South Cadbury hillfort viewed to the north-west from Sigwells (Photo J. Eastaugh)

Frontispiece: The South Cadbury Environs Project has initiated a new phase of work relating to South Cadbury, and a paper by Richard Tabor and Paul Johnson is published in this volume (pp. 1–24) concentrating on landscape changes over millennia at Sigwells. As the project progresses, the landscape setting of the hillfort will be clarified, and, with the publication in 2000 of the excavations by Leslie Alcock on the hillfort between 1966 and 1970 (*Cadbury Castle, Somerset: the Later Prehistoric and Early Historic Landscape*, by J. Barrett, P. Freeman, and A. Woodward, English Heritage, London), it will be possible to explore chronological and spatial relationships between the hillfort and its environs.

SIGWELLS, CHARLTON HORETHORNE: THE IDENTIFICATION, INTERPRETATION AND TESTING OF BRONZE AGE TO EARLY MEDIEVAL LANDSCAPES BY GEOPHYSICAL SURVEY AND EXCAVATION

RICHARD TABOR AND PAUL JOHNSON

SUMMARY

A pilot study for the South Cadbury Environs Project demonstrated that extensive geophysical survey can identify successive systems of land division from which different social, economic and subsistence activities can be inferred. Six hypothetical episodes of landscape restructuring are presented, ranging from the Early Bronze Age to medieval periods, together with early results of evaluation by excavation.

INTRODUCTION

The South Cadbury Environs Project (SCEP) is an on-going survey sampling a 64 sq km area centred on Cadbury Castle. The project makes extensive use of surface collection, topsoil sampling and test pitting, but is distinct from many other surveys in its expansive approach to geophysical prospection, in part prompted by the ground-breaking success of then experimental techniques over the whole of Cadbury Castle's interior from 1966–70 (Alcock 1972, 54–62). The various techniques combine to provide detailed evidence of the boundaries which structured the perceived landscape over a succession of different periods.

The most widely applied geophysical techniques measure either variations in the magnetic character of particles in the soil or its electrical resistance. The suitability of land for these techniques will depend upon the geology, hydrology, topography and depth of soil in the target area. The Geoscan Research FM36 gradiometer was used for this study because its sensitivity, data storage capacity and portability make it an instrument well-suited to regional scale magnetometry. It has proved an effective tool for locating ditches, areas rich in organic residues, features associated with fire and, to a lesser extent, stone structures.

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A field of 18ha, large for this region (Fig. 1), was selected for a pilot study to test the efficacy of geophysical survey, combined with varying modes of artefact collection. Situated on a plateau at the head of a small east-dipping V-shaped valley, its north-facing scarp overlooks Cadbury Castle. The scarp is broken by two steep-sided ravines, which provide routes towards a modern

