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EXCAVATIONS AT BALKSBURY CAMP, ANDOVER 1995–97

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ABSTRACT

Further excavations at Balksbury Camp have resulted in the acquisition of new data concerning the construction and initial use of the enclosure. These include a series of radiocarbon dates which show that the site was probably built in the 8th–9th centuries BC and that the enclosure circuit was enhanced and maintained for approximately 200 years. During this period there was very little or no settlement within the enclosure; instead activities taking place at the site resulted in the rapid accumulation of a 'midden' behind the enclosure bank.

INTRODUCTION

The site

The enclosure known as Balksbury Camp is situated to the south of Andover (Fig. 1) on a low chalk spur above the junction of the rivers Anton and Anna (Pillhill Brook). The site is centred on OS Grid Reference SU 352446 and encloses *c.* 18 ha. of land which rises to a height of *c.* 91m aOD in its northern extent. The enclosure is univallate in form with an earthen bank inside a single ditch. Only one entrance has been recorded, in the south-eastern corner of the enclosure.

Over most of the site a thin argillaceous topsoil covers Cretaceous Upper Chalk which is dissected in places by periglacial features. Parts of the chalk spur are capped with a thin layer of 'clay-with-flints'. Prior to the recent investigations the site was predominantly scrub and waste ground with some patches of woodland, especially along the line of a terrace representing the eastern extent of the enclosure circuit.

The area of the enclosure to the north of the A303 Andover Bypass had been identified for residential development within the local plan for a number of years, and excavations were carried out in both 1973 and 1981 in response to the potential threat of construction. Approximately 0.60 ha. of the enclosure survives to the south of the A303.

Previous investigations (Fig. 2)

The site has been the subject of extensive archaeological investigations since the earlier part of this century. The broad results of those earlier investigations are summarised here, for further details refer to the original publications (Hawkes 1940, Thompson 1958, Wainwright 1969, Wainwright and Davies 1995).

In 1939 two sections were excavated across the bank and ditch along the south side of the enclosure (Hawkes 1940). The principal aims were to establish if an entrance existed here as suggested by an earlier source (Williams-Freeman 1915) and to relate the development of this site to that of the neighbouring hillfort at Bury Hill (Fig. 1). Hawkes recorded a single phase ditch with poorly-preserved bank deposits on the inner edge. A very dark deposit described as 'occupation remains' was recorded in both trenches, lying against the rear of and below the bank.

In 1958 seven houses were constructed in the north-east of the enclosure, just behind the line of the bank. A 146m long section of chalk bank was recorded along the line of the front gardens of the new properties (Thompson 1958). Animal bones and pottery were also recovered from a buried soil below the bank.

A number of trenches were excavated in 1967 in advance of the construction of the A303

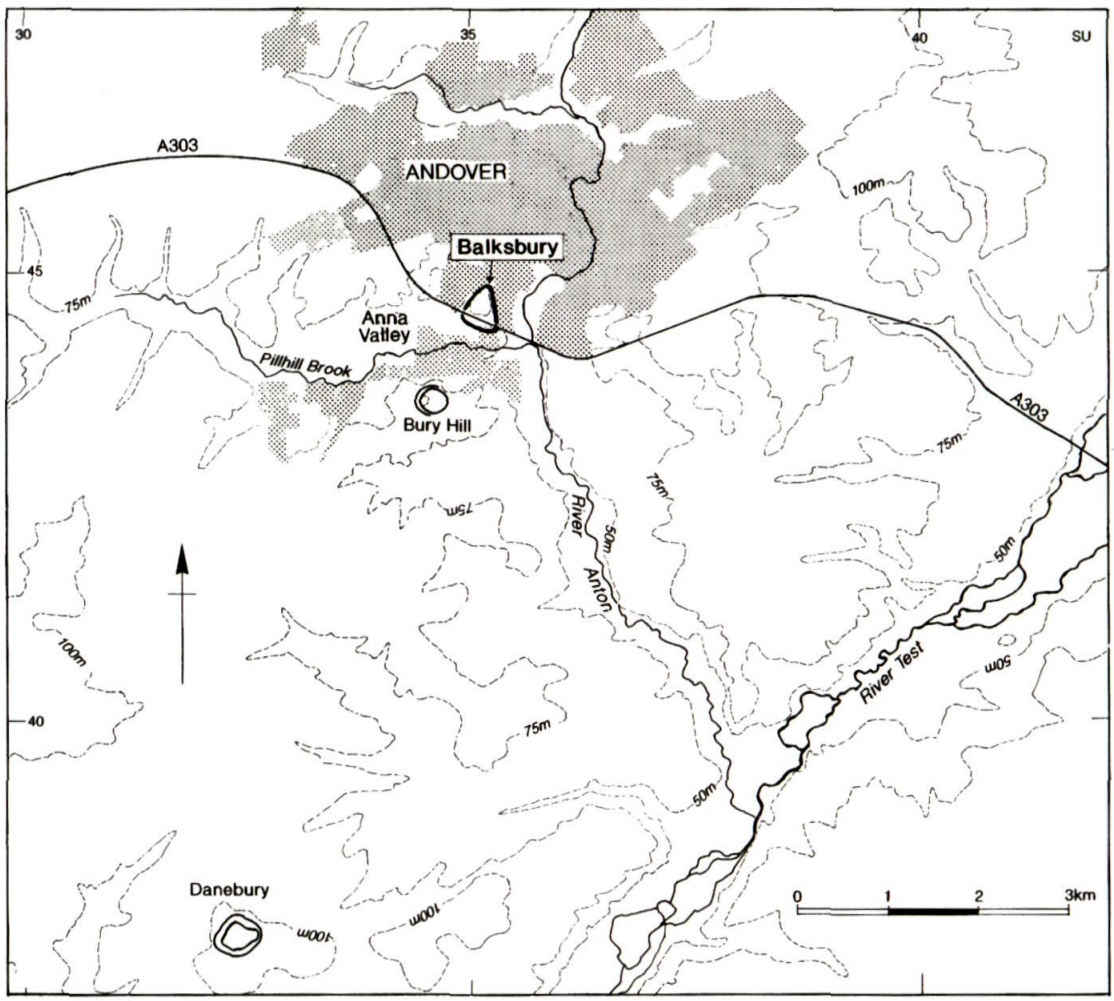


Fig. 1 Site location

Andover Bypass, including nine sections through the bank and ditch sequence (Wainwright 1969). Within the enclosure numerous features were recorded, predominantly of Iron Age date. Most of these were located just behind the bank. Some evidence of pre-enclosure activity was also recorded, in particular a tightly clustered group of four Beaker period hearths.

A buried soil was found to underlie the bank construction although no finds were recorded from this material (*ibid*, 27). The excavator proposed a three-phase development of the enclosure circuit, commencing in the Early Iron Age. This dating was derived from the presence of Late Bronze Age/Early Iron Age pottery recovered from below the phase II bank (*ibid*, 36). Soil development was noted between phases II and III of the bank construction, suggesting a period of apparent neglect in the maintenance of the enclosure circuit (*ibid*, 11).

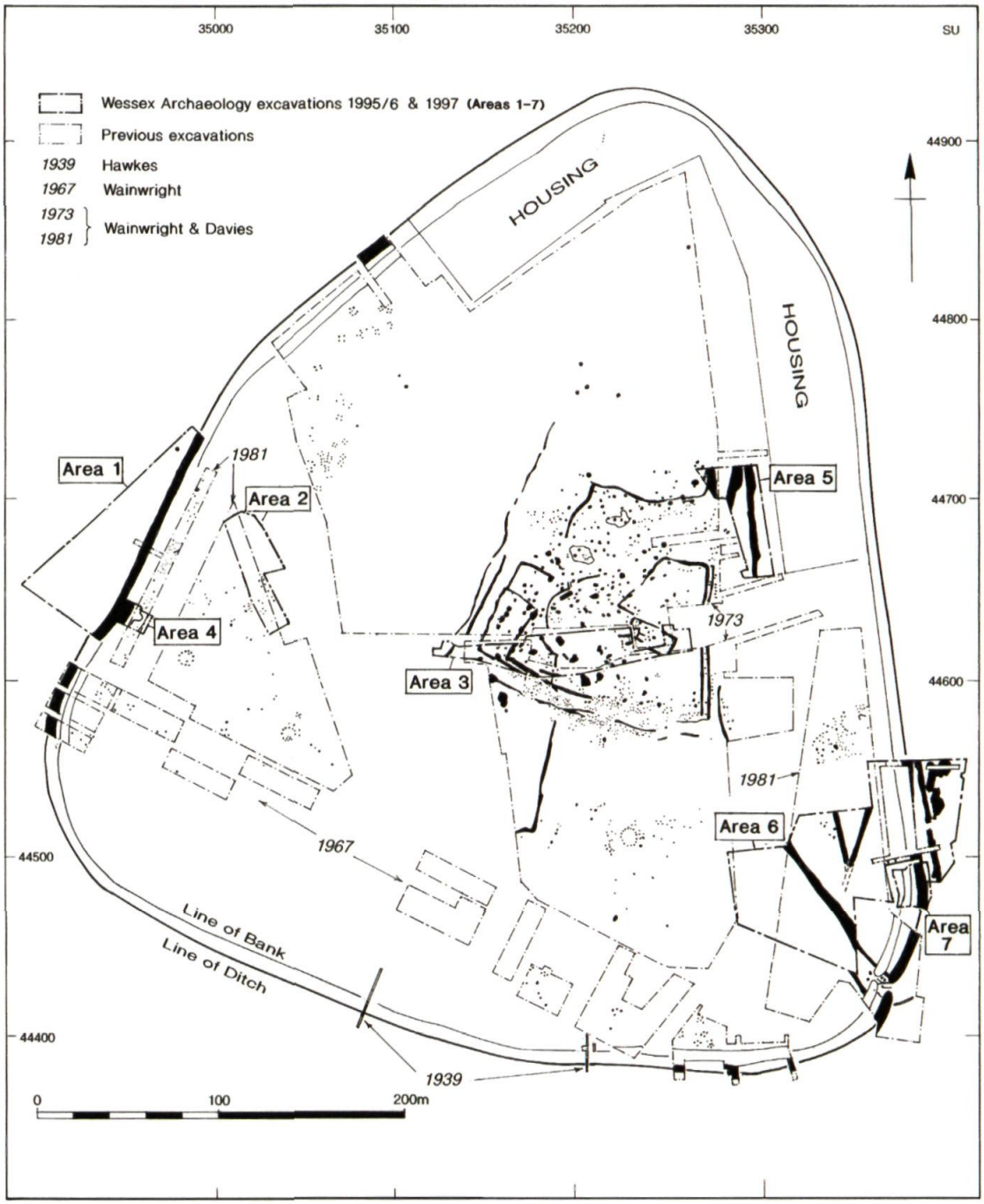


Fig. 2 Feature location and all areas of previous investigation

Once again a very dark deposit was recorded against the inner edge of the bank and this was found to contain substantial quantities of Iron Age pottery, animal bones and other material. A single crouched inhumation burial was recorded within this deposit.

In 1973 and 1981 further extensive excavations were carried out at the site as a response to the renewed threat of residential development (Wainwright and Davies 1995). The work involved the examination of *c.* 12 ha. of the interior and also a small area outside the enclosure in the south-east.

Features recorded included internal enclosures, pits, circular post-built structures, 'four-post' and 'five-post' structures and inhumation burials, all of Iron Age and Roman date. There was also a late Roman masonry building with an associated corndryer. The north-western, western and southern areas of the enclosure contained post-built structures indicating settlement activity limited to the Late Bronze Age/Early Iron Age whereas the central area contained a concentration of features ranging in date from Late Bronze Age/Early Iron Age through to the late Roman period. A crouched inhumation burial of Beaker period date was also discovered just within the enclosure.

An entrance was located in the south-eastern corner of the enclosure and was excavated in 1981. Three distinct phases of reconstruction were identified, paralleling the tripartite sequence of bank construction.

The 1995–96 excavations

The long-standing allocation for residential development was finally taken up and Wessex Archaeology was commissioned by Westbury Homes (Holdings) Limited to carry out further investigations prior to construction. These works took place between December 1995 and February 1996 in six areas both within and outside the enclosure (Fig. 1). All of this work was carried out under the terms of a Scheduled Monument Consent that had been issued some years previously. The selected areas within the enclosure, totalling a further *c.* 5.5 ha., were principally those which had been unavailable for investigation during previous campaigns, whilst the work outside the enclosure was undertaken in order to examine the immediate setting of the monument.

The site work inside the enclosure was concerned with recording the extent of archaeological deposits rather than with their excavation, in order to complement archaeological findings from the 1973 and 1981 excavations in these areas. Each was subject to the machine-stripping of topsoil and subsoil material until either archaeological deposits or the basal chalk were revealed. The areas were then cleaned and recorded by hand.

Three sections were excavated through the enclosure circuit in order to further examine the sequence of deposits and, in particular, to recover information relating to the environmental history of the site. A very limited piece of fieldwork was carried out in April 1996 when two inhumation burials were discovered during groundworks immediately in advance of construction.

The 1997 excavations

The bank and ditch sequence in the south-eastern part of the site had been rapidly examined in 1996 and the bank had been found to be relatively well-preserved. This area was the subject of a renewed application for Scheduled Monument Consent and a written scheme of further detailed investigation was approved by English Heritage. The excavation was carried out by Wessex Archaeology in March–April 1997 (Fig. 1, Area 7).

RESULTS

1995–96 excavations

The results of the work are summarised below on an area by area basis. Areas 4 and 6 are dealt with last as these areas consist of more detailed investigations into the bank and ditch sequence.

The overall nature and distribution of recorded archaeological features and deposits closely paralleled the results of the earlier excavations. Some limited activity was identified outside the enclosure circuit to the west and east (Areas 1 and 6 respectively). Pre-enclosure deposits/features were

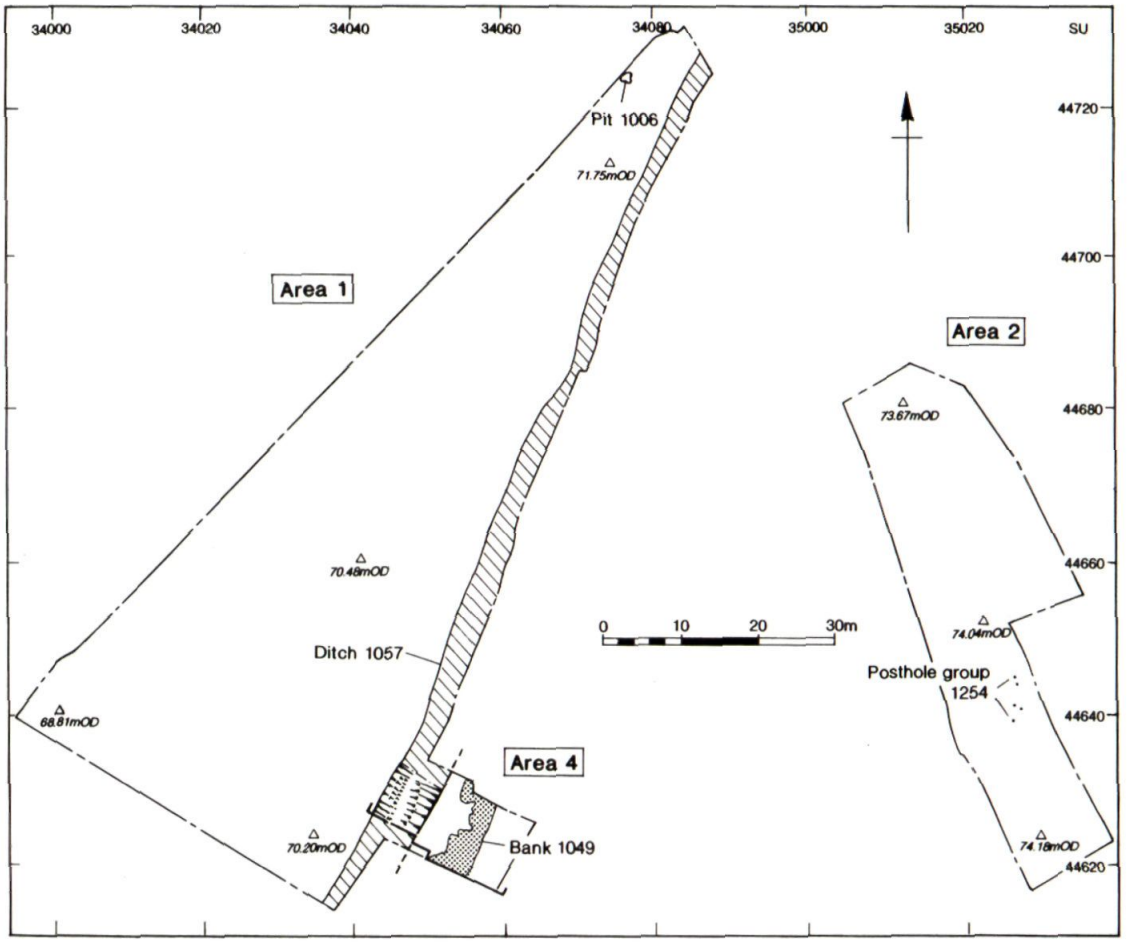


Fig. 3 Areas 1 and 2 – all features

only recorded below the bank deposits in Areas 4, 6 and 7.

Area 1 (Fig. 3)

This was located outside the western perimeter of the enclosure and was found to contain extensive areas of very modern disturbance, probably associated with the construction of the A303 Andover Bypass. There were also numerous tree-throw holes and a number of shallow ploughmarks aligned north-south.

With the exception of the outer edge of the main enclosure ditch (1057) which formed the eastern boundary of the excavation area, only one archaeological feature was recorded. A small sub-circular pit (1006) in the northern tip of Area 1 was 0.80m in diameter and 0.29m deep. The only artefact recovered from this pit was an undiagnostic piece of worked flint found in the lowest fill.

Area 2 (Fig. 3)

This area slightly overlapped an area investigated in 1981. A group of five postholes (1254) was clustered within a *c.* 6m × 6m area, and were the only 'new' features to be recorded. All five measured

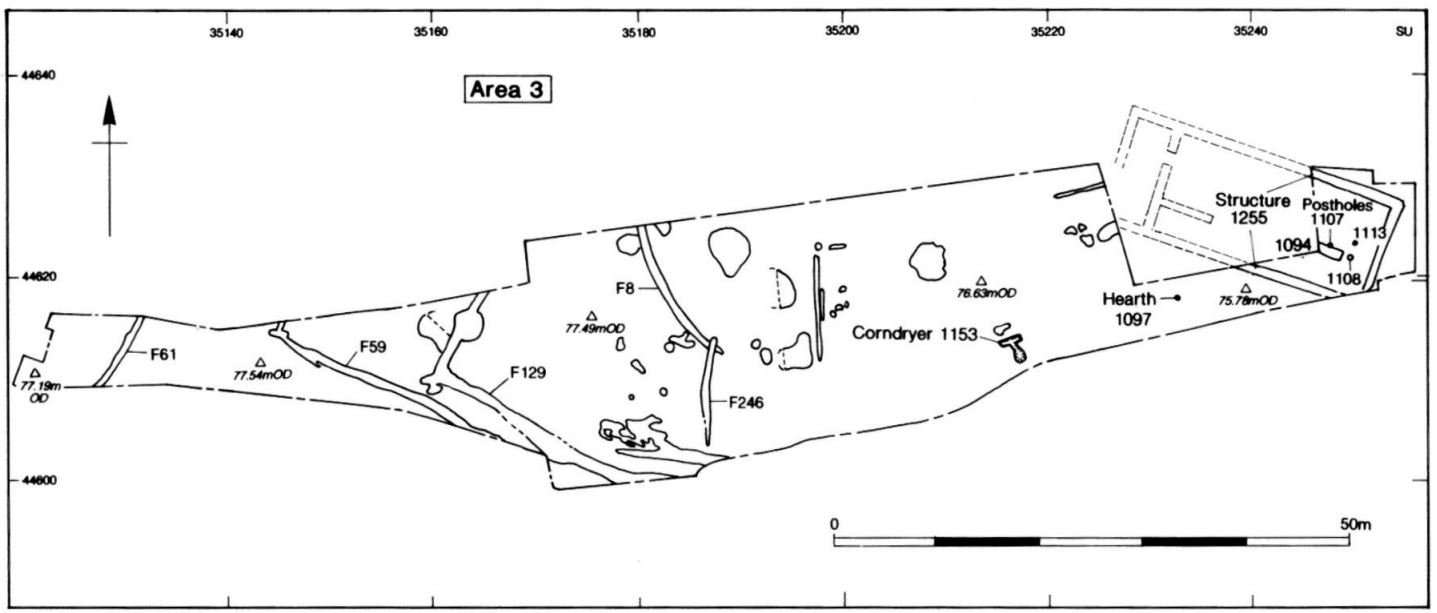


Fig. 4 Area 3 – all features

c. 0.25m in diameter, but no structural configuration was immediately apparent from their distribution and none was excavated. These features probably represent a continuation of the general spread of postholes in this vicinity which are associated with Late Bronze Age/Early Iron Age structures (Wainwright and Davies 1995, fig 11).

Area 3 (Fig. 4)

This area slightly overlapped with parts of the 1973 excavations in the central area of the enclosure, and few of the features uncovered during the current work were excavated as they almost certainly duplicated earlier findings (prefixed with the letter F on Fig. 4). These previously investigated features included ditches, gullies, pits and postholes all predominantly of Late Iron Age – late Roman date, and also the remains of a rectangular late Roman masonry structure (*ibid*, figs. 26; 30–32).

A small hearth (1097) was recorded in the eastern part of Area 3. It remained only just discernible as a shallow oval feature 0.04m deep and 0.50m × 0.26m in plan. It was filled with a charcoal-rich deposit which contained burnt chalk and fragments of fired clay, but remains undated. Two postholes at the eastern extent of the area (1108; 1113) both contained burnt flint and Late Bronze Age/Early Iron Age pottery, although 1108 also contained one sherd of Roman date.

Also recorded here was most of the south-eastern end of a late Roman rectangular structure (1225), previously recorded in 1973. This part of the structure was not nearly as well-preserved as the northern part, and was discernible only as a regular arrangement of shallow gullies (0.80m wide and 0.2m deep) filled with compacted flint and chalk. An internal division was indicated by the presence of a short stretch of wall footing (1094) which probably represents the continuation of a similar feature recorded at the other end (*ibid*, fig 32). This internal wall showed two distinctive phases of construction which can be paralleled in the results of the previous investigation. The rectangular building was *c.* 26.5m long and 11.25m wide.

A masonry-built corndryer (1153) was recorded to the west of structure 1255 (Fig. 5). This was very similar in size and construction technique to a late Roman example found *c.* 40m to the south

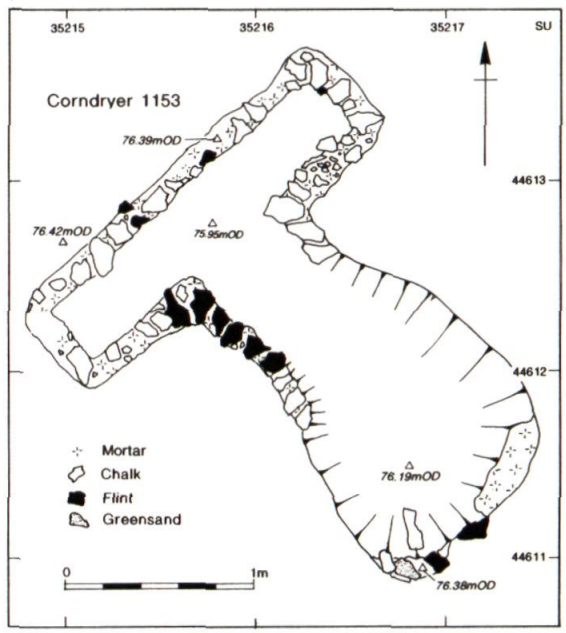


Fig. 5 Corndryer 1153

in the 1973 excavations (*ibid*, figs. 35, 71). Structure 1153 was a well-constructed, 'T-shaped', sunken feature aligned north-west to south-east with the head of the 'T' at the north-west end. It was 2.5m long, 2.0m wide and 0.52m deep and was constructed with single-skin sides of flint and chalk blocks. The predominant construction technique comprised irregularly-laid courses of sub-angular flints at the base with three courses of regularly-laid chalk blocks at the top set in a sandy mortar. The bowl-shaped stokehole was unlined and was 1.40m long, 1.20m wide and 0.35m deep. A *c.* 0.01m thick layer of ash and charcoal (1150) was found in the base of the stokehole. Scorching of the flint and chalk masonry was noticeable, especially in closest proximity to the stokehole.

Area 5 (Fig. 6)

A number of archaeological features were recorded in addition to modern disturbances, tree-throw holes and ploughmarks. These included negative lynchets as well as a small number of discrete features, including two inhumation burials which were found by groundwork contractors to the west of the excavated area.

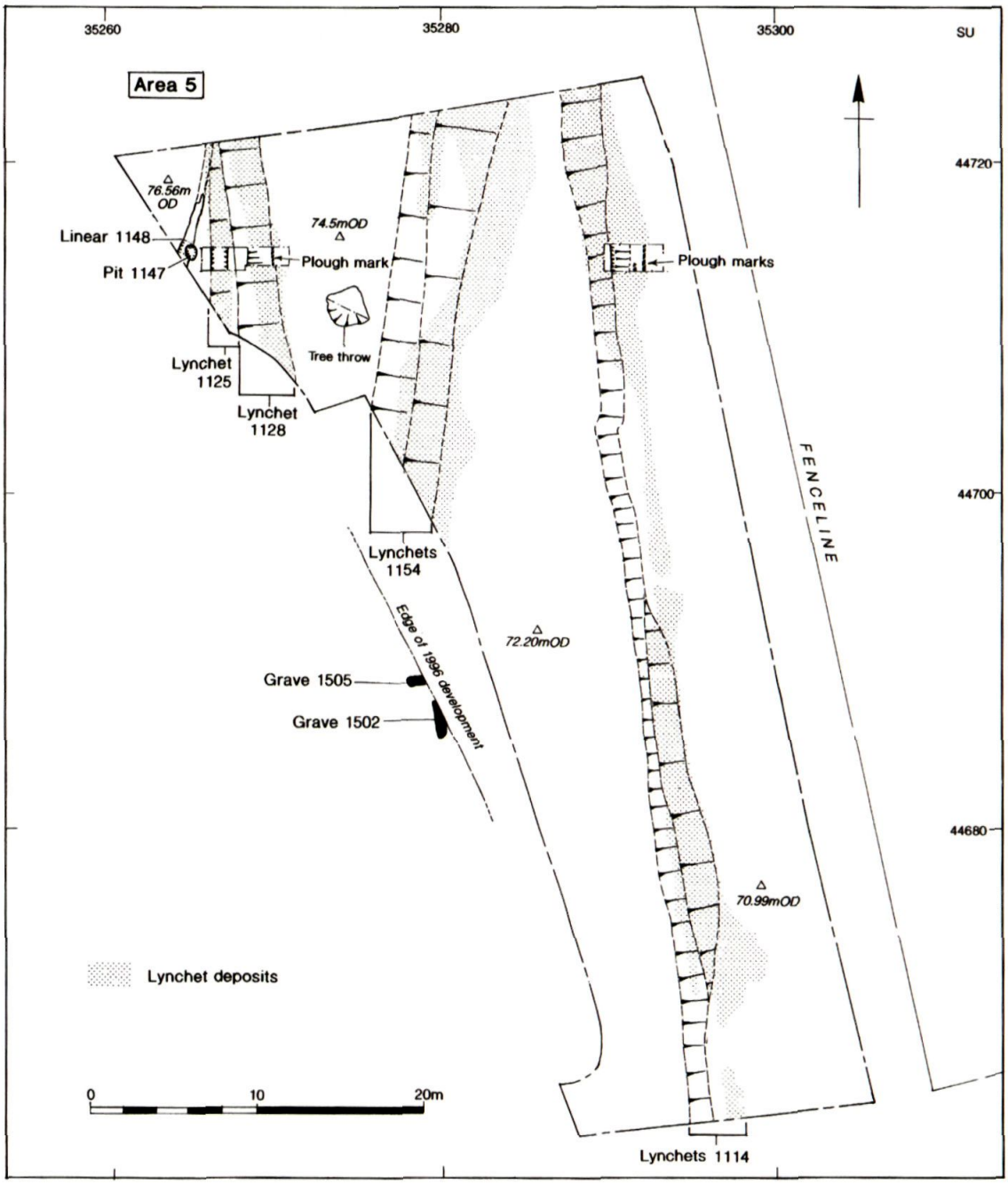


Fig. 6 Area 5 – all features

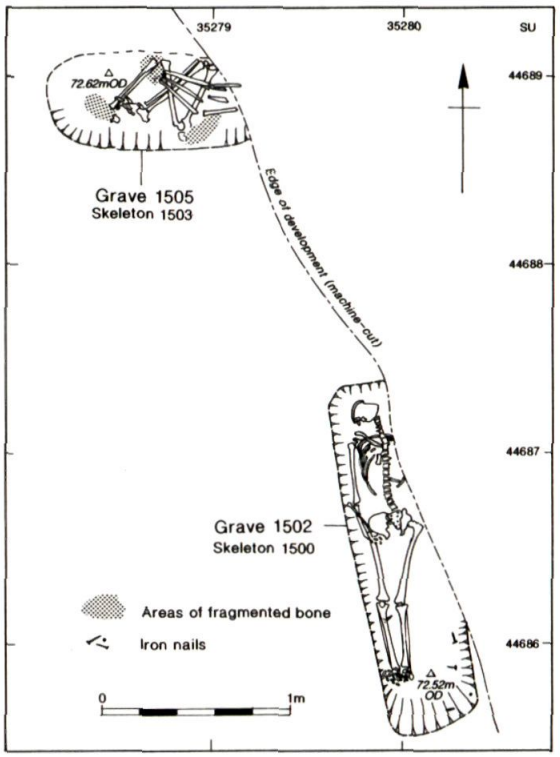


Fig. 7 Burials 1500 and 1503

In the north-west corner a shallow linear feature (1148) was aligned north-north-east to south-south-west and was 1.0m wide and 0.15m deep. It was heavily truncated by later activity and could not be traced to the north. The single fill contained animal bone along with burnt and worked flint (two flakes) indicating a potential prehistoric date. It was cut by a small sub-circular pit (1147) which contained a single sherd of possible Late Bronze Age/Early Iron Age pottery.

