Archaeological investigations at The Bostle, Bronze Age and Anglo-Saxon barrow cemeteries, Balsdean, East Sussex, 1997

by Jacqueline I. McKinley

with a contribution by Lorraine Mepham In the summer of 1997, an archaeological monitoring programme by Wessex Archaeology during trenching along the route of a water pipeline from Falmer to Balsdean, culminated in an excavation at The Bostle (TQ 537100 105400) adjacent to the scheduled Bronze Age and Anglo-Saxon barrow cemetery.

A small, mixed rite Bronze Age cemetery was excavated including four adult cremation burials, two of which were securely dated to the Early Bronze Age period, and five infant inhumation burials, one of which was radiocarbon dated to the Late Bronze Age. Four Saxon ring-ditches were excavated, three of which surrounded central graves containing the remains of inhumation burials. Evidence suggests that at least one of the latter was coffined and one shrouded. A radiocarbon date range of AD 640–879 was obtained from the coffined burial.

The temporal and spatial extent of The Bostle cemeteries has been shown to be greater than was previously appreciated. The dating of the Bronze Age burials and implied temporal variation in rite carries interesting implications for our understanding of Bronze Age mortuary rites and how they may have reflected the society burying its dead at The Bostle.

INTRODUCTION

n the summer of 1997 Wessex Archaeology was commissioned by Southern Water Services to undertake an archaeological monitoring programme during trenching along the c. 6 km route of a water pipeline between Falmer (TQ 537500 109050) and the Balsdean Reservoir (TQ 537450 104450), East Sussex (Fig. 1). The site investigations were preceded by a desk-based assessment (Wessex Archaeology 1997) which identified the key area of archaeological potential around The Bostle (centred on TQ 537100 105400); a geophysical survey along the proposed route within the latter area did not detect any 'major' archaeological features (Geophysical Surveys Bradford 1997). This report records the results of the excavation at The Bostle: no archaeological features or deposits were disturbed along other parts of the route which was subject to a watching brief undertaken prior to the excavation.

The excavation covered an approximately 100-metre length of the pipeline route adjacent to the Bostle Scheduled Monument area (*c.* 110 m

× 60 m) situated at *c*. 150 m–154 m aOD on the chalk ridgeway of the South Downs overlooking the town of Rottingdean (Figs 1 & 2). A margin of *c*. 4 m was maintained between the fenced Scheduled Monument area and the machine-stripped (topsoil removal) 10–12 m wide pipeline route. All archaeological features within the area of excavation were investigated, including full excavation of all graves and potential cremation-related deposits following recommended procedures (McKinley & Roberts 1993; McKinley 1998).

BACKGROUND

The Bostle barrow group (SMR No. TQ 30 NE33; Fig. 2) is recorded as including three large Bronze Age bowl barrows (6.8–11 m diameter, surviving heights 3–5 m; two having been truncated) and a cluster of 27 smaller Early Anglo-Saxon barrows (maximum diameter 7.5 m, heights of 3 m or less), some with ditches (Grinsell 1934, 229 & 264; Burstow & Norris 1951; SMR). The barrows have, however, been subject to scant examination and the dating — particularly for the Anglo-Saxon period — is not conclusive

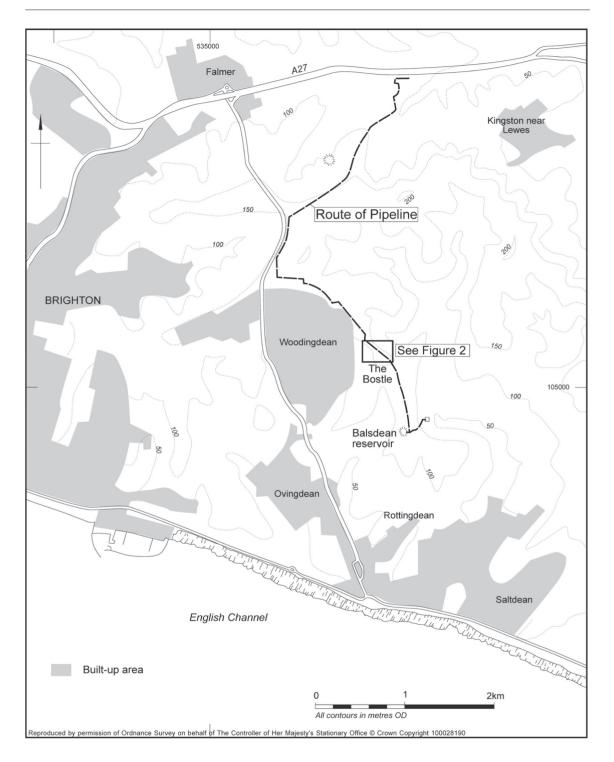


Fig. 1. Location map showing the pipeline route and The Bostle.

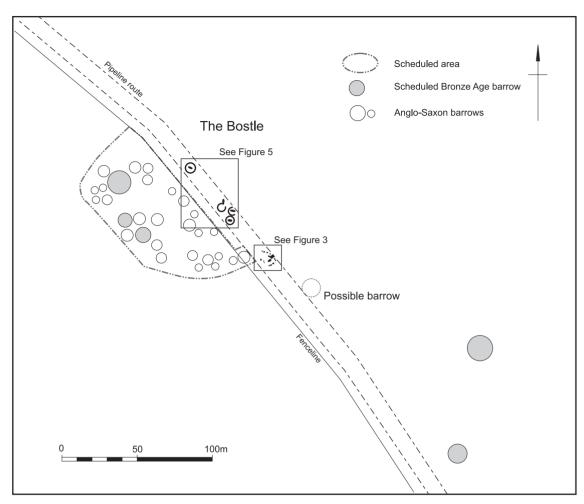


Fig. 2. The Bostle: known barrows and location of excavated features.

(Grinsell 1936, 29; Burstow & Norris 1951; Welch 1983, 17). In 1939, disturbed human remains were removed from at least seven barrows (Burstow & Norris 1951); the presence of a bronze knife in one grave led to the conclusion that it dated to the Bronze Age (Welch 1983, 424) and the recovery of bone from the upper levels of the larger — presumed Bronze Age - barrow suggested the presence of Anglo-Saxon secondary burials (Burstow & Norris 1951). Barrow construction was not comprehensively recorded; quantities of large flints were observed on the surface of the ditch outside the bank of one of the larger barrows excavated in 1939 and later excavation of one of the smaller barrows revealed the presence of a small ditch (0.43 m wide, 0.53 m deep) with a south-east causeway 0.61 m wide. The burial was

believed to have been Anglo-Saxon although it had been disturbed and the only find was an undated small bronze pin (Burstow & Norris 1951).

Two other scheduled Bronze Age barrows (SMR No. TQ 30 NE 34; 18 m and 10 m diameter, 0.2–0.3 m high with no visible ditches) lie *c*. 200 m to the south-east of The Bostle group (Fig. 2). Other potentially associated features were recorded in the desk-top assessment (Wessex Archaeology 1997) including various undulations in the field to the east of The Bostle group suggesting the possible eastern extension of the barrow cluster and a *c*. 10 m diameter concentration of large flints with a thin grass cover to the south-east of the barrow group (Fig. 2). It may be pertinent to note Welch's observation that '... post-war plough damage ... has reduced many of the

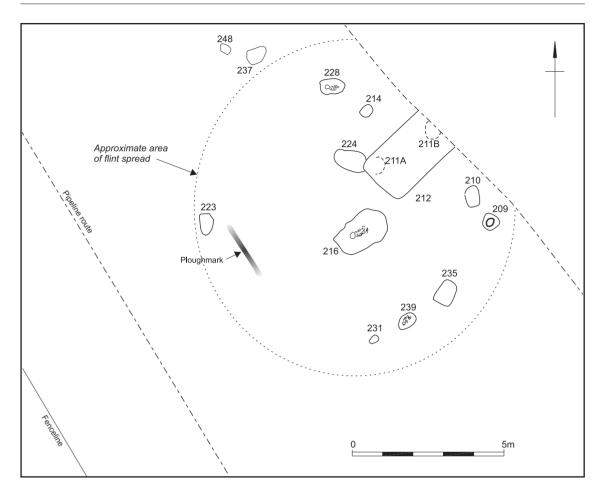


Fig. 3. Plan of Bronze Age features.

barrows on the South Downs to mere concentrations of flints ...' (1983, 17).

ARCHAEOLOGICAL FEATURES AND DEPOSITS

The shallow depth of the topsoil (0.1–0.2 m) and negligible subsoil resulted in exposure of the chalk natural during machine stripping. The extent of plough-damage was illustrated by the frequent plough-marks scouring the chalk and several of the archaeological features. The excavated features related to two broad phases of activity, Bronze Age and Anglo-Saxon (Fig. 2).

BRONZE AGE

A patchy but marked circular concentration of large and medium-sized flints — suggestive of the

remnants of a barrow — visible prior to topsoil stripping, overlay most of a group of features within a 9 m \times 12 m area at 150–151 m aOD on the southern edge of The Bostle barrow group (Figs 2 & 3). Four types of feature were represented — all relatively shallow at between 0.06–0.3 m in depth — most reflecting funerary activity.

