 | 50 | 5 | C | - | a | C | B | - | - |
| LBA/EIA | Ditch W62 | 1702 | 124 | 20 | 40 | 16 | B | - | a | - | - | - | - |
| LBA/EIA | Pit W207 | 5236 | 341 | 10 | 50 | 7.5 | C | C | b | C | B | P/beans (A*) | - |
| LBA/EIA | Pit W207 | 5250 | 324 | 10 | 500 | 1 | A | - | c | C | A | P/beans (A**) | - |
| LBA/EIA | Pit W207 | 5265 | 342 | 10 | 600 | 6 | A | A | c | A | A | P/beans (A**) | - |
| LBA/EIA | Pit W208 | 5030 | 311 | 10 | 100 | 15 | A | A | c | C(h) | A | Smb (C), mollusc (C), p/beans (C), bone | - |
| IA | Pit | 4589 | 858 | 20 | 5 | 3 | - | - | c | - | C | - | - |
| EIA/MIA | Grave W64 | 1306 | 55 | 20 | 15 | 4.5 | C | - | b | C | C | - | - |
| EIA/MIA | Grave W69 | 1412 | 63 | 10 | 25 | 5 | - | - | a | - | C | - | - |

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|---------|--------------|------|-----|-----|------|----|-----|---|---|---|-----|-------------------------|---|
| EIA/MIA | Grave W69 | 1412 | 68 | 10 | 25 | 4 | C | - | b | - | C | Bone mollusc (C), bone | - |
| EIA/MIA | Grave W70 | 1605 | 96 | 20 | 15 | 3 | C | - | c | - | - | - | - |
| EIA/MIA | Grave W97 | 1733 | 125 | 20 | 60 | 36 | C | - | a | C | A | - | - |
| EIA/MIA | Grave W97 | 1735 | 129 | 20 | 40 | 10 | A | C | b | C | C | - | - |
| EIA/MIA | Posthole W67 | 1410 | 64 | 10 | 40 | 6 | C | C | a | C | B | - | - |
| LIA/ERO | ?Crem | 336 | 30 | 48 | 40 | 5 | - | - | - | - | B | Burnt bone | - |
| LIA/ERO | ?Crem | 2944 | 254 | 10 | 5 | 3 | - | - | - | - | C | - | - |
| LIA/ERO | ?Hearth | 3985 | 839 | 30 | 120 | | A** | B | - | B | B | Snails | C |
| LIA/ERO | ?Pit C4586 | 4585 | 853 | 20 | 10 | | - | - | a | - | C | - | - |
| LIA/ERO | Crem | 59 | 8 | 12 | 10 | 5 | C | C | c | - | C | - | - |
| LIA/ERO | Crem | 59 | 11 | 20 | 10 | 5 | - | - | - | - | C | - | - |
| LIA/ERO | Crem | 62 | 91 | 10 | 5 | - | C | - | - | - | - | - | - |
| LIA/ERO | Crem | 82 | 89 | 8 | | 20 | - | - | - | - | B | Burnt bone | C |
| LIA/ERO | Crem | 2186 | 17x | 120 | 710 | 40 | - | - | c | - | A | Snails | B |
| LIA/ERO | Crem | 2186 | 24x | 30 | 500 | 50 | - | - | - | - | A** | Snails | B |
| LIA/ERO | Crem | 2201 | 20x | 35 | 80 | 15 | A | - | c | - | A | Snails | C |
| LIA/ERO | Crem | 2208 | 18x | 100 | 200 | 40 | - | - | - | - | A | Snails | B |
| LIA/ERO | Crem | 2208 | 25x | 50 | 3000 | 10 | - | - | - | - | A** | - | B |
| LIA/ERO | Crem | 2216 | 27x | 10 | 50 | 10 | C | - | - | - | A | Burnt twigs, burnt bone | C |
| LIA/ERO | Crem | 2232 | 28x | 25 | 100 | 10 | A* | - | c | B | A | Burnt bone, twigs, bird | C |
| LIA/ERO | Crem | 2287 | 31x | 10 | 5 | 2 | C | - | c | - | C | - | C |
| LIA/ERO | Crem | 2301 | 32x | 10 | 5 | 2 | - | - | - | - | C | Snails | - |
| LIA/ERO | Crem | 2826 | 216 | 12 | 25 | 5 | A | - | - | C | B | Burnt bone | - |
| LIA/ERO | Crem | 3007 | 501 | 50 | 100 | 30 | C | - | c | - | A* | Snails | C |
| LIA/ERO | Crem | 3192 | 525 | 60 | 2040 | | - | - | - | - | A** | - | A |
| LIA/ERO | Crem | 3704 | 801 | 30 | 70 | 5 | - | - | c | - | A* | - | C |
| LIA/ERO | Crem | 3708 | 800 | 20 | 20 | 5 | - | - | c | - | B | - | - |
| LIA/ERO | Crem | 3710 | | 10 | 10 | 5 | - | - | c | - | B | Burnt bone, snails | - |
| LIA/ERO | Crem | 3737 | 809 | 10 | 30 | 5 | C | C | c | - | A | Snails | - |
| LIA/ERO | Crem | 3776 | 812 | 10 | 10 | 3 | - | - | c | - | C | - | - |
| LIA/ERO | Crem | 3805 | 815 | 10 | 20 | | - | - | - | B | B | ?Seed heads | - |
| LIA/ERO | Crem | 3809 | 816 | 20 | 20 | | C | - | c | C | B | ?seed heads, bone | - |
| LIA/ERO | Crem | 3894 | 821 | 10 | 5 | 3 | - | - | - | - | C | - | - |
| LIA/ERO | Crem | 3933 | 827 | 10 | 5 | 2 | - | - | - | - | C | - | - |
| LIA/ERO | Crem | 3934 | 828 | 10 | 10 | | C | - | c | - | C | - | - |
| LIA/ERO | Crem | 6366 | 898 | 10 | 15 | | C | - | - | - | C | - | - |
| LIA/ERO | Ditch | 4563 | 854 | 20 | 10 | 3 | - | C | c | - | C | - | - |
| LIA/ERO | Ditch | 4564 | 855 | 20 | 15 | | - | - | c | - | C | Snails | - |
| LIA/ERO | Ditch | 4587 | 863 | 10 | 10 | | - | - | a | - | C | - | - |
| LIA/ERO | Ditch | 4605 | 864 | 10 | 10 | | - | - | b | - | C | - | - |
| LIA/ERO | Ditch C2042 | 2040 | 3x | 10 | 15 | 5 | - | - | c | - | B | - | - |
| LIA/ERO | Ditch C2100 | 2103 | 6x | 10 | 5 | | - | - | c | - | C | Snails | C |
| LIA/ERO | Ditch C2101 | 2102 | 7x | 10 | 5 | 3 | C | - | c | - | C | - | C |
| LIA/ERO | Ditch C2116 | 2115 | 5x | 10 | 10 | 3 | - | - | c | - | C | - | C |

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|---------|-----------------|------|-----|----|-----|----|-----|-----|---|---|---|------------|---|---|
| LIA/ERO | Ditch C2118 | 2117 | 4x | 10 | 5 | | C | - | - | - | - | C | - | - |
| LIA/ERO | Ditch C2122 | 2121 | 8x | 10 | 5 | | - | - | - | - | - | C | - | - |
| LIA/ERO | Ditch C2128 | 2126 | 14x | 10 | 10 | | - | - | c | - | - | Snails | C | - |
| LIA/ERO | Ditch C2128 | 2127 | 13x | 10 | 20 | 7 | - | - | c | - | - | Snails | C | - |
| LIA/ERO | Ditch C33 | 32 | 64 | 10 | 30 | 5 | C | - | - | - | - | C | - | - |
| LIA/ERO | Ditch C4566 | 4589 | 857 | 20 | 10 | 3 | C | - | b | - | - | Snails | - | - |
| LIA/ERO | Ditch C71 | 34 | 65 | 20 | 20 | 5 | A | C | c | - | - | C | - | - |
| LIA/ERO | Feat C3937 | 3936 | 829 | 10 | 20 | | - | - | b | - | - | B | C | - |
| LIA/ERO | Feat C4609 | 4608 | 861 | 10 | 10 | | C | - | a | - | - | C | - | - |
| LIA/ERO | Feat C4611 | 4610 | 862 | 10 | 20 | | C | - | c | - | - | C | - | - |
| LIA/ERO | Hollow | 2282 | 40x | 10 | 10 | 5 | - | - | c | - | - | C | - | - |
| LIA/ERO | Pit | 3911 | 841 | 60 | 200 | | A** | A** | - | - | - | Snails | - | - |
| LIA/ERO | Pit | 3975 | 842 | 10 | 20 | | A* | A | - | - | - | Burnt bone | B | - |
| LIA/ERO | Pit C3800 | 3799 | 814 | 10 | 5 | | C | - | c | - | - | - | - | - |
| LIA/ERO | Pit C3910 | 3982 | 843 | 10 | 10 | | A | - | - | - | - | C | - | - |
| LIA/ERO | Pit C42 | 40 | 1 | 20 | 200 | 20 | A | - | c | - | - | A | - | - |
| LIA/ERO | Post hole C2250 | 2251 | 29x | 10 | 10 | 5 | - | - | - | - | - | C | C | - |
| LIA/ERO | Post hole C4514 | 4513 | 850 | 40 | 35 | | - | - | a | - | - | B | - | - |
| LIA/ERO | Scoop C644 | 643 | 47 | 10 | 20 | 5 | A | C | c | - | - | C | - | - |
| RO | Crem | 49 | 3 | 8 | 5 | 5 | - | - | - | - | - | - | - | - |
| RO | Crem | 58 | 9 | 10 | 5 | 3 | C | - | - | - | - | - | - | - |
| RO | Crem | 85 | 12 | 8 | 5 | 5 | - | - | - | - | - | - | - | - |
| RO | Crem | 95 | 13 | 25 | 5 | 5 | - | - | - | - | - | - | - | - |
| RO | Crem | 113 | 14 | 20 | 30 | 20 | - | - | - | - | - | C | - | - |
| RO | Crem | 2152 | 10x | 30 | 180 | 20 | - | - | c | - | - | Snails | B | - |
| RO | Cut C176 | 177 | 67 | 20 | 20 | 10 | C | - | c | - | - | C | - | - |
| RO | Cut C178 | 179 | 66 | 20 | 25 | 55 | C | C | - | - | - | B | - | - |
| RO | Ditch | 733 | 74 | 15 | 10 | | A | A | - | - | - | C | - | - |
| RO | Ditch C164 | 163 | 68 | 10 | 15 | 8 | C | - | c | - | - | C | - | - |
| RO | Ditch C18 | 17 | 71 | 20 | 20 | 3 | B | C | - | - | - | C | - | - |
| RO | Ditch C187 | 204 | 70 | 10 | 10 | 5 | C | - | c | - | - | C | C | - |
| RO | Ditch C227 | 180 | 17 | 10 | 5 | | - | - | - | - | - | C | - | - |
| RO | Ditch C450 | 449 | 37 | 20 | 20 | 5 | A | C | - | - | - | B | - | - |
| RO | Ditch C592 | 591 | 42 | 20 | 30 | 5 | A | C | c | - | - | B | - | - |
| RO | Ditch C618 | 617 | 45a | 10 | 10 | 2 | C | C | c | - | - | C | - | - |
| RO | Ditch C806 | 801 | 88 | 10 | 5 | | C | C | - | - | - | muschel | - | - |
| RO | Ditch C806 | 801 | 90 | 20 | 5 | 3 | B | - | - | - | - | - | - | - |
| RO | Feature C66 | 65 | 72 | 10 | 5 | 3 | C | - | c | - | - | - | - | - |
| RO | Grave | 23 | 6 | 8 | 20 | | B | - | c | - | - | C | - | - |
| RO | Grave | 23 | 19 | 8 | 10 | | C | - | - | - | - | B | - | - |
| RO | Grave | 23 | 5 | 10 | 40 | 5 | A | B | - | - | - | B | - | - |
| RO | Grave | 23 | 18 | 10 | 15 | | C | - | - | - | - | B | - | - |
| RO | Hollow way C896 | 622 | 44a | 10 | 20 | 10 | A* | C | - | - | - | B | - | - |
| RO | Layer C143 | 143 | 16 | 10 | 5 | | - | - | - | - | - | - | - | - |

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|-------|-----------------|------|-----|-----|------|----|-----|-----|---|------|------------|----------------------|
| RO | Layer C352 | 352 | 31 | 45 | 30 | 5 | A* | - | c | - | B | - |
| RO | Oven C630 | 629 | 51 | 10 | 20 | 5 | C | | C | C | B | |
| RO | Oven C630 | 629 | 80 | 30 | 40 | | | | | | A | |
| RO | Pit | 754 | 63 | 10 | 10 | 5 | B | | c | | C | |
| RO | Pit C175 | 174 | 15 | 20 | 20 | 5 | A* | - | - | - | C | - |
| RO | Pit C4550 | 4551 | 851 | 30 | 150 | 20 | B | | | | Snails | |
| RO | Pit C518 | 582 | 40 | 20 | 10 | 7 | C | | | | C | |
| RO | Pit C612 | 611 | 78 | 20 | 20 | 3 | A* | A | | B | B | |
| RO | Pit C703 | 702 | 69 | 22 | 10 | 5 | A | | C | C | C | |
| RO | Pit C9 | 10 | 4 | 40 | 125 | | A* | A* | - | A | B | - |
| RO | Pit C9 | 261 | 20 | 10 | 10 | | C | - | - | - | C | - |
| RO | Post hole C382 | 381 | 33 | 10 | 30 | | | | c | | B | |
| RO | Scoop C644 | 643 | 47 | 10 | 200 | 5 | A | C | c | C | B | |
| RO | Stoke hole C638 | 637 | 52 | 10 | 125 | | | | | C | A | |
| RO | Stoke hole C638 | 637 | 58 | 20 | 450 | | A | | | | A** | |
| RO | Stoke hole C638 | 637 | 59 | 10 | 250 | | | | | | A** | |
| RO | Stoke hole C638 | 637 | 60 | 10 | 125 | | C | | | | A* | |
| RO | Stoke hole C638 | 637 | 61 | 10 | 30 | | | | | | B | |
| RO | Stoke hole C638 | 637 | 62 | 10 | 40 | | | | | | B | |
| RO | Stoke hole C638 | 637 | 81 | 20 | 800 | 10 | A | | | C | A** | A |
| RO | Stoke hole C638 | 637 | 82 | 20 | 300 | | A | | | | A** | B |
| RO | Stoke hole C638 | 637 | 83 | 20 | 300 | | A | | | | A** | B |
| RO | Stoke hole C638 | 637 | 84 | 10 | 200 | | | | | C | A** | B |
| RO/EM | Grave W59 | 1390 | 59 | 20 | 50 | 25 | A | C | a | C(h) | C | - |
| RO/EM | Layer W46 | 1612 | 97 | 20 | 40 | 20 | C | - | a | C(h) | C | - |
| EM | ?Grave | 2480 | 60 | 10 | 10 | 5 | C | | | | Snails | |
| EM | ?Post hole | 642 | 50 | 10 | 10 | 3 | | | | | C | |
| EM | Feature C2835 | 2836 | 218 | 10 | 20 | 5 | | | c | | C | |
| EM | Feature C2835 | 2838 | 219 | 100 | 5 | 3 | | | | | Snails | |
| EM | Feature C2835 | 2842 | 221 | 10 | 5 | | | | | | C | |
| EM | Feature C2835 | 2844 | 222 | 100 | 10 | 3 | C | | c | | C | |
| EM | Feature C2835 | 2861 | 226 | 20 | 5 | | | | | | C | |
| EM | Feature C2835 | 2863 | 227 | 10 | 5 | | | | | | C | |
| EM | Feature C2835 | 2865 | 228 | 10 | 5 | 5 | | | | | | |
| EM | Feature C384 | 383 | 34 | 20 | 30 | 5 | A* | | c | | A | B |
| EM | Feature C384 | 415 | 36 | 45 | 2900 | | A** | A** | A | A | A | A |
| EM | Grave | 2886 | 233 | 20 | 10 | 5 | C | | | | Snails | |
| EM | Grave | 3035 | 528 | 10 | 20 | 10 | | | c | | B | |
| EM | Grave | 3061 | 529 | 10 | 15 | 5 | C | | | | B | C |
| EM | Grave | 3220 | 527 | 60 | 150 | 40 | | | | | Burnt bone | C |
| EM | Grave | 3714 | 808 | 20 | 20 | 5 | C | | b | C | B | Burnt bone, snails |
| EM | Grave | 3725 | | 10 | 10 | 3 | | | c | | B | Charred stalks, bone |
| EM | Grave | 3750 | 805 | 10 | 20 | 3 | B | | c | C | A | |
| EM | Grave | 3758 | 807 | 10 | 10 | | | | | | B | C |