Four negative lynchets were recorded (Groups 1125, 1128, 1154, 1114), all aligned generally north-south and delineating the easternmost extent of discernible terraces in the prevailing chalk slope falling gently to the east. These features thus followed the contours around the eastern side of the enclosure. A number of 'strip lynchets' were previously recorded as earthwork features in the north-east and north-west of the enclosure (Hawkes 1940, fig 1).

No datable artefacts were recovered from excavated sections across the lynchets. The features ranged in depth from 0.17 to 0.52m and in width from 0.63 to 2.70m. The deeper lynchets were those downslope to the east (Groups 1154 and 1114) which were 0.56m and 0.52m deep respectively. Group 1154 comprised two overlapping lynchets as did Group 1114. Ploughmarks were recorded below this latter group, all were *c.* 0.06m wide, were aligned north-south and were relatively closely spaced.

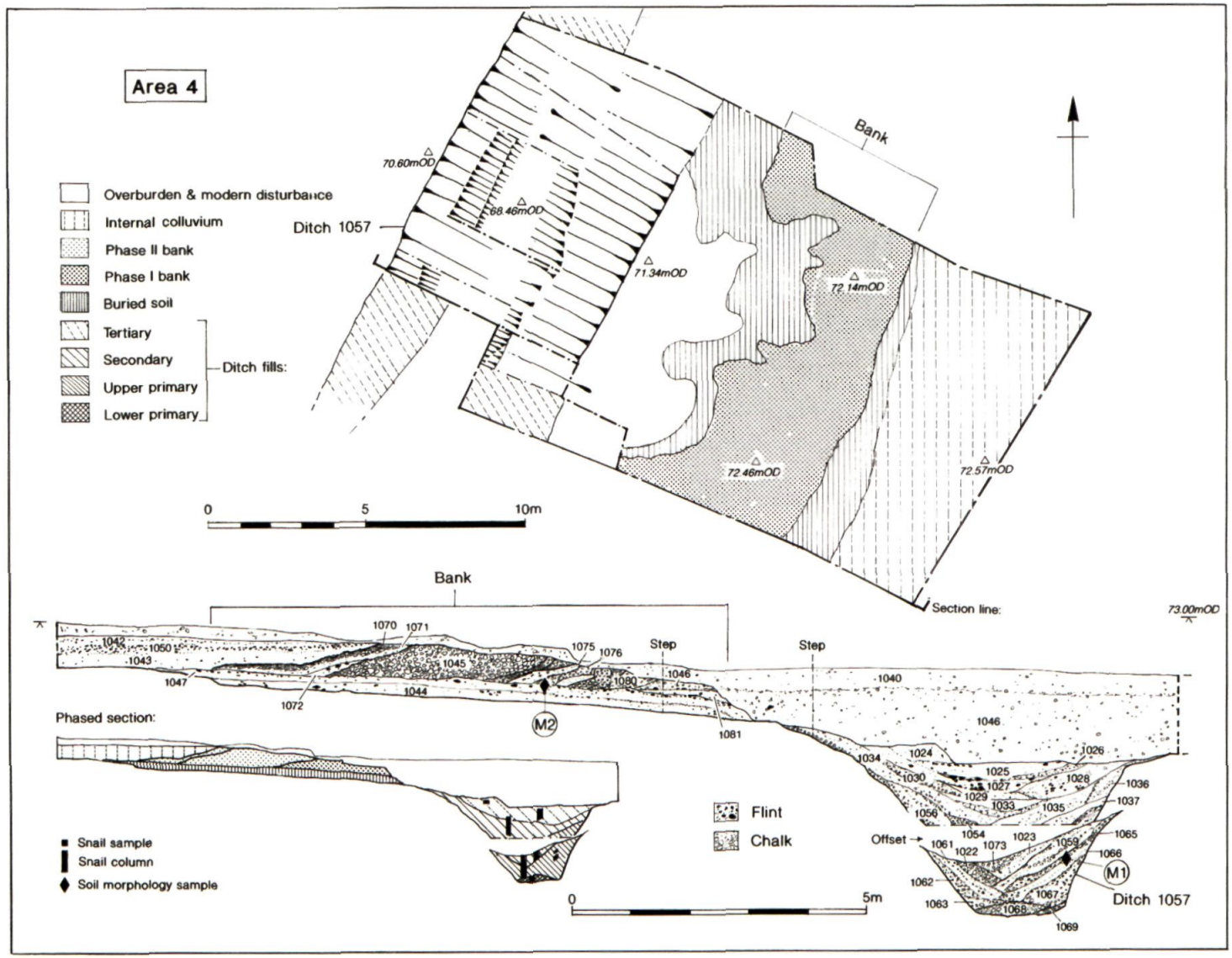
During construction groundworks in April 1996, two inhumation burials were discovered *c.* 4m beyond the western edge of Area 5. Both had been truncated to the east by the mechanical excavator before any recording and hand-excavation took place (Fig. 7). Grave 1502 contained burial 1500, a supine adult inhumation aligned north-south with the head to the north. Five iron coffin nails were recovered from the south end of the burial. Grave 1505 contained burial 1503, a flexed adult inhumation aligned east-west and lying on its right hand side with the head to the east. Only the lower abdomen and leg bones were present.

Four late Roman inhumation burials and one possible post-Roman inhumation burial have previously been recorded in the central area of the enclosure (Wainwright and Davies 1995, 28–29) The recently recorded burials, with the associated iron nails, seem to indicate a comparable late Roman date.

Area 4 (Fig. 8)

This was an eastwards extension of Area 1 which was positioned in order to examine the ditch and bank sequence on the western side of the enclosure (Fig. 3). Although this part of the enclosure circuit has previously been the subject of a number of investigations (cf. Wainwright 1969, Trenches BI–BIII; Wainwright and Davies 1995, section 'SSS–B', *m-fiche* 4 – fig 5), sampling for palaeo-environmental materials had been limited to the buried soils sealed below the bank (Allen 1995; Macphail 1995). Thus the principal aim of this current investigation was to recover further environmental information to complement that from the previous work.

Area 4 comprised a 10m wide section through


Area 4
Overburden & modern disturbance
Internal colluvium
Phase II bank
Phase I bank
Buried soil
Tertiary
Secondary
Upper primary
Lower primary
Ditch fills:
Ditch 1057
70.60mOD
68.46mOD
71.34mOD
72.14mOD
72.46mOD
72.57mOD
Bank
0
5
10m
Section line:
73.00mOD
Bank
Step
Step
Phased section:
M2
M1
Ditch 1057
Flint
Chalk
Offset
Snail sample
Snail column
Soil morphology sample
0
5m

the bank sequence and a 6.75m long section through the external ditch. The results were generally very similar to those obtained from Trench BI in 1967 (Wainwright 1969, fig 8). The bank deposits and the upper tertiary fills of the ditch had been truncated by later land-use which had removed any stratigraphic relationship between these features.

Buried soil. Three deposits were recorded below the bank and are thought to represent buried soils. Layers 1044 and 1047 together comprised a 0.40m thick deposit, with 1044 lying directly over the basal chalk. These layers were dark yellowish-brown silty clays and contained occasional small sub-angular fragments of flint. A third buried soil (1092, does not appear in section) was recorded physically below bank deposit 1046.

The bank. This was represented by a number of layers which were successively deposited from west to east resulting in an overall width of c. 9.20m. Two distinct phases of construction were recorded.

Phase I – the initial construction consisted of a revetment *c.* 2.0m wide and 0.40m high, made up of two relatively chalk-free deposits (1046; 1081). The upper of these two deposits (1046) contained pottery of Late Bronze Age/Early Iron Age date. These layers probably result from the initial clearing of soils from the area of the ditch. Stacked behind this initial revetment was a series of dump deposits (1080; 1049; 1078; 1076) which represent the later part of the phase I bank, resulting in an overall bank width of *c.* 4.0m. These were predominantly paler coloured silty clays which contained much chalk, and one deposit (1079) was completely of redeposited chalk. This bank material results from the further excavation of the ditch.

Lying against the back of the phase I bank was a 0.18m thick soil layer (1075). This deposit represents a period of stability and soil development preceding the construction of the phase II bank.

Phase II – this comprised a sequence of deposits of chalk-rich silty clays (1074; 1048; 1045) resulting in a bank *c.* 6.60m wide and 0.60m high. Deposit 1045 was the major component of this phase and it contained occasional flint nodules which were probably derived from the basal chalk during the corresponding excavation of the ditch. A few sherds of Roman pottery were recovered from layer 1048 and are considered to be intrusive.

Lying against the back of the phase II bank was a deposit of greyish silty clay (1072). This represents the erosion of the chalk layers which make up the phase II bank and was overlain by 1071, a soil horizon indicative of a further period of stability in the area and the possible cessation of any maintenance of the enclosure circuit. Both 1071 and 1072 contained pottery of Late Bronze Age/Early Iron Age date along with animal bones and pieces of worked and burnt flint. The shallow deposit 1070 directly over 1071 probably results from the continuing erosion of the bank material prior to the deposition of the 'internal colluvium'.

Internal colluvium. Behind the bank sequence was a series of deposits (1043; 1050; 1042) which had been recognised during previous work at the site. This sequence (in Area 4) contained substantial quantities of artefacts (mostly worked and burnt flint) and has been variously described as 'occupation remains' (Hawkes 1940, 341) or as a 'rubbish deposit' (Wainwright 1969, 32); it is referred to here as the 'internal colluvium'. As part of the current work, this sequence was closely examined and soil micromorphology samples were taken (see Macphail, this report).

The deposits which make up the 'internal colluvium' are very dark in colour, have a very weak, large, blocky structure and are predominantly fine and relatively stone-free with almost no chalk fragments. The material is certainly not colluvial in terms of mass movement of the whole, or even larger portions of, the soil profile (i.e. occasional moderate to high energy mass movement events, cf. Allen 1991a, 44–5). It is more likely the result of frequent low energy events (*ibid*, 43–4) involving the transportation and redeposition of the

Fig. 8 (*opposite*) Area 4 – plan and section

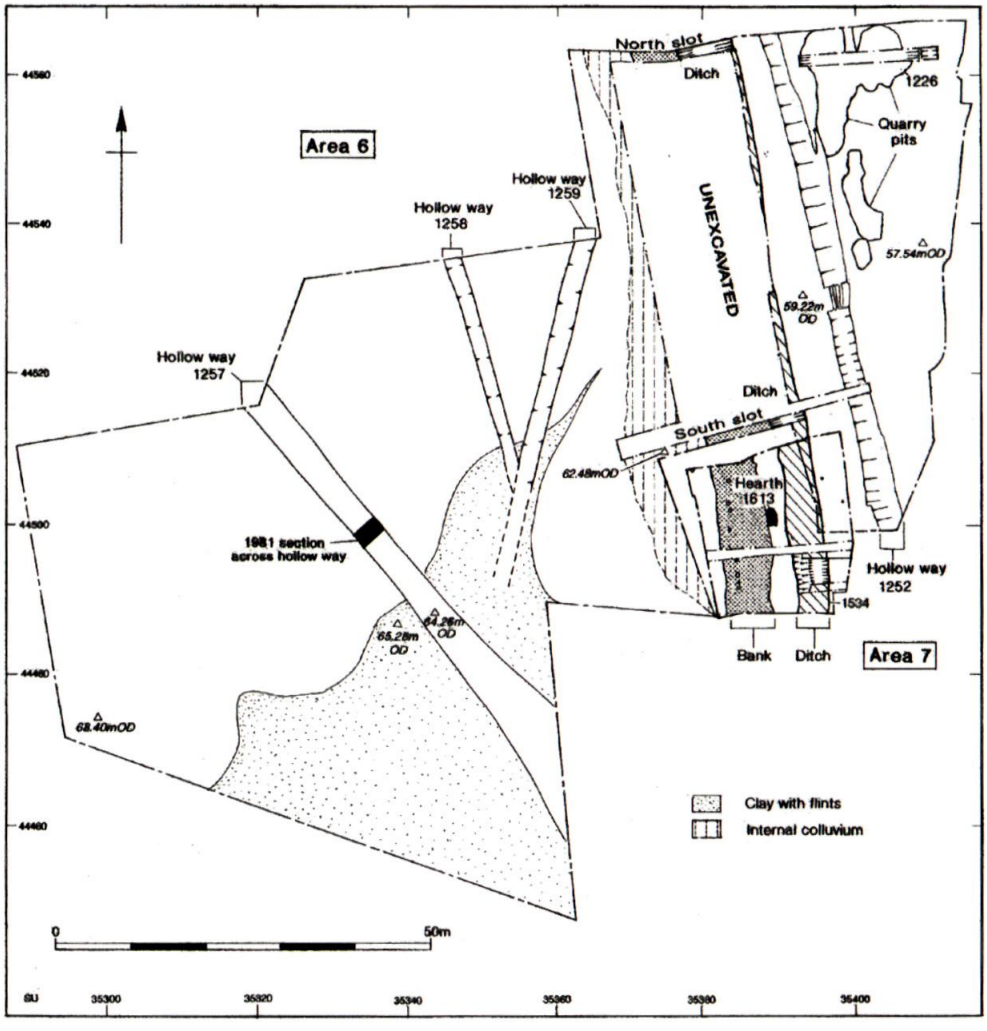


Fig. 9 Areas 6 and 7

finer and more organic elements (? topsoil). The overall morphology of the surface of the site is a dome, with the enclosing bank providing a revetment against which fine soil and mud can accumulate.

The substantial quantities of Late Bronze Age/ Early Iron Age artefacts which were deposited within the 'internal colluvium' (especially in Areas 6 and 7) are unlikely to have been eroded from features within the site (although the charcoal fragments and carbonised plant remains may have been), and most of these finds were probably discarded on the surface nearby. Indeed, examination of both the pottery and the animal bone assemblages has found that the artefacts recovered from the 'internal colluvium' are those which are least affected by weathering and other erosional processes. This supports the

view that the artefacts are close to their original place of deposition and that they were quickly buried by this material which was accumulating behind the bank

The ditch. The ditch (1057) was examined by means of a stepped section resulting in the full excavation of a 3m length. The ditch had a flat base and steep straight sides and was 1.40m wide at the base, *c.* 6m wide at the current surface and 3.10m deep (at maximum). The section indicated a single phase of construction and the presence of two distinct phases of bank construction was not reflected in the ditch section, indicating the total removal of any trace of earlier phase(s) of ditch construction. This situation was also the case in Trench B1 in 1967 (Wainwright 1969, fig 8), although the ditch section in Trench BIII clearly revealed evidence of at least two ditch phases.

The sequence of ditch fills within 1057 has been divided into primary, secondary and tertiary fills, and the primary sequence has been further divided into upper and lower.

The lower primary fills (1069; 1068) were deposits of coarse vacuous chalk rubble restricted to the centre of the ditch. The relatively limited extent of this fill type indicates regular cleaning of the ditch, at least in this part of the enclosure circuit. The upper primary fills (1037–39; 1058–67) comprised a series of banded silts with interleaved lenses of fine chalk and soil material. These were predominantly deposited against the western (outer) edge of the ditch. The later fills of this part of the sequence all contained pottery of Late Bronze Age/Early Iron Age date.

The secondary fills (1022–23; 1030–36; 1054; 1056; 1073) were mostly finer deposits of soil wash and chalk lenses along with occasional coarser deposits derived from the erosion of the bank and the sides of the ditch sides. They were deposited predominantly on the inner edge of the ditch. Again most of these deposits contained Late Bronze Age/Early Iron Age pottery.

The tertiary fills (1024–29) comprised dark yellowish-brown silty clay loams with frequent small fragments of chalk. They contained small amounts of burnt and worked flint and were probably mainly derived from erosion of bank material.

Area 6 (Fig. 9)

This encompassed land blocks both within and external to the enclosure, as well as two slots through the ditch and bank circuit on the eastern side of the enclosure. The two slots were *c.* 48m apart and were wholly machine-excavated. Each was 1.50m wide and was excavated down to basal clay-with-flints in the west, and to the tertiary ditch fills in the east. Both slots recorded broadly similar stratigraphic sequences although three phases of bank construction were recorded in the southern one and only two in the northern. This northern slot revealed extensive tree-throw damage in its eastern extent, and some modern disturbance at its western end.

Buried soil. A well-developed soil profile was recorded beneath the phase I bank in both slots. In the northern slot a single layer of dark silty clay *c.* 0.36–0.40m thick (1161) was recorded. However, in the southern slot a sequence of three deposits; a buried soil (1219; old land surface) sealed below two shallow colluvial deposits derived from upslope (i.e. from the west).

The bank. Phase I – this was 3.0–4.60m wide and 0.70m high and was made up of inverted stratigraphic units derived from the excavation of the ditch. The primary bank deposit (1200) was comprised of redeposited topsoil, overlaid by redeposited 'clay-with-flints' mixed with chalk (1199; 1167). The phase I and II banks were separated by a soil layer up to 0.17m thick (1166; 1198) which represents a relative period of stability or possibly a turf revetment of the inner edge of the bank.

Phase II – a series of deposits up to 0.80m high composed predominantly of chalk rubble (1165; 1197). Overall, for this phase, the bank was up to 7.0m wide. The rear of the bank was sealed by a deposit (1164; 1196) derived from erosion of the chalky bank material. This deposit was in turn overlain by colluvium derived from upslope (1162; 1204; 1179) which contained pottery of Late Bronze Age/Early Iron Age date.

Phase III – this was only recorded in the southern slot and was represented by a *c.* 0.60m wide, 0.40m high deposit of compact chalk rubble (1191).

Internal colluvium. This was *c.* 0.50m thick and was recorded behind the bank in the whole extent of Area 6, including both slots (1162; 1187). As with Area 4, the deposits here contained substantial quantities of artefacts. The full extent of the deposits to the west could not be ascertained, as they had been removed during previous excavations (Wainwright and Davies 1995, fig 5).

Other features. Within the enclosure were three distinct linear features (1257; 1258; 1259) which have been interpreted as 'hollow ways' or 'cart-tracks'. None of these features was excavated. Feature 1257 was 3.50m wide and was aligned north-west to south-east, cutting into the underlying clay-with-flints. In places a pair of parallel longitudinal ruts were visible at its outer edges, suggesting a cart-track. The location and orientation of the feature suggests it provided access for traffic coming into the enclosure from the south-eastern entrance.

This feature had been excavated in earlier excavations (*ibid*, F.3167, 98–102, fig 34) and was shown to be 0.60m deep. Previous palaeo-environmental and soil micromorphological analyses showed that it was originally a former stream channel with characteristic Late Devensian soil fills. A flint cobbled section of this feature was recorded just inside the entrance and was dated to the Roman period, at which time there was a reorganisation of the enclosure entrance.

Feature 1258 was only 1.40m wide; it was poorly-defined and was aligned north-north-west to south-south-east. Feature 1259 was 2.50m wide and was aligned north-north-east to south-south-west. To the south it converged with 1258. In places a pair of longitudinal parallel ruts were discernible defining the edges of the feature, again suggesting that it was a cart-track.

These three features were probably associated with the movement of vehicular and pedestrian traffic from and to the enclosure entrance in the south-east. Feature 1257 would have given access to the central area of the enclosure where there was a noticeable concentration of settlement activity during the Iron Age and Roman periods. Features 1258 and 1259 followed the prevailing contour lines in this area of the enclosure and would have given traffic access to the eastern side of the central area (if continued) or to settlement areas located around the enclosure just behind the bank.

The exterior. Outside this eastern side of the enclosure the land drops *c.* 5m steeply down to the east. This is caused by a natural terrace in the chalk adjacent to the River Anton, although this has been somewhat accentuated by the construction of a now disused railway and by terracing carried out for former buildings which are visible on aerial photographs (cf. Wainwright and Davies 1995, fig 6).

This external area contained few archaeological features; predominantly a hollow way and a number of quarry pits. Hollow way 1252 was aligned parallel to the enclosure ditch and was represented by a *c.* 4m wide shallow ditch. Parallel longitudinal bands of medium-sized (<60mm) flints rammed into the base of narrower hollows represent the lateral shift of wheel ruts from vehicular traffic along the general line of the hollow way over the period of use.

Pit group 1226 was an irregular area of disturbance (17m × 14m in extent) cutting into the underlying combe rock. It was made up of a number of intercutting sub-circular pits. No dating evidence was obtained from any of the excavated fills, but the pit group was cut by hollow way 1252. Two other large quarry pits with similar fills were recorded to the south of 1226, but were not excavated.

1997 Excavations

Area 7 (Figs 9, 10)

This was located in the south-eastern part of the enclosure circuit and included a small part of the previous Area 6. The main aim of this piece of fieldwork was to further examine the ditch and bank circuit in this area, particularly the details of the bank sequence. The recovery of environmental data and of material for radiocarbon dating were also priorities here.

The area measured *c.* 20m × 20m and encompassed both the ditch and the bank. The total length of the bank within this area was hand-excavated (with the exception of a narrow

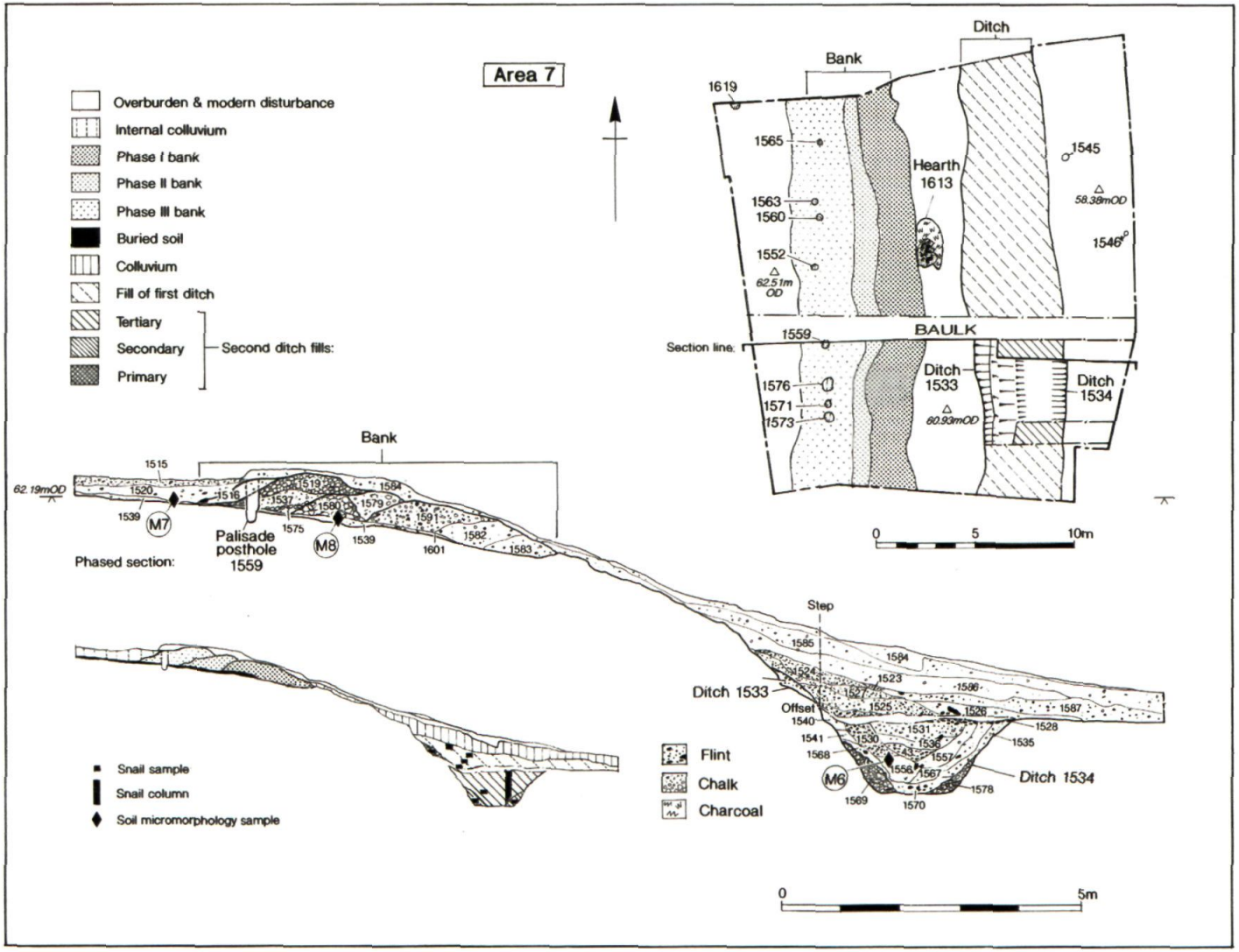


Fig. 10 Area 7 – plan and section

Table 1 Radiocarbon dates

Context	*Description*	*Sample*	*Identification*	*Lab no.*	*Radiocarbon Age*	$\delta^{13}C$(‰)	*Calibrated date*
1995-97 EXCAVATIONS							
1575	turf of phase II but under phase III bank	2062	Charcoal – *Prunus* sp.	AA-27526	2770±50 BP	-24.1	1040–820 cal BC
1601	LBA ?trample over BS under phase I bank	2061	Charcoal – *Prunus* sp.	AA-27527	2645±50 BP	-24.5	900–790 cal BC
1611	LBA hearth material under phase I bank	2091	Charcoal – *Corylus* sp.	AA-27529	2770±50 BP	-26.6	1040–820 cal BC
1611	LBA hearth material under phase I bank	2091	Charcoal – *Prunus* sp.	AA-27528	2745±50 BP	-25.5	1010–810 cal BC
PREVIOUS DATES (1973-1981 EXCAVATIONS) WITH NEW CHARCOAL IDS (Wainwright & Davies 1995; Jordan, Haddon-Reece & Bayliss 1994)							
layer 6	MIA pit 36		Charcoal –Pomoideae, *Fraxinus* sp., *Prunus* sp., *Acer* sp., *Quercus* sp., *Alnus* sp.,	HAR-444	2140±80 BP	-25.2	390 cal BC–cal AD 20
layer 4	MIA pit 182		no idents recorded	HAR-445	2000±80 BP	-24.1	200 cal BC–cal AD 140
layer 4	MIA pit 106		no idents recorded	HAR-446	2180±150 BP	-25.1	760 cal BC–cal AD 120
	base of phase I bank OR phase II bank*	BC1-10	antler	HAR-442	2740±170 BP	-22.9	1400–410 cal BC
3465	posthole 3464 (context 2326)		*Fraxinus* sp., *Populus* sp., *Fagus* sp., *Quercus* sp.	HAR-5127	2800±70 BP	-25.9	1160–820 cal BC
2326	Beaker burial 2286		human bone	HAR-5124	3530±80 BP	-23.5	2130–1680 cal BC
PREVIOUS DATES NOT TO BE QUOTED (contaminated/Lab error)							
layer 5/8	IA pit 500		?*Corylus*/*Alnus* sp.				
			Quercus sp., *Fraxinus* sp.	HAR-4431/ HAR-443 I / HAR-4432/ 443 II	1890±80 BP		
layer 5/8	floor of IA pit 500		Charcoal – *Corylus*/*Fragula alnus*	HAR-443	1310±100 BP	-25.3	cal AD 550–950

*phase II bank as listed in Wainwright & Davies 1995, table 36, p104, BUT base of phase I bank as listed in Jordan, Haddon-Reece & Bayliss 1994

All radiocarbon dates have been calibrated with the 20 year atmospheric calibration curve using CALIB 2.0 and are expressed at the 95% confidence level with the end points rounded outwards to 10 years following the form recommended by Mook (1986).

BS = buried soil

baulk), as was the underlying buried soil, and a 5m length of the ditch was similarly examined.