Cremation burials and cremation-related deposits There were four cremation graves, generally distributed towards the margins of the area delineated by the flint spread, one contained the remains of an urned burial (209) and three the remains of unurned burials (210, 223 & 235; Fig. 3).

The truncated remains of an inverted Collared Urn were recovered from grave 209 (0.56 m diameter, 0.1 m deep; Fig. 4). The ground level has probably been reduced since the burial was made, but it is also

context	cut/ grave	type	quantification	age & sex	pathology			
Bronze A	Bronze Age							
208	209	urned c.b.	72.4 g	adult >18 yr				
211 A & B	212	inh. burials	<i>c</i> . 60% skel. rec. <i>c</i> . 10% skel. rec.	A: foetus/neonate B: foetus/neonate				
213	210	un. c.b. + r.p.d.	551.0 g	1) adult female <i>c</i> . 30–45 yr ?2) immature >5 yr	<i>am</i> tl; abscess; pd; pnb – mandible; oa – 1C, 1T; ddd – 3T; op – d.humerus, finger phalanges			
215	214	?r.p.d./ ?unurned c.b.	1.4 g	juvenile c. 6–8 yr				
221	216	inh. burial	c. 80% skel. rec.	infant <i>c</i> . 3–4 yr ??male	hypoplasia; <i>cribra orbitalia</i> ; endosteal new bone; mv – enamel pearl, wormian			
222	223	unurned c.b.	617.7 g	adult female > c. 45 yr	<i>am</i> tl; caries; abscesses; oa – 2C, p.IP joints (hand); op – C1, finger phalanges; mv – wormian			
230	228	inh. burial	c. 30% skel. rec.	infant <i>c.</i> 9–12 mth.	<i>cribra orbitalia;</i> mv – enamel pearls			
234	235	unurned c.b.	687.4 g	adult ??female c. 30–45 yr	<i>am</i> tl; op – middle finger phalanges			
242	239	inh. burial	c. 35% ske. rec.	neonate				
Anglo-Sa	xon							
253	250	?coffined inh. burial	<i>c.</i> 40% skel. rec.	adult ?female > c. 45 yr	<i>pd; am</i> tl; abscess; caries; hypoplasia; <i>cribra orbitalia</i> ; oa – l.wrist; op – l.knee, l.navicular; pitting – l.1st Mt-P joint, r.1st p.IP (foot)			
265	263	coffined inh. burial	c. 50% skel. rec.	adult female c. 18–25 yr	pd; abscesses; calculus; hypoplasia; <i>cribra orbitalia</i> ; mv – right M3 absent			
270	267	shrouded inh. burial	<i>c</i> . 93% skel. rec.	adult male > c. 45 yr.	caries; abscess; calculus; hypoplasia; pd; fracture – l.rib; pnb – maxilla; exo – calcanea, patellae; calcified cartilage; sinusitis – maxillary; oa – temporo- mandibular, l.shoulder, r.elbow & wrist, r1st C-M, hips, knees, l.tarsals, r.p. & d.IP joint (foot), C2-6, T1-6, r.costo-vertebral; sacro-iliitis; ddd – C3-T2, L1- 3, L5-S1; pitting – m.clavicles, l.p.humeus, l.p.ulna, r.d.ulna, r.1st Mt-P, l.ankle, C7 & T1 spines; op – r.shoulder, r.d.radius, r.ankle, r.MP, l.p. & d.IP (foot), C1-2, T4-6 bsm, T6 rib; dl – L1-3; mv – maxillary M3 absent, atlas groove			

Table 1	Summarv	of	results	from	human	hone	analysis
Table 1.	Summary	U1	results	nom	numan	DOHE	allalysis.

KEY: inh. – inhumation; c.b. – cremation burial; r.p.d. – redeposited pyre debris; C – cervical; T – thoracic; L – lumbar; S – sacral; bsm – body surface margins; r./l. – right/left; m./d./p. – medial/distal/proximal; IP – interphalangeal; Mt-P – metatarsalphalangeal; amtl – *ante mortem* tooth loss; pd – periodontal disease; oa – osteoarthritis; op – osteophytes; exo – exostoses; pnb – periosteal new bone; ddd – degenerative disc disease; dl – destructive lesions; mv – morphological variation

possible that part of the vessel may have protruded above the contemporaneous ground level and was sealed by mound or cairn material. The unurned burials were made in sub-rounded or sub-rectangular graves (210, 223 & 235) of between 0.46 m \times 0.68 m to 0.80 m \times 0.65 m, and incorporated redeposited pyre debris (frequent fuel ash and fragments of burnt flint) above (210 & 235) or around (223) the burial; the latter also had large flint nodules in the upper grave fill.

A sub-rectangular, U-shaped cut (214; 0.40 m \times 0.34 m, 0.15 m deep) had a homogeneous fill rich in fine-particle fuel ash which included a small

quantity of cremated bone (Table 1). The nature of this deposit is debatable, it may represent another unurned burial or deliberately redeposited pyre debris (see **PYRE TECHNOLOGY AND CREMATION RITUAL** below).

A charcoal sample from grave 223 was submitted for radiocarbon dating and gave a date range of 2140– 1780 BC (Table 2), which corresponds with the Early Bronze Age date for the Collared Urn from grave 209. Though not conclusive, this Early Bronze Age date for two of the four cremation burials suggests they are all likely to belong to this chronological phase.

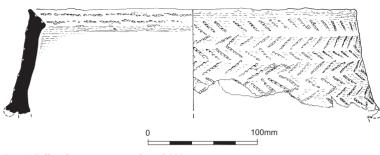


Fig. 4. Collared urn: cremation burial 208.

Inhumation burials

Three inhumation graves (216, 228 & 239) were situated in an approximate north–south line across the area delineated by the flint spread (Fig. 3). The size, though not the depths, of the graves varied in accordance with the age of the buried individuals, from 0.66 m × 0.46 m (239; neonate) to 1.80 m × 1.05 m (216; infant 2–4 yrs: Table 1). In the former, the acute sides of the ovate cut snugly encircled the neonatal infant at the base; in the latter, the infant was crouched in the centre of a sub-rectangular, obtuse-sided grave which could have held a much larger individual. The grave fills were all similar, comprising greyish brown silty clay with frequent weathered chalk pieces. No artefacts were recovered.

The remains of two foetal/neonatal burials (211A & 211B) were each recovered (during the watching brief; position not illustrated) from shallow scoops at either end of a rectilinear feature (212; 0.70 m × *c*. 2.60 m, 0.25 m deep: Fig. 3). Burial 211A was articulated, with the head to the north-east; the remains of 211B had apparently been disturbed. The single fill of feature 212, comprising weathered chalk rubble with rare inclusions of burnt flint and a fragment of sheep/goat mandible, also covered both burials.

A rectangular cut 224 (1.10 m \times 0.60 m), which had been clipped by the insertion of feature 212, had similar characteristics — shape, form and fill — to the

Table 2. Results of radiocarbon analysis (Scottish Universities Research and Reactor Centre). Note: results were calibrated with the 20 year atmospheric calibration curve using CALIB 2.0 and are expressed at the 95% confidence levels with the end points rounded outwards to 10 years, following the form recommended by Mook (1986).

Lab. ref.	material/context	BP	2.0 sig. 95%
AA-34122	charcoal; cremation burial 222	3610±50 вр	2140-1780 вс
AA-34121	human bone; inhumation burial 221	2695±45 вр	970-790 вс
GU-8279	human bone; inhumation burial 265	1300±50 вр	ad 640-880

inhumation graves but contained no bone. It is unlikely, given the good state of preservation of the neighbouring skeletal remains, that bone had been lost as a consequence of soil conditions adverse to its survival.

In the absence of any dating evidence from the inhumation burials a femur from grave 216 was submitted for radiocarbon analysis giving a date of 970–790

^{BC} (Table 2). Although it is far from conclusive that all five inhumation burials share this Late Bronze Age date, the implication is that there may have been a chronological variation in mortuary rites within the Bronze Age. It may also be significant that small quantities of fuel ash and burnt flint were recovered from the fills of graves 228 and 239, suggesting that they postdated at least some of the cremation burials.

Post-holes

Three probable post-holes were excavated, one (231) on the southern margins and two (237 and 248) to the north-west of the area delineated by the flint spread (Fig. 3). Cut 231 (0.26 m diameter, 0.26 m deep) included two fills (lower weathered chalk, upper clay loam) the upper incorporating fragments of Early Bronze Age pottery, struck flint and a pig incisor. The other features each contained single fills (0.11 m deep) and no finds. There is no obvious link between the post-holes and any other features within the group.

Natural features

Several tree bowls and other root activity were observed (not illustrated); fragments of Early Bronze Age pottery, struck and burnt flint, and rare charcoal flecks being recorded from the single fills of some of these features.

ANGLO-SAXON

Four ring-ditches — three (254, 262 & 266) with central graves (250, 263 & 267) and one (255) without — lay at between 152–154 m aOD, to the north-west of the excavated Bronze Age features (Figs 2 & 5.)