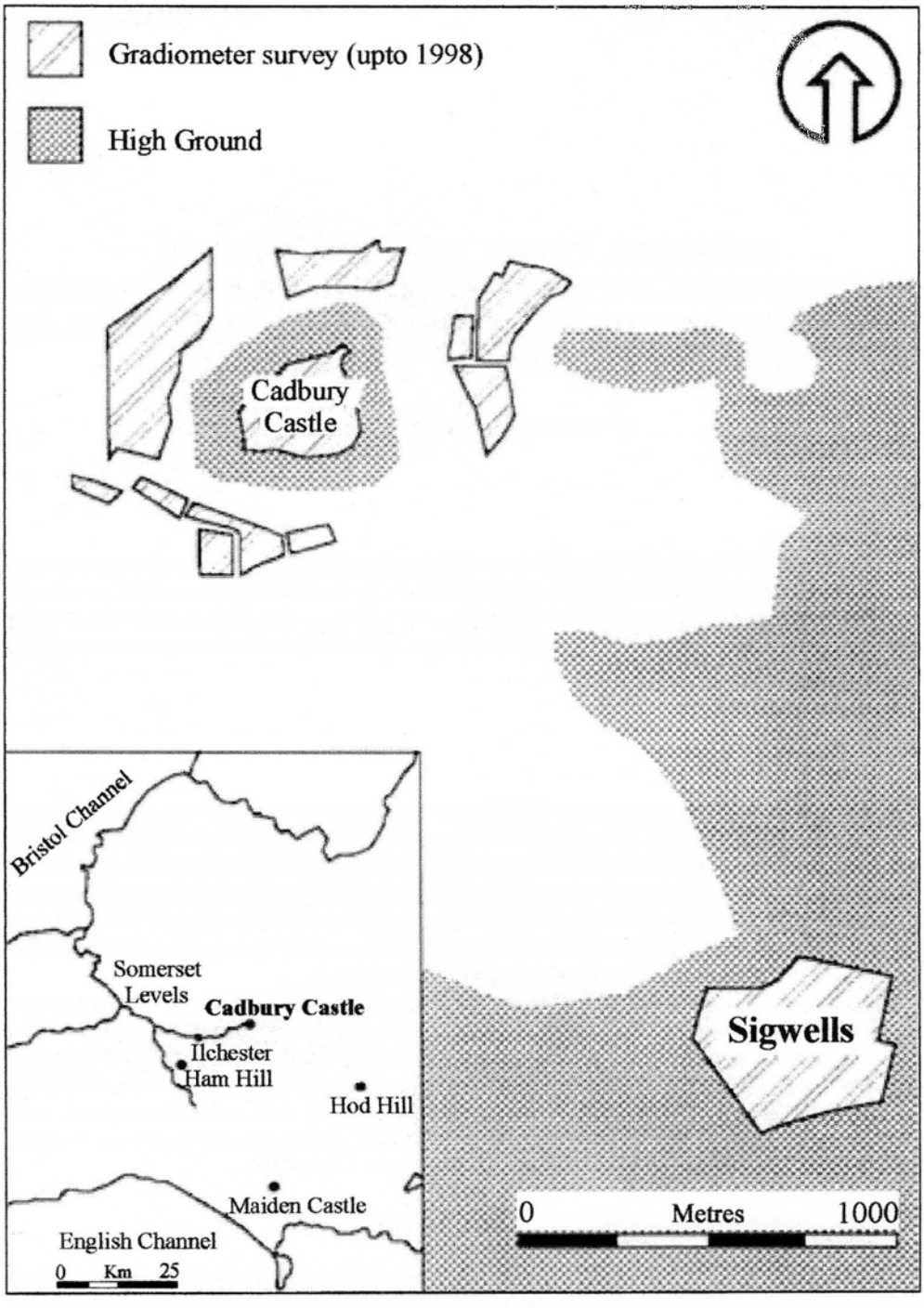

Fig. 1 Location map of the South Cadbury Environs Project, showing areas where gradiometer survey has been completed

farm on the site of the deserted medieval village of Whitcombe 80m below, under the springline. The plateau's Inferior Oolitic limestone cap, partially overlying sandstone, provides free drainage for very light, sandy soils.

The field's previously known archaeology derives from the excavation of three round barrows in 1877 (Rolleston and Lane Fox 1879) and from casual and metal detectorist finds, including Romano-British coins, bronzes, pottery and a stone altar. Members of the South East Somerset Archaeological and Historical Society and the Universities of Birmingham and Glasgow have conducted SCEP's fieldwork (Leach and Tabor 1997).

The first aim of work in the field was to establish the principal features of former land division and to identify significant markers of past human activity such as evidence for intensive burning or concentrations of organic material. The second aim was to identify patterns in the distribution of artefacts collected from the ploughsoil and to explore possible correlations between the two data sets which might be examined by test pitting and limited excavation.

Field Methods

For gradiometry the whole field was divided into 480 whole or partial 20m squares. Approximately 10% of the 18ha was sampled by resistivity survey. Readings were collected at every 1m along traverses laid out at 1m intervals. This is a coarse sampling; elsewhere SCEP has taken readings at every 0.5m, and even more frequently in some cases.

The artefact collection technique was by shovel pitting (or shovel testing: Aston and Gerrard 1995, 71–8). Units comprising 30 litres of ploughsoil were passed through a 10mm gauge mesh, having been collected at every 20m along lines set at 20m intervals. This sample size contrasts with that at Thy, Jutland, where 400 litres produced enough lithic material not only to recognise a site, but also to diagnose its character or *signature* (Steinberg 1996, 371). However, even with mechanical assistance the procedure is not commensurate with large scale regional coverage.