Hearth. A well-constructed hearth (1613) was found sealed below the pre-bank buried soil (1539). The hearth comprised a bowl-shaped pit measuring 1.85m × 0.89m and 0.16m deep. A layer of large, irregular, unworked flint nodules was closely packed into the bottom of the cut and formed the base of the hearth. Above the flint nodules was a 0.06m thick deposit of compact chalky material which showed some evidence of in situ burning. To the immediate north and east was a spread of charcoal-rich material (1611) which almost certainly derived from the use of this feature. Two radiocarbon dates were obtained from samples of this material which when combined give a date of 1000–830 cal BC (Tab 1, AA-27528; AA-27529).

Buried soil. A deposit of dark orange-brown clayey silt (1539) was found to be partially sealed beneath the bank. It was 0.10–0.14m thick and projected beyond the bank both westwards towards the interior of the enclosure and east towards the ditch. An irregular edge to this deposit on the 'inner' side of the bank might indicate the quarrying of this material for bank construction or possibly erosion during construction of the enclosure circuit.

Immediately to the south of the cross-baulk, a 0.04m thick deposit of dark charcoal-rich material (1601) was recorded. It contained pottery of Late Bronze Age/earliest Iron Age date (*c.* 1,100–900 BC). This deposit lay directly over the buried soil (1539) and was sealed by the phase I bank; it probably represents a trample zone of the old land surface. Both this deposit and the buried soil were sampled for soil micromorphological analysis. A radiocarbon date of 900–790 cal BC (Tab 1, AA-27527) was obtained from charcoal.

The bank. A well-preserved length of bank was exposed in the western part of Area 7. At the north end of the trench it was extant to a maximum height of 1.0m, but had been reduced at the southernmost end. The bank was generally represented by a *c.* 6.0–6.8m wide band of material at the top of the scarp, extending slightly downslope to the east. Three phases of construction were recorded here.

Phase I – this was a substantial sequence of deposits (*c.* 4.3m wide and 0.8m high) located at the top of the slope. The underlying buried soil had been partially stripped from this area and the earliest bank deposits were placed directly over the basal 'clay-with-flints'. This initial phase comprised primarily an inverted sequence of material taken from the excavation of the ditch.

First, a redeposited humic topsoil (1583; 1608 – contexts in the 1600 series are the equivalent deposits in the northern section of Area 7) was placed on the cleared area at the top of the slope to form a revetment. This probably included the material removed during the cleaning at the top of the slope as well as that taken from the area of the ditch. Subsequently a layer of redeposited 'clay-with-flints' (1582; 1607) was placed behind the revetment. Finally this was overlaid by a deposit of fragmented chalk (1591; 1604). A possible turfline (1602; 1609) had accumulated in places behind this bank (not seen in section), representing a relative period of stability before the construction of the phase II bank.

In the northernmost part of the excavation area an additional minor phase of bank (re)construction between phase I and phase II was represented by a 0.3m thick layer of redeposited 'clay-with-flints' (1605) and a 0.32m thick layer of redeposited chalk (1606).

Phase II – this comprised the construction of a well-defined and very compact chalk bank (1580) 0.5m high behind the phase I bank, resulting in an overall bank width of 4.60m. The resulting 'V'-shaped gap between this chalk dump and the earlier bank was filled with redeposited 'clay-with-flints' occasionally mixed with chalk rubble (1579). In the southern part of the excavation area 1579 was capped with a single course of large, tightly-packed flint nodules (1581). This may represent a strengthening of the predominantly earthen bank. The partial collapse of the southern extent of the bank was evident in the noticeably wider extent of the chalk deposit 1580 and the collapse of the flint capping down onto the rear (western) face of the chalk bank.

To the north of this flint capping, a deposit of humic greyish-brown silt (1575) was recorded lying against the rear face of 1580. This might represent an equivalent deposit to 1581, this time

as a turf layer placed on the back of the phase II bank. Charcoal from this deposit produced a radiocarbon date of 1040–820 cal BC (Tab 1, AA-27526). This date is statistically indistinguishable from that obtained from the hearth material (1611) sealed by the buried soil (1539), suggesting that the turves for this final refurbishment of the phase II bank were cut from the immediate area and thus charcoal resulting from activity associated with the hearth was incorporated into the turves. However, refitting flint flakes recovered from the phase II bank deposit 1579 and the pre-bank buried soil 1539 indicate that some of the phase II bank material was quarried from the area to the rear of the phase I bank.

A soil horizon was also recorded between the phase II and III banks in earlier excavations and was thought to represent a period of relative stability in the area of the enclosure perimeter (Wainwright 1969, 27–29).

Phase III – the final phase of bank construction was represented by a substantial deposit of chalk (*c.* 2.2m wide and 0.6–0.8m high) resulting in an overall bank width of *c.* 6.10m. This comprised three distinct deposits of compact chalk rubble (1519; 1537; 1538). Lying against the rear face of the bank was a layer of pale greyish-brown silt (1516) which represents erosion and partial collapse of the bank material.

An irregularly-spaced alignment of seven postholes was recorded (1552; 1559; 1560; 1563; 1565; 1571; 1573) at the rear edge of the phase III bank, along with a possible eighth example (1576). These postholes, all *c.* 0.4m in diameter and 0.25–0.74m in depth, were cut through the whole of the phase III bank sequence. The erosion deposit 1516 appears to have built up around these standing posts. During initial removal of 1516 the postholes were not identified because parts of 1516 had become incorporated into the uppermost sections of the features.

These postholes represent a palisade erected as the final part of the phase III bank construction. This element of the enclosure circuit has not previously been recorded, despite a total of 15 earlier excavated sections. Pottery was recovered from a number of the palisade postholes and is thought to be of Early Iron Age date (*c.* 900–600 BC).

Internal colluvium. A sequence of dark greyish-brown clayey silts (1515; 1520; 1618) was recorded lying against the rear of the phase III bank, directly above the erosion deposit 1516. Two separate slots, each 1m wide, were hand-excavated through these deposits in order to recover information concerning their date and nature. The remainder of the deposit was largely removed by machine, with only a small talus at the edge of the bank retained for careful hand-excavation.

The deposits comprised a 0.50m deep build-up of material and contained substantial quantities of artefactual material, including some disarticulated human mandible fragments and a small number of copper alloy objects. The pottery from this 'internal colluvium' was of Early Iron Age date (*c.* 900–600 BC). At least two discrete dumps of hearth material were recorded within the sequence (1517; 1518).

The ditch. A 3.1m length of enclosure ditch within the southern part of the area was fully excavated and two distinct phases of were recorded. In his 1967 season Wainwright identified three clear phases of ditch excavation, but advised that the complete sequence had not been recorded in any individual section (Wainwright 1969, 26). The ditch recorded here in Area 7 as phase I is probably Wainwright's phase II, and that recorded here as phase II is probably Wainwright's phase III.

Phase I – the earliest ditch (1533) could be seen as a small but very noticeable break in the slope in the inner edge of the main ditch. The remaining profile indicates that the initial ditch was *c.* 0.75m deep with steep straight sides, filled (at least in the lower part) with a pale clayey silt (1532). Most of the ditch and fills had been removed by the excavation of the much larger phase II ditch.

Phase II – this ditch (1534) was much more substantial, measuring *c.* 4.40m wide at the top and *c.* 2.0m deep. It had very steep straight sides and a flat level base 1.20m wide. The primary ditch fills (1569; 1578; 1570) were deposited against both sides of the base of the ditch and comprised small chalk fragments and occasional large flints set within a silty clay loam matrix. Unlike the coarse, vacuous chalk rubble recorded in the western part of the circuit, the primary fills here suggest a rapid

infilling of the base of the ditch shortly after construction (or shortly after a cleaning episode), rather than erosion of the sides.

The secondary ditch fills were mostly finer deposits (total depth *c.* 1.3m) of silty material with lenses of chalk and flint probably derived from erosion of the exposed sides of the ditch and also of some bank material.

The tertiary ditch fills (1524–25; 1527) were typically fine, clay-rich soils with a few more coarse components, representing soil wash predominantly from the bank. They were *c.* 0.4m deep overall, and extended to the eastern side of the ditch line. Sherds of medieval pottery were recovered from the upper fills (e.g. 1525).

Colluvium. The ditch was sealed by colluvial material derived from hillwash deposits (1523; 1526; 1585–87) transported over the denuded bank circuit as well as from the erosion of bank material itself (probably from components of the phase I bank). This colluvium was 0.80–0.90m thick. A 0.70m wide strip of charcoal-rich material (1523) seen at the base of this material was also recorded in the earlier sections through the eastern bank (Area 6) and probably represents *in situ* burning of vegetation, thus indicating a fairly stable soil horizon at this point in the stratigraphic sequence.

Within the enclosure a similar colluvial deposit (1514) overlaid the 'internal colluvium' which had built up against the rear of the phase III bank. This latter material was 0.50m thick and represents an equivalent deposit to that recorded overlying the ditch fills.

Other features. A small posthole (1619) was recorded behind the bank in the very north-west corner of the excavation area. It was cut into the basal 'clay-with-flints' and was sealed by the 'internal colluvium' (1620). The posthole measured 0.28m in diameter and was 0.24m deep, and contained pottery of Early Iron Age date.

The exterior. Two small, undated postholes (1545; 1546) each *c.* 0.30m diameter and 0.07m and 0.13m deep respectively were located in the north-east of Area 7. Both had been heavily truncated by extensive modern disturbance.

Summary

The overall stratigraphic sequence is consistent in all three areas where the enclosure circuit was investigated. To enable the finds and environmental sections of this report to be correlated with the earlier results a simplified stratigraphic sequence is summarised below.

1 Hearth below buried soil (no pottery recovered)
2 Buried soil beneath bank
3 Phase I bank
three main construction deposits, followed by possible turfline
4 Phase II bank
bank construction deposits and turfline
5 Phase III bank
no pottery from bank itself, but from palisade postholes cutting bank, and from deposition of material eroded from bank
6 Phase II ditch (no pottery was recovered from the phase I ditch) – the initial excavation is likely to be contemporary with the construction of the phase III bank, but the primary (? and secondary) infilling of the ditch is likely to be contemporary with the deposition of the 'internal colluvium' primary and secondary fills
7 Internal colluvium
series of colluvial layers, interspersed with dumps of hearth material

RADIOCARBON DATING by Michael J. Allen and Alex Bayliss

A series of four radiocarbon dates was obtained on charcoal from a stratified sequence of deposits associated with the bank section in Area 7. Rapidly growing species and roundwood fragments (*Prunus* and *Corylus*) were specifically selected from the charcoal samples for radiocarbon dating. In addition we republish the previous dates (Wainwright and Davies 1995; Jordan *et al.* 1994) as Rowena Gale has identified the charcoal subsequent to their original publication (see Gale, this report).

Samples were submitted to date three events:

- the deposition of turf of the phase II bank, under the phase III bank (context 1575)
- buried soil (? trample) 1601, over buried soil 1539, under the phase I bank
- hearth material spread 1611, under buried soil 1539

The results are given in Table 1. It was hoped that the charcoal would date these three events, thus providing a chronology for the pre-enclosure activity and phases of bank construction. Certainly the two statistically indistinguishable determinations from the hearth material (1611) provided a weighted mean of 2757±35 BP (1000–830 cal BC) and provide a clear Late Bronze Age/earliest Iron Age date. Further, charcoal from the trample horizon (1601) provides a date of 900–790 cal BC (2645±50, AA-27527) and indicates further activity after that associated with the hearth as well as providing a *terminus ante quem* for the construction of the phase I bank.

The charcoal from the turf between the phase II and phase III banks (1575) was submitted in order to provide a date for the completion of the former and start of the latter. However, the determination provided a date of 1040–820 cal BC (2770±50 BP, AA-27526) which is statistically indistinguishable at the 95% confidence level (Ward and Wilson 1978) from that of the charcoal from around the hearth (1611). We can conclude that the turf (and charcoal in/on it) was derived from localised activity contemporaneous with the hearth 1613. It therefore does not provide a date for any phase of bank construction, but does inform about activity prior to the construction and also about the origin of the turf on the phase II bank.

Conclusions

The chronological sequence derived from the radiocarbon dating can be summarised as follows:

event 1 = the hearth was fired on/in the buried soil at 1000–830 cal BC (combined date of samples from the same population) and occurs before the trampling activity 1601, over the buried soil 1539.

event 2 = ?trample layer 1601 (associated with Late Bronze Age/earliest Iron Age activity), after the hearth, dated to 900–790 cal BC. This provides a *terminus ante quem* for the phase I bank

event 3 = construction of phase I bank after both events 1 and 2 (not radiocarbon dated, but after 900–790 cal BC)

event 4 = construction of phase II bank (not radiocarbon dated)

event 5 = placing of turf against the rear of the phase II bank. This turf was cut from an activity area close to the hearth 1613. The activity of placing the turf is event 5, but the material in it relates to event 1. The radiocarbon result is statistically indistinguishable at the 95% confidence level from the determinations from the hearth.

FINDS

Pottery by Lorraine Mepham (Figs 11, 12)

The complete pottery assemblage from the 1995–6 and 1997 excavations comprises 2,891 sherds (28,460 g), most of which is of later prehistoric (Late Bronze Age to Early Iron Age) date, with smaller quantities of Roman and medieval material. This report concentrates on the later prehistoric component (2,859 sherds; 28,268 g), which may be considered as an addition to the overall assemblage from Balksbury Camp of which two major groups have thus far been published (Wainwright 1969; Rees 1995).

Methods

Pottery was examined following recommended guidelines for prehistoric pottery (PCRG 1997), based on detailed analysis of fabric and form. For both these variables, type series were created which, as far as possible, were related to existing type series from previous excavations (Rees 1995). Correlation of fabric type series was by visual examination. Details of surface treatment, decoration and evidence for use were also recorded. All prehistoric pottery has been quantified

by fabric within each context, and data are available in archive.

Fabrics

A total of 11 fabric types was identified, which fall into two broad groups on the basis of dominant inclusion type: flint-tempered or flint-gritted (Group FL) and sandy (Group QU). The terms 'flint-tempered' and 'flint-gritted' reflect the nature of the inclusions: 'flint-tempered' fabrics have had crushed flint, generally calcined, added deliberately to the clay matrix, while in 'flint-gritted' fabrics the flint has the appearance of occurring naturally within the clay. In this instance fabric FL8, containing less angular, patinated flint, may be described as 'flint-gritted', while the remaining fabrics FL1-FL7 are designated as 'flint-tempered'. Using Barrett's proposed classification for post-Deverel-Rimbury wares (1980), a distinction may also be made between 'finewares' and 'coarsewares', on the basis of the perceived care taken in the preparation and finishing of the various fabrics. Here, the better sorted and better finished fabrics FL6 and FL7 would fall within the 'fineware' bracket, while fabrics FL1, FL2, FL8, QU1, QU2 and QU3 could be described as 'coarsewares'; fabrics FL3, FL4 and FL5 could fall within either group.

It may be noted that fabrics FL4, FL5, FL6, FL7 and FL8 cannot be directly correlated with the existing type series, although fabrics F4 and F5 could merely represent finer variants of fabrics FL1 (Rees 1995, fabric 7) and FL2 (fabric 8) respectively.

The overwhelming majority of the assemblage consists of flint-tempered fabrics FL1, FL2, FL4 and FL5, with very much smaller quantities of other flint-tempered/flint-gritted and sandy fabrics. Fabric totals are given in Table 2. A small number of sherds (43 sherds, 228 g) appear to be burnt or severely overfired, and have been so far distorted from their original appearance that they cannot be assigned to fabric. The potential significance of these sherds will be discussed further below. The eleven fabrics defined are described below, and correlations to fabrics within the existing type series are given thus: [fabric 7]. The following terms are used to define frequency of inclusions: rare (1–3%); sparse (3–10%); moderate (10–20%).

Flint-tempered fabrics

FL1 Soft, moderately fine matrix, slightly micaceous; moderate, poorly-sorted, subangular flint <3mm; rare iron oxides; firing irregular [fabric 7].

FL2 Soft, moderately coarse matrix; moderate, poorly sorted (though generally better sorted than FL1), subangular flint <3mm; moderate, fairly well sorted, subrounded quartz <0.5mm; firing irregular [fabric 8].

FL3 Soft, moderately fine matrix, slightly micaceous; sparse, poorly sorted, subangular flint <1.5mm; rare iron oxides; generally oxidised with unoxidised exterior; relatively well-finished [fabric 9].

FL4 Finer, better sorted variant of FL1: soft, moderately fine matrix, slightly micaceous; moderate, fairly well sorted, subangular flint <1mm; rare iron oxides; firing irregular; relatively well finished.

FL5 Finer, better sorted variant of FL2: soft, moderately coarse matrix; moderate, fairly well sorted, subangular flint <1mm; sparse to moderate, subrounded quartz <0.5mm; rare iron oxides; firing irregular.

FL6 Soft, moderately fine matrix; moderate, poorly sorted, subangular flint <2.5mm; rare, subrounded quartz <0.5mm; rare chalk/limestone <2.5mm; rare iron oxides; unoxidised; slightly soapy feel; relatively well finished.

FL7 Soft, moderately fine matrix; sparse, well sorted, subangular flint <0.5mm (rarely <2.5mm); well-finished, with a soapy feel; unoxidised.

FL8 'Detrital' fabric: very soft, fine matrix, slightly micaceous; sparse, poorly sorted, subangular patinated flint <5mm; rare carbonaceous material; rare subrounded quartz; oxidised.

Sandy fabrics

QU1 Soft, moderately coarse matrix; moderate, fairly well sorted, subrounded quartz <0.5mm; firing irregular [fabric 3]

QU2 Soft, moderately coarse matrix; sparse, poorly sorted, subangular flint <2mm; moderate, fairly well sorted, subrounded quartz <1mm; sparse glauconite; very rare chalk/limestone fragments <1mm; unoxidised with oxidised margins [fabric 2?].

QU3 Soft, moderately coarse matrix; moderate, fairly well sorted, subrounded quartz <0.5 mm; rare to sparse, angular flint <2mm; rare to sparse iron oxides [between fabric 1 and fabric 8]

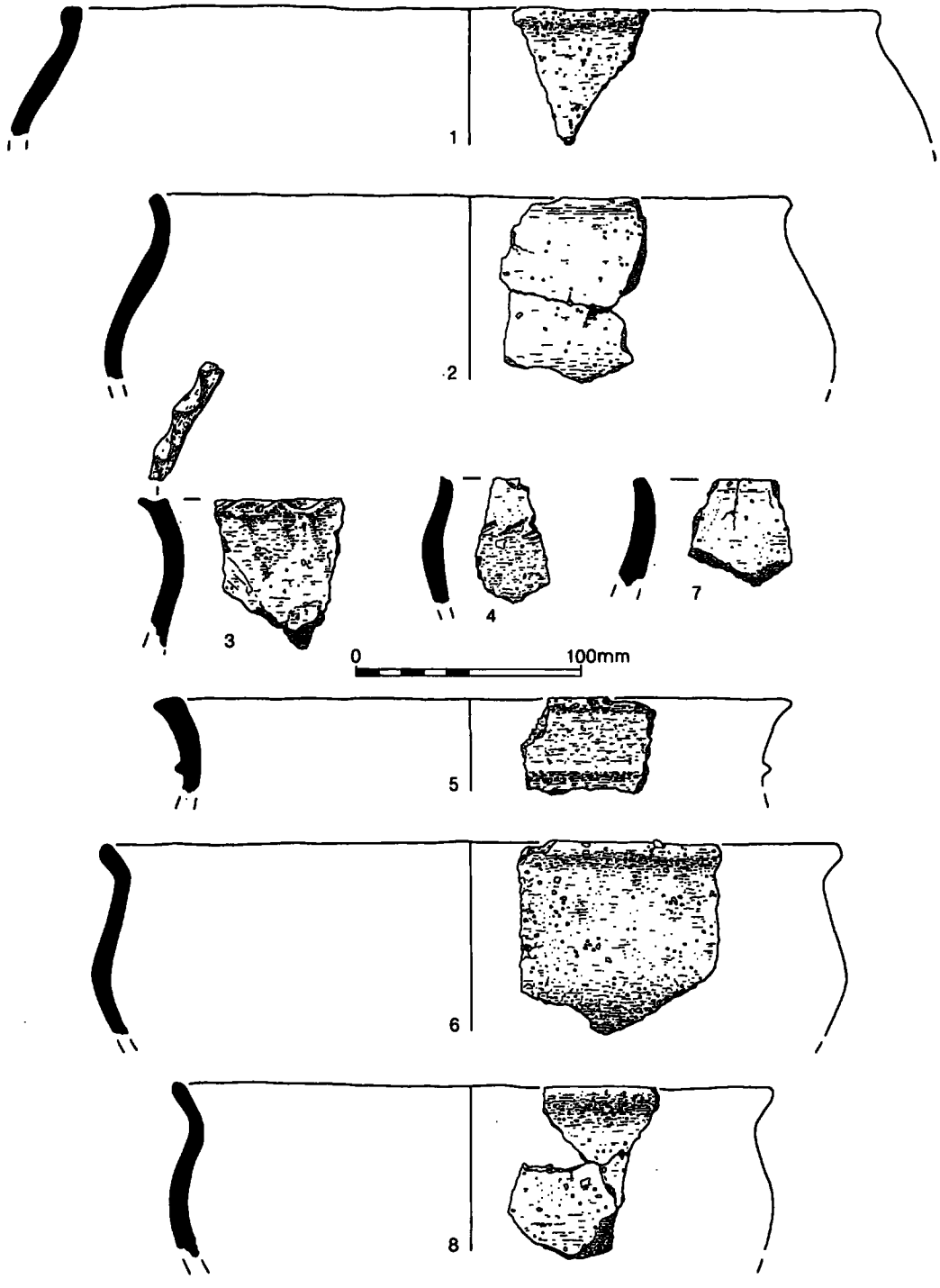


Fig. 11 Pottery – sherds 1–8

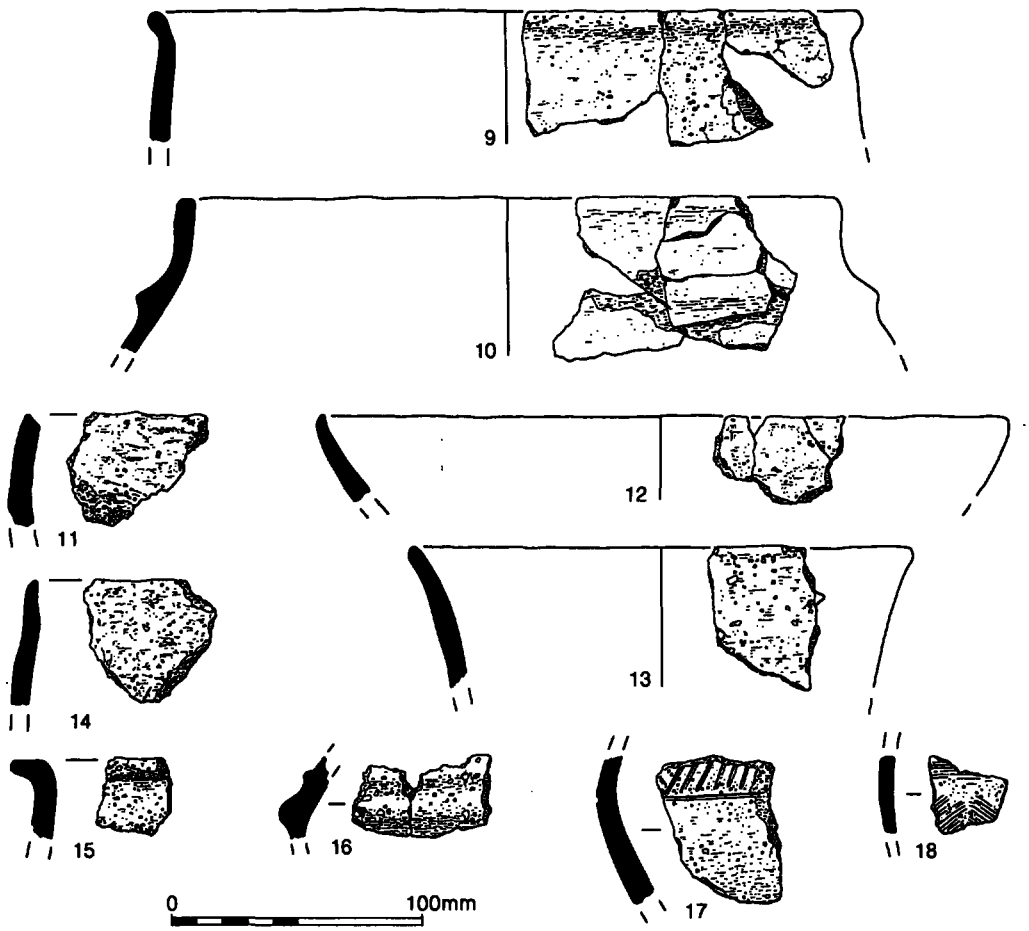


Fig. 12 Pottery – sherds 9–18

The raw materials for nearly all of these fabrics could have been obtained locally, i.e. within a 10 km radius of the site; indeed, all would theoretically have been available on or in the near vicinity of the site itself. The site lies on Upper Chalk, which could have provided both flint and chalk, while quartz sand is available from nearby river gravels. Sandy clays could also have been obtained from the Reading Beds 15 or 20 km away to the north and south respectively. There is no reason why pottery should not have been manufactured on or near the site, and in this context the small group of burnt or overfired sherds from the 'internal colluvium' (layers 1515; 1520) may be noted, although this evidence is ambiguous. These sherds have been distorted by subjection to high temperatures, and are very light, with a very soft, powdery feel and a light grey to orange colour; subangular flint inclusions are visible in most sherds. These sherds might be regarded as 'wasters' from on-site pottery manufacture; alternatively, they may have been accidentally burnt during use or after deposition.

Table 2 Pottery fabric totals

Fabric	*No. sherds*	*Weight*	*% of total*
FLINT-TEMPERED FABRICS			
FL1	1327	12428	44.0
FL2	700	8626	30.5
FL3	23	156	0.6
FL4	413	3025	10.7
FL5	227	2897	10.2
FL6	2	55	0.2
FL7	18	135	0.5
FL8	7	52	0.2
Sub-total	2717	27374	96.8
SANDY FABRICS			
QU1	7	51	0.2
QU2	67	457	1.6
QU3	25	158	0.6
Sub-total	99	666	2.4
OTHER FABRICS			
Unid. Prehist.	43	228	0.8
TOTAL	2859	28268	–

The glauconitic fabric QU2 is the only fabric which, on the basis of inclusions, is likely to be of non-local origin. Nodules of glauconite do occur within the Upper Chalk (Jukes-Brown 1908), but the frequency of quartz inclusions within fabric QU2 would not be consistent with such a source. A more likely source would be the Upper Greensand and associated deposits which outcrop at approximately 18 km distance, either to the north-east or north-west of the site. Glauconitic sandy fabrics have now been identified on a number of Early Iron Age sites in Hampshire and beyond, e.g. Danebury, Lains Farm and the previously published assemblage from Balksbury (Cunliffe 1984a, 245; Morris 1991, fabrics Q4 and Q7; Rees 1995, fabric 2), and form a growing body of evidence for regional pottery production.

Fabrics FL6, FL7 and FL8, by virtue of their rarity within the assemblage (each is likely to represent a single vessel, and none may be correlated with the existing type series), might also be considered for this reason to be of non-local origin; it may be significant that this small group includes both the fabrics identified as 'finewares' (FL6, FL7). None of these fabrics, however, contains inclusions which are sufficiently distinctive to pinpoint a non-local source. It is worth noting that the proportion of these potential non-local fabrics within the Early Iron Age assemblage (2.5%) is far lower than the proportion of non-local wares observed for other sites in the Andover area, which range from 40% to 65% (Morris 1994, 27); a slightly higher but still relatively low proportion was noted previously at Balksbury (6.1%: Rees 1995, table 8).

Vessel forms

The construction of a vessel type series has been hampered by the scarcity of diagnostic material. No reconstructable profiles are present, and many rim sherds are unattributable to vessel form. Out of 68 rim sherds recorded, 45 have been used to create a type series as defined below, which combines rim/neck form with body profile wherever possible; one further type has been defined solely on the basis of body sherds (type 14). Given the lack of overall profiles, the distinction between 'jar' and 'bowl' forms is not always clear-cut. The correlation of vessel forms to fabric types is presented in Table 3, and correlation with the existing type series is given thus [form 12.0]; forms not represented within the existing type series, but paralleled amongst the 1967 assemblage (Wainwright 1969) are identified accordingly.

Type 0 Rim sherd, unassignable to vessel form.

Type 1 Jar with rounded profile and short, upright rim, sometimes thickened [form 12.1] (Fig. 11, 1-2)

Type 2 Jar with long, flared neck; rim diameter greater than girth; rounded shoulder; rim slightly thickened, sometimes finger-impressed [form 22.3] (Fig. 11, 3).