The diameter of the ring-ditches ranged between 5.40 m (255) and 6.80 m (262). All were similarly

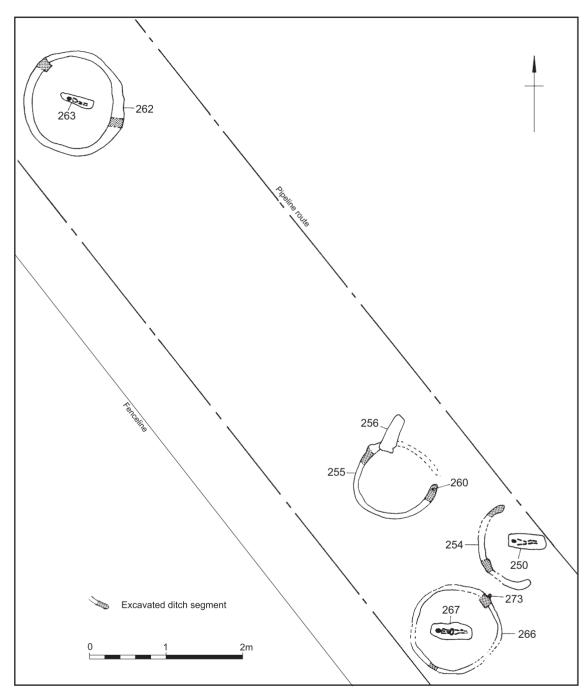


Fig. 5. Plan of Anglo-Saxon features.

shallow (0.08-0.13 m) — as a result of truncation by ploughing — generally with shallow concave profiles, and each had similar single clay loam fills with common small chalk and flint pieces. The presence or absence of terminals or causeways within the circumferences of the ditches could not be ascertained; severe truncation had sometimes almost totally removed traces of the cuts and apparent gaps

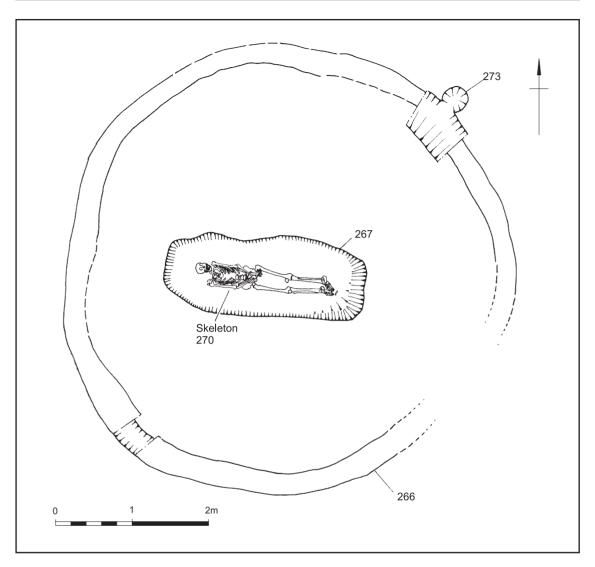


Fig. 6. Anglo-Saxon grave 267: ?shrouded burial 270.

cannot confidently be attributed to the presence of causeways. A small (0.09-m-diameter) stake-hole (260) was noted in the base of ditch 255 and there was a 0.35-m-diameter post-hole (273) on the outer margin of ditch 266 (Figs 4 & 5).

With the exception of ring-ditch 255, each of the ring-ditches surrounded a single central inhumation grave aligned west–east (head to the west). The cuts were sub-rectangular with vertical sides and flat bases, and ranged in size from $2.17 \text{ m} \times 0.62 \text{ m}$ (263) to 2.60 m × 1.05 m (267) with depths of between 0.40–0.59 m. Each grave held the remains of a single burial sealed

by a backfill of mid-brown silty clay with frequent small chalk and flint pieces. The bodies had all been laid supine and extended with the hands generally resting over the hip region. The skulls within graves 250 and 263 were slumped to one side whilst the tightly compacted posture of the large individual in grave 267 (particularly the shoulders) suggests the corpse was shrouded (Fig. 6). The only grave good recovered was an iron pin from grave 250 (Fig. 7 [2]), positioned 0.15 m to the left of the skull.

Grave 263 was substantially narrower than the others (by a minimum 0.38 m) and had shallow

(maximum 0.08 m deep), c. 0.2-mm-wide slots at either end; the eastern slot incorporated a small, centrally placed stake-hole (275: 0.05 m diameter. 0.03 m deep: Fig. 8). Three iron nails (Object nos 4-6) and an 'L'shaped bracket (Object nos 2/3) were recovered from the grave fill at the same level as the skeletal remains (Figs 7 [1] and [3] & Fig. 8). The artefacts were not directly on the base of the grave and are likely to represent the remains of a coffin or some other form of container/cover.

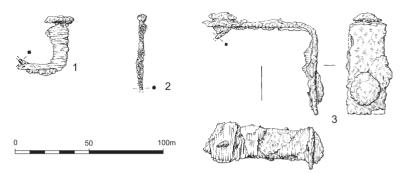


Fig. 7. Metalwork: 1) Nail, bent at right angles (ON 4, context 265, grave 263); 2) Pin shank with mineralized textile (ON 1, context 253, grave 250); 3) Corner fitting with rivets (ONs 2/3, context 264, grave 263).

A femur from grave 263 was submitted for radiocarbon analysis (Table 2), the resulting date range of AD 640–880 placed the burial in the mid-Anglo-Saxon period.

UNDATED

Ring-ditch 255 was cut by a flat based, sub-rectangular feature (256; 2.50 m \times 1.0 m, 0.21 m deep) with a single fill similar in appearance to those of the other excavated features but very loose (Fig. 5). The only finds recovered were a few struck flints. The possible purpose of the feature is unknown.

HUMAN BONE AND FUNERARY DEPOSITS

Human bone from nine Bronze Age contexts including four cremation burials and four inhumation burials — and three Anglo-Saxon inhumation burials was examined (Table 1).

Analysis of the cremated remains followed the writer's standard procedure (McKinley 1994a, 5–6). Age and sex was ascertained in accordance with standard procedures (Brothwell 1972; Beek 1983; Brooks 1955; Gejvall 1981; McMinn & Hutchings 1985). The cranial (Brothwell 1972), platymeric (degree of anterior-posterior flattening of the proximal femur) and platycnemic (meso-lateral flattening of the tibia) indices were calculated where possible (Bass 1987) and stature was estimated (Trotter & Gleser 1952; 1958) where long bones survived intact.

DISTURBANCE AND CONDITION

With the possible exception of 211B, which was

not recognized as human bone in the field and therefore not recorded in detail, bone loss as a result of post-depositional damage is only likely to have occurred from the shallowest grave (209) where cremated bone was visible in the upper fill of the urned burial. However, the shallow depth of some of the Bronze Age inhumation graves resulted in the immature bone being severely crushed and some did not survive lifting.

The cremated bone was in good visual condition, that from graves 210 and 223 being charcoal-stained owing to the presence of substantial quantities of redeposited pyre debris. Most of the bone from the Bronze Age inhumation burials was slightly degraded, that from 211B had numerous old breaks suggesting that it had been disturbed or redeposited in antiquity. With the exception of 211A the older infant bone survived better than that of its younger neighbours; as 211A was the youngest individual identified and from as shallow a grave as the others, the implication is that the mode of burial or burial environment was different from that of the others (Henderson 1987).

The bone from two of the Anglo-Saxon graves (250 & 263) was very poorly preserved, the axial skeleton and many of the articular ends of the bones having totally degraded (Fig. 8). The graves were all of similar depth and had similar fills, but whereas the compact position of the skeleton in grave 267 suggests it was shrouded with the backfill placed immediately around the body, grave 263 contained some form of associated wooden structure — coffin or cover — which would have resulted in an air gap being maintained between the body and the grave fill, creating a different micro-environment which would affect preservation (Henderson 1987). The preferential loss of spongy bone is related to bone

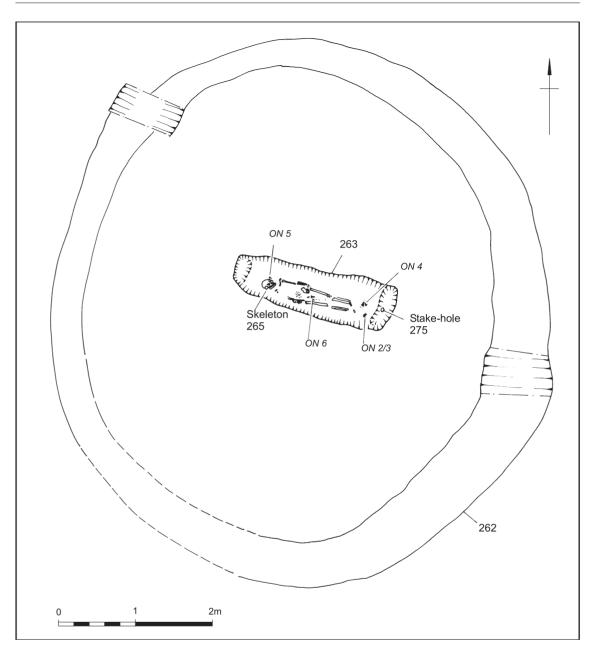


Fig. 8. Anglo-Saxon grave 263: coffined burial 265.

density, the affects of which may be accentuated by the sex of the individual (females less well preserved: Boddington 1987) and age (decrease in bone density — osteoporosis: Boddington 1987; Henderson 1987); the latter may help explain the more extensive degradation of the bone in grave 250 as compared with that in grave 263 (Table 1). The left arm bones from grave 250 were stained brown, suggesting the original presence of some organic covering such as fur or leather.