| | | | | | | | | | | | | | |
|----|------------|------|-----|-----|----|-----|----|---|---|------|---|--------------------------|---|
| EM | Grave | 3763 | 813 | 70 | 50 | | C | | c | | A | Bone | C |
| EM | Grave | 3997 | 840 | 60 | 30 | 10 | C | | a | | B | | |
| EM | Grave | 4501 | 845 | 50 | 50 | | C | | a | | C | | |
| EM | Grave | 4501 | 846 | 10 | 5 | | | | c | | | | |
| EM | Grave | 4501 | 847 | 10 | 5 | 3 | | | | | C | | |
| EM | Grave | 4501 | 848 | 10 | 20 | | | | a | | | | |
| EM | Grave | 4565 | 856 | 20 | 10 | 5 | | | c | | C | Snails | |
| EM | Grave | 4592 | 866 | 20 | 20 | 5 | | C | b | | B | Human bone | |
| EM | Grave | 4613 | 865 | 110 | 60 | | | | a | | C | Human bone | |
| EM | Grave | 4613 | 870 | 20 | 10 | 5 | C | | c | | C | | |
| EM | Grave | 4616 | 867 | 30 | 10 | | | | b | | B | | C |
| EM | Grave | 4622 | 868 | 10 | 20 | | | | c | | B | | |
| EM | Grave | 4646 | 871 | 30 | 25 | 5 | C | | a | ?C | C | Snails | |
| EM | Grave | 4660 | 879 | 30 | 20 | 3 | C | C | c | | B | | C |
| EM | Grave | 4664 | 889 | 50 | 25 | | C | | c | C | A | | C |
| EM | Grave | 4678 | 884 | 20 | 5 | 3 | | | | | C | | C |
| EM | Grave | 4681 | 876 | 20 | 15 | | C | | b | C | B | | |
| EM | Grave | 4687 | 878 | 10 | 5 | | | | c | | C | | |
| EM | Grave | 4700 | 875 | 10 | 10 | | | | c | | C | | |
| EM | Grave | 4705 | 877 | 30 | 30 | 5 | C | B | b | C | B | | |
| EM | Grave | 4709 | 883 | 10 | 10 | | | | b | | C | H | |
| EM | Grave | 4995 | 860 | 10 | 5 | | | | | | | | |
| EM | Grave | 6132 | 892 | 10 | 10 | 5 | | | c | | C | Bone | |
| EM | Grave | 6200 | 893 | 10 | 10 | | C | C | c | | C | ?textile | |
| EM | Grave | 6522 | 897 | 10 | 5 | 3 | | | | | | | |
| EM | Grub hut | 631 | 48 | 45 | 75 | 10 | B | | c | | A | H, burnt smb, mussel | C |
| EM | Grub hut | 632 | 49 | 65 | 50 | 10 | B | | c | | A | | C |
| EM | Layer C191 | 191 | 21 | 10 | 30 | 5 | C | | c | | A | | |
| EM | Layer C238 | 238 | 29 | 45 | 60 | 5 | A* | B | c | C | A | | B |
| EM | Pit C3753 | 3752 | 806 | 10 | 5 | 2 | | | c | | C | | |
| EM | Pit C4596 | 4595 | 859 | 20 | 40 | | | | c | | B | | |
| EM | Grave W104 | 1706 | 147 | 20 | 30 | 12 | A | C | a | | - | | - |
| EM | Grave W111 | 1812 | 180 | 15 | 20 | 10 | C | - | a | C | - | | - |
| EM | Grave W12 | 1147 | 5 | 20 | 10 | 1.5 | C | | a | | - | | - |
| EM | Grave W120 | 1897 | 200 | 20 | 10 | 5 | C | - | b | C(h) | - | | - |
| EM | Grave W121 | 1899 | 205 | 20 | 15 | 4.5 | B | - | b | C | C | | - |
| EM | Grave W122 | 1465 | 181 | 20 | 30 | 7.5 | C | - | b | C | C | P/beans (C), mollusc (C) | 2 |
| EM | Grave W123 | 1855 | 186 | 20 | 50 | 5 | A | C | a | C | A | | 6 |
| EM | Grave W13 | 1072 | 2 | 20 | 10 | 1 | - | - | b | C | - | | - |
| EM | Grave W13 | 1075 | 3 | 20 | 10 | 1 | C | - | c | C | - | | - |
| EM | Grave W18 | 1125 | 7 | 20 | 15 | 7.5 | B | C | a | C | - | | - |
| EM | Grave W185 | 1320 | 47 | 20 | 10 | 1.5 | A | - | b | C | - | mollusc (C) | - |
| EM | Grave W19 | 1121 | 17 | 20 | 20 | 3 | A | - | a | C | - | | - |
| EM | Grave W190 | 1647 | 101 | 10 | 25 | 15 | C | C | a | C | - | | - |

| | | | | | | | | | | | | | |
|-----|---------------|-------|-----|-----|-----|-----|-----|---|---|---|---|-------------------------|---|
| EM | Grave W20 | 1119 | 9 | 20 | 30 | 6 | C | - | a | C | - | - | - |
| EM | Grave W21 | 1117 | 8 | 20 | 10 | 1 | - | - | a | C | C | - | - |
| EM | Grave W22 | 1324 | 44 | 20 | 10 | 1.5 | B | - | a | C | C | mollusc (C) | - |
| EM | Grave W24 | 1115 | 11 | 20 | 20 | 2 | C | - | c | - | C | - | - |
| EM | Grave W27 | 1322 | 45 | 20 | 10 | 1.5 | C | - | b | C | C | - | - |
| EM | Grave W38 | 1515 | 95 | 20 | 10 | 3.5 | C | - | b | C | - | - | - |
| EM | Grave W41 | 1768 | 173 | 20 | 30 | 21 | B | - | a | - | - | - | - |
| EM | Grave W43 | 1574 | 82 | 20 | 15 | 10 | B | - | c | - | - | mollusc (C), bone | - |
| EM | Grave W45 | 1578 | 192 | 20 | 50 | 15 | A | - | a | C | C | Bone | 1 |
| EM | Grave W45 | 1858 | 194 | 20 | 50 | 15 | A | - | a | C | - | Bone | - |
| EM | Grave W57 | 1635 | 168 | 20 | 15 | 4 | C | - | c | - | C | - | - |
| EM | Grave W60 | 1454 | 206 | 20 | 30 | 9 | A | - | a | C | C | P/beans (C) | - |
| EM | Grave W60 | 1458 | 73 | 20 | 30 | 10 | A | - | a | C | - | - | - |
| EM | Grave W7 | 1177 | 16 | 6 | 5 | 1 | C | C | a | C | - | - | - |
| EM | Grave W7 | 3032 | 172 | 20 | 15 | 1.5 | - | - | b | C | - | Bone | - |
| EM | Grave W77 | 1100 | 4 | 20 | 25 | 7.5 | C | - | a | - | - | - | - |
| EM | Grave W78 | 1152 | 18 | 20 | 40 | 28 | C | - | a | C | - | - | - |
| EM | Grave W83 | 1300 | 25 | 20 | 25 | 5 | C | - | a | C | - | - | - |
| EM | Grave W84 | 1280 | 20 | 20 | 30 | 9 | C | - | b | C | - | - | - |
| EM | Grave W93 | 3008 | 141 | 20 | 10 | 2 | C | - | c | - | - | mollusc (C) | - |
| EM? | ?Hearth C3891 | 3890 | 824 | 10 | 10 | | C | | | | | | |
| EM? | Ditch | 3831 | 835 | 20 | 5 | | | | c | | C | | |
| EM? | Ditch | 3917 | 830 | 20 | 30 | 5 | | | | C | B | | |
| EM? | Ditch C3917 | 39917 | 837 | 30 | 25 | 5 | A | | | | B | | |
| EM? | Ditch recut | 3829 | 833 | 20 | 20 | | B | C | | | B | | |
| MD | Beam slot | 660 | 57 | 100 | 30 | 5 | C | | c | | B | | |
| MD | Ditch C267 | 266 | 22 | 10 | 15 | 3 | A | | | | B | | C |
| MD | Ditch C316 | 310 | 25 | 10 | 20 | | C | | c | | B | Smb | |
| MD | Ditch C360 | 361 | 32 | 20 | 20 | | A | | c | | B | Lmb | |
| MD | Ditch C504 | 503 | 39 | 10 | 5 | 3 | | | | | | | |
| MD | Ditch C520 | 549 | 79 | 20 | 20 | 5 | A | C | c | C | B | H | B |
| MD | Ditch C590 | 589 | 41 | 20 | 10 | 5 | B | C | | | B | H | |
| MD | Ditch C646 | 645 | 56 | 15 | 20 | 55 | C | | c | | B | | |
| MD | Laver C389 | 389 | 35 | 20 | 10 | 5 | C | C | c | | C | | |
| MD | Laver C413 | 413 | 38 | 10 | 25 | | A* | | | B | B | | B |
| MD | Pit C281 | 280 | 23 | 20 | 10 | | A | | | B | B | | |
| MD | Pit C281 | 309 | 24 | 20 | 30 | | A* | | | | B | Fish | B |
| MD | Pit C603 | 602 | 43 | 10 | 30 | 5 | C | | c | | B | Fish | |
| MD | Pit C614 | 613 | 45 | 10 | 250 | | A** | A | | A | A | | B |
| MD | Pit C614 | 636 | 46 | 10 | 10 | 3 | A* | | | | B | Lmb, fish | C |
| MD | Pit C792 | 791 | 76 | 30 | 75 | 10 | A* | C | c | | A | H, lmb, smb, fish | |
| MD | Pit C792 | 796 | 77 | 45 | 225 | 10 | A* | | c | C | A | H, lmb, fish, eggshell, | B |
| MD | Pit C872 | 411 | 26 | 10 | 30 | 10 | B | C | | | B | | B |
| MD | Ditch W44 | 1569 | 94 | 1 | 3 | 0.4 | B | - | c | - | - | P/beans (C) | - |

| | | | | | | | | | | | | | |
|----|------------------|------|-----|----|----|------|----|---|---|------|---|---|---|
| MD | Ditch W66 | 1598 | 92 | 20 | 50 | 25 | B | C | a | C | C | - | - |
| MD | Pit W47 | 1310 | 50 | 10 | 40 | 8 | A* | C | a | C | B | - | - |
| UN | Ditch W132 | 3131 | 232 | 10 | 10 | 2.5 | C | C | a | C | - | - | - |
| UN | H.way W170 | 3234 | 221 | 3 | 2 | 1 | C | C | c | - | - | - | - |
| UN | Pit W137 | 3345 | 252 | 3 | 10 | 1 | - | - | b | - | C | - | - |
| UN | Pit W137 | 3405 | 253 | 4 | 10 | 0.5 | - | - | c | C | B | - | - |
| UN | Pit W137 | 3406 | 254 | 4 | 10 | 0.5 | C | - | c | C | C | - | - |
| UN | Pit W137 | 3407 | 255 | 4 | 5 | 0.5 | - | - | c | C | C | - | - |
| UN | Pit W137 | 3408 | 256 | 5 | 5 | 0.75 | - | - | c | - | - | - | - |
| UN | Pit W137 | 3409 | 257 | 4 | 5 | 0.75 | - | - | c | C | - | - | - |
| UN | Pit W138 | 3397 | 246 | 10 | 40 | 4 | C | - | c | C | A | - | - |
| UN | Pit W138 | 3398 | 247 | 5 | 40 | 6 | - | - | b | C | A | - | - |
| UN | Pit W138 | 3399 | 248 | 5 | 35 | 5.25 | - | - | b | C | C | - | - |
| UN | Pit W138 | 3400 | 249 | 4 | 60 | 3 | C | - | c | C | B | - | - |
| UN | Pit W138 | 3401 | 250 | 2 | 5 | 1 | - | - | b | - | C | - | - |
| UN | Pit W138 | 3404 | 251 | 2 | 5 | 1 | C | C | c | C | - | - | - |
| UN | Pit W138 | 3491 | 261 | 10 | 70 | 7 | C | - | c | C | A | - | - |
| UN | Pit W139 | 3335 | 258 | 10 | 60 | 12 | C | - | b | C | B | - | - |
| UN | Pit W139 | 3410 | 259 | 10 | 20 | 10 | C | C | a | C | C | - | - |
| UN | Pit W139 | 3411 | 260 | 10 | 10 | 3 | C | - | b | C(h) | C | - | - |
| UN | Pit W139 | 3499 | 266 | 10 | 10 | 3 | C | - | c | C | B | - | - |
| UN | Pit W139 | 3500 | 267 | 10 | 10 | 1.5 | C | - | c | - | B | - | - |
| UN | Pit W180 | 3383 | 264 | 5 | 60 | 3 | - | - | b | C | A | - | - |
| UN | Pit W180 | 3498 | 265 | 5 | 60 | 6 | C | - | b | C | A | - | - |
| UN | Pit W37 | 1595 | 93 | 10 | 90 | 9 | A* | - | b | C | A | - | - |
| UN | ?Pit C2723 | 2722 | 206 | 10 | 20 | 3 | C | C | c | C | C | - | - |
| UN | ?Post hole C2536 | 2535 | 62x | 30 | 10 | 3 | - | - | c | - | C | - | - |
| UN | ?Post hole C2737 | 2736 | 203 | 7 | 2 | 2 | - | - | - | - | - | - | - |
| UN | ?Ring ditch | 2503 | 55x | 10 | 5 | 2 | C | - | c | - | - | - | - |
| UN | ?Ring ditch | 2509 | 56x | 10 | 5 | - | - | C | - | - | - | - | - |
| UN | Cut C2720 | 2719 | 200 | 5 | 5 | 3 | - | - | c | - | - | - | - |
| UN | Cut C2923 | 2922 | 238 | 10 | 5 | 4 | C | - | - | - | - | - | - |
| UN | Cut C2937 | 2838 | 246 | 20 | 10 | 3 | - | - | c | - | C | - | - |
| UN | Ditch | 2330 | 81x | 10 | 5 | 2 | - | - | c | - | - | - | - |
| UN | Ditch C2471 | 2470 | 63x | 10 | 10 | 3 | C | - | c | ?C | C | - | - |
| UN | Ditch C2583 | 2582 | 67x | 10 | 10 | 5 | - | - | c | - | - | - | - |
| UN | Ditch C2621 | 2622 | 70x | 10 | 5 | 3 | C | - | - | - | C | - | - |
| UN | Ditch C2710 | 2890 | 245 | 10 | 25 | 5 | C | - | c | - | - | - | - |
| UN | Ditch C2718 | 2718 | 261 | 20 | 15 | 5 | B | B | c | B | B | - | - |
| UN | Ditch C2718 | 2771 | 269 | 20 | 15 | 5 | C | - | - | - | C | - | - |
| UN | Ditch C2718 | 2775 | 270 | 20 | 15 | 5 | - | - | c | - | C | - | C |
| UN | Ditch C2718 | 2787 | 266 | 20 | 10 | - | - | - | - | - | - | - | - |
| UN | Ditch C2718 | 2791 | 263 | 10 | 30 | 10 | C | - | c | - | B | - | - |
| UN | Ditch C2718 | 2796 | 264 | 20 | 20 | 10 | C | - | - | - | B | - | - |

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EARLY IRON AGE

- 7.42.14 The Early Iron Age samples contained charred grain fragments in small quantities in four samples, a few charred chaff fragments in a single sample and low numbers of charred weed seeds in two samples. Bone fragments were present in two samples and molluscs in a single sample.