Type 3 Shouldered jar with concave neck profile and marked, almost carinated shoulder; single example has impressed decoration [form 22.5] (Fig. 11, 4)

Type 4 As Type 2 but with applied neck cordon; rim thickened externally and flattened (Fig. 11, 5).

Type 5 Carinated bowl; concave neck profile and everted plain rim [form 11.1] (Fig. 11, 6).

Type 6 Carinated bowl; concave neck profile with upright, squared rim [form 11.3] (Fig. 11, 7).

Type 7 Jar or bowl with ovoid or slightly rounded profile; upright or slightly everted, plain rim [form 15.0] (Fig. 11, 8; Fig. 12, 9).

Type 8 Large jar with rounded shoulder and concave neck profile; upright, squared rim; applied neck cordon (Fig. 12, 10).

Type 9 Bowl with ovoid profile and inturned rim, generally squared [form 13.2] (Fig. 12, 11).

Type 10 Bowl with hemispherical profile and upright plain rim; shallower than type 8 (Wainwright 1969, fig 17, 61, 65) (Fig. 12, 12).

Type 11 Long-necked vessel; neck slightly flared with plain or squared, very slightly everted rim [could derive from several different forms] (Fig. 12, 13).

Type 12 Long-necked vessel; neck profile slightly concave with plain upright rim [could derive from several different forms] (Fig. 12, 14).

Type 13 Everted, squared rim on upright neck; body profile unknown (Wainwright 1969, fig 16, 38) (Fig. 12, 15).

Type 14 Vessel with deeply furrowed or 'corrugated' shoulder; recognised from body sherds only [see form 19.0] (Fig. 12, 16).

Nearly all of these vessel forms can be directly paralleled within the published assemblages from Balksbury, and most also find parallels within the earliest Iron Age phases at Old Down Farm, Andover (Davies 1981, figs. 10, 15 and 16), where cordoning and shoulder corrugation (see types 4, 8 and 14) appear to be more common than at Balksbury.

Surface treatment and decoration

Beyond a crude surface wiping, generally visible as vertical strokes and probably executed with vegetable matter, the evidence for surface treatment is extremely limited. Sherds in fabrics FL4, FL6 and FL7, which show a greater degree of care in the sorting of inclusions, are more likely to show some kind of surface treatment, consisting at least of surface smoothing and frequently the application of a surface slip or slurry to disguise inclusions. These fabrics, however, are not burnished, and burnishing is restricted to a handful of sherds in fabrics FL1 (1 sherd), F2 (1 sherd), FL3 (5 sherds) and FL5 (2 sherds). Nor are there any examples of the 'red-finished' ('haematite-coated') wares which were noted amongst the 1973/1981 assemblage (but not from the 1967 assemblage). Almost without exception, the underside of bases show a high density of calcined flint fragments, presumably from where the vessels were set to dry before firing.

Decoration is even more scarce. Sherds in two fabrics, each probably representing a single vessel, display incised motifs: cross-hatching on two sherds of fabric FL4 (Fig. 12, 17), and combined linear and curvilinear combing on ten sherds of FL5 (Fig. 12, 18). Applied cordons are present on

Table 3 Correlation of vessel forms and fabrics

	FL1	*FL2*	*FL3*	*FL4*	*FL5*	*FL6*	*FL7*	*QU2*	*QU3*	*Total*
Type 0	10	7	2	2	2					23
Type 1	3		1	3	4					11
Type 2	1	1			1					3
Type 3									1	1
Type 4		2								2
Type 5		1								1
Type 6		1				1				2
Type 7		3			2					5
Type 8							1			1
Type 9	6	1								7
Type 10				2						2
Type 11	2	1			2			1	1	7
Type 12		1			1					2
Type 13	1									1
Type 14		3								3
Total	23	21	3	7	12	1	1	1	2	71

bodies (FL2: four examples) and necks (FL2: two examples: FL7: one example, Fig. 12, 10), and corrugation or deep furrowing on shoulders (FL2: four examples, e.g. Fig. 12, 16). One rim sherd in fabric FL1 (type 2) is finger impressed (Fig. 11, 3), and possibly the single type 3 jar, which also has impressed decoration on the shoulder (Fig. 11, 4).

Ceramic phasing and chronology

The local and regional context of the Balksbury pottery assemblage, and the chronological implications thereof, have already been ably discussed (Rees 1995), and it is not intended to repeat this information here in anything other than very summary form. Discussion will instead concentrate on the correlation of the pottery from the recent excavations to that of the previously published assemblages.

Pottery from the enclosure circuit

In Areas 4, 6 and 7, pottery was derived from contexts throughout the stratigraphic sequence. For the purposes of examining the ceramic sequence refer to the stratigraphic sequence summary at the end of the 'Results' section (see above).

Table 4 presents pottery fabrics, and Table 5 the vessel forms and decoration by stratigraphic phase. While the assemblage viewed as a whole has a strong appearance of homogeneity, several trends through time may be noted, on the basis of which the pottery can be grouped into two broad groups, or ceramic phases:

cp 1: this covers pottery from stratigraphic phases 2–4, i.e. activity up to and including the construction of the phase III bank (but not its subsequent modification and erosion). Pottery is characterised by the limited range of fabric types and vessel

Table 4 Pottery by stratigraphic phase and fabric

Fabric	*FL1*	*FL2*	*FL3*	*FL4*	*FL5*	*FL6*	*FL7*	*FL8*	*QU1*	*QU2*	*QU3*	*unid.*	*TOTAL*
2 BURIED SOIL	527/4587	10/135	9/61	42/446	2/31	–	–	–	–	–	–	–	590/5260
3 BANK I	21/98	1/8	–5/40										
construction	293/2704	–		17/198	–	–	–	–	–	–	–	–	39/304
turfline				249/1369	–	–	–	–	–	–	–	–	547/4116
4 BANK II													
construction	–	–	–	8/29							–	–	8/29
clay-with-flints	9/46	4/31	–	9/166	–	–	–	–	–	–	–	–	22/243
bank erosion	6/95	6/48	1/2	3/22	–	–	–	–	1/3	–	4/13	–	21/183
5 BANK III													
postholes	2/7	17/545	–	1/52	9/156	–	–	–	–	–	–	–	29/760
bank erosion	50/393	214/2898	2/12	10/65	26/320	–	6/46	–	–	7/35	–	–	315/3769
6 DITCH II													
primary fills	4/27	2/9	–	–	–	–	–	–	–	–	–	–	6/36
secondary fills	21/160	6/128	–	1/13	2/21	–	–	–	–	7/45	2/12	–	39/379
7 INTERNAL COLLUVIUM													
lower	308/3452	296/3307	6/41	43/392	16/2147	2/55	8/83	5/38	3/35	50/358	1/3	34/198	915/10109
hearth material	–	6/50	–	5/56	4/9	–	–	–	–	–	–	–	15/115
upper	80/816	135/1451	–	22/157	18/140	–	3/2	2/14	2/10	3/19	–	9/30	274/2639
TOTAL	1309/12261	690/8547	22/154	398/2777	77/2824	2/55	17/131	7/52	7/51	67/457	15/101	43/228	2833/28036

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Table 5 Vessel forms and decoration by stratigraphic phase

Form	*1*	*2*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*Decoration (no. sherds)*
2 BURIED SOIL	2	1	–	–	–	–	–	1	1	–	–	–	–	–
3 BANK I														
construction	–	–	–	–	–	–	–	–	–	–	–	–	–	–
turfline	–	–	–	–	–	–	–	3	–	–	–	–	–	–
4 BANK II														
clay-with-flints	–	–	–	–	–	–	–	–	–	–	–	–	–	–
bank erosion	–	–	–	–	–	–	–	1	–	–	–	–	–	–
5 BANK III														
postholes	1	–	–	–	–	–	–	–	–	–	–	–	–	1
bank erosion	1	–	1	1	–	2	–	1	–	–	1	1	1	10
6 DITCH II														
secondary fill	–	1	–	–	–	–	–	–	–	1	–	–	–	2
7 INTERNAL COLLUVIUM														
lower	3	–	–	–	1	3	1	–	1	4	1	–	2	13
hearth material	2	–	–	–	–	–	–	1	–	–	–	–	–	–
upper	1	–	1	–	–	–	–	–	–	2	–	–	–	5
TOTAL	10	2	2	1	1	5	1	7	2	7	2	1	3	31

forms. The fabrics consist of the coarsewares FL1 and FL2, and their slightly finer variants FL3, FL4, FL5 and QU3, and these occur in jar forms 1 and 2, and bowl forms 9 and 10 (Fig. 12, 11, 12). There is also a single small sherd in the sandy fabric QU1. It may be noted that fabric FL2 is proportionally much rarer in these phases than in cp 2.

Comparison with the previously published assemblages shows that this ceramic phase may be equated with the Late Bronze Age/earliest Iron Age assemblage, in which coarse flint-tempered wares in a limited range of jar and bowl forms predominate (Wainwright 1969, figs. 14–19; Rees 1995, figs. 62a, 63 and 64). Pottery of this period served to date the three-phase construction of the enclosure circuit, dating which is supported by the ceramic phasing outlined above, and also a small number of internal features. A date range of *c.* 1100–900 BC was previously suggested (Wainwright and Davies 1995, 15), but a radiocarbon date obtained following this most recent work (Tab 1, AA-27527) suggests that this should be extended to *c.* 800 BC. At Old Down Farm pottery of phase 2 is comparable (Davies 1981, figs. 8, 10).

cp 2: this covers pottery from stratigraphic phases 5 and 7, i.e. activity from modification of the phase III bank (postholes) and its subsequent erosion and also the deposition of the 'internal colluvium' against the rear of the eroded bank. The limited assemblage of pottery recovered from the primary and secondary fills of the phase II ditch (stratigraphic phase 6) could be assigned to cp 1 or 2.

A wider range of fabrics and forms is now apparent, including the 'finewares' FL6 and FL7, and the sandy fabrics QU1 and QU2, and a greater variety of jar and bowl forms, including carinated, cordoned and corrugated forms (e.g. Fig. 11, 6–7; Fig. 12, 10, 16); decoration is more frequent (e.g. Fig. 12, 17–18). Cross-context joins and possible same-vessel sherds identified demonstrate that stratigraphic phases 4 and 6 are quite closely linked.

It is apparent from comparison with the 1973/1981 assemblage that chronologically later material is included within the cp 2 material, and this corresponds to the Early Iron Age assemblage already identified (Rees 1995, figs. 62b, 64). It is interesting to note that pottery of this period was relatively uncommon in the 1973/1981 assemblage (*ibid.*, 72), and derived mainly from a concentration of pits in the central area of the enclosure; a date range of 900–400 BC was suggested (Wainwright and Davies 1995, 19).

It should also be noted that the condition of the sherds from cp 2, in comparison to that from cp 1, does not suggest much post-depositional movement – mean sherd size is 11.2 g, compared with 8.3 g for cp 1. This supports the view that the 'internal colluvium' formed as a result of rapid small-scale events and that the Early Iron Age pottery found in these deposits was not derived from erosion of the pits within the enclosure.

The visual homogeneity of the assemblage from cp 2, combined with the absence of slack-shouldered or ovoid jar/bowl forms attributed to the transitional Early/Middle Iron Age period (Rees 1995, table 9: forms 25.0 and 26.0) would suggest a more restricted timespan, perhaps 800–600 BC; the presence of the copper alloy tanged chisel and awl in colluvial layers may be noted here (see metalwork report below). Pottery of phase 3 at Old Down Farm is comparable (Davies 1981, figs. 13, 15, 16), and at Danebury ceramic phases 1–3 (Cunliffe 1984a, fig 6.85).

Pottery from internal features

A small quantity of material (15 sherds; 110 g) was recovered from features excavated in the interior of the enclosure circuit. These comprised a treehole (1051) in Area 2, two postholes (1113; 1108) in Area 3, and a pit (1147) in Area 5. The only fabrics represented are FL1, FL5 and QU3, the latter being the most common, occurring in all features except pit 1147. The overall quantities involved are too small to draw firm chronological conclusions, and there is only one diagnostic form, a jar of type 3 with impressed decoration from posthole 1113 (Fig. 11, 4). These features, therefore, cannot be more closely dated than to a general Late Bronze Age/Early Iron Age range.

Roman and later pottery

Roman material (27 sherds; 144 g) consists of coarse greywares and Black Burnished ware (BB1), with one sherd of possible Oxfordshire col-

Table 6 Metalwork by stratigraphic unit

Stratigraphic unit	*Implements/objects*	*Small fragments/droplets (no.)*
2 BURIED SOIL		24
3 BANK I	small cast ring	8
	?fragment of socketed/cast object	–
4 BANK II	escutcheon-shaped fitting	–
	rod fragment	–
6 DITCH II		
Secondary fill		1
Tertiary fill	iron strip fragment (?medieval)	–
7 INTERNAL COLLUVIUM	trunnion chisel	–
	awl/tracer	–
Other features		
R-B corndryer 1153	boot cleat, nail, strip fragment	–
R-B burial 1500	9 nails	–
R-B posthole 1108	plate fragment	–
TOTAL	21	33

our-coated fineware. Only one rim form is present, from an everted rim jar of later Roman date (3rd/4th century AD). Roughly half of this material (14 sherds) derived from the corndryer (1153) in Area 3, with one sherd from a posthole (1108) in the same area. Three sherds came from an upper fill of the enclosure ditch in Area 4 (1057), while two small sherds were intrusive in one of the 'internal colluvium' deposits (1050). Other sherds were unstratified.

In addition, four medieval body sherds (13 g) were recovered, from tertiary fills of the Phase II ditch (1534). All are locally made coarsewares of 12th/13th century date.

Metalwork by Lorraine Mepham (Fig. 13)

Metalwork from Late Bronze Age/Early Iron Age contexts

Six copper alloy objects were recovered from deposits of later prehistoric date. The excavation also produced 33 small, amorphous fragments, mostly from the buried soil below the enclosure bank. Some of these might be corrosion products although some may be waste droplets from metalworking. These fragments are not discussed further here. The complete Late Bronze Age/Early Iron Age metalwork assemblage is summarised by stratigraphic unit in Table 6.

The most clearly identifiable objects comprise a trunnion chisel and an awl or tracer, both of which came from the 'internal colluvium' in Area 7. The chisel (Fig. 13, 1) is the more diagnostic object as a recognisable Late Bronze Age type. Chisels are most commonly found in hoards of 'specialised' tools in East Anglia, for example at Norwich (Eaton) and Carlton Rode, Norfolk (Norfolk Museums Service 1977, 31, figs. 83, 84, pl. VI). In Hampshire, metalwork hoards of this period have different characteristics due to regional variation (Lawson 1999), but this is nevertheless a ubiquitous type in southern England. The awl or tracer (Fig. 13, 2) is less diagnostic, and is a type found throughout the Bronze Age, although more common in Early Bronze Age contexts than later.

The four other copper alloy objects comprise a small cast ring of uncertain function (Fig. 13, 3), a perforated escutcheon-shaped fragment, probably a fitting of some sort (Fig. 13, 4), a fragment from

a socketed or hollow cast object of unknown form (not illustrated), and a small rod fragment (not illustrated). While these objects are not particularly diagnostic, none would be out of place in a Late Bronze Age context.

Metalwork from Roman and later contexts

Fourteen iron objects were recovered from Roman or later features, largely during the 1995–6 season of excavation. This total includes five iron coffin nails from burial 1500; a boot cleat, a nail shank and a curved strip fragment from corndryer 1153; and a small plate fragment from posthole 1108, all Roman features.

Another iron object, a short strip fragment of uncertain function, bent almost to a right angle, came from a tertiary fill (1525) of the phase II enclosure ditch, a context which also contained medieval pottery of probable 12th/13th century date.

Worked flint by P A Harding

The total quantities of flint from each excavation area, as shown in Table 7, indicate distinct variations in flint distributions on opposite sides of the enclosure. Worked flint is particularly plentiful on the eastern side (Areas 6 and 7), predominantly from the buried soils (1539; 1601), from the possible turf layer (1575) at the rear of the phase II bank, from the erosion deposit (1516) which sealed the phase III bank, and from the 'internal colluvium' (1514–15; 1520) behind the phase III bank.

The 'internal colluvium' on the western side of the enclosure (Area 4) also produced a quantity of flint (1043; 1050). Aspects of the technology and the size of individual pieces from the 'internal colluvium' (1050) are comparable with those from Area 7, however most of the flint from the western side (including material from beneath the bank, has unmistakable edge damage and is likely to be residual. The primary fills of the enclosure ditch in Area 4 contain material which, like most of the flint from Area 7, is in mint condition and is probably contemporary with the construction of the bank and ditch circuit. The exploitation and use of flint in the early part of the first millennium has recently been the subject of critical review

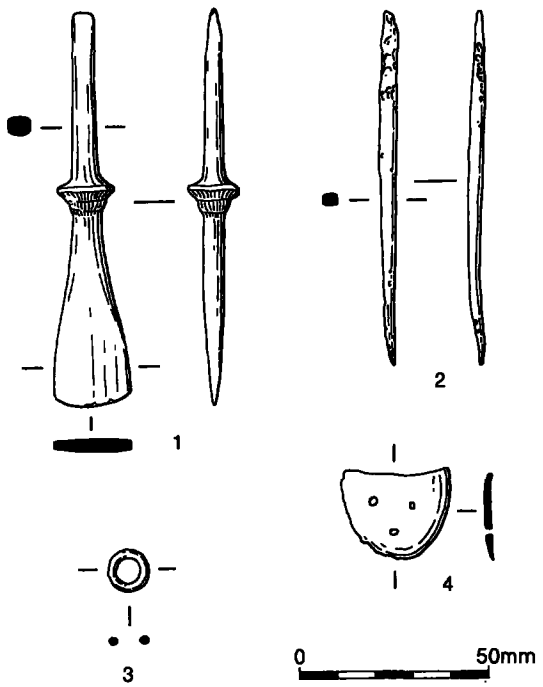

Fig. 13 Metalwork

(Young and Humphrey 1999) and it is becoming increasingly apparent that lithic material recovered from sites of this period cannot be written off as residual.

The condition of the flint from Area 7, which is unpatinated or only slightly patinated, suggests that flint working continued throughout the construction, refurbishment and abandonment of the circuit. Two heavily patinated broken flakes from the buried soils (1539; 1601), one of which has a narrow butt with platform abrasion, contrast in condition and technology to the main assemblage and represent residual artefacts. The main assemblage was probably created from nodules found during the initial excavation of the enclosure ditch. The waste accumulated at the rear of the bank and also under the phase II bank. Similar 'dumps' of waste material were located behind the phase II and III banks, some of which have become incorporated into the internal colluvial deposits (1514–15, 1520). Flint was apparently not discarded in the ditch.

Table 7 Worked flint by feature type and context

Area	*Feature*	*Context*	*1*	*2*	*3*	*4*	*5*	*6*	*7*
1	Undated pit	1008			1				
3	R-B corndryer	1086				1			
4	Buried soil	1047			13	1			
	Soil layer over phase II bank	1071			3				
	Internal Colluvium	1043, 1050	16	6	69	47	3	2	1 micro-dent., 1 scraper, 1 hammer
	Primary ditch fill	1058			1				
	Primary ditch fill	1059			4	5			
	Primary ditch fill	1061, 1064, 1068	1	4	17	5			
	Secondary ditch fill	1022, 1023			10	12		1	
	Secondary ditch fill	1073			1				
	Tertiary ditch fill	1027	1						
	Tertiary ditch fill	1029				2			
	Cleaning layer	1020	1	2	53	45	3	1	
5	Fill of ditch 1148	1146			2				
6	Buried soil	1218			1				
	Internal Colluvium	1162, 1187	1		21	28	1		
7	Hearth layer	1611			1	3			
	Buried soils	1539, 1601	9	2	185	141	3	1	1 knife
	Phase I bank	1583, 1591, 1602	1		32	31		1	
	Phase II bank	1579	1	1	20	10			
	Phase II turfline	1575	1		71	66			
	Phase III bank	1538			4	1			
	Palisade Post holes	1559, 1560, 1563, 1573			7	5			
	Phase III erosion silt	1516	8	3	108	62	1		1 piercer 1 hammer
	Internal Colluvium	1515, 1520	9	10	171	105	6	3	3 scrapers 2 hammers
	Burnt layer	1517			4	3		1	
	Burnt layer	1518			6	6			
	Secondary ditch fills	1528,1531,1536, 1540,1543,1556–7	1		16	2			
	Tertiary ditch fills (ditch II)	1524, 1525	1		3	1		1	
	Colluvium	1514, 1523		1	4	3			
	Cleaning layer	1522			6	3			
	Post hole	1620			3	7			
Total			51	29	837	595	17	11	11

Note:
1 Cores
2 Core fragments
3 Flakes
4 Broken flakes
5 Burnt worked flint
6 Retouched flakes
7 Tools

Metrical analyses

A metrical analysis of a representative sample (156 pieces) from the buried soil 1539 in Area 7 (table in archive) showed that the flakes are generally large, cortical or semi-cortical pieces, 86% of which exceed 30mm in length. Flake butts are plain and broad, 49% exceeding 8mm wide, with 59% of percussion angles measuring 65°–79°. Cones and bulbs of percussion are prominent and consistent with hard hammer flaking. Individual pairs of flakes from the buried soil (1539) and the phase II bank (1579) have been conjoined, however no large scale refitting groups were apparent. This evidence, together with the absence of small flakes and broken material, suggests that the flint represents dumped core preparation waste.

The associated cores are smaller than might be expected from the flakes which confirms that other cores were probably used elsewhere. Most are single platform flake cores while others employ alternate flaking to produce semi-discoidal cores where one flaking surface has assumed ascendancy over another. Striking platforms were generally constructed by flaking and some show several miss-hits with associated flaking angle recession which immediately preceded their rejection.

The retouched tools comprise three scrapers with convex edges on the distal ends of flakes, a piercer and a naturally backed knife. This implement has marginal retouch on the cutting edge which probably results from use. The results of the flake analysis with the core and retouched tool component are entirely comparable with the technology associated with Late Bronze Age flint industries. This represents a hitherto unrecognised flint assemblage from the east side of the enclosure associated with its construction and use. The total worked flint from previous excavations adjacent to Areas 6 and 7 in 1981 amounted to 346 mainly unstratified pieces which were apparently of Early Neolithic – Early Bronze Age date (Wainwright and Davies 1995, 40).

Other finds by E Loader

An overall total of 48,099 g of burnt, unworked flint was recovered from the 1995–97 excavations. Of this total, 15,890 g (33% of the total weight) was found during the 1995–96 work and 32,209 g (67% of the total weight) during the 1997 season. Burnt flint is intrinsically undatable, but is frequently found on prehistoric sites and is taken as an indicator of prehistoric activity. Its precise function remains unknown.

In Area 4, the largest proportion (3650 g) of burnt flint was recovered from the enclosure ditch 1057. Most of the remainder (3570 g) was recovered from the 'internal colluvium' (1050), with moderate quantities recovered from buried soils, pits and postholes.

Of the burnt flint found during the 1997 excavation, the largest proportion (11,020 g) was recovered from the 'internal colluvium' (1515; 1520) with a further 8357 g from the buried soil below the phase 1 bank (1539; 1601).

The fired clay assemblage comprised 287 g of small, featureless fragments in a soft sandy fabric with occasional flint inclusions. Several pieces also have occasional chalk inclusions. The majority of the fired clay was recovered from the 'internal colluvium', and given associated finds these are likely to be of Later Bronze Age/ earliest Iron Age date. No surfaces or diagnostic features were present on any fragments, though they could have been of structural origin or from hearth/pit linings. Two dumps of possible hearth material (1517; 1518) containing fired clay were recorded within the 'internal colluvium'.

Three flat limestone fragments were recovered from the Roman corndryer (structure 1153) in Area 3. One greensand quernstone fragment, from a quern of uncertain form, was recovered from a secondary fill (1022) of the phase II ditch in Area 4. Two further fragments of greensand, recovered from the 'internal colluvium' (1515) and a palisade posthole (1559) in Area 7, are possibly also quernstone fragments. Greensand is not a locally available stone and would have been imported. The nearest sources of Lower Greensand are 45 km to the west near Devizes, to the north at Uffington or from the western end of the Wealden anticline (Upper Greensand outcrops 18 km to the north), although at least some of the quernstones from the previous excavations were demonstrated to have originated from the Lodsworth quarries in West Sussex (Buckley 1995).

Two worked bone objects were recovered from Area 7. One was from the buried soil (1539) and is a flat, polished object, pointed at one end, of unknown function. The other was recovered from the erosion/collapse of the phase III bank (1516), and has been identified as a broken awl, comparable to similar objects recovered during the previous excavations (Wainwright and Davies 1995, fig 53).

THE ENVIRONMENTAL EVIDENCE

Introduction

The results of a limited programme of environmental analysis are presented here, the aims of which were specifically to examine deposit types not previously addressed in earlier analyses (Wainwright and Davies 1995). Where information or interpretation repeats and confirms that from previous reports, it is largely presented in archive. This work focuses on the local site environment and the use and economy of the enclosure itself rather than the broader landscape setting addressed by previous analyses (e.g. Allen 1995; Macphail 1995).

Land snails; evidence for landscape and land-use change by Michael J. Allen

Previous work on land snail assemblages at Balksbury concentrated on internal features within the enclosure (Allen 1995). During the 1967 excavations the enclosure ditch sequence was seen to be crucial to the understanding and phasing of the events on site (Wainwright 1969). However this was prior to the common contiguous sampling for land snails and in subsequent excavations (Wainwright and Davies 1995) the emphasis was placed on the internal features rather than these deeply stratified ditch sections which provide more limited scope for analysis (Allen 1995).

The excavations therefore provided an opportunity to sample the ditch sediment sequences from both the eastern and western sides of the enclosure. The buried soils beneath each bank section were also sampled. With the exception of the buried soils, this programme of analyses comprises contexts from this site not previously examined for snails or soils.

The results show major and dramatic local landscape (land-use) changes which can be broadly related to the major phases of later prehistoric and Roman occupation and thus provide a land-use framework for the entire occupation history of the hilltop which complements previously published records. The changes noted have significant implications for the interpretation of the use of the site and implications for other enclosures (and hill-forts) where these ditch sequences are rarely sampled for snail fauna. Because of this novel aspect the land snail analysis is presented more fully than some other analytical reports.

The data can be compared with information about the early post-glacial environment (obtained from *F.2110*), the pre-enclosure Atlantic (Neolithic-Bronze Age) woodland environment (tree-hollow *F.2052*) and the immediate pre-enclosure environs as determined from previous molluscan analysis (Allen 1995, 92–95).

The two excavated ditch sequences, one on the western side (ditch 1057, Area 4) and one on the eastern side (ditch 1534, Area 7), have completely different topographical aspects and therefore both were sampled and examined (Fig. 14). The western ditch (1057) is on a gentle south-west facing slope and is *c.* 3m deep. In contrast, the eastern ditch (1534) is on a steep scarp overlooking the Anton valley in which marshy conditions exist at present and peaty deposits of at least 0.85m are known (Allen pers. obs.). This ditch is shallower being only *c.* 2.20m deep.

Methods

Sampling for land snails was undertaken in conjunction with sampling for soil micromorphology and included the buried soils beneath the bank in both locations as well as both ditch profiles. Samples were in contiguous columns where possible, at 100 mm or smaller intervals as appropriate (Figs. 8, 10). Samples of 1000 g were processed from samples taken through the western ditch section (1057). Larger samples of 2000 g, however, were processed from loose, coarse, chalky rubble primary fills in an attempt to recover some shells. Because of the lower shell numbers

in the eastern ditch section (1534), samples of 1500 g were processed consistently throughout these deposits.

Processing followed the methods outlined by Evans (1972) and results are presented in Tables 8 and 9, and as histograms of relative abundance in Figure 14 where some species are plotted together. These groupings and the summary groups (shade-loving, catholic and open country) follow schemes recommended by Evans (1972; 1984). They are as follows:

Zonitidae: *Aegopinella pura*, *Aegopinella nitidula*, *Oxychilus cellarius*, *Vitrea contracta*, and *V. crystallina*,
Clausiliidae including *Cochlodina laminata*, *Macrogastra rolphii* and *Clausilia bidentata*
Other Shade-loving species: *Acanthinula aculeata*, *Helicigona lapicida*, *Columella edentula*
Punctum Group: *Punctum pygmaeum*, *Nesovitrea hammonis*, *Vitrina pellucida* and *Euconulus fulvus*

Although full sequences of samples were taken from both ditch sections, only alternate samples were extracted and identified through the secondary fills in ditch 1534 on the eastern side of the enclosure. Both sequences are shown on a composite diagram with the deposits separated into a single chronological sequence providing a long and continuous local landscape history (Fig. 14).

Buried soils

Only single spot samples were taken from the buried soils, as analysis from closely-sampled soils in the 1981 excavations showed poor preservation of land snails. The buried soils under the western bank (1044; 1047) contained fewer than five shells in each sample and that from buried soil below the eastern bank (1539) only fourteen. Generally, however, they all reflect both the preservation and the composition of assemblages reported previously (Allen 1995). Little ecological interpretation can be made from these and they do not contradict the previous interpretation of short grassland sward (grazed or trampled) with a modicum of bare ground locally (Allen *op cit*, 97).