DEMOGRAPHIC DATA

A minimum of ten individuals was identified from the Bronze Age deposits and three from the Anglo-Saxon (Table 1). The four Bronze Age cremation burials each contained the remains of an adult, the three sexed individuals being female. One burial (213) may have included a second, immature individual, however, the single unerupted second incisor crown supporting this suggestion may have derived from the adult (unerupted); alternatively, it could reflect contamination from a pyre site insufficiently wellcleared prior to reuse (e.g. that associated with deposit 215). The nature of deposit 215 is debatable (see PYRE TECHNOLOGY AND CREMATION RITUAL below), but it contained the remains of the only juvenile in the assemblage. All five of those identified from the Bronze Age inhumation burials were under four years old, with three aged less than six months. The excavated graves comprise only a small part of more extensive burial groups from which little demographic evidence has been derived; a minimum of eight previously examined barrows appeared to contain the remains of single individuals, including at least one adult female and one child (Burstow & Norris 1951). Within these limits, however, a number of interesting observations can be made with respect to the recently excavated groups.

There appears to be a chronological division in the rites practised within the Bronze Age (see ARCHAEOLOGICAL FEATURES AND DEPOSITS above) with an Early Bronze Age (2140–1780 вс) group of cremated adults (predominantly female) and one juvenile, and a Late Bronze Age (970–790 BC) group of neonate/young infant inhumation burials. Any significance attributed to the absence of adult males from the former should be viewed with caution given the small size of the group. From a sample of 86 individuals derived from 31 Early/Middle Bronze Age sites comprising single primary or small numbers (between one and ten) of cremation burials (generally associated with extant or former barrows) examined by the writer, 41% have been sexed as female and 10% as male, with 21% immature — predominantly infants (12%; pers. obs.). More mixed demographic groups or a predominance of males have been observed elsewhere, however, for example, the 'rich' burials in Petersen's 1981 review (table II) showed an imbalance in favour of the males (56% compared with 37% females).

High infant mortality is not, in itself, unexpected, but a combination of taphonomic and cultural reasons tend to reduce what was probably the true figure in archaeological 'populations'. Given the stresses of cremation on young infant remains and the possibility of bone being overlooked in collection for burial from a dual cremation, immature bones could potentially be 'missing' from some of the cremation burials (McKinley 2000a, 102). However, the exclusive inhumation of infants at this site must reflect cultural influences; the level of truncation and threat to preservation indicated by the condition of the neighbouring Anglo-Saxon burials would not favour inhumed immature remains over those of adults. The implication is that this small Early Bronze Age burial area was set aside in the Late Bronze Age for the disposal of infants.

The closest parallels currently reported include the Early Bronze Age barrow at West Overton, Wiltshire (Smith & Simpson 1966), where five infants (four less than nine months old) were buried around the central adult male burial (three cremation burials were similarly dated); five of the six inhumation burials from Ladies Mile, Patcham were of 'children' and were believed to predate the similarly dated Early Bronze Age cremation burials from the same barrow (Yeates 1960); the Middle Bronze Age cremation burials from Cock Hill (Ratcliffe-Densham 1961) included adult and immature remains, the two (?undated) unburnt skeletons recovered being those of foetal/neonatal individuals; other Middle Bronze Age assemblages were more mixed, for example, 33% of the individuals from Itford Hill (Holden 1972) were immature, as were 47% from Earls Farm Down, Wiltshire (Powers & Brothwell 1967) and 32% from Simons Ground, Dorset (White 1982).

The three Anglo-Saxon burials form part of a relatively large assemblage which included members of both sexes and at least one immature individual (Burstow & Norris 1951), implying that the cemetery was probably serving a 'normal domestic' population.

SKELETAL INDICES

Skeletal indices were calculated where possible from the adult Anglo-Saxon remains. The stature, cranial and platycnemic indices were calculated for the male burial 270. Stature was estimated at 1.82 m (c. 5' 11½"), falling in the upper range recorded for Anglo-Saxon males (Table 3). The cranial index of 68.8 (dolichocrany) falls within the range of indices from other contemporaneous sites in the region (Table 3) and reflects the general trend

Site	Reference	cranial index	cranial type	average male stature	platymeric index	platycnemic index
The Bostle	Burstow & Norris 1951	67.4	dolichocrany			
Apple Down, W. Sussex	Harman 1990	66–81 average 74.4	48% dolichocrany	1.74 m (5'8½")		
Stafford Rd, Brighton	Armitage 1988	71.5	dolichocrany	1.78 m (5'10")	74.7-79.9	68.9/71.9
Ocklynge, Eastbourne	O'Conner 1980			1.72 m (5'7 ¾")		
Alfriston, E. Sussex	O'Conner 1976			1.78 m (5'10")		

Table 3. Anglo-Saxon: comparative skeletal indices.

towards long-headedness in the Anglo-Saxon period (Marlow 1992). The platycnemic index (Table 3) was calculated at 68.0/69.7 (mesocnemic). The platymeric index was calculated for all three adults; at between 67.7-77.4, all were within the platymeric range, the highest readings being for the male. The close proximity of the figures with each other and those from elsewhere (Table 3) suggests homogeneity within and between population groups, though the small numbers involved elicit caution. The suggestion cannot be tested further for the region since, despite the *c*. 22 known early Anglo-Saxon cemeteries within a *c*. 5-mile radius of The Bostle (Welch 1983, fig. 4.1), there has been little detailed examination of the skeletal material.

PATHOLOGICAL LESIONS AND MORPHOLOGICAL VARIATIONS

Pathological lesions were present in remains from five Bronze Age and all three Anglo-Saxon burials; observations were more common in the latter in consequence of the greater age of the individuals and the remains being unburnt rather than cremated (McKinley 1994a, 106). A summary of the observed lesions is presented in Table 1.

In the Bronze Age remains the overall rate of *ante mortem* tooth loss was 29% (adult females), with higher involvement of the mandibular dentition (34% compared with 20%) and a general increase in severity with age. Carious lesions were noted in two tooth roots from one permanent dentition (in cremated remains generally only those lesions affecting the tooth root will be observed: McKinley 1994a, 107–8). Dental abscesses were recorded in two dentitions (rate 4%) both affecting anterior mandibular sockets; in burial 213 the infection had spread to the adjacent mandibular body surface. Slight dental hypoplasia (developmental defect in the tooth enamel: Hillson 1979, 148–9) was noted in one tooth from one dentition.

With the exception of ante mortem tooth loss,

all the dental lesions observed in the Anglo-Saxon dentitions showed an age-related increase in severity. Slight (burial 265) to heavy (burial 270) calculus deposits (tartar) were noted in two dentitions. Slight to moderate periodontal disease (gum disease) was recorded in all three dentitions. Ante mortem tooth loss was seen in one female dentition, with an overall rate of 2.5% (females 4%); the older adult male (burial 270) had retained all his teeth. Carious lesions were observed in the two older adult dentitions, with an overall rate of 10% (12% female, 7% male); all lesions were cervical in origin. Dental abscesses were also recorded in the two older adult dentitions, with an overall rate of 8.7% (male 9%, females 8%); none was directly associated with carious lesions though the distribution was similar (anterior teeth in the female and molars in the male). In the male (270) the maxillary infection had spread to the surface of the bone. The overall rate of ante mortem tooth loss is lower than that of 6.9% from Apple Down, West Sussex (Harman 1990), but similar to that of 3.9% from Ocklynge Hill, Eastbourne (O'Conner 1980), whilst the overall rates for caries and abscesses were respectively the same or close (7.2%) to those from Apple Down (Harman 1990).

Cribra orbitalia (resulting from a metabolic disorder connected with iron deficiency anaemia) was recorded in two infants from the Bronze Age assemblage (porotic; rate 43%) and both females from the Anglo-Saxon group (cribotic; rate 50%). The greater iron requirements of females and immature individuals often results in higher rates amongst these groups (Robledo *et al.* 1995).

Patches of fine-grained endosteal new bone was observed over extensive areas of the lower portions of the Bronze Age skull 221, indicative of a chronic infection within the meningeal membrane (*dura mater*) which may have been a contributory factor in the death of this young individual. Both maxillary sinuses from the Anglo-Saxon male 270 (2/5 possible) had lesions indicative of extensive infection: Wells (1977) quoted a rate of 6.8% as average for Anglo-Saxon assemblages (Roberts & Manchester 1997, 131).

The only evidence of direct trauma was a single well-healed fracture in one rib from the Anglo-Saxon burial 270 (1/12); such fractures frequently represent the most common fracture site in archaeological populations, most resulting from direct injury such as a fall against a hard object (Adams 1987).