For every hectare covered a $1m^2$ test pit was dug by hand to the natural geological surface. Comparisons of the number of artefacts in the ploughsoil with the total from below the reach of the plough tested the significance of the shovel pit data and added to the diagnostic assemblage. There was a good correspondence for durable artefacts such as flint and Romano-British pottery.

The programme of survey work began in 1993 and was completed in February 1998. A series of University of Bristol training excavations will test the chronological hypotheses outlined below. The first of these was in June 2000, and has led to revision of the sequence previously proposed (Tabor and Johnson 2000, 324).

Processing and Analysis of the Gradiometer Data

Individual grids were assembled in meshes, using *Geoplot 2.0*. Across most of the field the background data range was around 4 nT (+/-2 about the mean reading), the exception being an area on the west side where the background range was reduced to less than 2 nT. Most anomalies fell within 8 nT either side of the mean, although in some instances, probably associated with thermo-remnant magnetism, readings increased to 15 nT either side of the mean. There were very high readings in the proximity of iron and a perceivable halo included readings well within the range of other archaeological material.

Metal pipelines were the principal causes of high readings, five focusing on a former water tower site to the east of the field's centre (Fig. 2). A sixth lies between the southernmost corner of the field and the south end of a gully, Christmas Tree Gully, appearing as a blank strip in the data plot. Dark stripes on either side of the gully result from modern fencing.

The processing sequence was as follows: a) readings deviating from the mean by more than 8 to 15 nT (after checking the numerical data for features in that range) were replaced by *null*; b) isolated anomalous readings were removed (despiking); c) mean readings for each traverse