Phase I ditch (1533) – Area 7

This feature had only survived in a severely truncated form on the 'inside' edge of the phase II ditch (Fig. 10). The assemblages were predominantly open country species (especially *Vallonia costata* and *Vallonia excentrica*) but with *Trichia hispida*, *Carychium tridentatum* and the Zonitidae (largely the *Aegopinella* species) giving rise to high species diversity indices (Shannon Index of over 2.2). The two snail assemblages are not dissimilar to those from the buried soil. An open short-turfed calcareous grassland with bare earth (*P. muscorum*) is indicated, particularly in the earlier phase, but the presence of more shady conditions, probably shrubs and longer herbaceous vegetation, is indicated by the presence of the Zonitidae, and *Carychium tridentatum*. In this case, such vegetation may have occurred on the steep slope into which the initial enclosure ditch was cut.

The enclosure ditch (1057 and 1534)

Primary fills – The primary ditch fills (Figs 8, 10) comprised lenses of alternating fine and coarse chalk rubble with lenses of soil material. It is evident that deep (*c.* 0.6m), coarse, vacuous chalk rubble deposits in the western ditch section (1057) and the shallower primary fills (of finer chalk fragments in a calcareous silty clay loam matrix) in the eastern ditch section (1534) formed relatively rapidly.

Land snail evidence indicates that the phase II ditch was constructed in a pre-existing open environment. In the lower primary fills from both ditch sections shell numbers (1 to 48 shells) and species diversity ($H' = 0.09$ to 1.47) are low. The assemblages are poor and mixed, containing open country, catholic and shade-loving species. The pioneering open country species *Vallonia costata* is significant indicating colonisation of poorly vegetated areas by the mollusc faunae (Ellis 1985; 1986). A limited shade-loving component (largely *Vitrea contracta* with single specimens of *Aegopinella nitidula*, *A. pura* and *Clausilia bidentata*) in these small assemblages may represent the former shrub and longer herbaceous vegetation indicated by assemblages from the earlier ditch.

Immediately after the rapid deposition of lower primary rubble fills, finer upper primary fills are

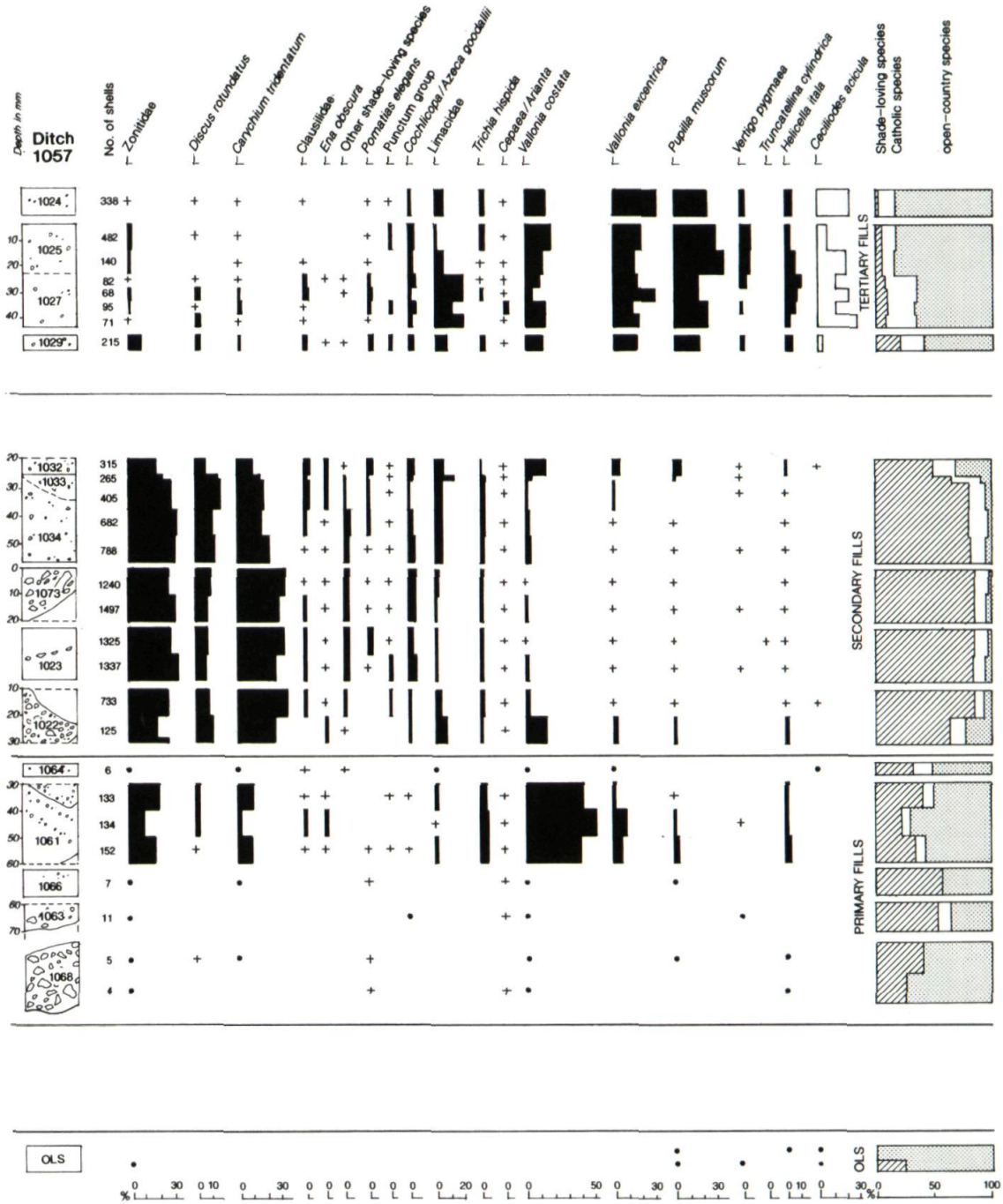

Fig. 14 Mollusc diagram

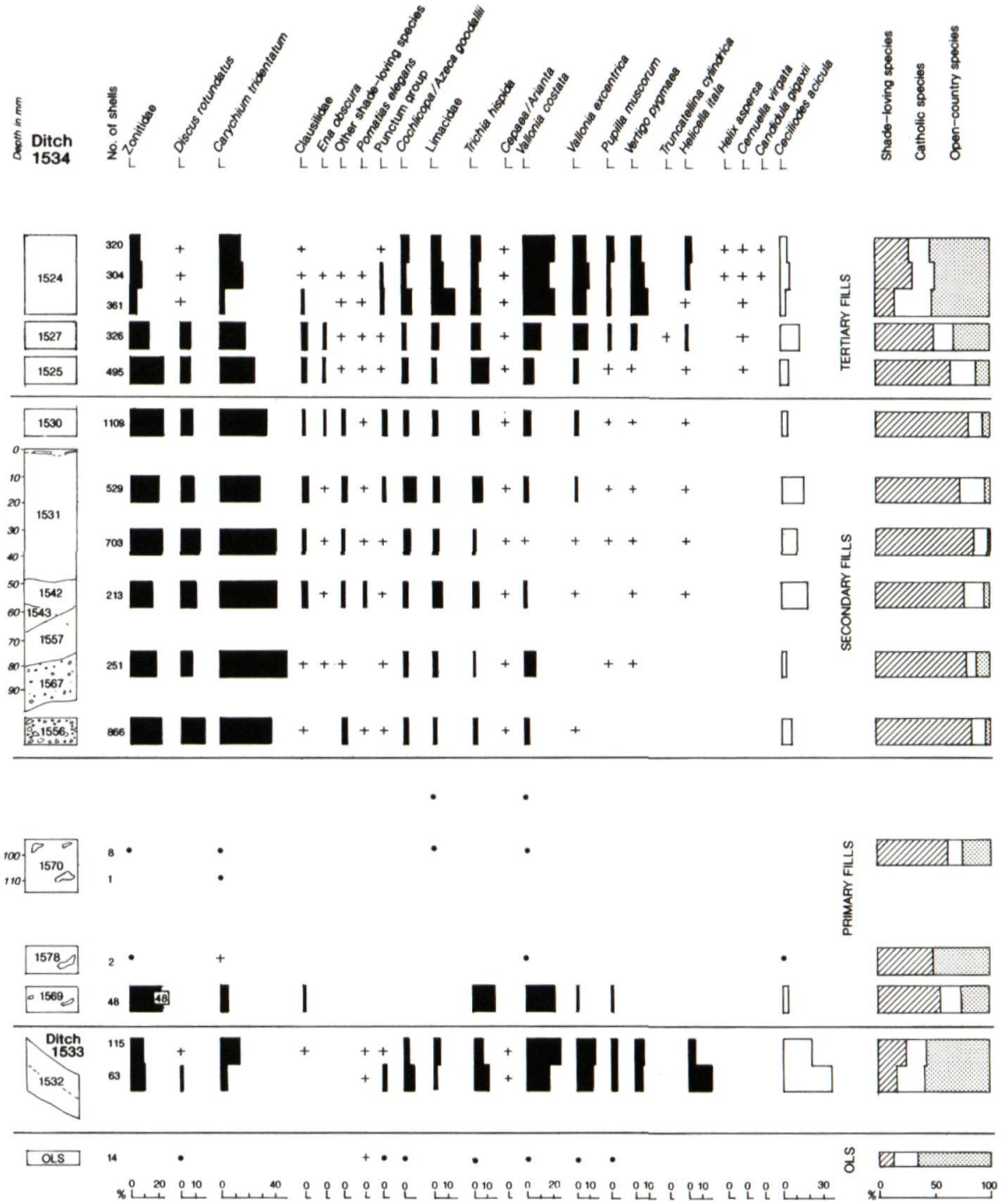
Depth in mm
Ditch 1534
No. of shells
Zonitidae
Discus rotundatus
Carychium tridentatum
Clausiliidae
Ena obscura
Other shade-loving species
Pomatias elegans
Punctum group
Cochlicopa / Azeca goodalli
Limacidae
Trichia hispida
Cepaea / Arianta
Vallonia costata
Vallonia excentrica
Pupilla muscorum
Vertigo pygmaea
Truncatellina cylindrica
Helicella itala
Helix aspersa
Carnuella virgata
Candidula gigaxii
Cecilioides acicula
Shade-loving species
Catholic species
Open-country species
1524
1527
1525
1530
1531
1542
1543
1557
1567
1556
1570
1578
1569
Ditch 1533
1532
OLS
320
304
361
326
495
1109
529
703
213
251
866
8
1
2
48
115
63
14
TERTIARY FILLS
SECONDARY FILLS
PRIMARY FILLS
OLS
%

Table 8 Mollusc assemblage from pre-bank buried soil and enclosure ditch, western side of monument

Phase			*LBA–EIA Primary ditch fills*								*?RB Secondary ditch fills*					
Feature	*OLS*	*OLS*	*1057*	*1057*	*1057*	*1057*	*1057*	*1057*	*1057*	*1057*	*1057*	*1057*	*1057*	*1057*	*1057*	*1057*
Sample	*2031*	*2032*	*2002*	*2003*	*2004*	*2012*	*2005*	*2006*	*2007*	*2013*	*2008*	*2009*	*2014*	*2015*	*2010*	*2011*
Context	*1044*	*1047*	*1068*	*1068*	*1063*	*1066*	*1061*	*1061*	*1061*	*1064*	*1022*	*1022*	*1023*	*1023*	*1073*	*1073*
Depth (cm)	*spot*	*spot*	*spot*	*spot*	*60–70*	*spot*	*50–60*	*40–50*	*30–40*	*spot*	*20–30*	*10–20*	*spot*	*spot*	*10–20*	*0–10*
Wt (g)	*1000*	*1000*	*2000*	*2000*	*1000*	*1000*	*1000*	*1000*	*1000*	*1000*	*1000*	*1000*	*1000*	*1000*	*1000*	*1000*
MOLLUSCA																
Pomatias elegans (Müller)	–	+	+	+	–	+	+	–	–	–	–	–	12	49	5	14
Carychium tridentatum (Risso)	–	–	–	1	–	1	11	3	10	–	28	221	347	411	443	383
Carychium spp.	–	–	–	–	–	1	4	1	6	1	8	57	41	58	41	57
Succinea/Oxyloma spp.	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Azeca goodalli (Férussac)	–	–	–	–	–	–	–	–	–	–	–	–	10	5	12	8
Cochlicopa lubrica (Müller)	–	–	–	–	1	–	–	–	–	–	–	5	12	9	12	18
Cochlicopa lubricella (Porro)	–	–	–	–	–	–	–	–	–	–	–	–	12	7	15	13
Cochlicopa spp.	–	–	–	–	–	–	1	–	1	–	2	12	54	35	60	48
Columella edentula (Draparnaud)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–
Truncatellina cylindrica (Férussac)	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–
Vertigo pygmaea (Draparnaud)	1	–	–	–	1	–	–	1	–	–	–	–	1	–	1	–
Vertigo spp.	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Pupilla muscorum (Linnaeus)	1	1	–	1	–	1	6	3	1	–	2	3	3	1	4	2
Vallonia costata (Müller)	–	–	1	1	3	2	50	77	56	2	18	22	19	14	26	18
Vallonia excentrica Sterki	–	–	–	–	–	–	9	15	3	1	3	1	12	4	2	2
Vallonia spp.	–	–	–	–	–	–	6	6	2	–	3	1	2	–	2	–
Acanthinula aculeata (Müller)	–	–	–	–	–	–	–	–	–	–	–	17	51	48	51	46
Ena obscura (Müller)	–	–	–	–	–	–	1	3	1	–	2	6	6	15	8	9
Punctum pygmaeum (Draparnaud)	–	–	–	–	–	–	–	–	1	–	–	3	14	7	10	5
Discus rotundatus Müller)	–	–	–	+	–	–	1	6	6	–	16	81	125	138	140	145
Vitrina pellucida (Müller)	–	–	–	–	–	–	–	–	–	–	–	2	3	–	1	2
Vitrea crystallina (Müller)	–	–	–	–	–	–	–	–	–	–	–	–	–	20	15	7
Vitrea contracta (Westerlund)	–	–	1	–	4	2	24	15	24	–	14	61	188	67	110	118
Nesovitrea hammonis (Ström)	–	–	–	–	–	–	1	–	–	–	–	6	6	2	5	5
Aegopinella pura (Alder)	1	–	–	–	–	–	1	2	2	–	8	71	126	147	196	116

Table 8 (cont.) Mollusc assemblage from pre-bank buried soil and enclosure ditch, western side of monument

Phase			*LBA–EIA Primary ditch fills*								*?RB Secondary ditch fills*					
Feature	*OLS*	*OLS*	*1057*	*1057*	*1057*	*1057*	*1057*	*1057*	*1057*	*1057*	*1057*	*1057*	*1057*	*1057*	*1057*	*1057*
Sample	*2031*	*2032*	*2002*	*2003*	*2004*	*2012*	*2005*	*2006*	*2007*	*2013*	*2008*	*2009*	*2014*	*2015*	*2010*	*2011*
Context	*1044*	*1047*	*1068*	*1068*	*1063*	*1066*	*1061*	*1061*	*1061*	*1064*	*1022*	*1022*	*1023*	*1023*	*1073*	*1073*
Depth (cm)	*spot*	*spot*	*spot*	*spot*	*60–70*	*spot*	*50–60*	*40–50*	*30–40*	*spot*	*20–30*	*10–20*	*spot*	*spot*	*10–20*	*0–10*
Wt (g)	*1000*	*1000*	*2000*	*2000*	*1000*	*1000*	*1000*	*1000*	*1000*	*1000*	*1000*	*1000*	*1000*	*1000*	*1000*	*1000*
MOLLUSCA																
Aegopinella nitidula (Draparnaud)	–	–	–	–	–	–	1	1	5	–	5	64	117	136	160	107
Oxychilus cellarius (Müller)	–	–	–	1	2	–	1	1	1	1	–	23	74	52	54	36
Limacidae	–	–	–	–	–	–	2	1	3	1	11	30	33	32	35	35
Euconulus fulvus (Müller)	–	–	–	–	–	–	–	–	–	–	–	–	1	–	3	–
Cecilioides acicula (Müller)	4	2	–	–	–	–	–	–	–	1	–	2	–	–	–	–
Cochlodina laminata (Montagu)	–	–	–	–	–	–	–	1	–	–	–	–	6	9	2	5
Macrogastra rolphii (Turton)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Clausilia bidentata (Ström)	–	–	–	–	–	–	–	2	1	–	–	13	15	21	29	8
Clausiliidae	–	–	–	–	–	–	+	–	–	+	–	–	–	–	–	–
Candidula gigaxii (L. Pfeiffer)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Cernuella virgata (Da Costa)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Helicella itala (Linnaeus)	–	1	2	1	–	–	6	3	3	–	2	8	3	2	4	2
Trichia hispida (Linnaeus)	–	–	–	–	–	–	8	9	7	–	3	20	31	24	34	28
Arianta arbustorum (Linnaeus)	–	–	+	–	–	–	–	–	–	–	–	4	–	–	–	–
Helicigona lapicida (Linnaeus)	–	–	–	–	–	–	–	–	–	+	+	+	6	6	6	2
Cepaea nemoralis (Linnaeus)	–	–	–	–	–	–	–	–	–	–	–	–	–	1	2	–
Cepaea hortensis (Müller)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	1
Cepaea/Arianta spp.	–	–	–	–	+	+	1	2	+	–	+	2	7	4	7	–
Helix aspersa (Müller)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Taxa	3	2	3	5	5	4	16	17	16	5	13	20	27	26	30	26
TOTAL	3	2	4	5	11	7	134	152	133	6	125	733	1337	1325	1497	1240
Shannon Index	1.10	0.69	1.04	1.61	1.47	1.35	1.84	1.70	1.85	1.26	2.06	2.19	2.40	2.32	2.37	2.27
Brillouin Index	0.60	0.35	0.62	0.96	1.08	0.92	1.76	1.61	1.72	0.98	1.97	2.13	2.39	2.28	2.33	2.23
Shannon Index – Brillouin Index	0.50	0.35	0.42	0.65	0.39	0.43	0.09	0.09	0.13	0.28	0.09	0.06	0.01	0.04	0.04	0.04

Table 8 (cont.) Mollusc assemblage from pre-bank buried soil and enclosure ditch, western side of monument

Phase		*?RB Secondary ditch fills*					*?post Roman Tertiary ditch fills*							
Feature	*1057*	*1057*	*1057*	*1057*	*1057*	*1057*	*1057*	*1057*	*1057*	*1057*	*1057*	*1057*	*1057*	
Sample	*2016*	*2017*	*2018*	*2020*	*2019*	*2021*	*2022*	*2023*	*2024*	*2025*	*2026*	*2027*	*2028*	
Context	*1034*	*1034*	*1034*	*1033*	*1032*	*1029*	*1027*	*1027*	*1027*	*1027*	*1025*	*1025*	*1024*	
Depth (cm)	*48–58*	*38–48*	*27–38*	*25–27*	*19–25*	*11–17*	*39–44*	*34–39*	*29–34*	*24–29*	*15–24*	*5–15*	*spot*	
Wt (g)	*1000*	*1000*	*1000*	*1000*	*1000*	*1000*	*1000*	*1000*	*1000*	*1000*	*1000*	*1000*	*1000*	
MOLLUSCA														
Pomatias elegans (Müller)	8	15	10	3	12	9	1	2	2	2	1	2	3	
Carychium tridentatum (Risso)	156	121	77	36	35	4	–	3	1	1	2	–	–	
Carychium spp.	35	11	3	8	4	1	1	–	–	–	–	1	1	
Succinea/Oxyloma spp.	–	–	–	–	–	–	–	–	–	–	–	–	–	
Azeca goodalli (Férussac)	–	–	–	–	–	–	–	–	–	–	–	–	–	
Cochlicopa lubrica (Müller)	3	2	–	2	4	4	–	2	1	1	2	7	2	
Cochlicopa lubricella (Porro)	3	1	–	3	1	–	–	–	–	–	–	–	–	
Cochlicopa spp.	19	25	9	5	11	4	2	4	–	3	3	14	8	
Columella edentula (Draparnaud)	–	–	–	–	–	–	–	–	–	–	–	–	–	
Truncatellina cylindrica (Férussac)	–	–	–	–	–	–	–	–	–	–	–	–	–	
Vertigo pygmaea (Draparnaud)	1	–	–	–	1	3	–	2	–	1	8	28	11	
Vertigo spp.	–	–	1	3	1	4	–	–	–	3	2	9	4	
Pupilla muscorum (Linnaeus)	3	1	–	5	18	40	18	24	12	15	53	136	86	
Vallonia costata (Müller)	28	20	9	13	48	27	11	14	4	8	20	85	49	
Vallonia excentrica Sterki	2	2	8	3	20	38	14	14	20	14	24	88	109	
Vallonia spp.	2	–	–	–	2	3	–	1	2	2	–	7	3	
Acanthinula aculeata (Müller)	32	31	9	3	2	1	–	–	–	–	–	–	–	
Ena obscura (Müller)	6	9	6	4	6	1	–	–	–	1	–	–	–	
Punctum pygmaeum (Draparnaud)	5	4	3	2	1	3	–	2	–	–	–	8	2	
Discus rotundatus (Müller)	119	95	76	48	28	9	3	1	2	1	–	+	1	
Vitrina pellucida (Müller)	1	1	–	–	–	–	–	–	–	–	–	1	–	
Vitrea crystallina (Müller)	–	6	–	–	–	–	–	–	–	–	–	–	–	
Vitrea contracta (Westerlund)	91	63	36	11	16	3	–	1	–	–	1	12	1	
Nesovitrea hammonis (Ström)	1	–	–	–	1	1	–	–	–	–	–	–	–	
Aegopinella pura (Alder)	92	87	44	24	21	7	–	1	–	–	1	–	–	
Aegopinella nitidula (Draparnaud)	66	79	39	22	22	8	1	–	1	1	1	2	–	
Oxychilus cellarius (Müller)	32	19	16	11	6	1	–	–	–	–	–	–	–	

Table 8 (cont.) Mollusc assemblage from pre-bank buried soil and enclosure ditch, western side of monument

Phase		*?RB Secondary ditch fills*					*?post Roman Tertiary ditch fills*							
Feature	*1057*	*1057*	*1057*	*1057*	*1057*	*1057*	*1057*	*1057*	*1057*	*1057*	*1057*	*1057*	*1057*
Sample	*2016*	*2017*	*2018*	*2020*	*2019*	*2021*	*2022*	*2023*	*2024*	*2025*	*2026*	*2027*	*2028*
Context	*1034*	*1034*	*1034*	*1033*	*1032*	*1029*	*1027*	*1027*	*1027*	*1027*	*1025*	*1025*	*1024*
Depth (cm)	*48–58*	*38–48*	*27–38*	*25–27*	*19–25*	*11–17*	*39–44*	*34–39*	*29–34*	*24–29*	*15–24*	*5–15*	*spot*
Limacidae	45	39	24	39	23	19	16	12	14	17	9	8	25
Euconulus fulvus (Müller)	1	–	–	–	–	–	–	–	–	–	–	–	–
Cecilioides acicula (Müller)	–	–	–	–	1	8	21	15	16	13	31	36	79
Cochlodina laminata (Montagu)	+	3	–	–	–	–	–	–	–	–	–	–	–
Macrogastra rolphii (Turton)	–	–	–	–	–	–	–	–	–	–	–	–	–
Clausilia bidentata (Ström)	9	13	16	6	13	4	1	1	2	2	1	–	2
Clausiliidae	–	–	–	–	–	–	–	–	–	–	–	–	–
Candidula gigaxii (L. Pfeiffer)	–	–	–	–	–	–	–	–	–	–	–	–	–
Cernuella virgata (Da Costa)	–	–	–	–	–	–	–	–	–	–	–	–	–
Helicella itala (Linnaeus)	3	3	3	–	7	11	3	8	6	10	10	15	18
Trichia hispida (Linnaeus)	22	25	12	11	7	7	–	–	1	+	2	15	13
Arianta arbustorum (Linnaeus)	–	–	–	–	–	–	–	–	–	–	–	–	–
Helicigona lapicida (Linnaeus)	1	4	1	1	1	1	–	–	+	+	–	–	–
Cepaea nemoralis (Linnaeus)	–	–	–	–	–	–	–	–	–	–	–	1	–
Cepaea hortensis (Müller)	–	–	–	–	–	–	–	–	–	–	–	–	–
Cepaea/Arianta spp.	2	3	3	2	4	2	+	3	+	+	+	3	+
Helix aspersa (Müller)	–	–	–	–	–	–	–	–	–	–	–	–	–
Taxa	25	24	20	21	23	22	11	15	12	13	14	15	14
TOTAL	788	682	405	265	315	215	71	95	68	82	140	442	338
Shannon Index	2.38	2.51	2.33	2.44	2.69	2.51	1.74	2.10	1.94	2.14	1.92	1.94	1.85
Brillouin Index	2.34	2.47	2.41	2.40	2.62	2.39	1.71	2.05	1.71	1.91	1.78	1.89	1.80
Shannon Index – Brillouin Index	0.04	0.04	–0.08	0.04	0.07	0.12	0.03	0.05	0.22	0.22	0.14	0.05	0.05

Table 9 Mollusc assemblage from pre-bank buried soil and enclosure ditch, eastern side of monument

Phase		*Phase I ditch*		*Phase II ditch primary fills*				*Phase II ditch secondary fills*						*Phase III ditch tertiary fills*				
Feature	*OLS*	*1533*	*1533*	*1534*	*1534*	*1534*	*1534*	*1534*	*1534*	*1534*	*1534*	*1534*	*1534*	*1534*	*1534*	*1534*	*1534*	*1534*
Sample	*2100*	*2078*	*2079*	*2063*	*2064*	*2066*	*2067*	*2096*	*2069*	*2071*	*2073*	*2075*	*2084*	*2085*	*2086*	*2080*	*2081*	*2082*
Context	*1539*	*1532*	*1532*	*1569*	*1578*	*1570*	*1570*	*1556*	*1567*	*1542*	*1531*	*1531*	*1530*	*1525*	*1527*	*1524*	*1524*	*1524*
Depth (cm)	*spot*	*base*	*top*	*spot*	*spot*	*105–115*	*95–105*	*spot*	*75–85*	*50–60*	*30–40*	*10–20*	*spot*	*spot*	*spot*	*10*	*+10*	*+10*
Wt (g)	*1500*	*1500*	*1500*	*1500*	*1500*	*1500*	*1500*	*1500*	*1500*	*1500*	*1500*	*1500*	*1500*	*1500*	*1500*	*1500*	*1500*	*1500*
MOLLUSCA																		
Pomatias elegans (Müller)	+	+	+	–	–	–	–	5	–	4	8	3	5	3	1	+	1	–
Carychium tridentatum (Risso)	–	2	10	3	+	1	–	276	117	67	264	128	325	100	58	5	64	45
Carychium spp.	–	1	7	–	–	–	–	51	5	23	27	31	67	27	7	11	7	7
Succinea/Oxyloma spp.	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–
Azeca goodalli (Férussac)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Cochlicopa lubrica (Müller)	–	1	1	–	–	–	–	1	–	–	1	8	7	3	1	13	4	4
Cochlicopa lubricella (Porro)	–	–	–	–	–	–	–	–	–	–	1	2	1	1	–	–	–	1
Cochlicopa spp.	1	4	3	–	–	–	–	28	7	7	31	39	30	13	9	13	8	11
Truncatellina cylindrica (Férussac)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2	–	–	–
Vertigo pygmaea (Draparnaud)	–	3	3	–	–	–	–	–	2	1	–	1	3	5	12	38	32	21
Vertigo spp.	–	–	4	–	–	–	–	–	–	–	2	–	1	1	1	8	7	4
Pupilla muscorum (Linnaeus)	1	3	6	1	–	–	–	–	3	–	1	1	6	3	9	6	9	15
Vallonia costata (Müller)	6	11	30	11	1	–	2	28	23	5	7	15	51	40	45	84	78	74
Vallonia excentrica Sterki	2	8	16	1	–	–	–	9	–	2	4	9	19	13	34	36	48	31
Vallonia spp.	–	–	–	–	–	–	–	–	–	–	–	1	2	2	4	3	4	3
Acanthinula aculeata (Müller)	–	–	–	–	–	–	–	25	3	5	9	15	18	2	1	–	–	–
Ena obscura (Müller)	–	–	–	–	–	–	–	–	1	2	4	5	18	8	5	1	2	–
Punctum pygmaeum (Draparnaud)	–	1	–	–	–	–	–	8	–	3	6	9	31	5	–	7	10	4
Discus rotundatus (Müller)	1	1	+	–	–	–	–	146	22	24	100	49	98	36	28	5	1	4
Vitrina pellucida (Müller)	–	–	–	–	–	–	–	–	1	–	–	1	10	1	1	–	–	–
Vitrea crystallina (Müller)	–	–	–	–	–	–	–	2	2	2	6	2	5	2	3	1	1	–
Vitrea contracta (Westerlund)	–	3	4	23	–	–	5	42	14	6	36	7	86	24	14	1	1	6
Nesovitrea hammonis (Ström)	1	–	1	–	1	–	–	–	1	–	–	–	3	–	–	–	–	–
Aegopinella pura (Alder)	–	–	2	–	–	–	–	55	20	5	42	23	74	28	10	3	4	5
Aegopinella nitidula (Draparnaud)	–	4	4	–	+	–	–	73	11	17	59	66	88	53	17	16	27	12
Oxychilus cellarius (Müller)	–	–	2	–	–	–	–	37	3	7	27	13	33	20	10	2	2	2