Lesions indicative of osteoarthritis (Rogers et al. 1987; Rogers & Waldron 1995, 32-46) were recorded in two of the Bronze Age adult females and the two older Anglo-Saxon adults; the number of sites affected range from two (Bronze Age burial 213) to 25 (Anglo-Saxon male). The number of sites affected generally increases with age, though other contributory factors may include mechanical stress, excess weight and genetic predisposition (Rogers & Waldron 1995). The physically energetic lifestyle followed by the male (270) is manifest by the size and robusticity of his skeletal remains, though the extent of the lesions, encompassing all areas of the body and including 61% of the vertebrae, must have had a debilitating effect on his activities towards the end of his life. Similarly, degenerative disc disease - resulting from the breakdown of the intervertebral disc and reflecting age-related 'wear-and-tear' (Rogers & Waldron 1995, 26-7) — was noted in 61% of the adult male vertebrae, reinforcing the evidence of physical stress suggested by the osteoarthritis.

Osteophytes (irregular growths of new bone along joint margins), pitting and other destructive lesions may develop in response to a number of conditions and it is not always possible to ascertain the specific cause of individual lesions (Rogers & Waldron 1995, 20–31). The vast majority of these lesions were seen in joint surfaces and are most likely to represent the early stages of some form of joint disease. Similarly, it is not always possible to be conclusive with respect to the aetiology of exostoses (bony growths at tendon and ligament insertions), the causative factors of which include advancing age, traumatic stress, or various diseases.

Variations in the skeletal morphology may, with other predisposing factors, indicate genetic relationships within a 'population' (Berry & Berry 1967; Tyrrell pers. comm.). Some traits have been attributed to developmental abnormalities, for instance, extra sutural ossicles or wormian bones (Brothwell 1972, 95–8), which were noted in two of the Bronze Age individuals.

PYRE TECHNOLOGY AND CREMATION RITUALS

The majority of the cremated bone was the buff/ white colour indicative of a high degree of oxidation (Holden *et al.* 1995a,b); variations from black (i.e. charred) to grey — parts of the upper skeleton being most frequently affected — were seen in a few fragments from all the deposits other than burial 222, and a small fragment of charred soft tissue residue was recovered from burial 222 (McKinley 1994a, 83). There are numerous factors which may influence the efficiency of cremation (McKinley 1994a, 77–84), for example poor oxidation of hand bones (burial 213) is probably indicative of the peripheral position of the hands on the pyre.

The quantities of bone recovered from the undisturbed adult burials ranged from 551.0 g to 687.4 g (the small amount of bone in burial 208 undoubtedly being the result of disturbance), representing *c*. 34-43% of the expected weight of bone from an adult cremation (McKinley 1993a). Incomplete recovery of cremated remains from the pyre for burial is a characteristic of the rite; the quantities recovered here fall within the median range for British cremation burials (McKinley 1993a; 1997a).

With the understandable exception of context 215, the majority (68–88% by weight) of bone fragments from the burials was recovered from the 10-mm-sieve fraction, with a maximum fragment size of 70 mm. Various factors may affect the size of bone fragments (McKinley 1994b), post-cremation and post-depositional movement being important influences as demonstrated by the smaller maximum fragment size recorded from the disturbed urned burial 208 (39 mm). There was no evidence to suggested deliberate fragmentation of bone prior to burial.

Bone elements from each skeletal area were present in each burial (context 215 excluded). There was no discernibly deliberate selection of skeletal elements for burial; however, the very small percentage (2%) of identifiable lower limb fragments from burial 213 is unusual.

Whilst it is expected that the cremated remains of an immature individual will be less than those of an adult, the quantity of bone recovered from context 215 is exceptionally small, and this, together with the form of the deposit, render its interpretation as a burial questionable. The relatively homogeneous deposit (150 mm deep) was charcoal-rich and no cremated bone was noted in excavation. It is possible that rather than representing the burial, context 215 comprises a deliberate deposition of pyre debris — material cleared from the pyre site after the bone had been collected for burial (McKinley 1997a). If so, the grave of this individual must lie outside the area of investigation.

All the grave fills except that of 209 contained redeposited pyre debris — a relatively common feature of the rite within the Bronze Age (McKinley 1997a). In graves 210, 223 and 235 it appears that pyre debris was deposited over the burials, some infiltrating between the bone fragments through time. The inclusion of such substantial quantities of pyre debris within the graves suggests that the pyre sites lay close to the place of burial.

FINDS AND ENVIRONMENTAL DATA (Finds by Lorraine Mepham)

POTTERY Collared Urn

The remains of a Collared Urn were recovered from grave 209; the upper 100 mm of the inverted vessel survives, down to the base of the collar (Fig. 4). The fabric is grog-tempered (grog inclusions <3 mm in a slightly micaceous clay matrix); inner and outer surfaces are fairly evenly oxidized, with an unoxidized core. The collar of the vessel is decorated with twisted cord impressions arranged in vertical herringbone motifs and there are two concentric lines of twisted cord impressions around the internal rim bevel. From this deposit, 79 sherds (1453 g) certainly or probably belong to this ur; a further 26 sherds (141 g), in a similar fabric but thinner-walled and lacking decoration, could derive from the same vessel (from the undecorated area below the collar) or could represent a second vessel.

The overall form of the vessel is unknown, but the expanded rim and deep collar with 'peaked' base would be sufficient to place it within Longworth's Secondary Series and Burgess' Late group, which they date after *c*. 1450 BC (Longworth 1984; Burgess 1980); Longworth records a vessel with a very similar collar/rim profile and decorative scheme from Beddingham, near Lewes (Longworth 1984, pl. 187, 539). This date would place the burial within the Early Bronze Age range suggested by the radiocarbon date obtained from one of the other cremation burials (Table 2).

Other pottery

A further 14 sherds were recovered, five (14 g) from a tree-bowl and nine (36 g) from post-hole 231. All are in grog-tempered fabrics similar to the Collared Urn (burial 208) and are likely to derive from similar vessels. Two sherds from post-hole 231 are decorated with twisted cord impressions, but otherwise the sherds are all plain and undiagnostic.

WORKED FLINT

Worked flint was recovered in small quantities from Bronze Age features with the exception of one unstratified piece. The 16 pieces comprise one core fragment, 14 flakes and broken flakes, and a crudely made, broken scraper. Most pieces are patinated, and approximately half the flakes retain cortex. None of the The two fills within grave 210 — that is, the burial and the redeposited pyre debris (recorded as sub-samples under context number 213) — were examined separately. The majority of the bone (91%) came from the concentration representing the burial. A substantial proportion of the bone from the redeposited pyre debris comprised small bones of the hands (16 bones, *c*. 30% of identifiable bone); similar observations have been made by the writer in other associated cremation-related deposits (e.g. McKinley 1993b) and suggests that those collecting the remains for burial spent only a limited time in recovery of the smallest bones, perhaps in the knowledge that more would be incorporated in the grave together with the other pyre debris.

pieces is closely chronologically distinctive, but the form of the flakes (large and heavy) and the technology employed (hardhammer technique) suggested a Bronze Age date.

IRON OBJECTS

Four iron objects from grave 263 -comprising three nails (ONs 4–6) and one corner fitting (ONs 2/3) — all probably relate to some kind of coffin or cover (Figs 7 & 8). A small fragment of iron (length 20 mm, width 2 mm) recovered from a soil sample taken from the base of the grave could derive from one of these objects or a further object of unknown form.

The nails are all disc-headed and bent at right angles; one has snapped at the bend (Fig. 7[1]). All have traces of mineralized wood adhering and the grain of the wood indicates that the nails were deliberately bent during use. The width of the planks into which the nails were driven can be estimated from the mineralized traces as at least 35 mm, but there is no evidence that each penetrated more than one plank, and their precise function is unclear. The corner fitting, found by the right foot, consists of a strip 20 mm wide and approximately 120 mm in length, bent at right angles with a rivet at either end (Fig. 7[3]). Mineralized wood survives on the internal surface and around the point of one rivet, but there is insufficient to indicate the method of construction; the most obvious would be the use of the fitting to strengthen a simple butted or combing joint at the corner of a wooden container.

Such a small quantity of ironwork gives little indication of the form of the wooden container of which they formed a part, but evidence from Saxon cemeteries elsewhere is equally scarce and inconclusive. At the Buckland cemetery in Dover, for example, nails, right-angled bars, clench bolts and riveted strips were recorded in several graves, and taken to indicate the presence of a coffin or body container, but in no instance could the precise form of the container be surmised (Evison 1987, 99–100). While this could reflect an absence of wooden body containers from such cemeteries, it is more likely that carpentry joins were preferred to metal fittings, as seems to be the case with all kinds of woodworking at this period (Evison 1987, 100).

A pin shank in two fragments (Fig. 7 [2]) was found close to the left shoulder of skeleton 253 (grave 250). The head is missing and there are traces of mineralized textile adhering to the shank representing a twill weave with yarn spun in opposing directions (Z/S). Twill weaves are usually found in heavy garment

fabrics. The position of this pin could reflect its use to fasten some garment worn by the individual in death or a garment placed by the individual's left shoulder as seems to have been the case in graves from Cook Street, Southampton, and Winnall, Winchester (Hinton 1993, 107–8).