EARLY – MIDDLE IRON AGE

- 7.42.15 Charred remains were generally sparse in the six samples and the origin and taphonomy of the remains in these samples is less well understood. One sample from W97 contained a number of charred cereal grains. Burnt bone fragments were observed in four samples. A single post-hole attributed to this period did not produce enough charcoal to indicate the original timber. As with the graves the origin and taphonomy of the charred remains may be questionable from these contexts.

UNDIAGNOSTIC PREHISTORIC

- 7.42.16 A number of features only remain broadly ascribed to the prehistoric period, which in general contain moderate to poor grains and chaff preservation. However, the significance and potential of these will largely rely on their final phase ascription.

LATE IRON AGE/ EARLY ROMANO-BRITISH

- 7.42.17 The majority of the 58 samples was from cremation-related features and in general contained good to abundant quantities of charcoal, but little charred plant remains. The likelihood is that the latter are largely incidental to the funerary activities, however some were relatively rich (cremation sample C2232) and others contained seed heads (cremation samples C3805, C3809) which might relate to pyre items and tributes. Pits and hearths typically contained larger assemblages (pit sample C3911 and hearth sample C3985).

ROMANO-BRITISH

- 7.42.18 A total of 47 samples from a range of Romano-British features (cremations, ditches, graves, ovens, trackways, pits, post-holes and stokeholes) produce a wide array of preservation. Six samples in particular stood out with useful quantities of grain or chaff and included ditch sample C733, trackway C896, layer C352, and pits C175, C612 and C9.

'SUB-ROMAN'

- 7.42.19 The two sub-Roman samples contained varying quantities of charred grain fragments and low levels of charred weed seeds, including hazelnut fragments. A few charred chaff fragments were retrieved from sample of grave C59.

SAXON

- 7.42.20 A total of 77 samples from graves were assessed. They generally represent a single sample from each grave. Nearly all produced some grain, but largely in low quantities. Only graves W19 and W185 produced relatively high numbers of cereal grains. Hazelnuts were present in grave W120 and peas/ beans in grave W121 and W60. The remains in these graves, as with other graves, are generally low and the origin and taphonomy is not secure in view of the multiperiod activity on the site.
- 7.42.21 The samples processed from Saxon pits (pit C3753 and C4596), hearths (hearth C38912), post-holes, ditches and other features (feature C2835) generally produced

very sparse remains with only low numbers of charred and charcoal remains. A possible sunken-featured building produced some grain (samples C631 and C632), and apart from the single isolated ditch recut (sample C3829) were the only Saxon samples to contain even moderate quantities of charred remains.

MEDIEVAL

- 7.42.22 Twenty-two samples were examined from medieval contexts. Ditches contained low quantities in general through the sample from medieval ditch W44 contained a moderate amount of charred grain fragments and a few charred pea/ bean fragments. Many of the medieval samples from all produced high numbers of charred grain and small quantities of charred weed seeds and charred chaff fragments, in particular those from pits W47, C281, C614 and C792.

UNPHASED

- 7.42.23 About 115 processed samples remain unphased. the remains from very few are high, and unless these can be dated and related to the assemblages described above they are not of any great significance.

Conservation

- 7.42.24 The processed samples are all stored in a dry and stable condition. If retained in the current and dry state they are suitable for long term archive until further decisions about a programme of analysis is decided. The unprocessed samples (WA) are not suitable for long term storage or retention. Any further processing of these if required should be undertaken in the near future. The remaining unprocessed samples are unsuitable for archive in their current state, and should be considered for discard if not processed.
- 7.42.25 It is acknowledged that charred remains are present in the residues of the processed samples and will be extracted from all samples proposed for further analysis. The charred remains that exist in the samples for which no further work is proposed will be discarded. The flots of these samples will, however, be retained in the archive so a record of this proportion of the sample is always available for further examination.

Comparative material

- 7.42.26 Kent is relatively poorly served for well-preserved analysis of charred plant remains from prehistoric contexts until the later Iron Age (cf. Scaife 1987). The present publication of charred remains from Neolithic to Saxon sites in Kent is relatively sparse, although it is acknowledged that there are significant assemblages coming to light as a result of recent field work (much largely a result of that associated with CTRL).
- 7.42.27 Secure preserved Neolithic remains must be considered a priority in Kent and are of regional and national significance in view of their general scarcity (cf. Scaife 1987). Elsewhere isolated pits have produced good 'snap-shots' of early farming e.g. Grooved Ware pits at Down Farm (Robinson in Barrett *et al.* 1991), and the Stonehenge landscape (Carruthers in Richards 1990).
- 7.42.28 The Iron Age and Romano-British assemblages find more suitable examples with which to compare in Kent. These include sites at Gravesend (Arthur and Metcalfe in Johnston 1972) and Keston Camp (Hillman unpubl., cf. Scaife 1987), and

Wilmington gravel pit (Hillman 1982). Published records of Iron Age and Romano-British date tend to be dominated by spelt wheat with barley.

Potential for further work

- 7.42.29 The following section discusses the potential for further work of the charred and charcoal remains in the relation to the Landscape Zone
- 7.42.30 In general, the charred remains provide the potential to define a number of landscape-related activities and site-based activities relating to agricultural practise. The presence of grain, and peas/ beans indicate the range and diversity of crops, while the charcoal has the potential to define the nature of the exploited landscape and the place of that activity within the landscape. Furthermore, the charred remains also have the potential to provide some indication of the farming economy and changes through time, especially the later Bronze Age to Saxon periods. Information of this type from Saxon periods is particularly sparse in much of the country nationally, but recent work in Kent has also provided some further information (e.g. Waitrose site, Margate).
- 7.42.31 The presence of weed seeds may provide information about the wider landscape and which soil types were cultivated. They may provide some information on summer and winter sown crops.
- 7.42.32 In the earlier prehistoric periods (Neolithic and earlier Bronze Age) information about landscape, land-use and agricultural economy is particularly important, and here can be related to a broader spectrum of landscape data defined from Godwin's pollen analysis at Frogholt (Godwin 1962).
- 7.42.33 The presence of the better-preserved remains enables a detailed picture of the site developments, although this is biased by the changing use (burial vs settlement) reflected in different periods. The charred remains will help define specific activities (crop processing etc, placement of ritual bundles on pyres), and with the technology present on site. The presence of seed-heads in cremation related contexts enable details of funerary practice and ritual to be added to.
- 7.42.34 The charcoal from domestic and settlement context, in particular, can help define the nature and management of the local woodland. In other features the identification of species and timber ages can help in defined the nature and technology of the activities i.e. furnaces and pyres with high burning temperatures.
- 7.42.35 Charcoal may be able to facilitate radiocarbon dating, but the likelihood is that a closer and more useful chronology will be established by the artefacts. Although the human bones have the potential to provide absolute dates for burials, statistically there is not a sufficient sample to allow detailed analysis of burial sequence, either within individual cemeteries or between separate cemeteries.
- 7.42.36 On a regional scale the information from the pyres and particularly from a selection of Saxon samples can contribute to a level of information poorly examined from these features and this period.
- 7.42.37 With specific reference to the material from the Neolithic pits, the material is not exceptional in its own right but it is exceptional for the Neolithic in southern England. There are very few non-monumental, non-funerary Neolithic sites in Kent (Clarke 1982; Holgate 1981) and south-east England. Where such exist, very few

which have been excavated in recent times (i.e. non-antiquarian) and even fewer from which detailed palaeo-environmental studies have been undertaken (see Clarke 1982).

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7.43 Assessment of Pollen

Michael J. Allen and Rob Scaife

Introduction

- 7.43.1 Several monoliths were taken of undisturbed soil sequences to facilitate both more detailed pedological description, and also sub-sampling for pollen.

Methodology

- 7.43.2 Undisturbed samples were taken from sealed contexts during excavation either in kubiena tins (foil containers) or soil monoliths. Where samples were taken in long soil monoliths (in excess of 0.2m) then undisturbed sample can be cut from these after suitable pedological/ sedimentological description has been made and any subsampling for pollen or other analyses.

Provenance

- 7.43.3 Samples include Bronze Age to Saxon contexts (**Table 42**). Of particular note are potential denuded Bronze Age barrow mounds, through which the Saxon graves were cut; deposits recording beneath potential trackway metalling (e.g. samples 83, 84, Q, X1 – X4); and occupation debris (e.g. pit sample E1).

Table 42: Provenance details of Pollen samples

| Sample/ ref no | Phase | Contexts | Description |
|--------------------|----------|--|---|
| W83 | EBA | | Old land surface under mound |
| W84 | EBA | | Old land surface under mound |
| W103 | EBA | W1661 | Ditch fills W33 |
| E1 | Iron Age | C1499 | Basal layer of storage pit |
| A1 – A3, A1a – A5a | Iron Age | C624, C625, C626, C679, C678, C628 | Deep irregular pit complex in west of site |
| X1 – X4 | R-B | C143, C916 | Above and below road metalling 155 |
| Y1 – Y4 | R-B | C838 | Above road metalling 839 |
| Z1 – Z6 | R-B | C121, C122 | Above road metalling |
| B1- B5 | Saxon | C1360 + | Cemetery |
| C1 – C3 | Saxon | | Ditch fills in cemetery |
| F1 – F6 | | C1483, C1500-1507 | Ditch fills |
| G1, G2 | Saxon | W632, W631 | Sunken-featured building ‘floor’ |
| M1 – M11 | Saxon | C1178, C1083, C1079, C1171, C1174, C1175, C1176, C1177 | Fills of grave C7 |
| Q | Saxon | | Former old land surface through which graves were cut |

Conservation

- 7.43.4 Undisturbed soil samples are not suitable for long term storage. Samples should be stored in dry cool to cold/ refrigerated, but not freezing, dark conditions before sampling. Once the monolith samples have been fully described following

pedological/ sedimentological notation and subsampled for pollen, it is proposed the monoliths are discarded unless being used for soil micromorphology.

Comparative material

- 7.43.5 The most significant comparative data from this area is that published within long landscape sequences at Holywell Coombe (Kerney *et al.* 1980), and the nearby site of Frogholt (Godwin 1962).

Potential for further work

- 7.43.6 None of sampled contexts provide long sequences for which a wider landscape picture would be gained. Those from individual pits are unlikely to greatly increase our interpretation of activity and function over and above the charred remains (cf. Dimbleby 1985; Scaife pers. comm.). Only contexts for which soil micromorphology (see below) might be undertaken are worth pursuing for pollen. These would include buried soils beneath barrows, and occupation deposits in pits (see list above).
- 7.43.7 Thus the assessment to date is largely assessment of contextual value, rather than pollen preservation. The analytical value of samples is heightened by the following samples considered for contemporary soil micromorphological analysis. Those of significant contextual potential include buried soils (samples 83, 84 and Q), turf in graves (one of M1-11), below trackway metalling (one of sample X1-X4) and the basal layer in the storage pit (sample E1).

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7.44 Assessment of Molluscs

Michael J. Allen and Sarah F. Wyles

Introduction

- 7.44.1 As the site was situated on Folkestone and non-calcareous Beds, the archaeological deposits were not conducive to snail life or shell survival, and the area is generally poor for land snail preservation (cf Evans 1972). The research objectives of land-use and landscape in the later prehistoric to Saxon periods are not ones of general landscape type (i.e. woodland vs open country) that can be undertaken with moderate snail assemblage. They seek to determine the landscape type at 'high resolution' (i.e. type of land-use: arable, vs short-grazed, vs open trampled, vs long grassland), requiring sequences of well-preserved land snails.

Methodology

- 7.44.2 No samples were taken and processed specifically for land snails (cf. Evans 1972), however the presence of land snails was noted in the assessment of the bulk samples

Quantification and Provenance

- 7.44.3 During the processing of bulk soil samples for the recovery of charred plant remains and charcoals, snails were noted, and recorded in the flots. The presence of snails in these flots is assessed below. None of the shells (WA) were noted to be fresh- or brackish-water species.
- 7.44.4 Snails were not noted in any of the Neolithic flots. One sample from Early Bronze Age barrow ditch C4744 and one from Middle Bronze Age pit C3615 contained snails. Few Late Bronze Age/ Early Iron Age features contained shells, although pit C2805 consistently recorded the presence of snails. Preservation here may be due to micro-environmental conditions created by the pit fills (i.e. calcium phosphate input in the form of ash). The presence of snail shells in the samples from this pit is noteworthy. Only one Early to Middle Iron Age sample contained a few shells (less than 5) in the flot, whilst only ditch C2308 from the undiagnostic prehistoric category contained any shells.
- 7.44.5 Several Late Iron Age/ Romano-British samples (13) contained shells, however the contexts they were noted from (cremation C8; ditch C5; pit C1; and hollow C1) at this period, and the level of preservation make their presence of little significance. The preponderance of survival in cremation-related contexts is due the increased levels of calcium (bone) and calcium phosphate (burnt bone and ash).
- 7.44.6 Nine Anglo-Saxon graves and four other contemporaneous features contained some shell in the flots. Again low levels of preservation here are likely to be due to the higher calcium carbonate content created by bone (albeit often dissolved and poorly preserved).

Conservation

- 7.44.7 What little shell that survives is stable in dry condition in either dried flots or residues. They are suitable for long term storage, if necessary, in the current form.

Comparative Material

- 7.44.8 Due to the poor preservation of snails on non-calcareous geologies there are no comparative records in the immediate area. However, the chalkland of Kent and Sussex have provided detailed records of landscape change from the early post glacial and prehistoric periods in Kent, such as at Brook (Kerney *et al.* 1964) and Holywell Combe (Kerney *et al.* 1980), which provide a general environmental background. For the Neolithic the seminal paper by Thomas (1982) drawing on work from various Neolithic causewayed enclosures (various publications), and that of landscape blocks e.g. Caburn-Malling Down, East Sussex (Allen 1995a), show the potential for land snail analysis. This work provides some parallels for the Kent landscape. At Saltwood Tunnel, however, survival is not good enough to allow anything but specific and localised comment, rather than an integral interpretation of environment, environment change and land-use in the wider local landscape.

Potential for further work

- 7.44.9 Shell survival was so poor as to not facilitate any significant contribution. In periods post 2000 BC good preservation of shells is needed to facilitate detailed interpretation of land-use. Prior to this period where more general statements on woodland can be determined through poorer survival, either the contexts themselves are lacking or shells do not survive.
- 7.44.10 However snails from any earlier prehistoric features (e.g. particular features such as ditch C4744 and Middle Bronze Age pit C3615) will be of use in defining the nature of the earlier landscape at Saltwood, and broad evidence of local land-use. Snails from Late Bronze Age/ Early Iron Age pit C2805, where preservation is better, may aid in determining function and use of the feature (see molluscan remains from other Iron Age pits e.g. Balksbury, Hants; Allen 1995b).

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7.45 Assessment of Soil Micromorphology

Michael J. Allen with comments from Richard I Macphail

Introduction

- 7.45.1 One sample was taken specifically for soil micromorphology, with accompanying soil chemistry samples, from a buried soil beneath possible Early Bronze Age barrow mound material. A further series of monoliths suitable for pollen and soil micromorphology were also taken. The assessment of the value of soil micromorphology is based on the sampled contexts and question posed of them, and not of the material itself *per se*.

Methodology

- 7.45.2 Samples were taken from sealed contexts during excavation, either in kubiena tins (foil containers) or soil monoliths, to ensure that undisturbed samples were taken. Where samples have been taken in long soil monoliths (in excess of 0.2m) then undisturbed sample can be cut from these after suitable pedological/ sedimentological description has been made and any subsampling for pollen or other analyses.