Table 9 (cont.) Mollusc assemblage from pre-bank buried soil and enclosure ditch, eastern side of monument

Phase		*Phase I ditch*		*Phase II ditch primary fills*				*Phase II ditch secondary fills*						*Phase III ditch tertiary fills*				
Feature	*OLS*	*1533*	*1533*	*1534*	*1534*	*1534*	*1534*	*1534*	*1534*	*1534*	*1534*	*1534*	*1534*	*1534*	*1534*	*1534*	*1534*	*1534*
Sample	*2100*	*2078*	*2079*	*2063*	*2064*	*2066*	*2067*	*2096*	*2069*	*2071*	*2073*	*2075*	*2084*	*2085*	*2086*	*2080*	*2081*	*2082*
Context	*1539*	*1532*	*1532*	*1569*	*1578*	*1570*	*1570*	*1556*	*1567*	*1542*	*1531*	*1531*	*1530*	*1525*	*1527*	*1524*	*1524*	*1524*
Depth (cm)	*spot*	*base*	*top*	*spot*	*spot*	*105–115*	*95–105*	*spot*	*75–85*	*50–60*	*30–40*	*10–20*	*spot*	*spot*	*spot*	*10*	*+10*	*+10*
Wt (g)	*1500*	*1500*	*1500*	*1500*	*1500*	*1500*	*1500*	*1500*	*1500*	*1500*	*1500*	*1500*	*1500*	*1500*	*1500*	*1500*	*1500*	*1500*
Limacidae	–	2	6	–	–	–	1	25	7	14	30	28	41	17	18	63	35	24
Euconulus fulvus (Müller)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Cecilioides acicula (Müller)	–	23	25	2	2	–	–	58	11	43	83	91	49	31	47	15	25	15
Cochlodina laminata (Montagu)	–	–	–	–	–	–	–	1	–	3	2	1	2	2	4	–	–	–
Macrogastra rolphii (Turton)	–	–	–	–	–	–	–	2	–	–	1	–	–	–	–	–	–	–
Clausilia bidentata (Ström)	–	–	+	1	–	–	–	8	2	3	10	22	18	15	10	7	5	3
Clausiliidae	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Candidula gigaxii (L. Pfeiffer)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2	3
Cernuella virgata (Da Costa)	–	–	–	–	–	–	–	–	–	–	–	–	–	1	2	5	2	1
Helicella itala (Linnaeus)	–	11	6	–	–	–	–	–	–	2	3	3	4	1	6	5	14	16
Trichia hispida (Linnaeus)	2	8	9	8	–	–	–	29	5	10	19	40	58	65	23	26	23	22
Arianta arbustorum (Linnaeus)	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–
Helicigona lapicida (Linnaeus)	–	–	–	–	–	–	–	5	–	+	2	1	2	+	+	1	+	–
Cepaea nemoralis (Linnaeus)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Cepaea hortensis (Müller)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Cepaea/Arianta spp.	–	+	1	–	–	–	–	10	1	1	1	5	3	4	1	1	2	1
Helix aspersa (Müller)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	1
Taxa	7	13	15	7	2	1	3	20	19	21	25	26	26	25	24	21	23	21
TOTAL	14	63	115	48	2	1	8	866	251	213	703	529	1109	495	336	361	394	320
Shannon Index	1.48	2.33	2.27	1.40	0.69	0	0.90	2.10	1.84	2.07	2.13	2.40	2.39	2.48	2.65	2.33	2.38	2.44
Brillouin Index	1.23	2.05	2.11	1.23	0.35	0	0.64	2.12	1.86	2.09	2.10	2.38	2.35	2.43	2.54	2.25	2.31	2.34
Shannon Index – Brillouin Index	0.25	0.28	0.16	0.17	0.35	0	0.26	–0.02	–0.02	–0.02	0.03	0.02	0.03	0.05	0.11	0.08	0.07	0.10

noticed (1037–39; 1058–1067 from ditch 1057; 1570 from ditch 1534). These deposits are more pronounced in the western ditch section (1057) where a large number (*c.* 27) of distinctly identifiable chalk and soil bands were recorded. Such banding has been described from many archaeological sites, and also from the Experimental Earthwork at Overton Down, Wiltshire where it has been ascribed to annual cycles of 'silting' (Bell 1990; Bell *et al.* 1996). A series of six samples were removed including ones carefully extracted from two of the narrow soil bands (1066; 1064), one of which was thought to be a possible redeposited turf.

In contrast the eastern ditch section contained only a very limited finer upper primary fill (1570) in the centre of the ditch representing slower deposition and a less harsh ditch micro-environment. However shells were only recorded in sufficient numbers from one context (1061 – ditch 1057), a calcareous silty clay loam with common to abundant small chalk pieces. Soil lens (1066), also sampled for soil micromorphology, and the putative turf (1064), were poor in shells. The origin of the faunae from the upper primary fills is more complex; some shells are derived from the old land surface through which the ditch was cut (but this was poor in shells), others from the immediate vicinity, and some probably exploited the ditch micro-habitat itself (*cf.* Evans 1972, fig 122).

The local environment remained open but the slower sedimentation conditions, particularly at the top of the finer primary fills, gave rise to some scrub vegetation growth in these deep ditches. The main taxa included *V. costata*, which is a pioneering species occurring in immature grassland, and able to colonise poorly vegetated habitats (Ellis 1985; 1986). The shade-loving component of the assemblage gives us some clue to the nature of that poorly developed vegetation. It contains many species which here we might consider as living in more intermediate environments; *Vitrea contracta* and *C. tridentatum* in particular inhabit longer herbaceous vegetation and the other species (*Aegopinella nitidula* and *A. pura*) are common in open unkempt grassland and hawthorn seres. The indications are, therefore, of a deep ditch with open dry chalk rubble, patches or stretches of long, ungrazed grassy vegetation and some longer herbaceous plants and possibly occasional immature hawthorn shrubs.

Secondary fills – The secondary fills are largely finer deposits of soil wash, with some coarser chalk lenses (1022) and some possible stabilisation horizons. These fills were likely to have accumulated during the Iron Age and Roman occupation of the site. The change in the nature of the sedimentation in both ditch sections is sharply reflected in very high shell numbers (over 1,000 per kg) and dramatic changes in the nature of the snail assemblages. In conjunction with the deposition of the secondary fills, there was an immediate change in the vegetative state of the ditch. Very high species diversity indices (*H'* consistently over 2.2) and a large increase in the relative proportion of Zonitidae, *Discus rotundatus* and *C. tridentatum*, along with a reduction in both absolute and relative terms of *Vallonia costata* which was previously predominant, suggests a much richer biodiversity in the ditch during the deposition of the secondary fills. This regeneration is not the slight vegetation regeneration seen at the top of many in secondary fills and often marked by Evans' *Punctum* Group (Evans 1972), but a much more vigorous vegetation growth providing good shady cover.

The comprehensive change in the character of the mollusc assemblages indicates significant localised vegetation regeneration in the ditch (possibly of brambles, nettles and long grasses etc). These assemblages are dominated by shade-loving species (*Discus rotundatus, C. tridentatum, V. contracta, A. nitidula* and *A. pura*) and display a wide and diverse taxonomic range, including species such as *Azeca goodalli* not previously recorded from the site (Allen 1995). This species is relatively uncommon but occurs in woodland as well as more open habitats such as on the edge of rich grassy rides with other catholic and shade-loving species. It has been suggested to indicate the onset of Hawthorn sere at a Bronze Age site at Barton, Bedfordshire (Allen 1991b). Relatively good vegetation cover and shrubs are indicated by the rupestral species (*Clausilia bidentata, Magrogastra rolphii, Cochlodina*

laminata and *Acanthinula aculeata*) with possibly some decaying leaf litter indicated by *C. tridentatum, Discus rotundatus* and the predatory Zonitids.

Assemblages remain consistent throughout the secondary fills (broadly Iron Age and Roman phases) of both ditch sections; significant changes are only noted in the very top samples of the secondary fills. Otherwise only minor differences can be seen between the taxa present from both ditch sections. Shell numbers are higher in the western ditch (1057) and some species are only recorded here; *Azeca goodalli, Truncatellina cylindrica*, and (more surprisingly) *Columella edentula*. The latter species is anomalous; it is generally found in calcareous wet woods, fields and marshes, habitats which are ironically more likely to prevail on the eastern side of Balksbury overlooking the River Anton, and where it is present today (Allen pers. obs).

This comprehensive change in the character of the mollusc assemblages indicates significant localised vegetation regeneration in the ditch (long grasses, nettles, brambles and occasional hawthorn etc). This is obviously significant as it is taking place alongside the occupation and use of the hilltop. Nevertheless a harsher open and very dry downland outside the ditch may be reflected in the continued but low presence of *H. itala* and the occurrence of the rare obligatory xerophile *Truncatellina cylindrica* which does not occur in shady places (Evans 1972, 141) and which is now extinct in much of Wessex. Only once has it been previously recorded from Hampshire (Kerney 1976; 1999) but was common in early 2nd millennium BC in Wiltshire (Evans *op. cit.*), although Evans notes that it was not recorded in the Bronze Age sites at Stockbridge, Hampshire (Kennard *cf.* Stone and Hill 1938, 169)

At the top of the secondary fills in the western ditch section (1033; 1032), the establishment of a more complete grassy cover may be seen by the relative rise in the pioneering open country species *V. costata* accompanied by other open country species (*V. excentrica* and *P. muscorum*). A similar reduction in the relative proportion of the shade-loving species near the top of the secondary fills in the eastern ditch section is not detected.

Tertiary fills – The tertiary fills in both ditch sections are post-Roman (probably medieval) in date. These fills differ in that those from the western section comprise calcareous silty clays with many small chalk pieces and are typical of ploughwash deposits (cf. Allen 1991a; 1992). In the steeper eastern ditch section the deposits are less calcareous, more clay rich with common to frequent flint gravel.

In this eastern ditch section shell numbers decrease through time in the deposits. Although there is a steady increase in open country species through contexts 1525 and 1527, shade-loving species continue to be present indicating locally shadier mesic habitats, ungrazed grass and limited scrub but set within more open conditions. In the upper tertiary fill (1524) much more open conditions prevailed and the xerophile *H. itala* is present; the ditch is completely infilled and no longer offers its own micro-environment.

A hillwash element in the sequence suggest local erosion into the ditch within a largely short turfed grassland. The consistent presence of the Introduced Helicellids (*Cernuella virgata* and *Candidula gigaxii*), albeit in low numbers, indicates a medieval or post-medieval date for these deposits as these are a medieval introduction to Britain (Kerney 1966). Here, therefore, in the later post-occupation phases of Balksbury, open ungrazed grassy slopes existed over the virtually infilled ditch.

In the western ditch section all the sampled tertiary fills were overwhelmingly dominated by open country species (69%). Both the deposits and the assemblages (*V. excentrica, V. costata, P. muscorum* and Limacidae) are typical of ploughwash. These assemblages indicate the clearance of the vegetation in the ditch, or at least of its succession by ploughwash from arable activity around the edges of the ditch.

Unlike the eastern ditch section no Introduced Helicellids were present; the absence of these species cannot, however, be taken to indicate that they are earlier than the medieval period. The two sequences have been broadly ordered chronologically in the mollusc histograms (Fig. 14), on the basis of the nature of the local habitats, but it is possible that this is purely local variation within the ditches and that these two habitats co-existed.

Discussion

The detailed snail analysis presented here reinforces previous assessment but significantly provides new findings which are discussed below.

The pre-enclosure landscape. For the early pre-enclosure landscape the reader is referred to the previously published land snail and environmental analyses (Allen 1995, table 31; Macphail 1995, table 35) which indicate the presence of mature broad-leafed forest succeeded by an open woodland in the Neolithic to Early Bronze Age periods. The first evidence for local clearance on any scale seems to accompany the Late Bronze Age activity.

Nature of the enclosure habitats during construction and occupation. At the time of the construction of the initial phase of the enclosure in the Late Bronze Age the area had been largely cleared of woodland and open grazed grassland had become established. It is evident, however, that some woodland refugia existed, especially on the steeper slopes overlooking the Anton Valley, and probably elsewhere.

The enclosure was constructed, and initially existed, in an open grazed downland landscape. These open conditions existed across the enclosure, but although the ditches provide their own micro-habitats, it is significant that in both of the examined ditch sections, after the primary fill accumulation of probably less than 70 years (by analogy with Overton Down, cf. Bell *et al.* 1996), the ditches at least became heavily overgrown. Vegetation must have covered the base of the ditch, certainly providing a useful physical barrier, but not the anticipated environment.

Some vegetation regeneration and growth of longer grasses might be expected in many ditches, certainly during the deposition of upper secondary fills (Evans 1972; 1990), but total invasion of large portions of the ditch circuit seems to have occurred and not been cleared. Colonisation with a good vegetation cover of long herbaceous vegetation, brambles and occasional shrubs is envisaged within the ditch. However, beyond the confines of the ditch, open dry downland prevailed. Certainly this ditch vegetation would act as a suitable barrier, but surprisingly there are no other comparable molluscan analyses from contemporary or slightly later enclosure ditches in southern England. Despite major excavations at Danebury and Winklebury Camp in Hampshire, snail analysis was restricted to features and buried soils (Evans and Hewitt 1991; Thomas 1977), and at Maiden Castle (Dorset) no snail analysis programme was undertaken from the main Iron Age enclosure ditches (Evans and Rouse 1991). The same is true of recent excavations of other Iron Age enclosures where land snail analysis has been conducted, e.g. Poundbury, Dorset (Vaughan 1987), The Caburn, Sussex (Thomas pers. comm.) and the earlier excavations at Balksbury (Allen 1995).

Colonisation of the ditch at Balksbury was probably in part due to its large size. The fact that such vegetation is recorded in both analysed ditch sections indicates that it was probably quite extensive. In such deep ditches this cannot be taken as evidence for abandonment of the hilltop settlement, just of a 'circuit' of vegetation regeneration in the ditch. Indeed, although there is no secure dating evidence of the ditch *sequences* it seems likely that this vegetation remained throughout both the Iron Age and Roman occupation of the enclosure.

The overall similarity in both the molluscan sequences and the assemblages from the eastern and western sections is quite startling, despite their quite different ecological and topographic aspects. No evidence of the wetter environments of the adjacent peat-filled Anton Valley at the foot of the eastern ditch could be detected. The only significant differences that can be attributed to these aspects are in the post-enclosure phases.

Post-enclosure environment. On the open, western side of the enclosure, it is evident that in the medieval and post-medieval periods the ditch and bank area was subjected to plough abrasion. The upper fills of the ditch sequences are ploughwash deposits containing evidence of the denudation of the bank, and the molluscan assemblages confirm an open, dry, probably arable habitat; certainly the faunae are typical of calcareous hillwash.

On the eastern side of the enclosure, overlooking the Anton Valley, the steeper slopes of

Balksbury were not ploughed, although the lynchets recorded in Area 5 prove the ploughing of the shallower terrace in the north-eastern part of the enclosure. As the ditch was infilled, long ungrazed grassland, or rough pasture, with occasional shrubs became established on this scarp.

Soil micromorphology and chemistry by Richard I Macphail, G M Cruise and J Linderholm

Buried soils, ditch fills and 'internal colluvium' of Late Bronze Age/Iron Age date were sampled by one of us (R. Macphail) with M. J. Allen during 1996 and 1997 from the western and eastern parts of the enclosure circuit. These contexts were specifically sampled to compare with, or augment, those sampled by R. Macphail from the 1981 excavations. The previous study included Iron Age buried soils, Pleistocene to modern soils from a 'hollow way' and soils formed in a tree-hollow during the Atlantic period (Macphail and Goldberg 1990; Allen 1995; Macphail 1995).

Soil micromorphological and chemical methods employed in the present investigation have also been applied to ethnoarchaeological and archaeological site studies from chalk areas (see below). In this way the comparative database for this Balksbury soil investigation has been expanded and the authors have also made reference to buried soil studies from the Experimental Earthwork at Overton Down (Bell *et al.* 1996). As in the Balksbury 1981 study, the soils have been studied alongside investigations of the past landscape by land snail analyses (Allen 1995, Allen above; Macphail 1995). The results are summarised below, and full details are retained within archive.

Samples and methods

Undisturbed monolith and bulk samples were collected from contexts including buried soils, ditch fills and occupation deposits (Tab 10; Figs 8, 10). Six undisturbed (M1-M2; M6-M8; M2041) and eight bulk samples (S1-S2; S2096-S2100) were selected for laboratory study.

The samples are listed below:

	undisturbed	bulk
Western Bank		
Soil/turf layer (1066/1065) in secondary fill of ditch	M1	S1
Buried soil (1047/1044) under western bank	M2	S2a, S2b
Eastern Bank		
Laminated deposit (1556) ditch 1534, secondary fill	M6	2096
'Internal colluvium' (116 = 1618 = 1520)	M2041/M7	2097
Buried soil (1539) under phase II bank 1580	M8	2100
Buried soil (1539) under 'internal colluvium'	M7	2098
Clay-with-Flints under buried soil 1539	M7	2099

The pre-enclosure landscape

A reappraisal of the 1981 Balksbury thin sections confirms and amplifies the interpretation of soil landscape change before bank construction. In the centre of the enclosure, the original broad-leafed forest soils were identified as decalcified argillic brown earths formed on loessic silty clay (hollow way and tree hollow *F.2052* – Macphail 1995, 101–102). During the Late Bronze Age/earliest Iron Age these were being eroded and recalcified, probably by cultivation and colluvial effects (Macphail 1995). The once humic and decalcified topsoils were transformed into massive calcareous colluvial silty clay soils, with both low porosity and textural features typical of colluvial ploughsoils.

Erosion of calcareous hillwash continued after the initial bank construction, as evidenced by the Holocene Bt subsoil horizon becoming increasingly mixed by trampling, soil fauna and flora as the soil profile became shallower (studied under the phase II bank).

The buried soil: Context 1539, sample M8

Because of its heterogeneity and mixing by both fauna (bow-shape infills and burrows) and physical activity (intercalations), this layer is believed to have two related origins. Firstly, such heterogeneity is the likely result of erosion and colluvial mixing of the natural loessic/

Table 10 Chemical and magnetic susceptibility signature

Site/soil micromorphology sample	*Context*	*soil sample*	*MS 10^{-8} SiKg*	*MS550 10^{-8} SiKg*	*%MS_{conv}*	*%LOI*	*P° ppm*	*Ptot ppm*	*P ratio*
BALKSBURY									
Western Bank and ditch 1057 (Area 4)									
M1	Laminated upper primary ditch fills (1065; 1066)	S1	35	45	78	2.9	83	161	1.9
M2	Buried soil (1047) under bank (1049)	S2a	32	46	70	4.0	231	589	2.5
M2	Buried soil (1044) under buried soil (1047)	S2b	29	46	56	4.0	209	615	2.9
Eastern Bank & ditch 1534 (Areas 6 & 7)									
M6	Laminated secondary ditch fill (1556)	S2096	28	55	51	4.9	83	235	2.8
M2041 / M7	Internal colluvium (1520)	S2097	30	67	45	5.9	92	292	3.2
M7	Buried soil (1539) under internal colluvium (1520)	S2098	39	53	74	4.8	545	828	1.5
Below M7	Clay-with-Flints natural sub-base (1521) under buried soil (1539)	S2099	28	67	42	5.1	314	606	1.9
M8	Buried soil (1539) under phase II bank (1580)	S2100	41	54	76	4.6	83	275	3.3
OTHER SITES									
Neolithic Belle Tout (mean of 7 samples)	Turf and buried turf	S3	20	193	10	7.4	68	392	5.7
Beaker Belle Tout (Mean of 2 samples)	Buried soil	S4	21	64	33	5.6	87	331	3.8
Late Bronze Age Wolstonbury; (mean of 2 samples)	Buried soil	S5	38	150	25	7.5	22	72	3.3
Iron Age Wolstonbury (mean of 2 samples)	Ditch stabilisation soil	S6	65	499	13	13.9	512	1212	2.4
Butser pasture	Topsoil turf	-	16	425	3.8	32.6	57	161	2.8
Butser arable (mean of three samples)	Ap horizon	-	22	599	3.7	18.2	74	205	2.8

Chemical data provided by R. Engelmark and J. Linderholm, Centre for Environmental Archaeology, Dept. of Archaeology, Umeå University, Sweden.

KEY

Balksbury

S1	bank of chalk and Clay-with-Flints(CwF)
S2a	decalcified loessic (fine component CwF) upper subsoil Eb/Bt horizon
S2b	decalcified loessic Ah turf
S2096	secondary fills (laminated) in ditch
S2097	mixed internal colluvium
S2098	relict humic buried soil
S2099	relict CwF
S2100	humic decalcified buried soil

Other sites

S3	calcareous mixed chalk and CwF occupation soil
S4	occupation soil rich in organic matter
S5	Bt horizon of loess/CwF
S6	chalk ditch soil

clay-with-flints soil (Ah, Eb, Bt) cover and underlying chalk (Macphail 1995). Secondly, the intercalatory mixing, dusty void coatings and obviously charcoal-rich laminae, could suggest tillage of this heterogeneous colluvium. The hypothesis of erosion, colluviation and cultivation go well together. Moreover, from studies of experimental cultivation soils at Hambacher Forest (Germany) and at Butser Ancient Farm, such heterogeneity and intercalatory mixing is to be expected (Gebhardt 1990; 1992; 1995; Macphail *et al.* 1990; unpublished observations). The presence of charcoal-rich laminae also testify to management by fire of an Ap (ploughed topsoil) that is no longer present. Phosphate data and the $\%MS_{conv}$ support the view that the supposed arable soils were both manured and managed by fire (cf. Engelmark and Linderholm 1996; Macphail *et al.* 2000).

It can also be suggested from experiments that the lower massive layer (M8/3) of buried soil 1539 is a relic of the last phase of cultivation, while the more biologically worked and open topsoil is evidence of field abandonment prior to construction of the enclosure circuit. Observations of abandoned cultivated soils at Butser Ancient Farm allow the speculation that partial reworking by earthworms and fine channelling by plants of buried soil 1539 took place over the probable autumn-winter period after the harvest was collected, prior to bank construction.

An alternative interpretation, that soil disturbance here resulted from human activity during bank construction, is less likely to have turbated the soil to such a depth, and would leave the pre-burial period of biological activity unexplained. At Carn Brea and Maiden Castle, pre-rampart trampling produced disturbance and crusting in only the uppermost few millimetres of the soil (e.g., Macphail 1991). Furthermore, cultivation and associated erosion and colluvial mixing of decalcified loess with chalky soils, is consistent with the Balksbury 1981 findings (Allen 1995; Macphail 1995).

Pre-enclosure land-use

Arable activity is likely to have continued into this period, as the buried soil (1047) beneath the western bank (sample M2) essentially appears to reflect a fine arable hillwash accumulation, with the charcoal band at 30–40 mm reflecting one particular sedimentary episode in the formation of this well-sorted homogeneous deposit (see various chapters in Bell and Boardman 1992). Again, MS and phosphate data clearly indicate an arable regime that included burning and manuring. As undisturbed colluvium is likely to be laminated (Farres *et al.* 1992), the homogeneity of this deposit might also reflect animal trampling around the inside of the perimeter of the enclosure. The high levels of phosphate here are also consistent with this model.

Late Bronze Age/earliest Iron Age activity

The soils physically beneath 'internal colluvium' 1520 are complex. The lowest layer (M7/2) is moderately heterogeneous and contains calcareous silty soil, as found in buried soil 1539 (see above). At context 1521 (natural clay-with-flints), however, calcareous soil is much less frequent in a soil dominated by humic non-calcareous Ah horizon (turf) material, flints and a few gravel-size fragments, i.e. subsoil Bt horizon. This heterogeneity, and dusty coatings throughout the sample, are evidence of probably localised disturbance and mixing. However, a number of features in the dominant non-calcareous soil (SMF2b), namely fine humic layering, micropanning, low porosity, only occasional faunal excrements, few dusty clay coatings and the presence of relic amorphous organic matter and tissue remains, indicate that this soil may well contain turf that had been strongly compacted. One mechanism for compaction, and a possible cause for stoniness and some heterogeneity, is activity by stock (see reviews in Courty *et al.* 1994; Macphail *et al.* 1998).

This soil had then been sealed by a mixture of similar Ah horizon soil (turf) and Bt subsoil, possibly as a constructed/trampled surface *sensu lato* and juxtaposed to a hearth location (Allen pers. comm. 1998). Both layers are rich in phosphate; the highest amounts present on the site. Two linked hypotheses can be put forward.

Firstly, generally decalcified grassland was still extant during the Late Bronze Age/earliest Iron Age despite cultivation and associated erosion/colluviation, and in places it seems that stocking of animals led to enhanced phosphate and P ratios

>1.0 (trampled/buried soil 1539 and clay-with-flints 1521, samples 2098 and 2099). Either this trampled turf is *in situ* as part of the animal disturbed occupation soil, or local turf was used for some unknown constructional purpose. Layer M7/1 (trampled/buried soil 1539) could possibly be a constructed layer. In either case, the presence of such turf is evidence of animal management (probably cattle) contemporary with the early use of the enclosure. Comparisons with turf from Belle Tout and Wolstonbury show that the Balksbury turf is different, the former of these being less phosphatic, and the latter having microfabrics dominantly reflecting earthworm working, rather than one reflecting major physical compaction/trampling.

In essence the Late Bronze Age/earliest Iron Age buried soil findings are consistent with the open country snail fauna identified by Allen (above), and can be both associated with cultivation and grazing/stocking.

Post-enclosure construction activity

Although essentially homogeneous, the 'internal colluvium' (1162;1520, sample M2041) becomes increasingly humic up-profile. It is also the most humic deposit on-site, reflecting the large amount of charred and humified organic matter present. It contains very few coprolitic bone remains, and so the phosphate content is likely to reflect another source of phosphate. As the P ratio is high (3.2), this may indicate that manure residues are present. Such a hypothesis is supported by the relatively low $\%MS_{conv}$ which indicates that manure has been transformed by humification rather than by burning, even whilst some ash is apparently present here. The massive and homogeneous nature of the deposit argues that it is now a colluvium. The possibility that the deposit, which appears (micromorphologically) to be relatively low in anthropogenic inclusions, is a within-enclosure, dominantly animal manured/trampled cultivation colluvium, cannot be ignored (see above).

Late Bronze Age/earliest Iron Age ditch fills

The chemical and soil micromorphological data indicate that the ditch fills are at least in part 'contaminated' by earlier occupation soils that contained phosphate (see ditch fill 1066, sample 2096) and buried soils (ditch fill 1556, sample S1). These probably reflect Late Bronze Age/earliest Iron Age use of the enclosure (?animal activity) associated with the eastern bank area and cultivation soils associated with the western bank area respectively. Unlike the ditch fill at the Experimental Earthwork at Overton Down, washed-in ditch edge humic topsoil material was little in evidence (Macphail and Cruise 1996).

The thin section from the laminated eastern ditch fills (sample M6) is a sample of very coarse and open stony deposits derived from the eastern bank. The origin of such coarse stony deposits from freezing and thawing is probably only coincidental with the presence of micritic pendants, these are likely to be relic Pleistocene features (e.g., Courty *et al.* 1989, fig 9.2e). In contrast, finer layering in the western ditch reflects probable seasonal variations in ditch silting (Bell 1990). Chalk and soil clasts were loosened in winter and fell in during spring, becoming earthworm-worked probably during the moist seasons of spring and autumn.

Conclusions

Soil micromorphological and chemical analytical data from the Balksbury 1995/96 and 1997 excavations have been interpreted. Our discussion employed associated data from the Balksbury 1981 excavations and findings from referenced archaeological and experimental sites on the chalk. We have identified:

a) pre-enclosure arable activity.
b) animal stocking and continued cultivation during the early use of the enclosure.

Cultivation, which probably involved manuring and management by fire, took place alongside continuing erosion, colluviation and animal trampling. Phosphate-rich, trampled, turf soils formed under a likely stocking regime in places, and it seems possible that manure-enriched occupation soils were also cultivated. Ditch fills may reflect deposition and biological working as seasonally governed, with soil material possibly reflecting infilling by material resulting from earlier land-use.