CHARCOAL

Material from two samples, one from cremation grave 210 and the other from feature 214, were examined by Rowena Gale. The former contained mostly oak (*Quercus*) sapwood, with one piece of heartwood. A single small, knotty fragment was tentatively identified as the shrub *Daphne* sp. The two native species — *D. mezereum* (mezereum) and *D. laureola* (spurge laurel) — both occur on calcareous soils; the former is deciduous and has probably always been rare, the latter is evergreen and typically

DISCUSSION

The Bostle lies in a characteristic position for both Bronze Age and Anglo-Saxon barrow cemeteries within the region (Grinsell 1940, map III; Drewett 1976, fig. 1.2; Welch 1983, 17). The clustering of Bronze Age barrows on hill tops, using 'liminal' land deemed unsuitable for agricultural purpose, has been discussed by numerous writers (e.g. Drewett 1976; Bradley 1990, 131). Over time, what may have represented a practical usage of 'islands of uncultivated land' seems to have crystallized into areas of ritual significance. The reuse of Bronze Age barrows — both directly and as foci — for mortuary purposes in later periods is well documented, for example the Romano-British burials added at Friday's Church, Barpham Hill, Sussex (Barr-Hamilton 1980) and the numerous secondary Anglo-Saxon interments noted in the wider vicinity (Grinsell 1934, 236-7; Welch 1983, 17 & 21).

Ellison (1978, fig. 14) noted nine Bronze Age settlements in the vicinity of The Bostle, including Plumpton Plain and New Barn Down c. 4-8 km to the north, and Itford Hill c. 6 km to the east. These settlements - with the possible exception of Itford Hill — are categorized as 'small sites', believed to comprise agricultural units occupied by a single small 'kin group' (Ellison 1978). Fieldwalking in the vicinity has revealed a plethora of worked flint artefacts indicative of settlement activity extending from the top of the Downs into the many small dry valleys (see Gardiner 1988, chapters 9 & 10). To the south-east of The Bostle a high density of such material was recovered from Whiteway Bottom and Breaky Bottom (Allen pers. comm.); the sheltered position of these small valleys would have formed ideal settlement sites. The cemeteries provide the main form of evidence for early Anglo-Saxon settlement in the area

grows in woodland (Mabey 1996, 234–5). Oak sapwood and heartwood, and fragments of hazel (*Corylus*) were recovered from the second sample.

Oak is amongst the most commonly occurring species within deposits of pyre debris recovered from England (e.g. McKinley 1994a, 82; Gale 1997), probably having comprised the structural component of the pyre as well as contributing towards the brushwood infill (McKinley 1994a, 80). The identification of the *Daphne* — if correct — has potentially interesting implications. Such a small shrub is unlikely to have been used for fuel, particularly when there were clearly more suitable species available; however, both native species carry attractive small flower spikes and one is evergreen, presenting the possibility of its inclusion on the pyre for ritual rather than purely practical reasons.

(Welch 1983, 17), but only a few have been directly linked to contemporary settlements (Bell 1978).

The position of the previously unknown Bronze Age burial group — potentially covered by a mound - between the barrow cluster on The Bostle and the two, possibly three, to the south-east (Fig. 2), raises the possibility that further barrows and flat graves extend down along the ridge. The possible continuation of the barrow cemetery to the east of the scheduled area was suggested in the desk-based assessment (Wessex Archaeology 1997) and the confirmed presence of ditched burials - undetected by the geophysical survey — continuing to the east of the excavated strip supports the probability of a more extensive cemetery than has previously been recognised. The absence of any visible mounds to the excavated Anglo-Saxon graves suggests the possibility that the scheduled area also contains more than the 27 graves recorded.

BRONZE AGE

The flint spread, observed prior to machine stripping, above the discrete group of Bronze Age features suggests the one-time presence of a barrow or cairn, though there was no indication of there having been a ditch. Such diminutive remains are common on the South Downs (Welch 1983, 17) — e.g. Pyecombe (Butler 1991, 1) and Itford Hill (Holden 1972) — and most of the destruction is believed to have resulted from post-war agricultural activity. At The Bostle, however, the fact that no mound is marked on the early Ordnance Survey maps suggests that it was already an insignificant feature in the landscape in the nineteenth century.

It is not clear at what stage the mound or cairn was constructed. All the grave fills — inhumation and cremation — were remarkably similar, none apparently having cut through significantly different material. Although occasional flint nodules were recovered from two cremation graves (both dated to the Early Bronze Age) and two inhumation graves (including the dated Late Bronze Age grave), they only comprised a common inclusion in the fills of the three tree-bowls. The evidence seems to indicate that the implied flint mound/cairn was not raised until the Late Bronze Age, however, the confined area in which the burials were made and lack of intercutting features suggests some form of marker(s) existed from the Early Bronze Age. The post-holes towards the southern and northern margins of the flint spread may have held posts marking the burial area.

Approximately 80–90% of the postulated mound/ cairn fell within the area of excavation (Fig. 3). There is no clear, centrally placed feature, and both cremation and inhumation burials were dispersed across the area of the overlying flint spread, most lying in the eastern half/two-thirds.

Bronze Age cemetery groups commonly comprise a combination of inhumation and cremation burials (Bradley 1981) and, although predominantly one rite appears to have superseded the other (inhumation to cremation: Bradley 1990, 97-103; Barrett et al. 1991), some sites appear to have contemporaneous use of both rites, as, for example in the Early Bronze Age period at Friday's Church, Barpham Hill, (Barr-Hamilton 1980) and in the Middle and Late Bronze Age period at Twyford Down, Hampshire (Walker & Farwell 2000); the reasons postulated for such variations in mortuary rite include age, sex, status, individual or community preference and geographical location (Grinsell 1934, 35; Burgess 1980, 298). Formal Late Bronze Age burials of either rite are rare, with cremation appearing to predominate, often inserted into older barrows (Bradley 1990, 112; Brück 1995). A review of Late Bronze Age inhumation burials found their presence recorded at only seven British sites, all situated in the north and west (Brück 1995, fig. 8); unburnt remains have most frequently been recovered as disarticulated fragments from 'non-grave' contexts (Bradley 1990, 111; Brück 1995, 249 & fig. 1).

The evidence currently available, though not conclusive, suggests that the different mortuary rites at The Bostle were not practised contemporaneously; the Early Bronze Age rite appears to have been for disposal by cremation and the Late Bronze Age rite by inhumation of a complete corpse. The latter group join a very small corpus of inhumation burials from the Late Bronze Age, none of which currently appears to extend this far south-east (Brück 1995, fig. 8; though the potential limitations of the data was highlighted).

The demographic structure of the two Bronze Age burial groups has been discussed above, but how may these observations reflect the society to which those buried here belonged? The small size of the groups is suggestive of a single small domestic unit — outlined by Ellison (1978) as characteristic of this period and location — who used the cemetery over a relatively short time-scale. However, the radiocarbon date and artefactual evidence for the Early Bronze Age group suggest that the burials may have spanned the middle to late phases of that period and with only four burials over such a timescale, this small cemetery cannot have formed the final resting place for all the members of even one unit. Similarly, the presence of only infants in the Late Bronze Age group cannot be representative of the whole domestic unit. The cremation burials comprised mostly adult females and the inhumation burials were all infants, which suggests that this burial area may have been reserved specifically for the disposal of certain members of the community, though their composition changed over time.

The size, form and fill of feature 224 are significantly similar to those of the infant inhumation graves. The occurrence of 'empty graves' within a cemetery is not uncommon at any date; they most frequently seem to be of a small size intended for an infant or a child and the apparent lack of occupancy is frequently (with good reason) attributed to poor bone survival. The latter is not so in this instance, however, where the bones of the infants were all well-preserved. The grave may have been prepared in advance and subsequently backfilled because it was not required — e.g. the child recovered — or it may represent a cenotaph, the body itself for some reason not being available for burial e.g. lost at sea (*see* below).

The presence of redeposited pyre debris within most of the cremation graves suggests the close proximity of the pyre to the place of burial (McKinley 1997a), the area set aside for burial also featuring in the more extensive mortuary rites including cremation. The occasional presence of charcoal flecking and burnt flint in the backfills of some of the later inhumation graves suggests some pyre debris may still have been in the vicinity in the Later Bronze Age, perhaps contained within earlier mound material. The possible identification of *Daphne* sp. amongst the redeposited pyre debris from one of the cremation graves suggests the intriguing possibility of parts of the plant being placed on the pyre for symbolic reasons — either for its flower or evergreen properties. The inclusion of such tributes within mortuary rituals has been attested throughout the prehistoric period, those of flowers often being seen as symbolic of the shortness of life and evergreens of the everlasting after-life (Parker Pearson 1999, 149).

ANGLO-SAXON

The Anglo-Saxon practice of making burials within graves surrounded by a ring-ditch and covered by a low mound is believed to have commenced in the mid-late sixth century AD with their occasional inclusion in predominantly flat-grave cemeteries (Shephard 1979; Lucy 2000, 97–101). Many barrows had been destroyed by the 1940s (Grinsell 1934, 29) but they were (and remain) most common in Kent and extended westwards as far as Southampton *Hamwic* (Grinsell 1936, 28–30; Welch 1983, 17; Garner 2001). Numerous barrow clusters have been recorded in Sussex (Grinsell 1934, 227–9; Welch (1983, fig. 4.1) of which The Bostle, with a minimum of 31 known ring-ditches/barrows, currently appears to represent one of the largest.