Provenance

- 7.45.3 Samples include Bronze Age to Saxon contexts (**Table 43**).

Table 43: Provenance details for Soil Micromorphology samples

| Sample/ ref no | Phase | Contexts | Description |
|--------------------|----------|--|---|
| W83 | EBA | | Denuded barrow mound |
| W84 | EBA | | Denuded barrow mound |
| E1 | Iron Age | C1499 | Basal layer of storage pit |
| A1 – A3, A1a - A5a | Iron Age | C624, C625, C626, C679, C678, C628 | Deep irregular pit complex in west of site |
| X1 – X4 | RB | C143, C916 | Above and below road metalling 155 |
| Y1 – Y4 | RB | C838 | Above road metalling 839 |
| Z1 – Z6 | RB | C121, C122 | Above road metalling |
| B1- B5 | Saxon | C1360 + | Cemetery |
| C1 – C3 | Saxon | | Ditch fills in cemetery |
| F1 – F6 | | C1483, C1500-C1507 | Ditch fills |
| G1, G2 | Saxon | C632, C631 | Sunken-featured building ‘floor’ |
| C140 | Saxon | C1538 | Sunken-featured building |
| M1 – M11 | Saxon | C1178, C1083, C1079, C1171, C1174, C1175, C1176, C1177 | Fills of grave C7 |
| Q | Saxon | | Former old land surface through which graves were cut |

Conservation

- 7.45.4 Undisturbed soil samples are not suitable for long term storage and samples should be stored in dark and dry cool to cold/ refrigerated, but not freezing, conditions before sampling. Samples for soil micromorphology become stable and suitable for long term storage and archive curation once impregnated blocks have dried. The

slides are normally retained by the specialist but the remaining blocks are retained in the archive.

Comparative Material

- 7.45.5 Information from buried soils has been demonstrated to provide long site histories or prior and immediately post burial (e.g. Macphail 1986; 1995). Trample deposits are well known for their anthropogenic indicators recovered from deposits (e.g. Potterne, Macphail in Lawson 2000; Courty *et al.* 1989).

Potential for other work

- 7.45.6 A number of sampled contexts provide the potential to examine the on site lived-in environment and of site based activities (**Table 44**). The context of most of these samples is restricted to site-based, rather than wider landscape, interpretation. Only the buried soils beneath the barrow mounds and that sealed by the road have the potential of providing both on-site and wider environmental context. Where samples have been selected, small samples for soil chemistry, where available, should be analysed in conjunction with any soil micromorphology.

Table 44: Summary of Soil Micromorphology sample potential

| Sample/ group | Description | Potential | Pollen |
|------------------------------|--|----------------------------------|---|
| Prehistoric landscape | | | |
| E1 | Basal layer of storage pit | Localised activity on site | To be sampled for pollen at 2cm contiguous intervals to enable a) assessment and b) analysis if required. |
| Pre-Saxon landscape | | | |
| 1 of X1-4 | Soil beneath road metalling C155 | Pre-road landscape and activity | |
| Q | ?former land surface through which graves were cut | Pre-Saxon landscape and land-use | |
| 1 of M1-11 | Turf in grave | Pre-Saxon landscape and land-use | To be sampled for pollen at 2cm contiguous intervals to enable a) assessment and b) analysis if required |
| 83 | Top of OLS under barrow | Pre-Saxon landscape and land-use | To be sampled for pollen at 2cm contiguous intervals to enable a) assessment and b) analysis if required |
| 84 | OLS under barrow | Pre-Saxon landscape and land-use | To be sampled for pollen at 2cm contiguous intervals to enable a) assessment and b) analysis if required |
| Saxon landscape and activity | | | |
| G1 or G2 | Floor of sunken-featured building | Activity on site | |

- 7.45.7 A selection of stratified undisturbed samples, therefore, have the potential of providing information about the wider landscape (buried soils), and specifically of

activities on site. The latter include the soil horizon in the sunken-featured building and the storage pit. They may also contribute to a consideration of activity associated with funerary practices (i.e. turves in graves and the potential denuded barrow material). Analysis can provide detailed information about specific features, pits and activities on the site scale, and about activities associated with the wider land-use and landscape.

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7.46 Assessment of soil pH and Phosphates

M J Allen

Introduction

- 7.46.1 A series of soil samples were routinely taken by Wessex Archaeology from grave fills in an attempt to consider ways of assessing degree of bone survival (e.g. pH), and the position of bodies within graves (e.g. phosphates), if ever present at all in graves where no bone survived.

Methodology

- 7.46.2 The small samples for pH and soil phosphate were generally taken in groups of four per grave, comprising a single spot sample from the upper grave fill, and one each from the perceived head, abdomen and feet region at the base of the grave. This comprised approximately 130 samples (i.e. c. 33 graves). Three measurements were made on a selection of 6 pilot samples using a pEP pH meter. Small sub-samples were mixed in water and measured using the digital meter.

Quantity and Provenance

- 7.46.3 Soil pH was tested on six samples, as follows (**Table 45**):

Table 45: Quantification of pH results

| Sample | Phase | Feature | Context | pH |
|--------|----------|------------|---------|-----|
| W52 | EIA/ MIA | grave W64 | W1306 | 6.3 |
| W182 | Saxon | grave W109 | W1845 | 6.4 |
| W214 | Saxon | grave W127 | W3087 | 6.4 |
| W215 | Saxon | grave W127 | W3087 | 6.3 |
| W216 | Saxon | grave W127 | W3087 | 6.4 |
| W33 | Saxon | grave W27 | W1322 | 6.5 |

Potential for other work

- 7.46.4 Soil pH was sub-alkali and typical of the natural brown earth soils of the area. No significant variation was seen either between graves or within each grave. As a result, the potential for further work seems negligible.
- 7.46.5 No phosphate analysis was undertaken. Rapid assessment of phosphate (available phosphate) would also include that derived from the manuring regime. Whilst total phosphate might indicate increased levels at both occupation and burial areas, the analytical potential is low (Canti pers comm; Macphail pers. comm., Crowther pers. comm.). In order to define a body within a grave, a grid at about 0.05m density, descending a minimum of three 0.05m spit levels would need to be taken. No further work is deemed useful on this suite of samples.

7.47 Assessment of Human Bone

J I McKinley

Introduction

- 7.47.1 Human bone – unburnt and cremated - was recovered from all areas excavated and all major periods (i.e. Bronze Age, Iron Age, Romano-British and Anglo-Saxon) represented at Saltwood. The fragility of most of the bone from the inhumation burials resulted in much of it being block-lifted on site for subsequent excavation and cleaning under more controlled conditions. A suite of samples recovered from the grave fills resulted in the retrieval of some additional material. Cremation-related deposits were subject to whole-earth recovery and wet-sieved to 1mm fraction-size.

Methodology

- 7.47.2 The bone lifted in soil blocks was cleaned prior to assessment by gentle ‘spray-washing’, which proved to be the most effective mode of retrieval and cleaning. All the bone was subject to a rapid scan to assess demographic data, potential for indices recovery, and presence of pathological lesions. Assessments were based on standard methods (Brothwell 1972, Bass 1987, Buikstra and Ubelaker 1994). In addition, the cremated bone from each deposit was weighed, and an assessment of cremation efficiency and bone fragmentation was made (McKinley 1993, Holden *et al* 1995 a and b).

Quantification

- 7.47.3 Unburnt human bone was recovered from 145 contexts and burnt or cremated bone was recovered from 114 contexts at Saltwood. A summary of the scan results is presented in **Table 46**. Bone recovered from several deposits that was initially considered to be human has since been identified as animal, as well as one deposit that comprised only soil when examined in detail; these are not included in the tables. It is possible that further small fragments of human bone may be retrieved from as yet unprocessed soil samples.
- 7.47.4 The poor condition of the unburnt bone (see below) is a major factor affecting all areas of the proposed analysis. Bone was examined from 114 inhumation burials (see below, *Provenance*, for deposit types), including one possible dual burial. The cemetery population included a minimum of 13 immature individuals, the youngest of which was a c. 2 year old infant, the remainder comprising adults of both sexes spanning a wide age range.
- 7.47.5 A significant proportion of the cremated bone from Saltwood (**Table 47**) appears to represent material disturbed and redeposited in antiquity (therefore identified as undated). Confirmed cremation deposits include a possible urned and unurned cremation burial to the east of Stone Farm Bridleway, and a minimum of 12 cremation burials to the west of the bridleway. Most of the bone represents the remains of subadult-adult individuals.

Table 46: Saltwood inhumed bone

| Event code | Grave no. | Context | Period | Type | % skel. | Age | Sex | Comments |
|------------|-----------|----------------|---------|-------------------|---------|----------------------|---------|--|
| ARC SLT99 | C4507 | Sk 4552 | E/MBA | ? | c. 25% | Adult 25-40 yr. | ?female | Fragments from all skeletal areas; vertebrae crumbled to dust. Bone remaining moderately preserved. Excavated with 2 left legs? |
| ARC SLT99 | C4619 | Sk 4676 | E/MBA | Inh. burial | c. 35% | Adult >40 yr. | male | Heavily degraded fragments from all areas of the skeleton. Osteoarthritic lesions in cervical & lumbar, thoracic rib facets; osteophytes in left proximal ulna.; Large skeleton. |
| ARC SFB99 | W64 | 1356 | E/MIA | Inh. burial | <1% | ? | ? | tiny scraps tooth enamel |
| ARC SFB99 | W68 | 1445 | E/MIA | ?inh. burial | c. 1% | Adult | ??male | Fragment thick vault |
| ARC SFB99 | W68 | 1446 | E/MIA | ?=1445 | <1% | Subadult-adult | ? | Degraded scraps vault |
| ARC SFB99 | W69 | 1412/1448/1449 | E/MIA | | | | | no bone surviving, pending sample processing |
| ARC SFB99 | W97 | 1735 | E/MIA | Redep.; ?=1736 | <1% | Adult c. 20-30 yr. | ? | Tooth enamel. Cremated bone (see below). Lower grave fill. |
| ARC SFB99 | W98 | 1738-40 | E/MIA | | | | | tooth enamel |
| ARC SFB99 | W105 | 1381 | E/MIA | | | | | no bone recovered |
| ARC SFB99 | W103 | 1804/5 | LJA/ERO | | | | | no bone surviving, pending sample processing |
| ARC SLT98C | C212 | Sk 211 | LRO | | | | | no bone surviving, pending sample processing |
| ARC SLT99 | C2164 | 2165 | LRO | | | | | no bone surviving, pending sample processing |
| ARC SLT98C | C1 | 1001 | EM | ? | <1% | >infant | ? | Shattered fragments tooth enamel & skull from sample. |
| ARC SLT98C | C1 | Sk 1017 | EM | Inh. burial | c. 5% | Adult c. 18-30yr. | ?female | tooth crowns; degraded vault (4-5); upper & lower limb fragments (3-4); ?intrusive tooth crown |
| ARC SLT98C | C2 | 1026/1029 | EM | ? | <1% | Subadult-adult | ? | Teeth. |
| ARC SLT98C | C3 | 1039 | EM | ?redep. or = 1029 | <1% | Subadult-adult | ? | totally shattered fragments of tooth enamel. |
| ARC SLT98C | C3 | Sk 1029 | EM | Inh. burial | <1% | Juvenile-young adult | ? | shattered fragments tooth enamel |
| ARC SLT98C | C5 | 1046 | EM | ?redep. or = 1075 | <1% | ? | ? | shattered fragments tooth enamel |
| ARC SLT98C | C5 | 1075 | EM | ?inh. burial | <1% | Adult | ? | tooth crown |
| ARC SLT98C | C7 | 1084 | EM | ?redep. or = 1310 | <1% | Subadult-adult | ? | splinters of bone inc. vertebrae; worn and degraded (5) |
| ARC SLT98C | C7 | Sk 1310 | EM | Inh. burial | c. 26% | Adult c. 25-40 yr. | male | skull (2), axial skeleton (4), shattered fragments upper limb (4-5), lower limb very degraded (5); ?some reconstruction?; caries |
| ARC SLT98C | C9 | 1109 | EM | ?inh. burial | <1% | Infant-adult | ? | shattered tooth enamel; scrap burnt bone |
| ARC SLT98C | C12 | 1134 | EM | ?inh. burial | <1% | Adult | ? | tooth crown fragment |
| ARC SLT98C | C14 | 1118 | EM | ?redep. or = 1140 | <1% | Adult c. 25-45yr. | ? | tooth crowns; fragments cremated bone |
| ARC SLT98C | C14 | Sk 1140 | EM | Inh. burial | c. 1% | Adult c. 25-40yr. | ? | Tooth enamel |
| ARC SLT98C | C15 | 1183 | EM | ?inh. burial | <1% | Subadult-adult | ? | tiny fragments shattered tooth enamel |
| ARC SLT98C | C16 | 1120 | EM | ?redep. or = 1167 | <1% | Adult | ? | shattered fragments tooth enamel; 0.2g burnt bone. Fragment animal tooth. |
| ARC SLT98C | C17 | Sk 1157 | EM | Inh. burial | c. 1% | Adult c. 25-40 yr. | ? | |
| ARC SLT98C | C18 | Sk 1160 | EM | Inh. burial | <1% | Adult | ? | Shattered tooth crown & scraps of bone. |
| ARC SLT98C | C20 | 1164 | EM | ?inh. burial | <1% | ? | ? | tiny fragments shattered tooth enamel |
| ARC SLT98C | C21 | 1187 | EM | ?redep. or = 1256 | <1% | Adult >40yr. | ? | teeth & degraded skull (5) |
| ARC SLT98C | C21 | Sk 1256 | EM | Inh. burial | c. 2% | Adult c. 35-60yr. | ?female | Teeth, frontal fragments (3) |
| ARC SLT98C | C21 | unstrat. | EM | ?redep. or = 1256 | <1% | ? | ? | degraded bone (5+) |
| ARC SLT98C | C22 | 1198 | EM | ?inh. burial | <1% | ? | ? | shattered tooth enamel |
| ARC SLT98C | C23 | 1203 | EM | ?inh. burial | c.1% | Adult c. 20-35 yr. | ??male | Tooth crowns. Fragments cattle tooth. |