Charcoal by Rowena Gale

Environmental soil samples from the 1995/6 and 1997 excavations contained charcoal, sometimes relatively abundantly. Material was selected for identification from five samples for both radiocarbon dating and to provide palaeo-environmental data. Earlier excavations at the site had also produced charcoal and although some of this material was used for dating at Harwell, none was identified to genus (Wainwright and Davies 1995, 104). Two samples of charcoal remained from this earlier radiocarbon dating programme and have recently been re-examined and identified (by R Gale). The results are compared with those from the present analysis.

Samples and methods

Bulk soil samples were processed by flotation (to 0.5 mm) and the charcoal from the residues to 1 mm was separated from the seed and plant macrofossils.

The condition of the charcoal was mostly friable; some was compressed and difficult to examine. The charcoal was prepared for examination using standard methods. The fragments from each sample were fractured to expose fresh transverse surfaces and sorted into groups based on the anatomical features observed using a x20 hand lens. Representative fragments from each group were selected for further examination under high magnification. Freshly fractured surfaces were prepared in the transverse, tangential and radial planes. The fragments were supported in sand and examined using a Nikon Labophot incident-light microscope at magnifications of up to ×400. The anatomical structure was matched to reference material. Where appropriate the maturity (i.e. sapwood/heartwood) of the wood was assessed.

Results

The results are summarised in Table 11. The anatomical structure of the charcoal (including the Harwell samples) was consistent with the taxa (or groups of taxa) given below. It is not usually possible to identify to species level. The anatomical similarity of some related species and/or genera makes it difficult to distinguish between them with any certainty, e.g. members of the Pomoideae. Classification is according to Flora Europaea (Tutin, Heywood *et al.* 1964–80).

Aceraceae, *Acer* sp., maple
Betulaceae, *Alnus* sp., alder
Caprifoliaceae, *Sambucus* sp., elder
Corylaceae, *Corylus* sp., hazel
Fagaceae, *Quercus* sp., oak
Oleaceae, *Fraxinus* sp., ash
Rhamnaceae, *Frangula alnus* L., alder buckthorn
Rosaceae,
Pomoideae: *Crataegus* spp., hawthorns; *Malus* sp., apple; *Pyrus* sp., pear; *Sorbus* spp., rowan, service tree and whitebeam. These genera are anatomically similar.
Prunoideae: *Prunus* spp., which includes *P. avium*, wild cherry; *P. padus*, bird cherry; *P. spinosa*, blackthorn. The anatomical features of these genera are overlapping and it is sometimes difficult or impossible to differentiate between the species.

The charcoal samples from contexts representing distinct phases of use from the pre-enclosure period through to the use of the site in the Middle/Late Iron Age suggest that the woodland element was more or less consistent throughout. Woodland taxa included oak, ash, maple, hazel, and possibly cherry and whitebeam. Other taxa identified including hawthorn, blackthorn and elder would have been more likely to have formed scrub or thickets, as indeed would hazel, although this may also have grown as understorey in woodland. The nearby rivers would have provided suitably wet or boggy ground for alder buckthorn and alder.

The impact of the construction of the enclosure on local vegetation is unknown but (by implication) the erection of a palisade in the final phase of bank construction would have required substantial quantities of cut timber. Charcoal recovered during previous excavations gave a date of 390 cal BC – cal AD 20 (Wainwright and Davies 1995, table 36, pit 36) and suggested that firewood including oak, ash and maple, could still be obtained within range of the site. Timbers would also presumably have been required for maintenance and replacement of the palisade, granary structures, stockades, fence lines, etc. A similar although

Table 11 Charcoal identifications (The number of fragments identified is indicated)

Context	*Sample*	*Feature*	*Acer*	*Corylus*	*Frangula*	*Frax*	Pom	*Prunus*	*Quercus*	*Samb*
1611	2091	Hearth	–	4	–	2	12	10	8s	–
1601	2061	BS	3	3	?2	1	3	4	2h	–
1539	2087	BS	2	3	–	–	10	7	–	–
1517	2057	HD	–	3	–	–	2	21r	?1	32
1575	2062	TC	–	–	–	1	6	1	31sh	–

Abbreviations: *Frax* = *Fraxinus*; Pom = Pomoideae; *Samb* = *Sambucus*; r = roundwood; s = sapwood; h = heartwood; BS = buried soil; HD = hearth dump within 'internal colluvium'; TC = turf capping of phase II bank

slightly reduced range of taxa was identified from charcoal dated cal AD 550–950 (*ibid*, pit 500). This charcoal was used for radiocarbon dating and was very comminuted and difficult to examine – the absence of some species, e.g. maple, may not, therefore, be significant.

Charcoal from the hearth deposit (1611) in Area 7 can be described fairly securely as fuel debris. The origin of the charcoal from the buried soils (1601; 1539; ?turf capping 1575) is less certain, but this also could have resulted from domestic or industrial burning. The character of the wood and the range of species used was roughly similar in each of the samples, and would have produced efficient firewood. The maturity of the wood was difficult to assess. As would be expected, wood from some of the shrubbier species (e.g. elder) included narrow diameter roundwood, whereas oak from the two buried soils (1601; 1575) included heartwood. Burning scrub from the site of the enclosure prior to its construction could also be considered a potential source of charcoal, although the presence of charred grain in these contexts suggests that this was probably less likely. In later periods the repair of wooden palisades may have provided some fuel.

Assuming that the charcoal represents fuel debris, it is clear that wood and fuel was gathered from any useful source in the vicinity, although there was scant evidence of the use of wetland species from the neighbouring rivers. Wood fuel from wetland taxa, e.g. willow (*Salix*), poplar (*Populus*) and alder (*Alnus*), is generally less efficient than that from the taxa named above and can be more productively employed for other purposes (e.g. wattle). Similar or alternative uses of wetland species may have occurred at Balksbury.

Conclusion

The charcoal analysis, although from a very limited number of samples, indicated that the woodland composition was probably similar throughout the periods of occupation of the enclosure (Late Bronze Age/earliest Iron Age to Roman). By implication the construction of the enclosure probably depleted local woodlands of trees with post-sized trunks but the continued use of taxa such as oak, maple, ash and hazel for firewood suggests that the woodland regenerated reasonably quickly. The charcoal deposits probably consisted of fuel debris and the taxa identified suggested that fuel was gathered from trees and shrubs growing around the camp; maintenance of wooden palisade timbers may have provided some fuel in the later periods. There was little evidence of the use of riverine species.

Charred plant remains by Joy Ede

Methods

Eight samples were submitted for analysis from a range of contexts. All samples were of 20 to 40 litres and were processed by standard floatation methods at Wessex Archaeology (flot 0.5 mm res-

Table 12 Charred plant remains

	Phase	*LBA*	*LBA*	*LBA*	*Post III*	*Post colluvium*
	Feature	*OLS* *Area 4*	*OLS ?trample* *Area 7*	*turf capping* *Area 7*	*internal colluvium* *Area 6*	*hearth dump* *Area 7*
	Context	*1047*	*1601*	*1575*	*1162*	*1517*
	Size of sample (l)	*20*	*30*	*30*	*40*	*30*
Scientific Name	*Common Name*	*2000*	*2061*	*2062*	*2036*	*2057*
T. dicoccum/spelta glume base	emmer/spelt wheat	4	5	1	2	–
Triticum sp grain	wheat	–	4	–	–	–
cf *Triticum* sp		–	1	1	–	–
Hordeum sp grain	barley grain	–	4	–	–	1
cf. *Hordeum* sp		–	1	2	1	–
Cereal indet. grain		1 tail	7(4 immature)	4	3	9
Cereal indet. frags		–	+	+	+	+
TOTAL GRAIN		1	17	7	4	10
TOTAL CHAFF		4	5	1	2	0
Leguminae indet.		–	1	–	–	–
Galium aparine	cleavers	2	–	1	–	2
Sambucus nigra	elder	–	–	–	–	1
Compositae indet	daisy family undete	–	–	–	–	1
Bromus sp	brome grass	–	3	–	–	–
Corylus avellana	hazel nut shell frag	1	4	–	1	–
misc indet	unidentified seeds	3	–	1	–	3
TOTAL WEED SEEDS		5	4	2	0	7

idues 1 mm), and the entire residues of the selected samples sorted under a ×10–×30 stereo-binocular. The flots were sorted by the author and sub-sampled when appropriate. Previous samples were only 3–4 litres volume and micro-scopic extraction of residues was not undertaken, nor were the raw flots available for the analyst to examine (de Moulins 1995, 87). It was therefore likely that additional elements may have been recovered below. Identification was made using published texts and with reference to the author's own collection of modern seeds. Classification and terminology follows Clapham *et al.* (1981). The results are presented in Tables 12 and 13.

Table 13 Charred plant remains from corndryer 1153

	Feature	*Corndryer 1152*			*Drier F.511 1973 exc.*
	Context	*1110*	*1149*	*1150*	
	Sample No	*2033*	*2034*	*2035*	*13 samples,*
	Size of sample (l)	*10*	*adjusted to 10*	*10*	*@ 3–4 = 39–52*
Scientific Name	*Common Name*				
Triticum spelta glume base	spelt wheat	72	390	–	+
Triticum sp. glume base	wheat	2820	12400	68	+
Triticum sp. spikelet fork		161	1000	19	–
Triticum sp grain	wheat	19 (24%)	90 (30%)	5	++ (57%)
cf *Triticum* sp		3 (4 %)	–	–	–
Hordeum sp grain	barley grain	1 (1 %)	60 (20%)	–	+ (15%)
Hordeum sp internode		–	360	–	–
Avena sp grain		–	–	–	+ (0.6%)
Avena sp awn fragment	oat	–	40	–	–
Cereal indet. grain		57 (71%)	150 (50%)	1	+ (27%)
Cereal indet. frags		++	++	+	++
TOTAL GRAIN		80	300	6	(914)
TOTAL CHAFF		3053	14190	97	(96)
Papaver somniferum	opium poppy	32	320	2	–
Agrostemma githago capsule frag	corn cockle	–	170	–	
cf *Silene* sp		–	–	–	+
Chenopodium album		–	40	–	+
Chenopodiacaeae indet		16	160	2	–
Legs - indet round	vetches etc type legume	1	–	–	(+)
Pisum sativum		–	–	–	+
Legs- Trifolium type		–	40	–	–
cf *Daucus carota*	cf. wild carrot	8	–	–	–
Rubus fruticosus		–	–	–	+
Rumex sp	docks/sorrel	4	–	4	+
Polygonum aviculare		–	40	–	–
Polygonum sp		16	–	–	+
Rumex sp		–	160	–	–
Polygonaceae		17	40	–	–
Lithospermum arvense	corn gromwell	–	40	–	++
Euphrasia/Odondites sp	eyebright/red rattle	–	–	–	+
Plantago lanceolta/media	ribwort/hoary plantain	–	–	–	+
Galium aparine	cleavers	15	–	–	+
Sheradia arvensis		–	–	–	+
Anthemis cotula		–	–	–	+
Tripleurospermum inodorum (Schultz Bip.)	scentless mayweed	48	280	1	–
Centaurea/Cirsium/Carduus sp		–	40	–	+
Compositae indet larger	daisy family indet	8	80	–	+
Compositae indet smaller		24	–	–	–
Juncus sp		–	–	–	+
Gramineae larger	grasses	8	–	3	+
Gramineae smaller		48	–	5	+
grass tubers		–	–	–	+
misc indet	unidentified seeds	8	40	6	–
TOTAL WEED SEEDS		253	960	23	(262)
Minimum no. species		11	9	6	12 max, av. 7.4, min 0

Pre-enclosure contexts

Three pre-enclosure samples were examined; one from a buried soil (1047) in Area 4 and another from a buried soil (? trample layer 1601) in Area 7 which contained much burnt debris and from a possible turf capping (1575) of the phase II bank (Area 7). The latter was radiocarbon dated to the Late Bronze Age/earliest Iron Age (see Tab 1) and may have derived from nearby soils in the vicinity related to hearth 1613.

Both of the samples from the buried soils (1047; 1601) contained few remains (0.5 and 1.15 items per litre respectively). The presence of four (*Triticum* sp.) glume bases indicate that crop processing must have occurred in the vicinity. The one grain, being a small (tail) grain, probably also originates from crop processing debris along with the chaff and weed seeds. Only two weed seeds could be positively identified; both of cleavers (*Galium aparine*), a common plant of disturbed land including arable. One fragment of hazel (*Corylus avellana*) nut shell may have originated as part of an item of food or from hazel wood used as fuel. The buried soil (? trample 1601) below the phase I bank produced a lot of artefacts and charcoal, however the density of charred seeds was very low. The cereal grains of wheat and barley (*Hordeum* sp) were present. Several unidentified grains appeared to be crushed and were presumably immature grains not fully plump. Some crop processing debris including wheat chaff and grass seeds (*Bromus* sp).

Post-phase III bank

The charred seeds were sparse from the 'internal colluvium' (1162) which had built up against the rear of the last phase of the bank in Area 6. Most of the cereal grain was unidentified with one grain possibly being barley (Tab 12).

A sample from a dump of probable hearth material (1517) within the 'internal colluvium' in Area 7 was full of burnt material but contained few charred seeds. Most grains were unidentified. The few weed seeds included cleavers, elder (*Sambucus nigra*), a plant from the daisy family (Compositae). The presence of elder may indicate that these plants grew in disturbed soil, perhaps on the side of arable fields or around the enclosure.

Corndryer (Table 13)

Spelt wheat is the most common type of cereal found in Roman corndryers (van de Veen 1989). The mixture of cereal grains in context 1149 (wheat and barley) may indicate that the drying of at least two crops is represented. The relative lack of weed seeds implies that they were separated out at a different stage of processing which did not remove the chaff, for instance by coarse sieving of the intact spikelets. It may indicate that the crops were relatively weed free, perhaps due to roguing (coarse weeding) the crop as it grew.

The relative lack of chaff in context 1150 compared with the other samples may indicate a change in crop processing techniques or a difference in the sources of material represented in the deposit. The more restricted range of weed species may also indicate a difference in source material. The density of charred remains in this layer is also very different and there are far less charred remains. Even though there are differences the main component of this sample, as for the others, is crop processing waste.

All three samples clearly contain mainly crop processing waste. This waste is composed predominantly of wheat chaff, with some barley chaff too in 1149. The chaff of both wheat and barley indicates more grains than were present. All the weeds represented are types associated with arable and disturbed land.

The remains from this corndryer are consistent with those from other similar features (*op cit*). The main crop represented is wheat, probably spelt wheat. The fuel included crop processing waste composed of chaff and weed seeds which may be the result of processing wheat stored in spikelet form, or of processing wheat before storing as clean grain. The use of a corndryer implies the heating of a considerable quantity of cereal, and not purely a small-scale domestic action.

Comparison of corndryer 1153, with F. 511 (analysed in 1985)

The present author re-examined the seeds identified in 1985 from the corndryer *F.511* (de Moulins 1995, table 26) to ensure consistency of identification and interpretation and examine possible loss by previous processing and retrieval

methods (*ibid*, 87). No differences in identification existed that would change previous interpretations, however there were a few details noted as follows:

- a higher percentage of unidentified cereal grains were identified in the samples from corndryer 1153 than from corndryer *F.511*. This could be due to differences in preservation between the features, and de Moulins mentions that the remains from corndryer *F.511* were better preserved than the Iron Age samples
- few and only large chaff pieces were present in previous samples indicating that the original sorters probably missed the smaller items (sub-microscopic)
- variations in the presence of *Anthemis cotula, Tripleurospermum arvense, Odontites* sp., *Lithospermum arvense* and *Trifolium* sp type in the two features

There were also a few differences of identification as follows:

- *Rubus fruticosus* was mis-identified and is mainly *Papaver somniferum* (opium poppy)
- *Juncus* sp was mis-identified and is *Euphrasia/Odontites* sp
- Some *Sheradia arvensis* may be Umbelliferae indetermined but *Sheradia arvensis* is also present.
- *Vicia/Lathyrus* sp is included in the present study as legumes indet. round (and where size is differentiated – large)

The presence of only large pieces of chaff with an obvious glume in the samples from corndryer *F.511* indicates that the sorting of these samples was not carried out expertly enough to recover all charred cereal and seed remains. With the exception of the grain, comparisons between the chaff and weed seeds assemblages of these two features is difficult, however *Euphrasia/Odontites* sp and *Anthemis cotula* seeds were present, both of which are small to tiny.

The assemblages of charred plant remains from the two corndryers are completely different and there is an under-representation of chaff and weed seeds relative to the amount of grain present in *F.511*. There was also far less chaff than in corndryer 1153. If the assemblages were representative of the layer then the interpretation that clean grain was being dried in this feature would be reasonable. The earlier study states that most of the weeds were from lower layers and a mixture of sources is represented, which probably includes both clean grain being dried before milling as well as fuel composed of crop processing waste, and possibly parching grains in spikelet form before freeing the grains from their chaff (de Moulins 1995, 92).

However all arguments taken together suggest that extraction and sorting on site is the most likely explanation for the lack of chaff and weed seeds rather than a functional difference.

Animal bones by Mark Maltby

Methods

All animal bones were recorded individually on to a database which forms part of the site archive. Where appropriate, the following information was recorded on each fragment: context; feature; phase; species; anatomy; part of bone present; proportion of bone present; gnawing damage; surface condition; fusion data; tooth ageing data; butchery marks; metrical data. Where necessary, identifications were confirmed by reference to the comparative skeleton collection housed in the School of Conservation Sciences, Bournemouth University.

Sample size and preservation

The excavations produced only a small sample of 720 bones (Tab 14). Hand-excavation of later prehistoric contexts produced 669 fragments, the majority (452) of which were derived from the 'internal colluvium'. A total of 377 (56%) fragments was identified to species. A further 265 fragments were recorded from sieved samples but only 18 of these could be identified to species. Roman contexts produced only 51 fragments, all from hand-excavation. Twenty-nine of these were identified to species.

Preservation of the faunal assemblage was generally only moderate. About one quarter of the hand-excavated fragments from prehistoric

Table 14 Animal species

	Internal Colluvium	*Ditch*	*Later Prehistoric Buried Soil*	*Bank*	*Other*	*Later Prehistoric Total*	*%*	*Prehistoric Sieved*	*Roman*
Cattle	148	8	29	6	7	198	53	6	15
Sheep/Goat	48	13	13	1	1	76	20	12	5
Pig	18	1	1	1		21	6		2
Horse	42	3	5	2	3	55	15		7
Dog	4	21				25	7		
Red Deer	2					2	<1		
ULM	152	5	39	8	3	207			16
USM	34	30	7	1	1	73			1
UM	4	6	1		1	12		247	5
Total	452	87	95	19	16	669		265	51

ULM = unidentified large mammal
USM = unidentified sheep-sized mammal
UM = unidentified mammal

Table 15 Animal bone preservation data

	Internal Colluvium	*Ditch*	*Later Prehistoric Buried Soil*	*Bank*	*Other*	*Later Prehistoric Total*	*Roman*
Gnawed	52	11	4	3	2	72	7
Eroded	65	44	33	11	13	166	35
Ivoried	1	1	1	1		4	
Burnt	6					6	

contexts had weathered/ eroded surfaces. The assemblage from the 'internal colluvium' was the least severely affected in percentage terms (15%; Tab 15), indicating rapid burial. Over two-thirds of the Roman fragments were eroded. Gnawed bones were also common; 19% of the fragments identified to species in the later prehistoric contexts were damaged to some extent by gnawing. On the other hand only six bones from the 'internal colluvium' bore evidence of burning, although sieving produced 25 burnt fragments. Very few bones had ivoried surfaces.

Cattle

Fragments of cattle bones were the most commonly identified. Excluding the sieved material, cattle provided 53% of the identified fragments in the later prehistoric assemblage. They were also the most commonly recorded category in the Roman sample. All parts of the skeleton were represented, although there was a bias towards denser elements such as loose teeth, mandible and shafts of the major limb bones, which survived better. Mandibular ageing data were limited to six specimens of later prehistoric date. These included two with all permanent cheek teeth in wear and heavy wear on some teeth; two specimens had relatively slight wear on their deciduous premolars whilst two other specimens had heavier wear on these deciduous teeth. Young calves, immature cattle and mature adult cattle were therefore all represented.

The less reliable epiphysial fusion data confirmed the presence of cattle of all ages. Although calves were present, some late-fusing epiphyses had fused indicating the presence of cattle over four years old. Butchery marks were observed only on six cattle bones of later prehistoric date. Most were from disarticulation (i.e. knife cuts or knife cuts on the lateral aspects of the mandible (ramus) made during separation from the skull and cuts on the pelvis probably made during disarticulation from the femur) but there was limited evidence of skinning (knife cuts on the medial aspect of a metatarsal shaft); the only chop mark was found on a thoracic vertebra which had been chopped through axially on its body towards the lateral aspect.

Sheep/Goat

Bones and teeth of sheep/goat were the second most commonly identified from hand-excavation. However, only 76 fragments from later prehistoric contexts were identified, representing 20% of the identified sample. Forty-eight (18%) were recovered from 'internal colluvium' deposits (Tab 14). Sheep/goat were better represented in the small sample from the enclosure ditch. Only five fragments were found in Roman contexts.

Of the ten bones that could be identified specifically from later prehistoric contexts, six belonged to sheep and four (all from the erosion layer 1516 behind the phase III bank) were identified as goat. Poor preservation resulted in an uneven representation of sheep/goat bones. The sample was dominated by loose teeth, mandible and the shafts of the radius and tibia, all of which are dense elements. Mandibular ageing data indicated that three immature goat mandibles found in layer 1516 belonged to kids under a year old (Deniz and Payne 1982, 180), one mandible to a sheep of similar age and a third goat mandible to a slightly older animal (which was probably killed in its second year) and only one sheep/goat mandible which probably belonged to an animal aged about four year old. The sparse epiphysial fusion data merely confirmed the presence of kids and lambs and mature animals. Only one butchered specimen was recorded: a sheep scapula from the enclosure ditch had a knife cut on the posterior aspect of the blade, probably made during filleting.

Pig

Only 23 pig fragments were identified, all from hand-excavation. Twenty-one of these were found in later prehistoric contexts forming 6% of the identified species (Tab 14). All but three of these specimens were found in the 'internal colluvium'. Most of the elements represented were from the head but the sample is too small to derive any conclusions about anatomical representation. A mandible from the 'internal colluvium' deposit belonged to an animal killed between 18 and 24 months (Bull and Payne 1982), and a maxilla from a Roman context belonged to a pig of a similar age. Another mandible from the 'internal colluvium' probably belonged to a slightly older

animal. No butchery marks were recorded and only one pig bone was measured.

Horse

Horse bones were comparatively well-represented. Fifty-five (15%) were identified in later prehistoric contexts and seven in Roman contexts. These numbers were inflated by the presence of a partial skeleton of a horse in the 'internal colluvium'. Context 1520 ('internal colluvium') produced seven bones from the right hind foot of an adult horse but no butchery marks were recorded on this group. Other bones in this context may have belonged to the same horse, although they were not found in a clearly articulated group.

In this and other contexts horse pelvis and femur were well represented. Vertebrae were also relatively better represented than in the cattle assemblage. A horse humerus of later prehistoric date had an oblique knife cut on its shaft, indicative of filleting, however no other butchery marks were observed. The horse bones tended to survive in a more complete state than those of cattle. Only one mandible (from the phase I bank) possessed surviving teeth and it belonged to an adult animal. Two worn deciduous upper premolars from the same maxilla in a pre-bank buried soil (1539) were the only evidence for the presence of any immature horses. The tibia in the associated group discussed above had a lateral length of 292mm, giving an estimated withers height of 1.273m. The lateral length of a femur from the prehistoric ploughsoil measured 343mm and belonged to a slightly smaller pony with an estimated withers height of 1.204m. Other measurements indicated that the horses were relatively small animals.

Dog

Twenty-five bones of dog were recorded, all from hand-excavation of later prehistoric contexts. Most of these were found in the enclosure ditch and included groups of associated bones. Pairs of radii and ulnae and the left humerus of an adult animal were in a fragmentary state in ditch fill 1057 and they had been gnawed by another dog before burial. A partial skeleton of another adult dog was found in ditch fill 1542. No butchery marks were recorded on any of the dog bones and the presence of associated groups suggests that dogs were much less likely to processed for food than cattle, sheep/goat and pig. Unfortunately no complete dog limb bones were recovered to provide estimates of shoulder heights but the skeleton in 1542 possessed a tibia with a distal breadth of 25.6mm and a lower carnassial (first molar) with a greatest length of 24.0mm, indicating that it belonged to quite a large animal.

Red Deer

The 'internal colluvium' deposit 1520 produced an antler fragment and the shaft of the radius of red deer.

Discussion

The information from this small sample of animal bones can be added to that derived from the much larger data set from the 1973 excavations. Some of the results from the previous study have been summarised (Maltby 1995) but a more extensive report exists (Maltby 1979).

Most of the bones from the previous excavations were recovered from pits within central areas of the enclosure. This has enabled a comparison to be made with the current material which was mainly derived from different types of deposit around the periphery of the enclosure. The species identified here are the same that dominated the samples from the earlier excavations.

The relative abundance of the major species in this sample is, however, significantly different from the earlier sample. Here, cattle dominated the later prehistoric assemblage whereas sheep/goat were previously the most commonly recorded (Maltby 1995). Horse bones are also better represented in the current assemblage.

A combination of factors could account for this. Poorer preservation conditions favoured the recovery of the larger mammal bones. Bones of sheep-sized mammals may have been deposited in pits more frequently, either because the pits lay nearer to where their carcasses were processed and cooked and/or because of structured disposal patterns. A number of Iron Age sites in Hampshire have produced evidence that contexts on or near the edges of enclosures tend to produce higher percentages of bones of larger mammals

(Maltby 1996). This can partly be explained by the poorer preservation conditions often associated with contexts in these peripheral areas (shallow gullies; quarries; colluvial deposits). It may also reflect the fact that larger mammals may have been more often initially butchered in these areas and their bones discarded nearby or as before, due to structured disposal patterns.

Within the sheep/goat assemblage, the proportion of goat bones is higher in this assemblage than recorded in the 1973 assemblage which was heavily dominated by sheep (Maltby 1979). This current sample is very small and all the goat bones identified were from one context but there may have been spatial variation in the disposal of goat bones in different parts of the settlement.

Some of the bones are derived from some of the earliest contexts recorded at Balksbury. Bones from the buried soils and the earliest phases of the bank and ditch probably date to the Late Bronze Age/earliest Iron Age. However, the number of bones from these contexts is small and there is no evidence that the relative abundance of species represented in these is significantly different from later deposits. Similarly, the Roman sample is very small and unreliable, although it is worth noting that cattle and horse continue to be better represented than in the previous samples of this date from the site.

There is no evidence that the relative abundance of species represented in the Late Bronze Age/earliest Iron Age contexts is significantly different from the later Iron Age deposits. Similarly, although the Roman sample is very small, it is worth noting that cattle and horse continue to be better represented than in previous samples of this date from the site.

A feature of the 1973 assemblage was the large number of partial skeletons of all the domestic mammals, particularly sheep, pig, dog and horse that were deposited in beehive-shaped pits (Maltby 1979). Such depositions have been commonly recorded on Iron Age sites in Wessex, notably at Danebury (Grant 1984; 1991; Cunliffe 1992). The recent excavations have demonstrated that such finds are not restricted to pits in the central area of the site.

The preservation conditions in the colluvial and buried soil deposits in particular have destroyed bones of neonatal mortalities, which were present in a number of the pits. The limited cattle mandibular ageing data revealed the presence of calves as well as older cattle while the larger sample from the pits was dominated by adult cattle (Maltby 1981, 180). This perhaps hints that the disposal of cattle of different ages was not randomly spread across the site.

The presence of sheep and goat aged about a year old mirrors the peak of mortalities recorded from pits (Maltby 1981, 173). These animals were killed for meat, although they had not attained full body weight. The great majority of horses represented at Balksbury and other Iron Age sites in Wessex were adult animals, indicating that their main use was as working animals rather than meat. The butchery and fragmentation evidence from the recent work supports the impression derived from the 1973 assemblage that horses were much less heavily utilised for meat and marrow than cattle.

Although limited by its small size, this faunal sample has indicated the value of comparing assemblages from different parts of prehistoric settlements. Intra-site variability is the norm rather than the exception on sites such as these. Excavation and post-excavation strategies should, where possible, allow the opportunity for such intra-site comparisons of all finds to be made.

Human bone by Jacqueline I. McKinley

Human bone from five contexts was received for analysis, including the remains of two *in situ* Roman inhumation burials. The other material comprised redeposited bone from the backfill of the graves (also presumably Roman) and bone from the 'internal colluvium' behind the bank at the eastern side of the enclosure.