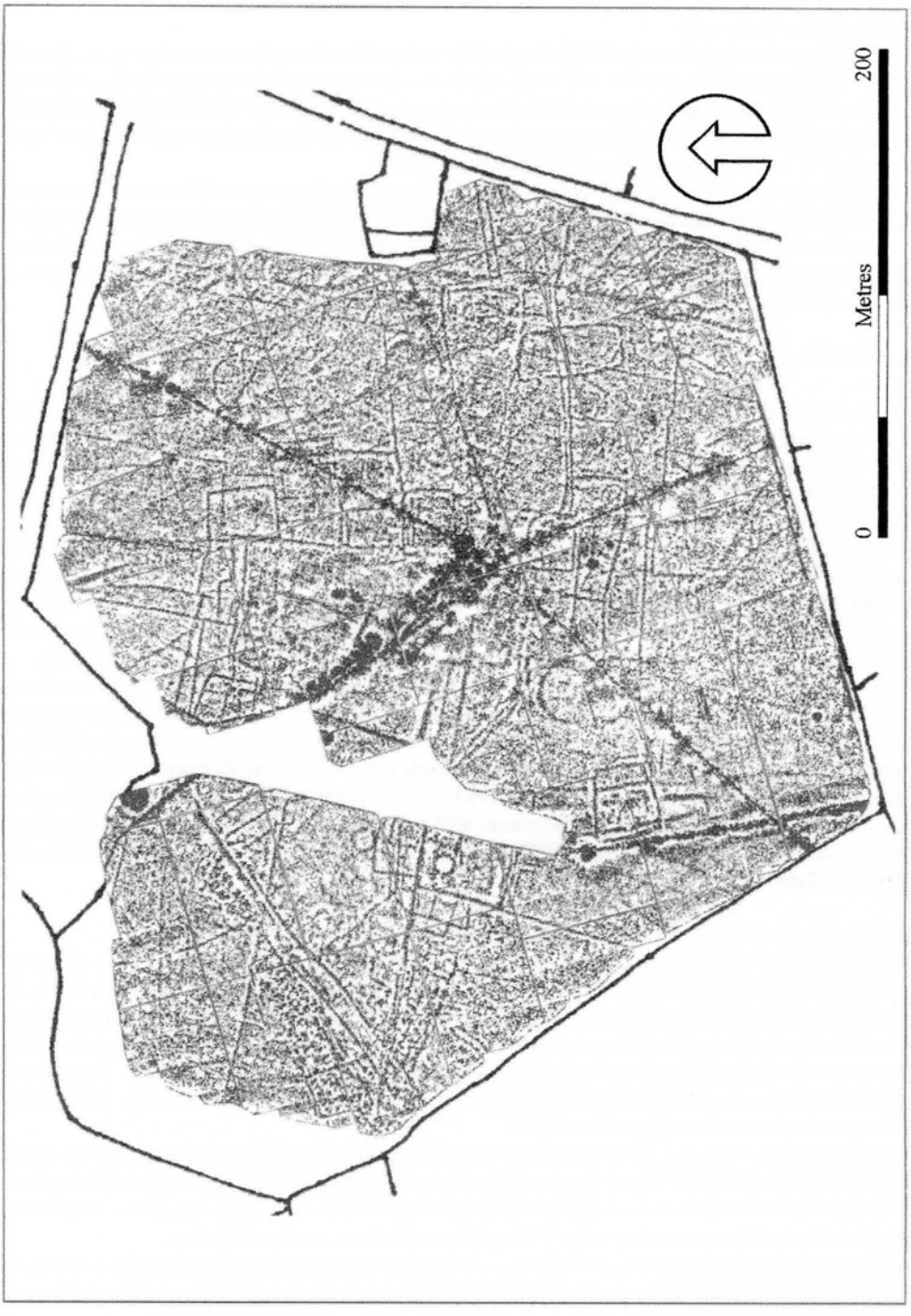

Fig. 2 Plot of gradiometer data (Geoplot 2)

were converted to '0' to facilitate data comparability. Common cosmetic functions such as edge-matching and interpolation were almost entirely avoided.

The processing revealed extensive linear and curvilinear patterning, as well as singular features and evidence for stone-founded buildings (Fig. 2). Lines were traced manually onto a hardcopy of a dot-density plot and coloured according to the perceived association with other anomalies by alignment or form. In this way different *systems* were identified, each of which was scanned and loaded onto a graphical programme and superimposed onto a 1:2500 map.

THE SYSTEMS

A remarkable number of boundary systems are distinguishable by their orientations. Four kinds of horizontal stratigraphic relationship can be identified: 1) respect for an earlier system or feature; 2) incorporation of an earlier system or feature; 3) interruption or interference by another system; 4) dominance by a later feature or system. A fuller analysis of the phasing has appeared in *Antiquity* (Tabor and Johnson 2000, 323–5).

The excavation of two ditches (Leach and Tabor 1997, 51–4, fig. 3) dated the two most extensive systems to early and late Romano-British periods.

It has become a commonplace to emphasise continuity across time but at Sigwells very distinct episodes are identifiable, within which are tangible reworkings of the landscape's architecture. Six phased systems have been isolated and are presented in chronological sequence below, with outline interpretations:

System 1 (Fig. 3)

This system is the least coherent. It is a composite of several phases of activity and landscape planning, some elements of which were clearly conceived with little regard for other elements.

Three Early Bronze Age barrows are the earliest dated features (Grinsell 1971, 95–6); other short arcs may be barrow ditches. Barrow ***C*** lies on a steeply scarped promontory separated from the plateau by linear feature ***D***. An extant 20m wide and 3m deep gully may be a continuation of it in a north-easterly direction, although it has been adapted to a late Romano-British system (see below). A probable second barrow (not shown) on the north side of the gully, separated from the first by a deep ravine, suggests a planned relationship between the ditch and the barrows, which may have been integrated into much later divisions of the landscape (for other examples see Barrett *et al.* 1991, 181–3).

A pair of barrows, now standing as a substantial single mound (***A*** and ***B***), lies across the possible continuation of two slightly arcing parallel ditches identified within the north-west and south boundaries of the field. With deliberately intersecting ring ditches, ***A*** lies across the putative continuation of the eastern ditch, and ***B*** across that of the western ditch. The gap between the ditches wavers between 20 and 25m and with a minimum conjectured length of 450m it is more probable that they describe a territorial boundary or track than an area for cultivation.

Long linear ditches lacking frequent subdivision are usually associated with animal husbandry rather than cultivation. Short lengths of approximately parallel ditches occur sporadically to the east of the twin barrows, but the impact of later activity in the field has obliterated all signs of a larger pattern which might have included stock enclosures such as those found on the Fens (Pryor 1996, 314–6).