| | | | | | | | |
|------------------|---------------|----|------------------|--------|----------------------------------|------------|--|
| ARC SLT98C C23 | 1388 | EM | ?redp. | <1% | Adult c. 18-35yr | ? | Tooth crown |
| ARC SLT98C C25 | Sk 1347 | EM | Inh. burial | <1% | Juvenile-young adult c. 7-25 yr. | ? | Shattered tooth enamel |
| ARC SLT98C C29 | Sk 1254 | EM | Inh. burial | <1% | Infant c. 2-3yr. | ? | Tooth crowns |
| ARC SLT98C C30 | Sk 1276 | EM | Inh. burial | <1% | Subadult- adult c. 13-25yr. | ? | tooth crowns. |
| ARC SLT98C C33 | 1330/1331 | EM | ?inh. burial | <1% | ? | ? | shattered tooth enamel |
| ARC SLT98C C34 | Sk 1361 | EM | Inh. burial | c. 4% | Adult c. 25-45 yr. | ? | Tooth crowns. Degraded fragments upper & lower limb shafts (5). |
| ARC SLT98C C35 | 1363 | EM | Inh. burial | <1% | Adult c. 30-50 yr. | ? | Tooth crowns. Scraps of ?long bone. |
| ARC SLT98C C37 | Sk 1415 | EM | Inh. burial | <1% | Adult c. 20-35yr. | ??male | Tooth crowns. |
| ARC SLT98C C39 | 1351 | EM | Inh. burial | c. 1% | Juvenile-subadult c. 9-14 yr. | ? | Tooth crowns |
| ARC SLT98C C40 | 1357 | EM | Inh. burial | <1% | Adult | ? | shattered tooth enamel |
| ARC SLT98C C40 | 1358 | EM | ?redp. | <1% | Adult c. 25-40yr. | ? | Tooth crowns, degraded skull fragments. |
| ARC SLT98C C44 | unstrat. | EM | ?redp. | <1% | ? | ? | shattered tooth enamel; 0.2g burnt/cremated bone; from sample |
| ARC SLT98C C44 | 1239 | EM | ?inh. burial | <1% | Adult c. 20-35yr. | ? | Tooth crown: = 1343 |
| ARC SLT98C C50 | 1380/ Sk 1381 | EM | Inh. burial | <1% | Adult c. 25-45yr. | ? | Shattered tooth enamel |
| ARC SLT98C C53 | Sk 1417 | EM | Inh. burial | c.1% | Adult c.25-40yr | ??female | Tooth crowns. |
| ARC SLT98C C55 | 1404 | EM | ?redp. or = 1404 | <1% | ? | ? | shattered fragments tooth enamel |
| ARC SLT98C C55 | Sk 1403 | EM | Inh. burial | <1% | Juvenile-adult | ? | fragment shattered tooth enamel |
| ARC SLT98C C57 | Sk 1452 | EM | Inh. burial | <1% | >infant | ? | shattered fragments tooth enamel |
| ARC SLT98C C171 | Sk 6140 | EM | Inh. burial | c. 17% | Adult | ??male | Eroded (3-4) upper & lower limb shafts, foot bones. |
| ARC SLT98C C171? | unstrat. | EM | ?redp. or = 6140 | c. 15% | Adult >40yr. | ??female | Teeth & degraded skull (4-5) |
| ARC SLT98C C177 | Sk 6527 | EM | Inh. burial | c. 16% | Adult 30-45 yr. | ? | Degraded (4) skull, tooth crowns, lower limb fragments (4-5), foot bones relatively well preserved (2). |
| ARC SLT98C C181 | Sk 6636 | EM | Inh. burial | <1% | Adult c.25-45 yr. | ??, female | /2 – tooth crowns ;3 -Scraps degraded long bone shaft. |
| ARC SLT98C C185 | Sk 6517 | EM | Inh. burial | c. 3% | Adult | ? | degraded fragments lower limb |
| ARC SLT98C C185 | Sk 6517/ 6528 | EM | Inh. burial | c. 10% | Adult c. 30yr + | ??female | teeth, degraded skull fragments (3-5) & cervical vertebrae ; periodontal disease, calculus |
| ARC SLT98C C190 | Sk 6420 | EM | Inh. burial | <1% | >infant | ? | Degraded scraps supposedly feet |
| ARC SLT98C C195 | Sk 6417 | EM | Inh. burial | <1% | Juvenile-young adult | ? | Shattered fragments tooth enamel. |
| ARC SLT98C C196 | Sk 6523 | EM | Inh. burial | <1% | Young infant c. 0-2yr. | | unworn deciduous tooth crowns |
| ARC SLT98C C198 | Sk 6565 | EM | Inh. burial | c. 45% | juvenile c. 8-10yr. | ? | Most of skull, warped & shattered vault (3). Late eruption of premolars. Legs moderately well preserved (2-3), axial skeleton disintegrated, upper limb poorly preserved (3-4). Left distal tibia recorded with femur as thigh bone. |
| ARC SLT98C C199 | Sk 6646 | EM | Inh. burial | c.% | juvenile; c. 7-10yr. | ??male | Permanent and deciduous tooth crowns. |
| ARC SLT98C C1290 | Sk 1343 | EM | Inh. burial | <1% | Subadult-adult c. 12-30 yr. | ? | Tooth crowns |
| ARC SLT98C C1451 | 1450 | EM | Inh. burial | <1% | Juvenile-young adult | ??male | Tooth crowns. |
| ARC SLT98C C2401 | 2400 | EM | ?redp. or = 2515 | <1% | Juvenile-subadult | ? | Shattered fragments unworn premolar & molar crowns. 0.2g cremated bone. |
| ARC SLT98C C2559 | 2558 | EM | ?redp. or = 2598 | <1% | Juvenile-subadult | | Shattered fragments unworn molar crown; 0.3g cremated bone. |
| ARC SLT98C C2816 | Sk 2817 | EM | Inh. burial | <1% | Juvenile-adult; c. 7-30 yr. | ? | Tooth enamel |
| ARC SLT98C C2869 | 2886 | EM | ?redp. or = 2906 | <1% | Subadult-adult | ? | shattered tooth enamel |
| ARC SLT98C C2869 | Sk 2906 | EM | Inh. burial | <1% | Adult c. 25-40 yr. | ??female | Tooth crown fragments |
| ARC SLT98C C6639 | Sk 6639 | EM | Inh. burial | c. 1% | adult c.35-50 yr. | ? | Tooth crowns. Scraps long bone shaft & skull(5+) |
| ARC SLT99 C109 | Sk 3716 | EM | Inh. burial | c. 5% | Adult>45 yr. | male | mandible, maxilla, occipital vault, cervical; lower limb: poor |

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|-----------|---------|---------------|----|----------------------------------|--------|-------------------------------------|----------|--|
| ARC SLT99 | C170? | ?4725 | EM | ?redepos. or =4727 | c. 1% | Adult 25-45 yr. | ? | tooth crowns & vault fragments |
| ARC SLT99 | C173 | Sk 6204 | EM | Inh. burial | c. 1% | Subadult- adult; c. 16-25 yr. | ??female | Tooth crowns. |
| ARC SLT99 | C174 | Sk 6230 | EM | Inh. burial | c. 26% | Older subadult-young adult c. 17-20 | ?male | Teeth; skull (3-4); degraded fragments mandible; right proximal femur recorded as left, as was innominate. Degraded (varies with side 3-5) fragments lower limb & upper limb & axial skeleton; calcanei; ?some reconstruction. |
| ARC SLT99 | C176 | Sk 6407 | EM | Inh. burial | c. 1% | Infant-juvenile c. 4-6 yr. | male | Tooth crowns |
| ARC SLT99 | C138 | Sk 1167 | EM | Inh. burial | <1% | Adult | ? | Shattered tooth crowns. Scraps of ?vault. |
| ARC SLT99 | C193 | Sk 1330 | EM | Inh. burial | c. 1% | Adult c 20-30 yr. | ?male | Tooth crowns. Slivers of long bone shaft. |
| ARC SLT99 | C1195 | Sk 1283 | EM | Inh. burial | <1% | ? | ? | Scraps of tooth crown |
| ARC SLT99 | C2401 | Sk 2515 | EM | Inh. burial | <1% | Juvenile-subadult c. 8-18 yr. | ? | Tooth crowns |
| ARC SLT99 | C2559 | 2558/ Sk 2598 | EM | Inh. burial | <1% | Subadult/adult | | Shattered enamel |
| ARC SLT99 | C3041 | 3039 | EM | ?inh. burial | <1% | Juvenile-subadult | ? | Unworn mandibular molar crown |
| ARC SLT99 | C3047 | 3046 | EM | Inh. burial | c. 1% | Adult c. 18-30 | ? | Tooth crowns & fragments shattered tooth enamel. |
| ARC SLT99 | C3777 | 3776 | EM | ?inh. burial | | >infant | | 1g burnt bone – mandible & long bone. |
| ARC SLT99 | C3896 | 3894/3895 | EM | ?inh. burial | nil | | | cattle tooth |
| ARC SLT99 | Unknown | Sk 4899 | EM | Inh. burial | <1% | Subadult-adult | ? | Fragment degraded petrous temporal.; Residue to scan. |
| ARC SFB99 | W7 | 3033 | EM | Inh. burial | c. 15% | Adult c. 18-45 yr. | ?male | Degraded & disintegrating skull vault, robust femur shafts. |
| ARC SFB99 | W11 | 1055 | EM | Inh. burial | c. 3% | adult | ??male | Degraded scraps of vault, and lower limb shafts. Appears to have been supine & extended. |
| ARC SFB99 | W12 | 1076 | EM | ?redepos. | c. 4% | Adult >30 yr. | ?female | occipital parietal vault. Degraded (3-4). Upper fill of grave - redeposited |
| ARC SFB99 | W12 | 1146 | EM | Inh. burial | c. 5% | Adult >50 yr. | ? | Degraded (4-5), skull fragments. Warped longitudinal. Sutures obliterated. Uneven occlusal wear in canine – cultural? |
| ARC SFB99 | W12 | 1147 | EM | =1146 or 1076 | <1% | | | Degraded scrap skull vault |
| ARC SFB99 | W13 | 1075/1077 | EM | Inh. burial(?s) | <1% | Subadult-adult; ?2) infant | | Actually only surviving bone on 'non-skeleton' 1077. Check with in situ teeth - ?late eruption some permanent teeth. Basal fill of grave. Most recovered from sample. |
| ARC SFB99 | W18 | 1125 | EM | ?redepos. or remains inh. burial | <1% | Adult | | canine crown. From grave fill – no burial remains recovered from this grave - this may actually be non-number 1168 |
| ARC SFB99 | W20 | 1119 | EM | ?redepos. | <1% | Juvenile-subadult | ? | Unworn maxillary molar crown. From grave fill – no burial remains recovered from this grave. |
| ARC SFB99 | W22 | 1332 | EM | Inh. burial | c. 1% | Subadult | ? | tooth enamel, some root. |
| ARC SFB99 | W23 | 1345 | EM | Inh. burial | <1% | Subadult | ??male | tooth enamel, mandibular and maxillary. |
| ARC SFB99 | W29 | 1322 | EM | ?redepos. or = 1328 | <1% | Adult | ? | shattered tooth crown |
| ARC SFB99 | W29 | 1328 | EM | Inh. burial | <1% | Adult c. 30-45 yr. | ? | tooth enamel, mandibular & maxillary. Disturbed? |
| ARC SFB99 | W38 | 1515 | EM | ?redepos. | <1% | Adult | ? | tooth crown fragment. Some cremated bone in here (see below). |
| ARC SFB99 | W38 | 1516 | EM | Inh. burial | <1% | Subadult | ? | From backfill above 1516. |
| ARC SFB99 | W40 | 1763 | EM | Inh. burial | c. 1% | Adult c. 30-45 yr. | ? | Unworn-lightly worn tooth crowns. Retained deciduous canine. Fragment cremated bone (see below). |
| ARC SFB99 | W42 | 1777 | EM | ?inh. burial | c. 1% | 1) juvenile-subadult; adult | ? | Teeth |
| ARC SFB99 | W43 | 1575 | EM | ?coffined; inh. burial | c. 27% | Adult c. 30-50 yr. | male | Tooth crowns from 2 dentitions; ?disturbed, some redeposited (very near surface, central to grave) |
| | | | | | | | | Degraded skull (4-5); upper & lower limb, & innominate fragments |

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|------------|------------|-----------|----|-----------------------|--------|-----------------------------------|----------|---|
| ARC SFB99 | W45 | 1856 | EM | Inh. burial | c. 25% | Adult c. 25-35 yr. | ??female | Teeth good; degraded skull (3-4); fragments heavily degraded upper & lower limb shaft. |
| ARC SFB99 | W57 | 1750 | EM | Inh. burial | c. 1% | Adult c. 25-35 yr. | ? | Teeth, some root. Scraps degraded skull. Long bones disintegrated, scraps left femur. |
| ARC SFB99 | W59 | 1391 | EM | Redep.? | c. 2% | Adult c. 20-35 yr. | ??female | Tooth crowns; degraded skull & mandible fragments (4-5). Hypoplasia. |
| ARC SFB99 | W60 | 1514 | EM | Inh. burial | c. 1% | Adult c. 25-40 yr. | | Cu-alloy staining on right mandibular premolar-molars. Mandibular & maxillary teeth. |
| ARC SFB99 | W70 | 1606 | EM | ?inh. burial | <<1% | ? | ? | samples; 2 slivers of bone; 4 no bone; 5 no bone |
| ARC SFB99 | W83 | 1293 | EM | Inh. burial | c. 3% | Adult c. 30-50 yr. | ?female | Degraded fragments skull and tooth enamel, innominates (obtuse greater sciatic notch); disintegrating scraps long bone. |
| ARC SFB99 | W104 | 1743 | EM | ?coffined inh. burial | <1% | Adult c. 25-40 yr. | ? | Tooth enamel. Disturbed. |
| ARC SFB99 | W111 | 1811 | EM | Dual inh. burial | <1% | Adult c. 20-30 yr.; young infant | | Tooth enamel crowns; inc. deciduous mandibular molar |
| ARC SFB99 | W120 | 1896 | EM | Inh. burial | <1% | Adult c. 25-45 yr. | ? | 4 maxillary tooth crowns, roots degraded. |
| ARC SFB99 | W123 | 1854 | EM | Inh. burial | c. 1% | Subadult-adult; c. 16-25 yr. | ? | Fresh appearance; tooth crown enamel. |
| ARC SFB99 | W123 | 1855 | EM | Redep. ?; ?=1854 | <1% | Subadult-adult; c. 15-30 yr. | ? | Tooth crown. Cremated bone (see below). |
| ARC SFB99 | W125 | 3127 | EM | Inh. burial | c. 1% | Subadult-young adult c. 13-25 yr. | ??male | Tooth crowns. |
| ARC SFB99 | W126 | 3085 | EM | Inh. burial | c. 1% | Older juvenile ; c. 8-10 yr. | 1) ?male | Teeth, crowns good condition, roots degraded; 12 permanent maxillary & 12 mandibular, 1 maxillary & 2 mandibular deciduous molars - ?later eruption premolars (see SLT 98C 6565). Hypoplasia. |
| ARC SFB99 | W185 | 1329 | EM | Inh. burial | c. 3% | Adult c. 25-40 yr. | ? | tooth enamel, scraps mandible & skull, degraded scraps long bone. Residue to sort. |
| ARC SLT98 | - | 1000 | ? | ? | c. 3% | Adult | ? | Lower limb shafts (4) |
| ARC SLT98 | - | 1122 | ? | ? | <1% | ? | ? | shattered tooth enamel |
| ARC SLT98 | - | 1372 | ? | Inh. Burial | <1% | Adult | ? | shattered fragments tooth enamel |
| ARC SLT98C | Ditch 2741 | 2890 | ? | ? | <1% | | | Fragment shattered tooth enamel |
| ARC SLT99 | Ditch 3828 | 3827/3831 | ? | Inh. Burial | <1% | Subadult-adult | ? | Highly degraded fragment ?tibia shaft. |
| ARC SLT99 | Cut 3891 | 3890 | ? | ? | <1% | ? | ? | ?human/?animal long bone fragments – shattered |
| ARC SLT99 | Pit 3910 | 3970 | ? | Inh. Burial | c. 1% | Adult c. 25-35yr. | ?female | mandibular & maxillary tooth crowns (enamel only) heavier occlusal wear one side |