Methods

Age was assessed from the stage of skeletal development (McMinn and Hutchings 1985), and the patterns and degree of age-related changes (Brooks 1955; Brothwell 1972, Bass 1987). Sex was ascertained from the sexually dimorphic traits of the skeleton (Bass 1987). Stature was estimated where possible (Trotter and Gleser 1952; 1957)

Table 16 Human bone – summary of results

context	*feature*	*type*	*% rec.*	*Age*	*sex*	*pathology*
1500	grave 1502	Roman inhumation	c. 85%	adult *c.* 30–35 yr.	male	*amtl* (1/19); caries (2/19); abscesses (3/20); calculus; hypoplasia; *spina bifida occulta*; fracture – r.tibia; osteomylitis – r.tibia; solitary bone cyst – l.lunate; exo – r.femur, r.patella; pitting – r.m.clavicle, r.acetabulum; op – cervical 2-3 bsm, r. & l.rib, r.talus; mv – 5-cusp mandibular M3, metopic suture, Vastus notch
1500B	grave 1502	r. ?Roman	<1%	adult >18 yr.	?male	destructive lesion – r.d.tibia; exo – r.d.tibia
1503	grave 1505	Roman inhumation	*c.* 40%	adult >c. 40 yr.	?	osteoarthritis – l.elbow, r. hip; osteoporosis; vertebral body collapse – 2 lumbar; ?hydatid cyst; op – 5th lumbar bsm, 2 r.carpals, r.1st metacarpo-phalangeal, r.proximal & distal interphalangeal (fingers), l.hip; sacro-iliitis; exo – p.femurs, d.fibula, calcanea
1504	grave 1505	r. ?Roman	*c.* 2%	adult >30 yr.	??male	*amtl* (4/13); ?fracture - ?rib; op – d.humerus
1516 & 1520	'internal colluvium'	r. LBA/EIA	*c.* 3%	adult *c.* 25–35 yr.	male	calculus; mv – all M3 absent

Key: r. = redeposited; % rec. = % skeletal recovery; *amtl* = *ante mortem* tooth loss; exo = exostoses; op = osteophytes; mv = morphological variation; r./l/ = right/left, m./d. = medial/distal; bsm = body surface margins

together with the platymeric and platycnemic indices (Bass 1987).

The archive report includes:

Skeleton Record Sheets showing skeletal elements recovered and tooth wear patterns with location of dental lesions, and joint record sheets.

Brief text descriptions of bone morphology and observed pathological lesions.

Results

A summary of the results is presented in Table 16. The bone from the *in situ* burials was slightly degraded, with crumbly trabecular bone, and that from burial 1500 was slightly root marked. In contrast, the redeposited bone from the grave fills was well-preserved with a fresh appearance. All of the bone from the Roman features was badly fragmented in consequence of the mode of its discovery by the contractors, the redeposited bone having fresh breaks with no joins. The bone recovered from the 'internal colluvium' was slightly worn but generally in good condition.

A minimum of four individuals was identified, all adult males. The redeposited bone (1500b; 1504) from the backfills of the adjacent graves in Area 5 (1502; 1505) may be from the same individual, whilst the bone from the 'internal colluvium' (1516; 1520) in Area 6 is from a further individual. The Roman burials may be associated with the small group of five, *c.* 75m to the south-west (Wainwright and Davies 1995, 28; fig 38).

Stature was estimated for one individual (burial 1500) at 1.65 m (5′ 5″). The platymeric index (anterior-posterior flattening of the proximal femur) was calculated from two femora (1500, 1503) at 84 and 70 respectively. The platycnemic index (meso-lateral flattening of the tibia) was calculated from burial 1500 at 74.

The occurrence of various dental disease was similar to that noted by Bayley and Garwood (1995) in the Late Roman assemblage to the south-west, with moderate-heavy calculus deposits. A spiral fracture in the right distal tibia from burial 1500 was well-set and healed, but was complicated by infection within the bone (osteomylitis), though there was no apparent associated infection of the soft tissues. No lesions were noted in the fibula which probably helped splint the

tibia. Most of the other recorded lesions were in the joints and of a degenerative nature (Rogers and Waldron 1995). The small size of the assemblage precludes calculation of rates.

A small fragment of calcified tissue recovered from the lumbar/pelvic area of burial 1503 shows the characteristics of the mineralised shell of a hydatid cyst (Ortner and Putschar 1985, 229–233, figs. 367 and 368), formed in consequence of an infestation by the tapeworm *Echinococcusa granulus*. The condition is linked with dogs and the herding of domesticated animals, infection occurring either as a result of direct contact with the former, or contamination of pasture, crops and drinking water with faeces from infected dogs (Manchester 1983). This forms one of only five examples recorded in Britain, two of which are Roman (Wells and Dallas 1976; McKinley in prep.), one 7th–8th century AD (McKinley 1999) and one medieval (Price 1975; Manchester 1983).

Discussion

The redeposited bone fragments from the Roman grave fills were obviously not exposed for long prior to redeposition, and the difference in appearance between this and the *in situ* bone clearly indicates the different burial environments. If this redeposited bone from the two grave fills does represent the remains of the same individual, as it appears to, it suggests that the two excavated graves were close contemporaries and that both burials coincided with the disturbance of an earlier grave. These finds bring the size of the known Roman human bone assemblage from Balksbury to a minimum of ten individuals.

The fragments recovered from the 'internal colluvium' in Area 6 are likely to have been incorporated into this material during the Late Bronze Age/earliest Iron Age. An inhumation burial was excavated from the 'internal colluvium' on the south-east side of the enclosure in 1967 (Wainwright 1969, 29).

DISCUSSION

This predominantly concerns the Late Bronze Age and earliest Iron Age periods which saw the construction and initial use of the enclosure. Later Iron Age and Roman activity on the site recorded during the recent excavations will not be discussed further and is summarised in the results section of this report.

Initial investigations of Balksbury (Hawkes 1940; Wainwright 1969), in common with much contemporaneous work on 'Iron Age' enclosures, concentrated on the date and construction typology of the 'defences', although some parts of the interior were also investigated. The more recent excavations in 1973 and 1981 (Wainwright and Davies 1995) closely examined the development of spatial aspects of the settlement and other activities within the enclosure, and attempted to place the site within a wider prehistoric landscape setting.

In order to complement the previous works, this current programme of investigation was designed to provide information leading to a clearer understanding of the individual structural phases of the enclosure circuit and the local land-use activities at the times of these successive phases. The detail of the palaeo-environmental and economic setting of the enclosure's construction and use, rather than the wider landscape of the earlier researches, were among the project's aims.

The enclosure environment

Environmental analysis resulting from the previous excavations had largely provided information about the wider environmental landscape setting and economy in which the site at Balksbury operated, mainly by virtue of the long time-span offered by the sampled and analysed contexts. Assessment of the land snails and soils from natural features provided evidence of the early post-glacial environment and analysis of both snails and soils from tree-hollows provided evidence from the Atlantic (Mesolithic) broad-leafed forest to the open grassland and arable conditions contemporary with the main enclosure. These analyses set the environmental framework for the current analytical programme which concentrated on the detail of the nature and economy of the enclosure itself, rather than the wider landscape, and thus complements the previous analyses.

The initial Late Bronze Age/earliest Iron Age enclosure at Balksbury was constructed in an

open downland landscape in which some small-scale tillage had already occurred. This is evident both in the pre-bank soils over tertiary deposits on the eastern side of the enclosure and the more calcareous pre-bank soils on the western side. There is also evidence of manuring/animal stocking and of management by fire of the ploughed topsoils (Ap) prior to their burial under the bank. The burning may have been clearance of longer grassy or even scrubby vegetation that had grown up over a fallow period, or possibly a more formal management rather than clearance operation.

The entire hilltop and the area immediately surrounding the main enclosure circuit had been clear-felled by the Late Bronze Age/earliest Iron Age. Even the steeper slopes to the Anton Valley in the eastern and south-eastern aspects were largely cleared of vegetation from the vicinity of the ditch circuit at least. Some scrub such as blackthorn and hazel may have existed on the lower steep slopes, and alder buckthorn and alder at the base of the steep slopes (i.e. in the Anton Valley).

Although tillage had occurred prior to the construction of the bank, there is an indication on the eastern side at least that the fields had been left fallow allowing plants such as cleavers to grow in the disturbed ground. By analogy with work at Butser Ancient Farm, it is plausible that the bank was built and the topsoil buried over the autumn-winter period after the harvest (i.e. the ears of corn/wheat) was collected, leaving the straw and weeds. Worms had partially re-worked the ploughsoil and some fine channelling by plant roots had occurred. Some grassland turf must still have existed because turves were seen in excavation within the bank sequence on the western side, separating phases of construction (Fig. 8).

Some trampling, churning and compaction of the grassland or previously tilled soil inside the enclosure seems to have occurred against the bank at the eastern side. This is evidence of animal stock churning the turf as they were grazed, or pounded, in the lee of the bank.

Eventually this churned soil was covered by deposits accumulating against the bank. Abutting the bank in all of the excavated areas (Hawkes 1940, 341; Wainwright 1969, 29) were dark humic deposits; the 'internal colluvium'. This accumulation can in part be attributed to the topographical form of Balksbury, being a domed hill surrounded by the bank circuit. Soil analysis indicates that this is the most humic deposit on the site (loss-on-ignition), with enhanced phosphate and phosphate ratios probably indicating manure and/or animal defecation which was mixed-in by the livestock. The muddy accumulation incorporated some artefacts which were rapidly buried, and not intensely trampled nor broken to such a degree that they become incorporated into the soil fabric.

Although there is evidence of some colluviation due to arable activity, this is not the predominant cause for the accumulation. It seems to be largely soil and mud accumulating against the bank that was churned and defecated upon by animals (probably cattle). Some vegetative material (straw and grass) may even have been added to keep it drier and/or as fodder. This addition may also have added to the composition of the manure element of the deposit identified in the soil study and which is similar to the transformation of colluvial deposits by animals inside the western bank area (buried soils 1047 and 1044).

Throughout the site cattle are most common with sheep/goat and pig providing a typical domestic assemblage. All of the animal was used, butchered, eaten and disposed of on site. The Roman assemblage is too small to examine any indication of changes in intensification of animal husbandry or use at this time (see above). Although tillage was not largely responsible for the 'internal colluvium', there is evidence (from land snail and soil analyses) of tillage within the enclosure throughout the occupation of the interior (Iron Age through to Roman).

Throughout most of the Late Bronze Age and Iron Age occupation, wheat and barley were grown in the locality and processed within the enclosure. The evidence here seems to indicate the farming of domestic animals and of cultivation on a small to moderate scale; possibly to feed the population living in and around the site. In the Roman period there is evidence of a larger scale of operations with more specialised processing and drying, mainly of spelt wheat and barley. Grain was processed to remove all the weed seeds, but not the chaff (i.e. sieving not winnowing), which may have been used as tinder. The quantity of

remains from the corndryer enabled Ede to suggest that '*the heating of a considerable quantity of cereal*' was '*not purely a small-scale domestic action*', from which we can suggest that in the later phases the site may have been used for the processing of agricultural produce for a larger or wider market.

The enclosure construction

Three distinct phases of bank construction were recorded in the south-eastern part of the enclosure circuit, although only two phases were discernible in the western part. Earlier investigations also recorded three phases (Wainwright 1969, 26). It is likely that most of the bank material was excavated from the ditch in of each successive phase, leading to the increasing size of the ditch in each phase, although the current excavations have shown that some material was quarried from the rear of the bank (i.e. for the phase II bank construction in Area 7). A minor additional period of bank construction was undertaken over a short length of the bank in Area 7, indicating that localised maintenance was undertaken and need not have included the whole of the enclosure circuit.

A further addition to the bank sequence was recorded in Area 7 which had not been recorded in any of the fifteen previous examinations of the enclosure circuit. A timber palisade was added to the phase III bank at this particular point, to the north of the only known entrance. It is possible that this palisade may have extended around the whole of the enclosure and had not previously been noticed; the palisade postholes were initially barely discernible during the current excavations. Erosion material lying against the rear of the phase III bank had sealed the upper fills of the palisade postholes, and it is possible that erosion of the bank was still taking place when the palisade was in place.

The well-constructed hearth recorded below the buried soil in Area 7 has produced a date of 1000–830 cal BC (Tab 1, weighted mean of AA-27528–9); this obviously relates to pre-enclosure activity. Charcoal from material sealed below the phase I bank was dated to 900–790 cal BC (Tab 1, AA-27527), giving a *terminus ante quem* date for the enclosure's initial construction. A turf layer capping the rear of the phase II bank contained charcoal dated to 1040–820 cal BC (Tab 1, AA-27526), an identical date was obtained from the hearth sealed below the buried soil. The turf capping also contained worked flints which refitted examples from a buried soil (1539) below the bank.

The ceramic evidence from the current excavations suggests a date of *c.* 1100–800 BC for activities prior to and including the construction of the phase II bank. Taken together with the radiocarbon dates summarised above, it is apparent that the date for the initial construction (and the first phase of refurbishment) of the Balksbury enclosure must be in the 8th–9th centuries BC, certainly no later than *c.* 800 BC.

Pottery from the 'internal colluvium' and from the phase III bank has been dated to the period 900–600 BC. The final phase of refurbishment of the enclosure circuit must be placed in this period, suggesting a *maximum* period of *c.* 200 years for the maintenance of the enclosure.

That the enclosure ditch and bank would still have been clearly visible throughout the later parts of the Iron Age and beyond is not in dispute, and is demonstrated by the successive phases of refurbishment of the entrance in the Roman period (Wainwright and Davies 1995, 20–21). However these later periods of use of the enclosure do not see any maintenance or redevelopment of the enclosure circuit (except for the entrance) and artefact-rich soil deposits do not continue to build up against the rear of the bank. This suggests a change in the use and status of the enclosure, possibly driven by regional socio-economic developments.

Late Bronze Age/Earliest Iron Age Wessex

A number of major changes in the material record of Late Bronze Age Wessex have their origins in the formalised divisions of the landscape first visible in the Middle Bronze Age (Barrett *et al.* 1991; Gingell 1992). During this period many of the recorded settlements were unenclosed and were grouped into concentrations with associated field systems. A small number of settlements were within ditched and banked enclosures (Barrett *et al.* 1991, 139). Some of these small enclosures

were constructed over pre-existing field/lynchet systems (*op cit*) whilst others were elements of an ordered division of the landscape which involved enclosures as an integral part of co-axial field systems (Gingell 1992, 153).

This period seems to define a shift away from the importance of funerary or ceremonial monuments to a new emphasis on the importance of the domestic sphere of social interaction. Part of this shift involves the use of material culture to define space, both within the enclosures themselves and also between the enclosures and the wider landscape and other communities (Barrett *et al.* 1991, 225). 'Placed deposits' of material seem to be symbolically defining the domestic/settlement space, presaging patterns of ritual/symbolic behaviour seen on a wider scale in the Late Bronze Age/earliest Iron Age (Hingley 1990a, 1990b; Cunliffe 1992; Hill 1995a). Patterns within the Deverel-Rimbury ceramic tradition indicate that different communities were signifying their separate identifies within a regional unity of fine wares through independence in the production of coarse wares (Bradley *et al.* 1994, 139).

In the early part of the Late Bronze Age (*c.* 11th–10th centuries BC) there appears to have been a dramatic increase in the scale of formalised land divisions first visible in the Middle Bronze Age. Extensive systems of linear earthworks (linear ditches) were constructed on the chalk downlands of Wessex within a landscape of open, dispersed settlements (Richards 1978, 1990; Barrett *et al.* 1991; Gingell 1992; Bradley *et al.* 1994). These systems must have required a great degree of communal effort and logistical management to undertake and maintain. The linear ditch systems run along high ridges for kilometres with subsidiary linears running perpendicular across the river valleys. The ditches divided up large areas of the chalk downland and seem to be concentrated on river valleys and watersheds.

More recent work (Bradley *et al.* 1994) has provided some support to an earlier theory (Hawkes 1939) that these divisions represented 'valley territories' for the management of cattle within a predominantly pastoral farming regime (Barrett *et al.* 1991). In many cases the linear ditches along the high ground demonstrate changes in direction which are focussed on areas of prominent Early Bronze Age burial mounds (Cook and Dacre 1985; Bradley *et al.* 1994). Perhaps a physical link was being made to reaffirm a symbolic link between certain communities and their ancestors within defined areas of the landscape (Bradley *et al.* 1994, 141).

A number of these linear ditches are known to the south and west of Balksbury (Bradley *et al.* 1994; Palmer 1984), and others have been recorded in the Andover area at Portway East and Floral Way (Cook and Dacre 1985; Rawlings 1998), the latter only *c.* 1–2 km to the north-west of Balksbury. It is possible that other linear ditches may have defined the high ground to the immediate north and north-west but major developments of the town since the 1960s (Cook and Dacre 1985, 3) have obscured any trace of archaeological features.

In the later part of the Late Bronze Age (*c.* 9th–8th centuries BC) there are a number of changes in the observed archaeological record of Wessex. This can be seen not only in the material culture (cf. Barrett 1980; Thomas 1989) and in the settlement typology and patterning (Cunliffe 1990, 1991; Thomas 1997), but also in agricultural practices (Jones 1981, 1984; Robinson 1984), and indeed in ritual practices (Barrett 1989; Bradley 1990, Cunliffe 1992; Hingley 1990a, 1990b; Hill 1995a, b). The evidence suggests a major change in social and economic networks of interaction and exchange at this time.

The Late Bronze Age/earliest Iron Age period also sees hoards of bronze metalwork being deposited, including continental examples, at a time when bronze hoard deposition in the south-east of England had ended (Thomas 1989, 272). This again suggests a change in social, political and economic networks, with a move away from the control of prestige goods (by an elite) to systems based upon the control of land and agricultural production (Thomas 1989; Cunliffe 1990, 335; Barrett *et al.* 1991, 227). The formation of alliances and exchange networks has been seen as a form of 'social storage' to call upon if necessary at a later date to offset any hardships caused by natural or social problems (Halstead and O'Shea 1982). It is against this background that the Balksbury enclosure must be studied.

Hill-top enclosures

Amongst the most dramatic changes which occurred in the later part of the Late Bronze Age is the increased variation in the settlement/monument typology, including the construction of a small number of large, univallate enclosures such as Balksbury. These have been grouped together and discussed as 'hill-top enclosures' (Cunliffe, 1984b, 14; 1991, 346). Other sites which may be included in this category include Bathampton Down (Wainwright 1970), Martinsell near Marlborough (Meyrick 1946), Winklebury (Smith 1977) and Harting Beacon in West Sussex (Bedwin 1978; 1979).

However, within this group there is much variation and a number of sites, including Balksbury, do not actually meet all of the criteria suggested by English Heritage (1988) for the identification of the group as a specific class of monument. The dating for the construction of these enclosures in Wessex is generally poor, apart from that they slightly post-date or are contemporaneous with the use of the linear ditch systems i.e. Late Bronze Age/earliest Iron Age (Cunliffe 1990). It is possible that a number of hill-top enclosures have not been recognised as they were replaced by later monuments such as developed hillforts.

Hill-top enclosures are usually located on high ground within the chalk downland, very often at junctions or at the ends of some of the major linear ditches (Cunliffe 1990, 329). This topographic positioning has been seen (Bradley *et al.* 1994, 141–144) as a means of emphasising territorial claims to specific areas of land by looking 'outside' from the boundaries themselves, rather than from the 'inside' looking to the boundaries. Roger Thomas (1997, 215) sees this transformation as a reflection of the development of 'exogamous' marital alliances from earlier 'endogenous' ones due to the increased social importance of available land in the Late Bronze Age.

Balksbury is typical of the hill-top enclosures in showing relatively little evidence of any permanent or long-lived internal settlement activity contemporary with the time of initial construction, and also periods of apparent neglect during their period of use (English Heritage 1988). This is in stark contrast to the resources expended on the periodic maintenance of the enclosure circuits (Bradley and Ellison 1975, 216).

This lack of internal settlement activity has been a key factor in the consideration of the function(s) of these hill-top enclosures. Initial interpretations were predominantly concerned with the concepts of cattle stockading or centralised grain storage. As seen at Balksbury, in their earliest form these enclosures often contain '4-post' structures, especially around the periphery. These structures have traditionally been proposed as representing above-ground grain storage facilities but there is little or no evidence from within the hill-top enclosures of grain processing. Cunliffe (1984b, 18) suggested that the '4-post' structures were 'fodder ricks' for cattle, thus giving support to the idea of the enclosures being used to stockade cattle at a time when their economic and political (and therefore social) importance was becoming paramount.

The idea of cattle stockading was taken a stage further with the suggestion that these large hill-top enclosures were focal points in the landscape where feasting and exchange, and possibly production of goods, was undertaken at periodic or seasonal points in the year. The enclosures provided a fixed location at which the formation and maintenance of social alliances and exchange networks could take place (Cunliffe *op cit*; Bradley 1986, 47).

Recent discussion about the nature of the Iron Age (cf. Hill 1989; 1994, 1995a; 1995b, papers in Gwilt and Haselgrove 1997) has stressed the need to examine the archaeological record of this period with a view to identifying aspects which could be considered to result from acts of 'ritual' or 'belief' rather than from 'domestic' or 'practical' activities. It is recognised that these two types of actions are not necessarily separate (Fitzpatrick 1997), and the idea of periodic events and activities at a specified and enhanced location is perhaps one way in which the functional can be interwoven with the ritual or symbolic.

Part of this questioning of the nature of Iron Age society has been a review of the concept of enclosure (Bowden and McOmish 1987; Hingley 1990a). Hill (1989) pointed out how the differences in the ways in which archaeologists have tended to analyse the Neolithic (ritual, different) and the Iron Age (domestic, familiar). Indeed, it is

in the more recent literature of Neolithic studies that the concept of enclosure has been examined in detail, in connection with the causewayed enclosures of the early Neolithic (Evans 1988, Edmonds 1993). Recent work concerning the aggrandisement of developed hillforts has led to suggestions that aspects such as prestige and social statement should be considered alongside defence. Bowden and McOmish (1987) have gone as far as to question the whole concept of hillforts as defensive structures, although Sharples (1991, 259) has warned against the wholesale acceptance of this view.

It has been recognised for some time (Bedwin 1978; Cunliffe 1984b, 18) that the hill-top enclosures could not have been constructed as defended settlements and indeed, as the excavations at Balksbury have shown, there is little evidence for actual settlement within the enclosure at the time of initial construction. The views expressed above concerning the multivallation of developed hillforts can be applied to hill-top enclosures, in that the construction and maintenance of the enclosure circuit represents a statement of a particular social group. The palisade at the rear of the phase 3 rampart at Balksbury would thus be seen as an enhancement of the enclosure circuit close to the entrance, more as a symbolic barrier than a functional one.

Middens

The 'internal colluvium' against the rear of the bank at Balksbury Camp is similar in some ways to deposits identified at a number of middens at Late Bronze Age/earliest Iron Age sites in Wessex. Such sites include Potterne (Gingell and Lawson 1984; Lawson 2000), East Chisenbury (McOmish 1996) and Runnymede (Needham and Spence 1996). Another midden is known at Martinsell (Meyrick 1946) but has not been examined in any detail, and one is suggested at Winklebury (Fisher 1985), another site which has been proposed as a hill-top enclosure. The similarities can be seen in both in the soil characteristics and in the scale and range of the archaeological components.

Palaeoenvironmental analyses of the 'internal colluvium' indicated that it is the result of frequent low energy events involving the redeposition of finer and more organic elements. This deposit included substantial amounts of unabraded pottery, animal bone and fired clay fragments, suggesting that material was probably discarded local to the rear of the bank and incorporated within the 'internal colluvium' fairly rapidly. Analysis of the ceramic assemblage indicates that non-local pottery was being brought to the site from at least 15–20 km away. This issue has recently been examined in more detail (Morris 1997) and it seems that the import of non-local wares over this sort of distance can be clearly seen at Danebury, certainly in the early and middle stages of the hillfort occupation (5th–3rd centuries BC)

These middens contain abundant artefactual material of all types, including local and imported materials/objects, human remains, organic material, human and animal waste. There is a great contrast in the scale of these sites and in the range of material they contain when compared to the lack of permanent and intensive settlement associated (if at all) with them. Just as with the hill-top enclosures, the midden sites have been interpreted as focal points in the landscape where feasting, ceremonies, exchange and production took place (McOmish 1996, 75; Needham and Spence 1996, 247; Lawson 2000). As many as seven linear ditches focus on the large 'midden' mound at East Chisenbury (McOmish 1996, 70) reflecting the pattern seen for some of the hill-top enclosures (Bradley and Ellison 1975; Cunliffe 1990).

At Balksbury, analysis of soil structure and chemistry indicates that stock (probably cattle) were kept in the areas immediately to the rear of the enclosure bank, and the high organic content of the deposit probably derives from animal waste and organic material brought to these locations for animal fodder and/or bedding. The abundance of bones of larger animals at the periphery of enclosed settlements in the Late Bronze Age and Early Iron Age has already been established (Hill 1995a; Maltby 1996), albeit that some of this could be attributed to taphonomic processes. The 'internal colluvium' also contained metalwork and metalworking waste, and the importance of bronze metalwork in the changing social patterns

of Late Bronze Age/earliest Iron Age of Wessex has already been mentioned (Thomas 1989).

Some human bone was also recovered from the 'internal colluvium'. Wainwright (1969, 32) recorded a crouched burial within this deposit in the south-eastern part of the enclosure. Human remains appear as part of 'placed deposits' within settlement enclosure ditches (Bowden and McOmish 1987; Hill 1995) and have been seen as an important development in the active use of ancestors by the living, possibly to emphasise the importance of social boundaries and domestic/settlement space. A skull was placed in one of the ditch terminals at the entrance to the hill-top enclosure at Harting Beacon and both of the entrance postholes contained teeth which were thought to be from this skull (Bedwin 1979, 25). The other entrance terminal contained two small pennanular gold rings of Late Bronze Age/Early Iron Age date. The actual context of the gold rings is not clear, but the skull was certainly placed within a recut of the ditch. This was interpreted by the excavator as the disposal of rubbish during the final phase of occupation, but in the light of subsequent debate (Brück 1995) it would seem more sensible to view it as a 'placed deposit'.

The relative dearth of structural remains within Balksbury that can be positively dated to the time of its construction provides a contrast with the relative abundance of artefactual material within the 'internal colluvium'. The initial purpose behind the establishment of the monument would seem to be to provide a formal boundary enclosing an important place in the landscape; a focal point possibly for social and economic interaction as well as ritual activities, some or all of which were interlinked, e.g. feasting, exchange and ceremonies to establish and maintain social allegiances. Such focal points in the landscape would be the venues for periodic interaction for communities in the region to exchange materials and goods as well as information to sustain social networks at a time of increasing social pressures in competition for land in the Late Bronze Age.

Ditched enclosures and hillforts

Given the scarcity of data available at present for the hill-top enclosures in Wessex, it is difficult to formulate ideas about why a few of these enclosures developed into Iron Age 'hillforts' whilst others, such as Balksbury, did not. Cunliffe (1993, 142) has identified another group of Early Iron Age enclosures in Wessex. These are the so-called 'ditched enclosures' which are usually situated on naturally defended sites, although the enclosures have a single relatively small ditch with a bank on one or both sides and this has been seen as non-defensive (cf. Danebury; Cunliffe 1995, 95).

In the area around Balksbury, both Danebury and Bury Hill are characterised by an initial construction phase comprising a single ditch and bank, and both can be included in this class of ditched enclosures. As with Balksbury, the initial phase at both sites appears to have been defined by a lack of settlement. Unlike Balksbury however, these sites were renewed by the construction (within the ditched enclosures) of much more massive, multivallate hillforts. This occurred at Danebury in the 5th century BC and slightly earlier at Bury Hill, probably in the 6th century BC (Cunliffe 1994, 39).

The origins of the ditched enclosures may be closely linked with those of the hill-top enclosures, i.e. the establishment of a formal boundary enclosing an area which was already 'special' in some way. Indeed, the two groups may not be easily divisible and Cunliffe (1995, 98) refers to the first phase of Danebury as a hill-top enclosure. This first phase ditch at Danebury encloses an arc of 'ritual pits' of Middle or Late Bronze Age date and the enclosure also contains a number of '4-post' structures.

Why the enclosure of Balksbury was not remodelled in the Early-Middle Iron Age as a defensive hillfort may be answered by the prevailing topography. Balksbury is situated on the high ground of a chalk spur at the junction of two river valleys. The ground falls away steeply along the east and south sides but is on gently sloping to flat ground to the west and north. This situation would have been a poorly defensible position in relation to the almost oval-shaped Bury Hill only 2 km to the south-west.

Settlement activity is clearly demonstrated within Balksbury throughout the Iron Age and Roman periods but the enclosure circuit was not

maintained, apart from a refurbishment of the entrance at some point within the Roman period. It appears that Balksbury had become a far less important focal point in the local landscape, although this may actually be a reflection of how 'importance' is reflected in the archaeological record. In terms of monumentality, Balksbury seems to have been superseded by the developed hillfort of Bury Hill.

With the resolution of the chronology now available for Balksbury it would seem that Bury Hill I was constructed at about the same time as the discontinuation of the maintenance of the Balksbury enclosure circuit. Although Balksbury became permanently settled in the Early Iron Age, its importance as a 'central place' in the landscape appears to have declined. In a developing social landscape of increasing competition and greater centralised control of land, and agricultural production of even larger areas of the chalk downland of Wessex (Cunliffe 1990, 335), more easily defended sites such Bury Hill, and Danebury became pre-eminent.

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