Linear feature ***D*** may have provided a means of stock control or territorial division (Fowler 1983, 192) but it also had a planned relationship with enclosure ***E***. The alignment of the enclosure, its location overlooking a steep route to the valley and the presence of pottery in an adjacent

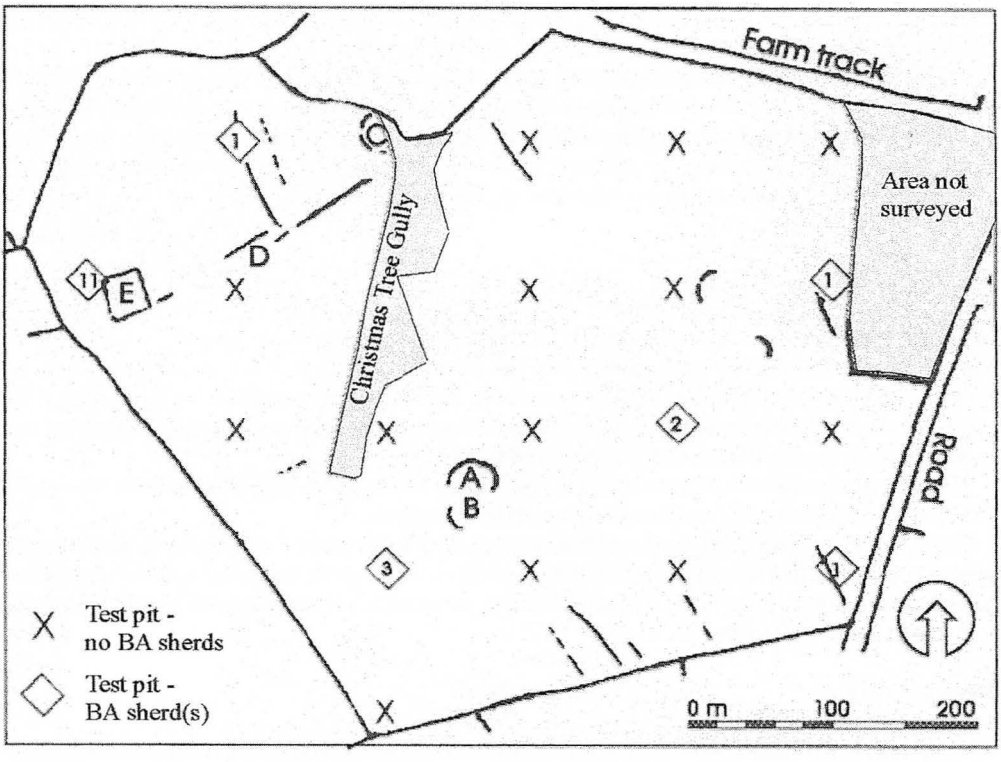

Fig. 3 System 1: diagnostic 2nd-millennium BC pottery from test pits superimposed (nos sherds)

test pit, indicate that it was not merely for stock management. Its almost square shape and proximity to earlier barrows compare well with the larger Middle to Late Bronze Age enclosure at South Lodge, Cranborne Chase, which was aligned with terraces from an earlier field system (Barrett *et al.* 1991, fig. 5.3). Structural evidence within such enclosures is ambiguous, but the distribution of finds and presence of burnt mounds implies some reservation of domestic space (ibid., 225).

The general distribution of flint sheds little light on the magnetic anomalies. The most pronounced area of positive incidence extends along the full length of Christmas Tree Gully. A significant slope down to the gully's east forms a natural catchment for chippings moved by cultivation since prehistoric times. In contrast, further east an area of intense Romano-British activity coincides with a low incidence.

SYSTEM 2 (Fig. 4)

The system is defined by the addition of two distinctive enclosures, both previously assigned to the early medieval period (Tabor and Johnson 2000, 324, figs 7 and 9). Enclosure ***W*** was deemed to respect ***U2***, one of a series of nearly equally spaced parallel linear features attributed to a Late Romano-British phase (see below, System 5, Fig. 8). However, excavations showed that enclosure ***W*** was much earlier, and whilst its relationship with ditch ***U2*** could not be determined securely, it appears to have had a planned relationship with a short length of box-profiled ditch at its north end, originally wrongly identified as a component of ***U2***. Pottery from the lower and middle fills had a strong affinity to Cadbury Castle ceramic assemblages 4 and 5, considered to be respectively Late Bronze Age and Early Iron Age (see below).