Table 47: Saltwood cremated bone

| Site | Feature | Context | Period | Type | Bone wt. | Age | Comments |
|-----------|---------|---------|---------|---------------|----------|----------------|---|
| ARC SLT99 | C3709 | 3708 | LBA/EIA | ? | 18.0g | Adult | Pitting - articular process |
| ARC SLT99 | C3710 | 3711 | LBA/EIA | ? | 483.5g | | |
| ARC SLT99 | C3739 | 3737/8 | LBA/EIA | ? | | | Bone yet to be examined |
| ARC SLT99 | C3777 | 3776 | LBA/EIA | ? | | | Bone yet to be examined |
| ARC SLT99 | C3806 | 3805 | LBA/EIA | ? | 5.4g | | |
| ARC SLT99 | C3806 | 3809 | LBA/EIA | ? | 1.4g | | |
| ARC SLT99 | C3896 | 3894/5 | LBA/EIA | ? | | | Bone yet to be examined |
| ARC SLT99 | C3935 | 3933/4 | LBA/EIA | ? | | | Bone yet to be examined |
| ARC SFB99 | W99 | 1704 | LBA/EIA | ?rpd | 10.3g | Adult | 2 sub-contexts; mixed charcoal rich pit |
| ARC SFB99 | W100 | 1727 | LBA/EIA | ?u. eb/; ?rpd | 33.3g | Adult | Quantities of charcoal? see photo. & plan |
| ARC SFB99 | W101 | 1729 | LBA/EIA | ?rpd | 12g | Subadult-adult | Charcoal rich pit fill |
| ARC SFB99 | W102 | 1700 | LBA/EIA | ?rpd | 4.6g | >infant | 4 sub-contexts; charcoal rich shallow pit |
| ARC SFB99 | W102 | 1701 | LBA/EIA | = 1700 | 0.3g | | ?human; 2 sub-contexts |
| ARC SFB99 | W106 | 1723 | LBA/EIA | ? | | | Bone yet to be examined |
| ARC SFB99 | W107 | 1725 | LBA/EIA | ?redepos. | 1.2g | >infant | |
| ARC SFB99 | W223 | 3603 | LBA/EIA | unurn. | 143.0g | Adult | |
| ARC SLT98 | C6 | 5 | E/MRO | ? | 291.7g | Adult | |
| ARC SLT98 | C12 | 67 | E/MRO | ? | 2.0g | | |
| ARC SLT98 | C12 | 68 | E/MRO | ? | 121.4g | Adult | |
| ARC SLT98 | C12 | 69 | E/MRO | ? | 0.4g | Adult | Osteophytes |
| ARC SLT98 | C14 | 59 | E/MRO | ? | 50.7g | Adult | Few u/b cattle teeth; 2 samples |
| ARC SLT98 | C14 | 60 | E/MRO | ? | 279.5g | Adult | Iron panning |
| ARC SLT98 | C14 | 61 | E/MRO | ? | 0.2g | | |
| ARC SLT98 | C14 | 62 | E/MRO | ? | 22.5g | Subadult-adult | Inc. animal bone; sherd |
| ARC SLT98 | C15 | 49 | E/MRO | ? | 2.4g | Subadult-adult | Pot sherds |
| ARC SLT98 | C16 | 86 | E/MRO | ? | 113.5g | Adult | |
| ARC SLT98 | C19 | 95 | E/MRO | ? | 1.0g | | |
| ARC SLT98 | C19 | 96 | E/MRO | ? | 20.5g | Adult | |
| ARC SLT98 | C20 | 56 | E/MRO | ? | 0.7g | Subadult-adult | |
| ARC SLT98 | C20 | 58 | E/MRO | ? | 16.2g | Adult >40 yr. | ?some animal bone; sherds |
| ARC SLT98 | C21 | 82 | E/MRO | ? | 3.7g | Subadult-adult | |
| ARC SLT98 | C21 | 83/84 | E/MRO | ? | 133.8g | Adult | Worn sherds |
| ARC SLT98 | C21 | 85 | E/MRO | ? | 14.4g | Subadult-adult | |
| ARC SLT98 | C22 | 100 | E/MRO | ? | 6.7g | Adult | |
| ARC SLT98 | C22 | 101 | E/MRO | ? | 89.3g | Adult | Sherds |
| ARC SLT98 | C337 | 336 | E/MRO | ? | 1192.8g | Adult | Charcoal stained |
| ARC SLT99 | C2187 | 2186 | E/MRO | ? | 0.1g | | |
| ARC SLT99 | C2210 | 2208 | E/MRO | ? | 41.4g | | Charcoal stained; two samples |
| ARC SLT99 | C2215 | 2216 | E/MRO | ? | 124.6g | | Heavily fragmented |
| ARC SLT99 | C2233 | 2232 | E/MRO | ? | 245.8g | Adult | |
| ARC SLT99 | C2303 | 2301 | E/MRO | ? | 0.1g | | |

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|------------|-------|-----------|-------|--------|--|--------|----------------|--|
| ARC SLT99 | C3008 | 3007 | E/MRO | ? | | 640.5g | Adult | |
| ARC SLT99 | C3193 | 3192 | E/MRO | ? | | 0.7g | | |
| ARC SLT99 | C3705 | 3704 | EM | ? | | 791.5g | Adult | |
| ARC SLT98 | - | unstrat | UN | ? | | 28g | Subadult-adult | Unstratified |
| ARC SLT98 | C33 | 32 | UN | ? | | 0.1g | | Ditch fill |
| ARC SLT98 | C71 | 34 | UN | ? | | 0.2g | | Ditch fill |
| ARC SLT98 | C1019 | 1018 | UN | ? | | <0.1g | ? | ?animal/?human; minuscule fragment; pit fill |
| ARC SLT98 | C1031 | 1030 | UN | ? | | 1.4g | Adult | From inh. grave fill |
| ARC SLT98 | C1137 | 1118 | UN | redep. | | 0.7g | Subadult-adult | From inh. grave fill |
| ARC SLT98 | C1154 | 1155 | UN | ? | | 1.1g | Subadult-adult | From inh. grave fill |
| ARC SLT98 | C1244 | 1243 | UN | ? | | 0.5g | | From inh. grave fill |
| ARC SLT98 | C1252 | 1251 | UN | ? | | 0g | ? | Human; ditch fill |
| ARC SLT98C | C2493 | 2492 | UN | ? | | <0.1g | | Probably human; ditch fill |
| ARC SLT98C | C2538 | 2537 | UN | ? | | 0.1g | | Probably human; posthole fill |
| ARC SLT98C | C2554 | 2553 | UN | ? | | <0.1g | | Probably animal; pit fill |
| ARC SLT98C | C2723 | 2722 | UN | ? | | <0.1g | | Animal/?human?; posthole fill |
| ARC SLT98C | C2778 | 2777 | UN | ? | | <0.1g | | Animal/?human? – tiny fragment; pit fill |
| ARC SLT98C | C2805 | 2802 | UN | ? | | 0.5g | | Probably animal; 3 samples; pit fill |
| ARC SLT98C | C2805 | 2803 | UN | ? | | <0.1g | | ?animal/?human; pit fill |
| ARC SLT98C | C2805 | 2804 | UN | ? | | <0.1g | | Probably animal; pit fill |
| ARC SLT98C | C2805 | 2813 | UN | ? | | 0.2g | | ?human/?animal; 3 samples; pit fill |
| ARC SLT98C | C2805 | 2814 | UN | ? | | 0.1g | | Probably animal; 2 samples; pit fill |
| ARC SLT98C | C2812 | 2811 | UN | ? | | <0.1g | | Burnt & unburnt animal; ditch fill |
| ARC SLT98C | C2816 | 2815 | UN | ? | | 0.1g | | ?human; from inh. grave fill |
| ARC SLT98C | C2819 | 2818 | UN | ? | | 0.1g | | ?human; posthole fill |
| ARC SLT98C | C2845 | 2844 | UN | ? | | <0.1g | | ?human; ditch fill |
| ARC SLT98C | C2869 | 2868/2886 | UN | ? | | 0.5g | | ?human; from inh. grave fill |
| ARC SLT98C | C2899 | 2898 | UN | ? | | <0.1g | | Human; from inh. grave fill |
| ARC SLT98C | C2919 | 2918 | UN | ? | | 0.3g | | Human; pit fill |
| ARC SLT98C | C2966 | 2967 | UN | ? | | <0.1g | | ?animal/human; from inh. grave fill |
| ARC SLT99 | C2101 | 2102 | UN | ? | | 0.2g | | Ditch fill |
| ARC SLT99 | C3014 | 3013 | UN | ? | | neg. | | Pit fill |
| ARC SLT99 | C3116 | 3115 | UN | ? | | 6.7g | Subadult-adult | Pit fill |
| ARC SLT99 | C3143 | 3145 | UN | ? | | neg. | | ?burnt animal; posthole fill |
| ARC SLT99 | C4757 | 3701 | UN | ? | | 3.5g | | |
| ARC SLT99 | C3713 | 3712 | UN | ? | | 0.4g | | Inc. u/b shattered tooth enamel.; ?backfill inh. grave |
| ARC SLT99 | C3715 | 3714 | UN | ? | | 0.1g | | Tiny fragments; from inh. grave fill |
| ARC SLT99 | C3722 | 3721 | UN | ? | | 0.3g | | Root fragment |
| ARC SLT99 | C3724 | 3723 | UN | ? | | <0.1g | | Tiny fragment; posthole fill |
| ARC SLT99 | C3726 | 3725 | UN | ? | | 1.7g | | ?backfill inh. grave; tiny fragments |
| ARC SLT99 | C3741 | 3731 | UN | ? | | 0.3g | | ?backfill inh. grave; inc. fragment u/b tooth enamel |
| ARC SLT99 | C3751 | 3750 | UN | ? | | 20.9g | Subadult-adult | ?backfill inh. grave; 2 bags |
| ARC SLT99 | C3753 | 3752 | UN | ? | | 6.3g | ? | 2 bags; pit fill |
| ARC SLT99 | C3755 | 3754 | UN | ? | | 0.9g | | Inc. u/b crown; from backfill inhum. grave |

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|-----------|-------|------|----|---|----------------|-------|----------------|---|
| ARC SLT99 | C3757 | 3756 | UN | ? | ? | neg. | | ?backfill inh. grave |
| ARC SLT99 | C3764 | 3763 | UN | ? | | 0.5g | | ?backfill inh. grave |
| ARC SLT99 | C3779 | 3778 | UN | | ? | 0.1g | | From inh. grave fill |
| ARC SLT99 | C3781 | 3780 | UN | | ? | 0.7g | | Inc. fragments u/b tooth crown; from backfill inh. grave |
| ARC SLT99 | C3764 | 3782 | UN | | redep? | 1.4g | Subadult-adult | ?backfill inhum. grave; human skull |
| ARC SLT99 | C3830 | 3829 | UN | | ? | 0.2g | | Pit fill |
| ARC SLT99 | C3864 | 3865 | UN | | ? | 5g | Subadult-adult | ?backfill inh. grave |
| ARC SLT99 | C3866 | 3867 | UN | | redep. | 2.4 g | | Backfill inh. grave |
| ARC SLT99 | C3885 | 3884 | UN | | redep. | 16.0g | Subadult-adult | ?human/?animal; backfill inh. grave |
| ARC SLT99 | C3918 | 3917 | UN | | ? | 1.2g | | Ditch fill |
| ARC SLT99 | C4665 | 4717 | UN | | redep. | .2g | | Human; in backfill inh. grave. |
| ARC SFB99 | W24 | 1115 | UN | | redep. | 0.5g | | ?human/?animal; in fill inh. grave |
| ARC SFB99 | W33 | 1355 | UN | | redep. | 1.2g | Subadult-adult | Ditch fill |
| ARC SFB99 | W38 | 1515 | UN | | redep. | 0.8g | | Human; backfill inh. grave |
| ARC SFB99 | W38 | 1516 | UN | | redep. | 0.3g | Subadult-adult | Inh. burial, i.e. = 1515 |
| ARC SFB99 | W44 | 1602 | UN | | redep. | 0.4g | Subadult-adult | In basal ditch fill |
| ARC SFB99 | W45 | 1578 | UN | | ?rpd/; ?redep. | 6.8g | Subadult-adult | Inc. sample; upper fill inh. grave 1577, some charcoal – rpd?, redep?; u/b fragment, ?animal/?human |
| ARC SFB99 | W45 | 1859 | UN | | redep. | 2.5g | | ?human; fill inh. grave |
| ARC SFB99 | W57 | 1635 | UN | | redep. | 2.7g | Adult | In fill inh. grave, ?redep. burial/rpd? |
| ARC SFB99 | W59 | 1390 | UN | | ?rpd/ ?redep. | 2.2g | Subadult-adult | Inc. sample; charcoal flecking. ??rpd or just redep. ; pit fill |
| ARC SFB99 | W62 | 1697 | UN | | redep. | 0.2g | | ?human; in fill ditch |
| ARC SFB99 | W67 | 1410 | UN | | ?redep. | 0.3g | | ?human; in charcoal rich pit fill |
| ARC SFB99 | W69 | 1412 | UN | | redep. | 2.5g | | ?human; in inh. grave fill |
| ARC SFB99 | W70 | 1605 | UN | | redep. | 2.9g | Subadult-adult | Some slightly blue/grey; in fill inh. grave |
| ARC SFB99 | W95 | 1573 | UN | | redep.? | 2.6g | Subadult-adult | In ditch fill; charcoal flecks ?rpd? |
| ARC SFB99 | W97 | 1735 | UN | | redep. | 0.7g | Subadult-adult | In backfill inh. grave |
| ARC SFB99 | W103 | 1805 | UN | | redep. | 5.3g | Adult | In backfill inh. grave |
| ARC SFB99 | W104 | 1706 | UN | | redep. | 0.8g | | Human; in fill inh. grave |
| ARC SFB99 | W109 | 1845 | UN | | redep. | 0.6g | Subadult-adult | In backfill inh. grave |
| ARC SFB99 | W122 | 1465 | UN | | ?rpd | 2.1g | Subadult-adult | Inc. sample; charcoal rich pit |
| ARC SFB99 | W123 | 1855 | UN | | redep. | 13.5g | Subadult-adult | 2 sub-contexts; few fragments slightly grey; u/b tooth crown, unworn. In backfill inh. grave |
| ARC SFB99 | W139 | 3410 | UN | | ? | 0.1g | | ?human/animal; in pit fill, discrete deposit |
| ARC SFB99 | W170 | 3646 | UN | | ?rpd | 15.5g | Juvenile-adult | 2 samples; charcoal flecking, could be rpd in ditch fill |
| ARC SFB99 | W180 | 3498 | UN | | ? | 2.2g | | ?human/animal; charcoal rich pit fill |
| ARC SFB99 | W190 | 1647 | UN | | ?redep. | 0.4g | >infant | Pit fill, charcoal |

Provenance

- 7.47.6 The deposits from which unburnt human remains were recovered largely comprised the remains of inhumation burials, including two associated with Bronze Age barrows, six of Early/Middle Iron Age date, one Late Iron Age/early Romano-British, and two late Roman or 'sub-Roman' (bone from the latter has yet to be examined). The remainder, comprising the large majority of inhumation burials from all sites, was of Early Anglo-Saxon date (coded EM in **Tables 46-7**).
- 7.47.7 Most of the cremated bone recovered to the west of Stone Farm Bridleway was from deposits of Late Bronze Age/Early Iron Age and Romano-British date, including the remains of cremation burials and other cremation-related deposits; one cremation burial believed to be of Anglo-Saxon date was also recovered. Much of the cremated bone recovered to the east of the bridleway derived from the backfill of Anglo-Saxon inhumation graves, with some deposits from ditch fills. Other deposits, including several which appear to represent redeposited pyre debris, were recovered from the vicinity of Late Bronze Age/Early Iron Age features. In addition, one possible urned cremation burial (W100) and one urned burial (W223) were recovered.

Conservation

- 7.47.8 The unburnt bone from the inhumation burials is generally in very poor condition, being extensively degraded (mostly scoring 5 on a decreasing scale of 1-5) and in many cases the disintegration process is on-going rendering the bone very fragile. Frequently, the only part of the skeleton to survive intact is the enamel of the tooth crowns. The poor condition of the bone is reflected in the levels of percentage skeletal recovery, which in the vast majority of cases is <1%. More than c. 10% of the skeleton survived in only 9% of the inhumation graves, the maximum being c. 45% from a juvenile in grave C198 and c. 27% from an adult from grave W43. It may be noted that bone from the two Early/Middle Bronze Age inhumations (C4507, C4619) survived in better condition than from the later inhumations.
- 7.47.9 The cremated bone is generally in good condition. The quantity of bone from the large majority of the deposits was very small, with only 26 contexts in total containing in excess of 10g of bone. The greatest weight of bone from a single deposit was 1192.8g (C337) with a maximum of 33.3g from the eastern part of the site (W100). The small weight of bone and frequently comminuted fragments largely reflects the type of deposit, many of which represent disturbed or redeposited material. The bone is almost universally the buff-white indicative of a high level of oxidation.
- 7.47.10 Under the terms of Schedule 11 of the CTRL Act 1996, all human remains are to be reburied.