Graves with associated ring-ditches have generally been found to contain extended inhumation burials (Cook 1985; Down & Welch 1990) and grave goods are relatively sparse, iron knives forming the most frequently recovered artefact, with fibulae or discbrooches from some female graves (Grinsell 1934, 30; Hogarth 1973). Dating has generally been based on artefactual evidence either from the ring-ditch/ barrow burials themselves or - more commonly from adjacent or neighbouring flat-grave cemeteries; later graves tending to include fewer goods. Of the Anglo-Saxon cemeteries within a five-mile vicinity of The Bostle (Welch 1983, fig. 4.1) most are believed to date from the fifth to early eighth century, and include both flat and barrow cemeteries. Burial 265 from The Bostle represents one of the few such burials — the only one from the Sussex clusters — to have been radiocarbon dated, the calibrated date of AD 640-880 indicating that the use of the barrow cemeteries may have extended beyond the early eighth century attributed to the neighbouring flat cemeteries and possibly into the late ninth century.

The ring-ditches excavated at St Peter's, Broadstairs, Kent (Hogarth 1973), which are believed to be earlier than their westerly counterparts, occurred in a variety of shapes (circular to sub-rectangular) and range of diameters (c. 5–10 m), and it is possible that the size and shape of the ditches became more uniform as use of the rite increased (e.g. Garner 1993; 2001). There is no record of the dimensions of the investigated Anglo-Saxon ring ditches within the scheduled area (Burstow & Norris 1951), however, the distribution plan of the barrows (Fig. 2) suggests they are in the region of 5–6 m diameter, which corresponds closely with the range of diameters (5.40 m to 6.80 m) from the excavated ditches.

There is no conclusive evidence that any of the ditches at The Bostle comprised penannular rather than continuous ditches; the former generally representing the most common form in the majority of cemeteries. Single stake-holes were noted in the bases of two of The Bostle ring-ditches (255 & 266). Similarly located stake-holes at St Peter's, Broadstairs were interpreted as indicative of close-set fences around the ditch circuits (Hogarth 1973); such an interpretation is unlikely for The Bostle, where they could represent the remains of grave markers.

The existence of ditches with no central burial (feature 255) has been observed at several other barrow cemeteries (Cook 1985; Down & Welch 1990; Garner 1993). Given the depth to which the adjacent graves were cut, 0.40–0.59 m into the chalk, it is improbable that a grave central to ditch 255 has been removed by truncation. The ring-ditch and associated mound may have represented a 'cenotaph'; such features are known in association with mortuary deposits in both the Anglo-Saxon period — most famously at Sutton Hoo — and in preceding periods (Toynbee 1996, 54; McKinley 1997b, 57; McKinley 2000b; 2003).

The slots at either end of grave 263 — which form an integral feature of the grave structure (Fig. 8) — may represent a negative version of Hogarth's type-4 ledge or be akin to 'floor slots' interpreted as '... location slots for wooden beams on which the coffin rested...' (Hogarth 1973, 112, fig. 7). It may be significant that this grave was the only one with evidence indicative of the presence of some form of container or cover, since the slots would have allowed for a container to be lowered into the grave by hand without having to tip or drop it into position to avoid trapped fingers.

The burials were all made supine and extended, laid west–east in the position most commonly adopted in fifth-century Anglo-Saxon cemeteries (Hogarth 1973; Craddock 1979; Down & Welch 1990; Lucy 2000, 80). The single grave good recovered — an iron pin from grave 250 — is in keeping with the general lack of items from burials of this type and date. It has been suggested that the lack of grave goods in these later graves reflects a change in the rite with the corpse being shrouded rather than dressed for burial; the alternative view is that the one need not negate the other and that a change in the mode of dress to items which did not require inorganic fastenings may in part explain the dearth of material in these cases (Samson 1999).

There is little to link the population of this cemetery with any known Anglo-Saxon settlement; Bishopstone (5th-century), *c*. 10 km to the southeast, probably represents the nearest known. At Bishopstone the close physical proximity of the cemetery and the settlement led Bell (1978) to suggest that, at least in the early Anglo-Saxon period,

cemeteries were located close to the settlements they served. The exposed position of The Bostle and absence of occupation evidence within the vicinity suggests that this tendency may have changed by the mid-Anglo-Saxon period, the cemetery probably serving a number of dispersed farmsteads for which no evidence has yet been uncovered.

Acknowledgements

The project was funded by Southern Water and managed for Wessex Archaeology by Roland Smith and Paul McCulloch. The watching brief stage of the project (including initial excavation of some features reported here) was undertaken primarily by Rosie Edmunds, and latterly by Jenny Morrison and Mark Dunkley. The excavation was undertaken by Jacqueline I. McKinley with the enthusiastic assistance of Marie-Claire Ferguson. Thanks are due to Rowena Gale and Pippa Smith for the identification of the charcoal and the animal bone respectively. Thanks are also due to the various readers for their comments on the texts. The illustrations in this report are by S. E. James.

Author: Jacqueline I. McKinley, Wessex Archaeology, Portway House, Old Sarum Park, Salisbury, Wiltshire, SP4 6EB.

REFERENCES

Adams, J. C. 1987. *Outline of fractures*. London: Churchill Livingstone.

Armitage, P. L. 1988. The human skeletal remains, in P. S. Smith, Early Anglo-Saxon burials from Stafford Road, Brighton, East Sussex, *Sussex Archaeological Collections* (hereafter *SAC*) 126, 43–9.
Barr-Hamilton, A. 1980. The excavation of two Bronze Age barrows at Friday's Church, Barpham Hill, *SAC* 118, 171–82.

Barrett, J., Bradley, R. & Green, M. 1991. Landscape, Monuments and Society: the Prehistory of Cranbourne Chase. Cambridge: Cambridge University Press.

Bass, W. M. 1987. *Human Osteology*. Columbia (MO): Archaeological Society.

Beek, G. C. van 1983. *Dental Morphology: an Illustrated Guide*. Bristol: Wright PSG.

Bell, M. 1978. Saxon Sussex, in P. Drewett (ed.), *Archaeology in Sussex to AD 1500*, CBA Research Report No. 29, 64–9. Berry, A. C. & Berry, R. J. 1967. Epigenetic variation in the human cranium, *Jnl Anatomy* 101(2), 261–379.

Boddington, A. 1987. Chaos, disturbance and decay in an Anglo-Saxon cemetery, in A. Boddington, A. N. Garland & R. C. Janaway (eds), *Death, Decay and Reconstruction*. Manchester: Manchester University Press, 27–42.

Bradley, R. 1981. Various styles of urn: cemeteries and settlement in southern England, in R. Chapman, I. Kinnes & K. Randsborg (eds), *The Archaeology of Death.* Cambridge: Cambridge University Press, 93–104.

— — 1990. *The Passage of Arms*. Cambridge: Cambridge University Press.

Brooks, S. T. 1955. Skeletal age at death: the reliability of cranial and pubic age indicators, *American Inl Physical Anthropology* **13**, 567–97.

Brothwell, D. R. 1972. *Digging Up Bones*. London: British Museum Natural History.

Brück, J. 1995. A place for the dead: the role of human remains in Late Bronze Age Britain, *Proceedings of the Prehistoric Society* (hereafter *PPS*) **61**, 245–77.

Burgess, C. 1980. *The Age of Stonehenge*. London: Dent. — — 1986. 'Urnes of no small variety': Collared urns reviewed, *PPS* **52**, 339–51.

Burstow, G. P. & **Norris, N. E. S.** 1951. Excavations of barrows in The Bostle, Balsdean, *Sussex Notes and Queries* **13** (6), 129–31.

Butler, **C.** 1991. The excavation of a beaker bowl barrow at Pyecombe, West Sussex, *SAC* **129**, 1–28.

Christie, P. M. 1967. A barrow-cemetery of the second millennium BC in Wiltshire, England, *PPS* **33** (12), 336–67. **Cook, A. M.** 1985. The Anglo-Saxon cemetery, in A. M. Cook, & M. W. Dacre, *Excavations at Portway, Andover* 1973–1975.

Oxford University Monograph No. 4.

Craddock, J. 1979. The Anglo-Saxon cemetery at Saxonbury, Lewes, East Sussex, *SAC* **117**, 85–102.

Down, A. & **Welch, M.** 1990. *Chichester Excavations VII: Apple Down and The Mardens.* Chichester: Chichester Council. **Drewett, P.** 1976. The excavation of four round barrows of the second millennium BC at West Hearth, Harting, 1973–75, *SAC* **114**, 126–50.

Ellison, **A.** 1978. The Bronze Age of Sussex, in P. Drewett, (ed.), *Archaeology in Sussex to AD 1500*. CBA Research Report No. **29**, 30–37.

Evison, V. I. 1987. *Dover: Buckland Anglo-Saxon Cemetery.* English Heritage Archaeological Rep. **3**.

Gale, R. 1997. Charcoal, in A. P. Fitzpatrick, Archaeological Excavations on the Route of the A27 Westhampnett Bypass, West Sussex, 1992, vol. 2. Wessex Archaeology Report No. 12, 77–82.

Gardiner, J. P. 1988. The Composition and Distribution of Neolithic Surface Flint Assemblages in Central Southern England. Unpublished Phd thesis, University of Reading. **Garner, M. F.** 1993. Middle Saxon evidence at Cook Street, Southampton (SOU 254), *Proc. Hampshire Field Club and Archaeological Soc.* **49**, 77–127.

— — 2001. Excavation of a Middle Saxon cemetery at Cook Street, Southampton, *Proc. Hampshire Field Club and Archaeological Soc.* **56**, 170–91.

Gejvall, N.G. 1981. Determination of burnt bones from Prehistoric graves, *OSSA LETTERS* **2**, 1–13.

Geophysical Surveys of Bradford 1997. Unpub. client report on the geophysical survey, Falmer to Balsdean pipeline. Survey No. **97/61**.

Grinsell, L. V. 1934. Sussex barrows, *SAC* **75**, 216–75. — — 1936. *The Ancient Burial-Mounds of England*. London: Methuen.

— — 1940. Sussex Barrows: supplementary paper *SAC* **81**, 210–14.

Harman, M. 1990. The human remains, in A. Down & M. Welch, *Chichester Excavations VII: Apple Down and The Mardens*. Chichester: Chichester Council, 183–94.

Henderson, J. 1987. Factors determining the state of preservation of human remains, in A. Boddington, A. N. Garland & R. C. Janaway (eds), *Death, Decay and Reconstruction*. Manchester: Manchester University Press, 43–54.

Hillson, S. W. 1979. Diet and dental disease, *World Archaeology* **II**(2), 147–62.

Hinton, D. A. 1993. Non-ferrous metal objects, in M. F. Garner, Middle Saxon evidence at Cook Street, Southampton (SOU 254), *Proc. Hampshire Field Club and Archaeological Soc.* **49**, 77–127.

Hogarth, A. C. 1973. Structural features in Anglo-Saxon graves, *Archaeological Journal* **130**, 104–19.

Holden, E. W. 1972. A Bronze Age cemetery-barrow on Itford Hill, Beddingham, SAC **110**, 70–117.

Holden, J. L., Phakley, P. P. & Clement, J. G. 1995a. Scanning electron microscope observations of incinerated human femoral bone: a case study, *Forensic Science International* 74, 17–28.

— — 1995b. Scanning electron microscope observations of heat-treated human bone, *Forensic Science International* **74**, 29–45.

Longworth, I. H. 1984. Collared Urns of the Bronze Age in Great Britain and Ireland. Cambridge: Cambridge University Press.

Lucy, S. 2000. *The Anglo-Saxon Way of Death.* Stroud: Sutton Publishing.

Mabey, R. 1996. *Flora Britannica*. London: Sinclair-Stevenson. Marlow, M. 1992. The population, in S. J. Sherlock & M. G. Welch, *An Anglo-Saxon Cemetery at Norton, Cleveland*. CBA

Research Report **82**, 107–18. **McKinley**, J. I. 1993a. Bone fragment size and weights of

bone from modern British cremations and its implications for the interpretation of archaeological cremations, *International Jnl Osteoarchaeology* **3**, 283–7.

— — 1993b. (unpublished) A Bronze Age Cremation Burial from Guiting Power III, Gloucestershire (for Guiting Power Amenities Trust).

— — 1994a. The Anglo-Saxon Cemetery at Spong Hill, North Elmham Part VIII: the Cremations. East Anglian Archaeology No. **69**.

— — 1994b. Bone fragment size in British cremation burials and its implications for pyre technology and ritual. *Jnl Archaeological Sciences* **21**, 339–42.

- 1997a. Bronze Age 'barrows' and funerary rites and

rituals of cremation, PPS 63, 129–45.

— — 1997b. The cremated human bone from burial and cremation-related contexts, in A. P. Fitzpatrick, *Archaeological Excavations on the Route of the A27 Westhampnett Bypass, West Sussex, 1992*, vol. 2. Wessex Archaeology Report No. **12**. 55–72.

— — 1998. Archaeological manifestations of cremation, *The Archaeologist* **33**, 18–20.

— 2000a. Human bone and funerary deposits, in K.
 E. Walker & D. E. Farwell, *Twyford Down, Hampshire.* Archaeological investigations on the M3 motorway from Bar End to Compton, 1990–1993. Hampshire Field Club Monograph 9.
 — 2000b. Phoenix rising; aspects of cremation in Roman Britain, in M. Millett, J. Pearce & M. Strück (eds.), Putting Roman Burial Practice in Context. Oxford: Oxbow Books, 38–44.
 — 2003. The Early Saxon cemetery at Park Lane, Croydon, Surrey Archaeological Collections 90, 1–116.

McKinley, J. I. & Roberts, C. 1993. Excavation and postexcavation treatments of cremated and inhumed human remains, *Institute of Field Archaeologists Technical Paper* **13**.

McMinn, R. M. H. & Hutchings, R. T. 1985. A Colour Atlas of Human Anatomy. London: Wolfe Medical Publications. Mook, W. G. 1986. Business meeting: recommendations/

resolutions adopted by the twelfth International Radiocarbon Conference, *Radiocarbon* **28**, 799.

O'Conner, T. P. 1976. The excavation of a round barrow and cross-ridge dyke at Alfriston, East Sussex, 1975, *SAC* **114**, 151–63.

— — 1980. Human remains, p. 239 in P. M. Stevens, Ocklynge Hill Anglo-Saxon cemetery, Eastbourne, SAC 118, 231–44. Parker Pearson, M. 1999. The Archaeology of Death and Burial. Stroud: Sutton.

Petersen, F. F. 1981. *The Excavation of a Bronze Age Cemetery on Knighton Heath, Dorset.* BAR British Series **98**.

Powers, R. & Brothwell, D. R. 1967. Human skeletal material, in P. M. Christie, A barrow-cemetery of the second millennium BC in Wiltshire, England, *PPS* **33** (12), 359–62.

Ratcliffe-Densham, H. B. A. & M. M. 1961. An anomalous earthwork of the Late Bronze Age, on Cock Hill, Sussex, *SAC* **99**, 78–101.

Roberts, C. & **Manchester, K.** 1997. *The Archaeology of disease*. New York (NY): Sutton.

Robledo, B., Trancho, G. J. & Brothwell, D. 1995. Cribra Orbitalia: health indicator in the late Roman population of Cannington (Sommerset [*sic.*], Great Britain), *Jnl of Palaeopathology* **7**(3), 185–93.

Rogers, J., Waldron, T., Dieppe, P. & **Watt, I.** 1987. Arthropathies in palaeopathology: the basis of classification according to most probable cause, *Jnl Archaeological Science* **14**, 179–93.

Rogers, J. & **Waldron**, T. 1995. *A Field Guide to Joint Disease in Archaeology* Chichester: Wiley.

Samson, R. 1999. The church lends a hand, *The Loved Body's Corruption*. Glasgow: Cruithne Press, 120–44.

Shephard, J. F. 1979. The social identity of the individual in isolated barrows and barrow cemeteries in Anglo-Saxon England, in B. C. Burnham & J. Kingsbury (eds), *Space, Hierarchy and Society*. BAR International Series **59**, 47–79.

Smith, I. F. & Simpson, D. D. A. 1966. Excavation of a round barrow on Overton Hill, North Wiltshire, England, *PPS* **32**, 122–55.

Toynbee, J. M. C. 1996. *Death and Burial in the Roman World.* Baltimore (MD): John Hopkins University Press. **Trotter, M.** & **Gleser, G. C.** 1952. Estimation of stature from long bones of American whites and Negroes, *American Jnl Physical Anthropology* **10**(4), 463–514.

— — 1958. A re-evaluation of estimation of stature bases on measurements of stature taken during life and of long bones after death, *American Journal Physical Anthropology* **16**(1), 79–123.

Walker, K. E. & Farwell, D. E. 2000. Twyford Down, Hampshire. Archaeological Investigations on the M3 Motorway from Bar End to Compton, 1990–1993. Hampshire Field Club Monograph 9.

Welch, M. G. 1983. Early Anglo-Saxon Sussex. BAR British

Series 112 (i and ii).

Wells, C. 1977. Diseases of the maxillary sinus in antiquity, *Medical and Biological Illustration* **27**, 173–8.

Wessex Archaeology 1997. Falmer to Balsdean pipeline, Brighton, East Sussex: Archaeological desk-based assessment, Unpub. Client Report 43712a.

White, D. A. 1982. *The Bronze Age Cremation Cemeteries at Simons Ground, Dorset*. Dorset Natural History and Archaeological Society Monograph **3**.

Yeates, C. W. 1960. Ladies Mile, Patcham 1956, in G. A. Holleyman & C. W. Yeats, Excavations in the Ditchling Road area north of Brighton 1950–1957, *SAC* **98**, 136–43.