Comparative material

- 7.47.11 The human remains from Saltwood in themselves cover a wide temporal range and comprise the contents of several cemeteries relating to various population groups. Some ten other archaeological sites excavated along the Channel Tunnel Rail Link Route have produced varying quantities of human remains from individual burials or cemeteries – both inhumation and cremation – from the Bronze Age through to Anglo-Saxon (Glass 1999). These new sites join a corpus of published data from

Kent including nine Bronze Age, two Iron Age, one Iron Age-Romano-British, 14 Romano-British and 17 Anglo-Saxon cemetery/burial sites (Anderson 1994, Shaw 1994, Mays and Anderson 1995, Ashbee 1997, Parfitt 1999).

- 7.47.12 From these comparable cemeteries a minimum of 21 Bronze Age (mostly cremation burials) three Iron Age, 138 Romano-British (mostly inhumation burials) and 640 Anglo-Saxon (all inhumation burials) burials have been recovered. Limitations in comparisons will be imposed not just by the poor condition of much of the bone from Saltwood, but the similarly poor condition of much of the unburnt bone from other sites in Kent, the lack of skeletal analysis in some cases and limited analysis in others (Mays and Anderson 1994).
- 7.47.13 Wider comparisons with material from excavations outside Kent e.g. Edix Hill, Cambridgeshire (Duhig 1998) and Apple Down, West Sussex (Harman 1990) may illustrate broad region similarities or variations.
- 7.47.14 Various types of cremation-related deposit have been found on sites from all periods (e.g. Jessup 1959, McKinley 1997a and b, Barber and Bowsher 2000, McKinley in press). The recovered data will be used to assess the various types of deposit and the mortuary rituals and rites they may reflect.

Potential for further work

- 7.47.15 The human bone assemblage, both cremated and unburnt, covers a wide temporal range from the Early/Middle Bronze Age to Anglo-Saxon, with a major concentration in the latter phase. The overall potential of the unburnt bone assemblage is severely limited by the very poor condition of the bone, but the frequent recovery of tooth crowns offers the possibility of the further recovery of data pertaining to demography and health.
- 7.47.16 Age will largely have to be assessed from tooth wear patterns. The occasional presence of additional ageing criteria will allow the establishment of controls against which any necessary adjustments can be made to the age ranges offered by standardised tooth wear pattern charts (Miles 1962, Brothwell 1972). This data may counteract the effects of different diet, general health and genetic predisposition within different population groups. In many cases it should be possible to attribute tighter age ranges than those given for this assessment.
- 7.47.17 Sexing of a greater number of individuals may be attempted using multivariate analysis of measurements taken from the tooth crowns (Ditch and Rose 1976). The demographic data may be compared with that of others within the region and nationally to assess the nature and development of the cemeteries, and to assess any variations in spatial distribution within the cemeteries.
- 7.47.18 There will be little opportunity to assess physical characteristics. It will not be possible to undertake calculation of skeletal indices, for example, stature estimation or cranial index, but there may be limited potential for the calculation of other indices reflective of the homogeneity of the assemblage. This data may also be used for regional and national comparisons.
- 7.47.19 Very few pathological lesions were observed in assessment and, consequently, there is restricted potential to comment on the health, economy and status of the cemetery populations of any period as reflected in the condition of the skeletal remains. There will be limited scope for assessment of diet as indicated by the dental health of the

individuals, though the predominant recovery of only dental enamel from the Anglo-Saxon cemeteries will necessitate a restricted interpretation.

- 7.47.20 The use of DNA sampling to assist in gender determination, and the identification of family groups, is likely to be limited by the very poor bone survival. While some of the inhumation burials within the Anglo-Saxon cemeteries have potentially survived well enough to provide adequate DNA samples, these are unlikely to provide a sufficiently wide range of samples to answer specific questions – the identification of gender for random isolated samples is not sufficient.
- 7.47.21 The use of strontium and lead isotope analysis to determine geographical origins, however, has a higher potential, since this process can utilise tooth enamel. This analysis could be used, for example, to demonstrate similarities (or lack of) in geographical origin between the three Anglo-Saxon cemetery groups.
- 7.47.22 The possibility of obtaining high precision dates for burials of any date is likely to face similar restriction due to poor bone preservation – even where bone does survive, this may only comprise the mineral component, without the collagen which is necessary for dating. Bone from the inhumation burials of pre-Saxon date, however, does survive in better condition, and may be sufficient to provide adequate samples for dating – this would be most appropriate for the groups of burials considered to be of Early/Middle Bronze Age and Early/Middle Iron Age date.
- 7.47.23 The patterns of skeletal survival within the inhumation graves from the eastern part of the site may be assessed in the light of a suite of pH samples extracted from targeted areas within the grave fills. This may indicate the original presence of organic materials within the grave that have altered the microenvironment sufficiently to enhance bone survival. However, preliminary analysis of a small sub-sample of these pH samples indicates few significant variations in pH value to date. Other factors may also have had similar effects, such as soil chemistry, and these will also be considered in any discussion of differential bone survival across the site.
- 7.47.24 Assessment of cremation-related deposits, their type and nature – requiring reference to the primary context data - will demonstrate aspects of the funerary rites and rituals (McKinley 1994a, 1997, 1998 and in press).

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7.48 Assessment of Animal Bone

Robin Bendrey

Introduction

- 7.48.1 All fieldwork events conducted at Saltwood have produced animal bone assemblages in varying quantities. At the time of assessment, the assemblages from the two fully excavated areas were chosen for assessment, to provide as holistic a view as possible of the animal bone assemblage *in toto* from all periods represented at Saltwood. These areas comprised the late prehistoric/ Romano-British and later occupation area at the west end of the site (under event code ARC SLT98), and the relatively small amount of material recovered from the excavation of the central Anglo-Saxon cemetery (under event code ARC SLT98C) the latter including a horse burial. The bone assemblages were retrieved by both hand-recovery and sieving. The condition of the recovered bone is generally very poor.

Methodology

- 7.48.2 The small size of the mammal bone assemblage negated the need to sub-sample, and so all the bone has been catalogued for this assessment.
- 7.48.3 The hand-recovered bone was identified with the aid of a comparative osteological reference collection. Bone identified to species (**Table 48**) was recorded using the diagnostic zones of Dobney and Rielly (1988). Bone not identified to species was awarded an animal-size category (e.g. sheep-sized), or labelled indeterminate. The criteria of Boessneck (1969) and Payne (1985) were used to differentiate between sheep and goat remains. If this was not possible the fragments were labelled sheep/goat. Only sheep bones were identified from the hand-recovered remains (seven of 53 ovicaprid fragments). All sheep/goat bones have been considered as sheep for the purposes of the assessment. The assemblage has also been weighed.
- 7.48.4 The bone from the bulk-sieved samples was recorded in the same way as the hand-recovered material, except that the total bone material derived from each sieved sample was weighed instead of the individual fragments.

Table 48: Quantification of hand-recovered mammal bone by taxon

| Taxon | Number of fragments | Bone weight (g.) | Mean frag. Weight (g.) | Context frequency |
|---|---------------------|------------------|------------------------|-------------------|
| Cattle, <i>Bos</i> sp. domestic | 192 | 6297.5 | 32.8 | 66 |
| Sheep, <i>Ovis</i> sp. domestic | 53 | 366.5 | 6.9 | 25 |
| Pig, <i>Sus</i> sp. domestic | 36 | 254.5 | 7.1 | 20 |
| Horse, <i>Equus caballus</i> sp. domestic | 23 | 1485 | 64.6 | 19 |
| Dog, <i>Canis</i> sp. domestic | 89 | 363 | 4.1 | 5 |
| cf. Red deer, <i>Cervus elaphus</i> L. | 1 | 2 | 2.0 | 1 |
| Cattle-sized | 491 | 1120 | 2.3 | 48 |
| Sheep-sized | 103 | 91 | 0.9 | 25 |
| Indeterminate | 270 | 74.5 | 0.3 | 20 |
| Totals | 1258 | 10054 | 8.0 | 100 |

Quantifications

- 7.48.5 Basic fragment counts and bone weights have been used to quantify the material from the western occupation area. Context frequency (for the hand-recovered bone) and sample frequency (for the bulk samples) have been used to compare the material from the two recovery-methods. Using absolute and relative frequencies allows

assessment of the occurrence of the different taxa independent of varying fragmentation, bone weights and context/sample size (O'Connor, 1988, 77-8).

- 7.48.6 The assemblage from the central cemetery has not been quantified in tabular form due to its small size, but is described in the text.

Table 49: Comparative distribution of mammal bone by period

(number of fragments (N.) compared to context frequency (c.f.))

| Period | | LIA/RO | RO | RO/EM | RO/MD | EM | EM/MD | MD | MODERN |
|---------------|-------------|------------|------------|-----------|-----------|----------|-----------|------------|----------|
| Cattle | N. | 16 | 79 | 24 | 18 | 3 | 4 | 46 | 2 |
| | c.f. | 5 | 25 | 4 | 4 | 2 | 2 | 22 | 2 |
| Sheep | N. | 13 | 13 | 6 | 4 | - | 3 | 14 | - |
| | c.f. | 5 | 6 | 2 | 3 | - | 1 | 8 | - |
| Pig | N. | 4 | 17 | 2 | 2 | - | 1 | 9 | 1 |
| | c.f. | 3 | 5 | 2 | 2 | - | 1 | 6 | 1 |
| Horse | N. | 2 | 12 | 5 | 2 | - | - | 2 | - |
| | c.f. | 2 | 9 | 4 | 2 | - | - | 2 | - |
| Dog | N. | 85 | 1 | - | 3 | - | - | - | - |
| | c.f. | 3 | 1 | - | 1 | - | - | - | - |
| cf. Red deer | N. | - | 1 | - | - | - | - | - | - |
| | c.f. | - | 1 | - | - | - | - | - | - |
| Cattle-sized | N. | 91 | 234 | 50 | 6 | - | 19 | 91 | - |
| | c.f. | 5 | 19 | 2 | 4 | - | 1 | 17 | - |
| Sheep-sized | N. | 65 | 16 | 2 | 5 | - | 2 | 13 | - |
| | c.f. | 4 | 8 | 1 | 3 | - | 2 | 7 | - |
| Indeterminate | N. | 62 | 144 | - | 3 | - | - | 61 | - |
| | c.f. | 7 | 7 | - | 1 | - | - | 5 | - |
| Totals | N. | 338 | 517 | 89 | 43 | 3 | 29 | 236 | 3 |
| | c.f. | 14 | 36 | 5 | 8 | 2 | 3 | 30 | 2 |

- 7.48.7 A breakdown of phased hand-recovered mammal bone from the western occupation area is presented in **Table 48**, whilst **Table 49** shows the distribution of this material by period. Cattle dominates the assemblage by number of fragments, bone weight and context frequency. Dog is the second most common by number of fragments, the majority of which derived from a single articulating skeleton (context C751). The context frequency is a more accurate reflection of its importance. Sheep is the second most common species by context frequency, followed by pig – a rank order of importance that is also shown by the number of fragments. Horse provides more bone weight, but a larger mean fragment weight, double that of the similar sized cattle, suggesting that it did not undergo the same level of butchery and so may not have had importance as a food-animal. A single fragment of burnt deer antler was identified from context C315. The specimen is probably from red deer (there is some surface pearly evident), although fallow deer has been recorded from Roman deposits in Kent (Bendrey, forthcoming b). This specimen has been labelled as 'cf. red deer' for the assessment.

Table 50: Comparative analysis of recovery techniques

| Taxon | Hand-recovered context frequency | | Bulk-sieved sample frequency | |
|---|----------------------------------|-------------|------------------------------|-------------|
| | absolute | relative | absolute | Relative |
| Cattle, <i>Bos</i> sp. domestic | 66 | 0.66 | 7 | 0.16 |
| Sheep, <i>Ovis</i> sp. domestic | 25 | 0.25 | 17 | 0.40 |
| Pig, <i>Sus</i> sp. domestic | 20 | 0.20 | 9 | 0.21 |
| Horse, <i>Equus caballus</i> sp. domestic | 19 | 0.19 | - | - |
| Dog, <i>Canis</i> sp. domestic | 5 | 0.05 | - | - |
| cf. Red deer, <i>Cervus elaphus</i> L. | 1 | 0.01 | - | - |
| Goat, <i>Capra</i> sp. domestic | - | - | 1 | 0.02 |
| Fox, <i>Vulpes vulpes</i> L. | - | - | 1 | 0.02 |
| Totals | 100 | 1.00 | 43 | 1.00 |

- 7.48.8 Comparison of the hand-recovered bone with the bulk-sieved bone (**Table 50**) in the same area reveals differences in the representation of the main domestic animals.

Cattle are over represented in the hand-recovered material compared to the bulk-sieved material, and the reverse is true for sheep. This observed bias is an expected product of the different methods of recovery (Payne 1975). The occurrence of pig is roughly the same. Goat and fox have also been identified from the samples.

Provenance

- 7.48.9 Animal bone within the western occupation area was recovered from a wide range of context types, with no apparent bias.
- 7.48.10 The phased bone material from the central cemetery consists of a poorly preserved equid skeleton from context C1327 (grave C??), and a small sheep-sized fragment from the Bronze Age barrow ditch (context C1036). The equid skeleton from the cemetery has been positively identified to horse, *Equus caballus*, on the basis of the morphology of the enamel patterns of the teeth (Baxter, 1998; Eisenmann, 1986).

Conservation

- 7.48.11 The assemblage is characterised by very poor preservation. Bone material is generally porous and brittle, with the bone from the central cemetery being particularly friable, and is therefore likely to have low collagen content. The exception to this is the dog skeleton from the western occupation area, which is very well preserved. The low mean fragment weight of the unidentified portion of the assemblage highlights the fragmentary condition of the bone. The cattle-sized, sheep-sized and indeterminate material represent a relatively small number of highly fragmented bones. The poor conditions for preservation may have over-emphasised the importance of cattle due to the greater taphonomic destruction of the bones of the smaller species.
- 7.48.12 The potential for detailed research of the assemblage is much constricted by the poor preservation, which reduces the amount and quality of data available. The largest samples of bone derive from the Late Iron Age/ Romano-British, Romano-British and medieval periods.
- 7.48.13 Further analysis would not conflict with long term storage. The material is already suitably packaged for long-term storage.

Comparative material

- 7.48.14 Comparable material from Kent for the assemblages from Saltwood is quite limited. There are a couple of published Roman sites that have produced assemblages of animal bone, including Canterbury Castle (King, 1982) and Mount Roman Villa (Bendrey, 1999). Other sites are in the process of being studied or published, including Ickham (Powell, forthcoming), and Monkton (Bendrey, forthcoming b). Saxon material is more restricted than the Roman, including a published bone assemblage from Linacre Garden, Canterbury (Driver, 1990). Medieval material is better represented, with a number of large assemblages (Bendrey, forthcoming a; Driver, 1990; Wall, 1980). Within the CTRL project there are few notable assemblages, with the exception perhaps of Little Stock Farm (URS 2001), which comprises predominantly prehistoric remains with some medieval, and a very small Anglo-Saxon assemblage and a larger medieval one from Mersham (Bendrey, 2000).

Potential for further work

- 7.48.15 The data available from the assemblages is restricted by the poor preservation of the bone. The larger pieces of animal bone possess some potential for radiocarbon determinations, which should be made on well surviving non-residual material.
- 7.48.16 The animal bone assemblage from the western occupation area has the potential to provide evidence of the diet and economy as represented by the animal bones. Evidence relating to age-at-death and size of the animals is present, though limited. Of particular interest are a few fragments of burnt pig in a cremation deposit from context C49.
- 7.48.17 The potential of the animal bone from the central cemetery is restricted to the data that can be gathered from the horse skeleton. This will provide details on the age and size of the horse, and cultural information related to the burial of a horse in the Anglo-Saxon cemetery.
- 7.48.18 Further work will focus on quantification and analysis of the larger assemblage from the western occupation area. This analysis will be in conjunction with an examination of the assemblage recovered from more recent investigations to the east of Stone Farm Bridleway (ARC SFB99 and SFB01), the majority of which is considered to represent early medieval remains (Crockett pers. comm.).

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7.49 Assessment of Documentary Research

Sheila Sweetinburgh

Introduction

- 7.49.1 Following the excavation at Saltwood, the purpose of this assessment was to establish whether there were any extant sources that might aid the understanding of the site. At the same time it was considered appropriate to examine the secondary literature covering Saltwood and its environs for the Anglo-Saxon period and the early Middle Ages.
- 7.49.2 From the historical standpoint an investigation of this area to the north of the village of Saltwood for the Late Anglo-Saxon and Norman/ Angevin periods is extremely difficult because there is only one Anglo-Saxon charter, according to Sawyer, that relates to land in Saltwood. Furthermore, for the post-Conquest period the manor of Saltwood was primarily under the jurisdiction of the Archbishop of Canterbury and relatively few medieval manorial records have survived. Also, the early medieval livestock enclosures and settlement are not identifiable within the documentary sources because they cannot be linked to a particular named settlement or farm from the Middle Ages, which would allow the use of place name evidence.

Methodology

- 7.49.3 The investigation was divided into four parts: a survey of the cartographic evidence, a listing of the potential primary sources from a number of archive catalogues, a brief examination of the potentially most useful printed primary sources, and a survey of the secondary literature. The map survey was undertaken first because it was hoped that the maps would reveal place names associated with the excavation area that would be useful with respect to the charter and manorial evidence. Unfortunately this was not the case which meant the search of the various catalogues (Canterbury Cathedral Archives and Library [CCAL], Lambeth Palace Library [LPL], and the British Library [BL]; see *Quantification* below) was limited to the name Saltwood. Similarly, without the means to pinpoint the name search more closely for the printed primary sources, Saltwood was the only name used.
- 7.49.4 However, printed primary sources, like the *Calendars of Inquisitions Post Mortem* were searched because these sources are available locally. Similarly a brief survey of the secondary literature was undertaken, especially Everitt's study of *Continuity and Colonization*, Du Boulay's book on *The Lordship of Canterbury* and the CAT published reports on excavations in the Folkestone area.

Quantification

- 7.49.5 During the course of this assessment, the following documentary sources were consulted.

ANGLO-SAXON CHARTER:

Sawyer 1221: charter dated 1026, Searpa, a hall thegn granted land at Saltwood to Christchurch Priory (CCAL: Dc/ Register p, fol. 24v; BL: Cott x.11; LPL: MS 1212, p.330); printed in Kemble, *Codex Diplomaticus Aevi Saxonici*, no. 742.

BRITISH LIBRARY:

Saltwood: papers and deeds early 13th century to 1832
BL: Add Ms 42638, 42659, 42660, 42669.

BL: Add Ch 68236, 68292, 68621, 69029, 69647, 69659-69661, 69700-69792, 69882-70103.
Saltwood [deeds relating to Brockhill al. Brockwell al. Thorne manor from 1273-1837]
BL: Add Ms 42626-42631, 42642-42644, 42660, 42662-42664, 42665, 42667.
BL: Add Ch 69735-69777, 69780-69792, 69894, 69923, 69928, 69935, 69936, 70013, 70029, 70031, 70050, 70051, 70053, 70071-70075, 70078, 70080, 70081, 70083, 70087, 70089, 70092, 70097, 70098, 70100, 70104.
Acquittance for computus of the manor in 1469, 1496-7
BL: Add Ch 70049; Harl 53 G. 43
Evidence concerning tenure of Saltwood by Hugo de Montfort (1072)
BL: Cott Ms Aug. ii. 36.

CANTERBURY CATHEDRAL ARCHIVES AND LIBRARY

Sede Vacante registers (within the Christchurch Priory Registers); dated 1292-1349, 1333-1421, 1438-1556, 1486-1508..

CCAL: Dc/ Registers Q, G, N, R..

Sede Vacante scrapbooks, 13th century entries for Saltwood

CCAL: Dc/ SVSB I/ 97/ 3; III/ 182-184.

Tithe map and award 1841-2

CCAL: Dcb/ TO/ S6 A & B

EAST KENT ARCHIVES, WHITFIELD

EK: U270/ Q4 Folkestone Priory charters.

EK: H/ U9/ P1 map of the manor of Lyminge and local area [dated 1626]

LAMBETH PALACE LIBRARY

Archbishop of Canterbury estates:

Court rolls including Saltwood material

LPL: ED 137 (various courts including Saltwood) for 1448-9

Account rolls: Saltwood

LPL: ED 946 [dated 1391-2]

LPL: ED 947 [dated 1391-2]

LPL: ED 948 [dated 1444-5]

Bailiwick of Aldington (including Saltwood)

LPL: ED 1193A [dated 1455-6]

LPL: ED 1194 [dated 1465-6]

LPL: ED 1195 [dated 1466-7]

LPL: ED 1196, 1197 [dated 1471-2]

LPL: ED 1198 [dated 1474-5]

LPL: ED 2018 [dated 1475-6]

LPL: ED 1199 [dated 1477-8]

LPL: ED 1200 [dated 1484-5]

LPL: ED 1201 [dated 1496-7]

Other religious houses:

St Radigund's Abbey (Blackwose al. Canons' Court in Saltwood)

LPL: ED 270 [dated 1391-2]

- 7.49.6 It is possible there are other materials at the Public Record Office and among the unclassified collections for the Saltwood area held at Whitfield. With regard to the Crown records, if more work was envisaged it would probably be more sensible to confine it to a thorough search of the Calendars of the various royal collections.

Comparative Material

- 7.49.7 A number of sites in Kent have yielded evidence concerning the settlement of the Downs and the associated woodland fringe, but for this area of Saltwood probably the most useful is the neighbouring CAT excavation of Dollard's Moor and the area around Newington and Peene. The interim assessment of the land use in these areas indicated the survival of a medieval field system which had become fossilised as a patchwork of fields and tracks following enclosure in the late medieval period (Bennett *et al.* 1991: 26).
- 7.49.8 Even though the predominant farming policy during this later period was a move towards pasture, in part a response to the increasing demand for livestock to provision the garrison towns in northern France, especially Calais, and to feed the English army on campaign, the actual field layout (boundary ditches, fences) may not have altered dramatically over the centuries. Consequently, once the full analysis has been carried out on the landscape history of these areas for the Anglo-

Saxon period, and for the Middle Ages using the Radnor and Brockman collections, it may be possible to draw parallels regarding the Saltwood site (*ibid.* 32).

Results

- 7.49.9 Charting the changing landscape at Saltwood through documentary research has allowed the following developments to be identified. During the 19th century the area north of Saltwood tunnel comprised a number of fields, the largest of which seems to have been White Post field, over twenty acres, in which most of the archaeological dig was sited. Though it cannot be proven, it seems likely that this field system closely resembles the situation in the late Middle Ages, but the field names had apparently altered over the centuries. Unfortunately the early modern estate maps of the region, held at the East Kent archives at Whitfield, do not appear to cover the excavation area. The only one that might be at all useful is an estate map of the manor of Lyminge, dated 1626, but at present it is in poor condition and almost unreadable.
- 7.49.10 With regard to the position of the excavation site, it may be worth noting that according to the tithe map it is to the north-east of 'Hayne barn'. This barn may be the barn referred to by Wallenberg who noted that 'Heane Wood Barn' was probably close to the meeting place of the Heane Hundred, which might be important in terms of the early Anglo-Saxon cemetery (Wallenberg 1934, 457).
- 7.49.11 Turning to the 1841 tithe award, White Post field was owned by the Rev. Brockman which might suggest it had been part of the Brockman estate (the Brockman family acquired the Beachborough estate near Folkestone in the 1550s), though it seems more likely it had been purchased separately. If so, it may have been part of the archiepiscopal manor of Saltwood, probably close to its northern edge, but as yet I have not been able to ascertain the exact position of the manorial boundaries.
- 7.49.12 To the north was the royal vill of Lyminge, and there were other land holders in the area including Dover Priory. The registers of the local religious houses detail their land holdings as follows; Dover Priory, St Batholomew's Hospital at Dover, St Radigund's Abbey; LPL: MS 241; Bodleian Library: Rawlinson MS B 335; Bodleian Library: Rawlinson MS B 336. However, on balance the evidence seems to indicate that the site was within Saltwood manor and its north position might suggest it formed part of the customary holdings, not the demesne land. Consequently the most useful topic with regard to the archaeological finds at Saltwood would appear to be an analysis of the farming practices of the peasantry.
- 7.49.13 According to Everitt the Saltwood area was what he called Holmesdale and Chartland, regions of early settlement, the richer soils of Holmesdale being used for crop production while pasture farming was the primary occupation on the Chartland (Everitt 1986, 45 & 49-52). This description would appear to correspond to the Domesday entry for Saltwood where there was said to be land for 15 ploughs, there were 33 acres of meadow and woodland pasture for 80 pigs (Morgan 1983, 2 & 41). The demesne land was apparently not as extensive as that held by the 33 villagers and 12 smallholders, the lord had 2 ploughs and the peasants 9.5, but it was presumably closer to the village and castle. The peasants farmed the southern margins of the Downs to the north of the village.
- 7.49.14 A further description of the manor in the late 15th century indicates that, at least on an acreage basis, pasture was more important than arable (of the total estate of 80 acres of land, 20 acres of wood, 100 acres of moor 100 acres of heather, 24 acres

were in the manor of Brokhill and 8 acres in the manor of Postling, the residue was held of the Archbishop of Canterbury) and this may also have been true for the earlier period (*Cal. Inq. Post Mortem*, Henry VII, I, no. 380).

- 7.49.15 Although there are considerable difficulties in seeking to ascertain how the peasantry farmed their holdings, the manorial records may provide the best clues. For example, from the 13th century custumal evidence for Saltwood Du Boulay has found that the harvest workers ‘entered the lord’s corn and hay’ with their carts, which indicates the demesne was set apart from the customary land (Du Boulay 1966: 132). It seems likely the peasant holdings were similarly in blocks of land, rather than regularly intermingled strips, and such an arrangement might lead to the building of discrete homesteads or barns away from the village.
- 7.49.16 Another type of document which might be useful are the account rolls for Saltwood because, even though they do not survive for the early Middle Ages, the late 14th century ones may include references to the ancient customary dues. Such evidence may reveal how the demesne was farmed in the post-Conquest period, and in turn this may indicate peasant farming practices. Even though there is only one extant court roll for Saltwood, it may provide valuable evidence in terms of peasant land holding, surnames, and inheritance practices. On many manors the customary land was named after the tenant family who held the particular *tenementum* in the High Middle Ages and it is sometimes possible to gain some idea of the size of these individual holdings by using the later records.
- 7.49.17 Surnames may also produce evidence about local place-names, and may be especially useful in areas of dispersed settlement where it may be possible to trace the longevity of a particular family within the area. Similarly, surnames may indicate occupations, though the evidence needs to be treated with caution by the 15th century because surnames had become more fixed within families.

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7.50 Assessment of Conservation Potential

Rob White

Introduction

- 7.50.1 All of the objects from the Anglo-Saxon cemeteries and most of those from earlier deposits (excluding stable bulk artefact types like lithics) were transferred from the Canterbury Archaeological Trust to the City of Lincoln Conservation laboratories. Most of the transfers occurred in four batches between May and September 2000.
- 7.50.2 This assessment is based on an examination of the artefacts during the course of their conservation between May 2000 and January 2001, although conservation work continued on many pieces beyond this arbitrary cut-off point.
- 7.50.3 A number of specialists have examined parts of the assemblage and have commented on requirements for further analysis. Their recommendations have yet to be examined by the Conservation Department and such issues are raised here in general terms. A broad statement of the issues involved in conservation of this assemblage is provided here.

Methodology

- 7.50.4 The conservation methodology has been based on the requirement to achieve a complete, stable archive of the material. The elements of site archive consist of the identification of material, leading to its stabilisation and appropriate packaging. This process is based on the following tasks:
- *X-radiography*
 - *remedial treatment of unstable structures*
 - *appropriate packaging and provision of micro-climates for all classes of material*

Conservation

- 7.50.5 Artefact survival and condition is in line with prevailing burial conditions (which are acidic), with localised influences producing occasional variation, such as the differential bone survival previously discussed. Organic material has not survived except where it is in association with metalwork. In such cases it appears to have survived by one of two mechanisms:
- *partial replacement of the organic structure by metal corrosion products (e.g. the many textile, wood and leather remains on the swords);*
 - *preservation by association with biocidal agents such as metal corrosion products (e.g. the wood associated with the 'Coptic' bowls).*
- 7.50.6 Organic survival (other than via the above mechanisms) has been so poor that characteristic soil staining has been minimal. For example, in the case of the wooden barrel from grave C7 (SF 1533), wood has been preserved by partial

mineral replacement in the region of the ferrous supporting bands, but no trace at all of evidence for the main body of the barrel could be located between these bands.

- 7.50.7 Survival of inorganic materials also matches expectations of the burial environment in a broad sense.
- 7.50.8 Metalwork survives in a variety of conditions. Ferrous metalwork is in an advanced state of deterioration, although, in the majority of cases, structural detail and associated evidence has been well preserved by the deterioration process. The surviving ferrous structures are extremely fragile; examination of the radiographs suggests a significant presence of central voids. Non-ferrous metalwork has survived relatively well and would appear in the majority of cases to be in a reasonably robust state. The relatively small amount of vessel glass, along with the numerous beads and glass/ enamel inclusions on jewellery, also survive well, albeit with physical disruption.

The Implications of Further Analysis and Conflicts with Long-Term Storage

- 7.50.9 Further analysis of the Saltwood assemblage will respond to recommendations made by individual specialists. In general terms, in advance of discussing all of the recommendations, further analysis is unlikely to impact on long-term storage, given that appropriate steps are taken to recover its effects (if any). There may be a risk to the integrity of certain classes of material, depending on the condition of the material and the proposed analytical work. For example, micro-structural analysis of ferrous items within the assemblage, which are predominantly in advanced states of deterioration, should be subject to initial assessment to determine the level of risk to the selected items. Destructive sampling processes may compromise the physical integrity of such degraded and fragile structures. Indeed, their condition may prohibit further analyses.
- 7.50.10 It should also be noted that the intended archive recipient (currently identified as Folkestone Museum) is likely to require (as a component of the archive transfer process) recovery of any remedial and/ or aesthetic work arising as a direct result of the sampling/ analysis.
- 7.50.11 On completion of site archive level conservation the assemblage will be in a suitable condition for transfer to its identified recipient organisation. This process is informed by the practices indicated above.
- 7.50.12 The further requirements of the assemblage in terms of its long-term storage and/ or any other conservation related issues may be summarised as follows:
- *an appropriate level of routine monitoring in terms of both the condition of the finds and the suitability of its storage environment;*
 - *the provision, where necessary, of environmental control measures in storage areas;*
 - *the remedial treatment of elements of a which develop signs of active deterioration following transfer;*
 - *the identification and implementation of appropriate conservation requirements in relation to any display proposals.*

- 7.50.13 All of the requirements listed above are issues which should be addressed via policy guidance (collection management and environmental) of the archive repertory. Responsibility for the delivery of these functions rests with the receiving organisation.

Comment on Retention/ Discard Policy

- 7.50.14 Recommendations on retention and discard issues made by the various specialists associated with the project might also be informed by conservation related considerations. Such recommendations might be assisted by a commentary from suitably qualified conservation personnel, which might focus on (for example) comparative condition of material in respect of its potential retention and/ or discard. Such discussion is also likely to be influenced by the needs of potential recipients of discarded material.
- 7.50.15 If an archive repository is established retention and disposal issues must dovetail with that institution's policy documentation (*e.g.* collecting policy).