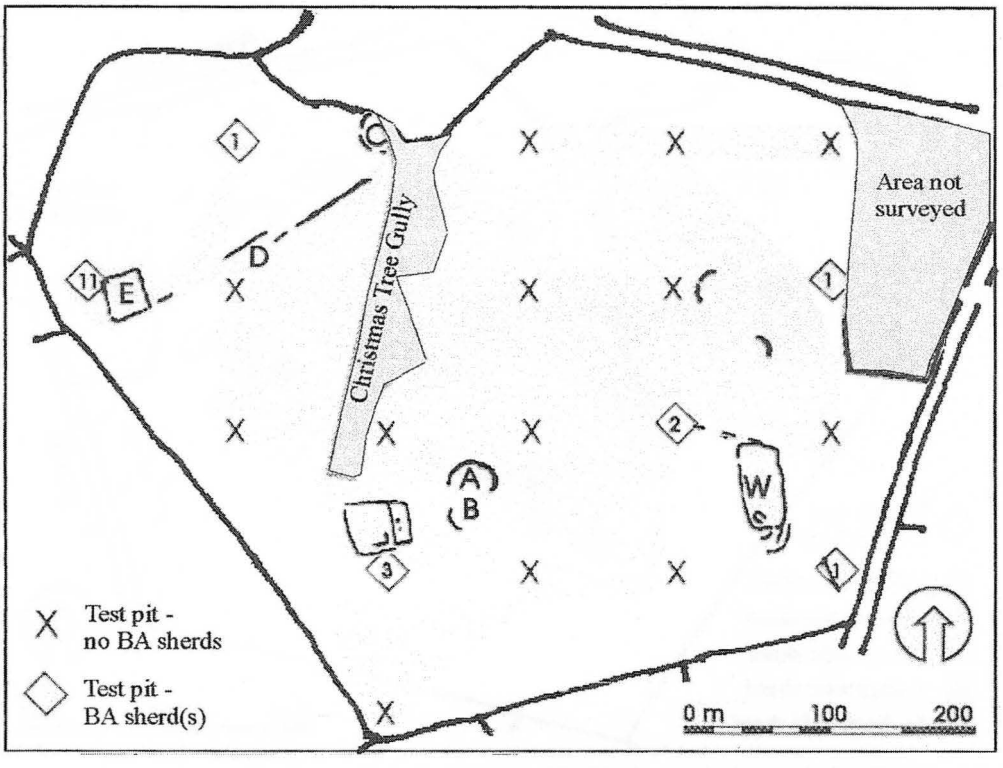

Fig. 4 System 2: diagnostic 2nd-millennium pottery from test pits superimposed (nos sherds)

A double enclosure approximately 30m west of ring-ditch ***B*** is at odds with all other systemic alignments, but has an orientation which would allow an association with ***W***. This very speculative attribution receives support from the discovery of three Bronze Age sherds in a test pit immediately south of it. Ditch ***D*** clearly survives as a feature in later systems and should thus be included here, possibly with enclosure ***E***.

The resulting landscape comprises isolated enclosures of distinctly different characters. ***W*** has a funnel towards its south-facing entrance, facilitating stock herding, whilst the other two have no discernible entrances. The apparently deliberate deposition of isolated bovine mandibles in ***W*** may indicate the importance of cattle, as at a broadly contemporary enclosure at Milsoms Corner, 2km north-east of Sigwells.

SYSTEM 3 (Fig. 5)

This system shifts to a general orientation of approximately north-west to south-east, but the mode of land division is similar to the earlier Bronze Age scheme. Arcs join linear features to form D-shaped enclosures (***F*** and, more tentatively, ***G***), a form belonging principally to the earlier Iron Age, replaced increasingly by rectilinear enclosure systems from the 3rd century BC onwards (Palmer 1984, 129). Fowler has described them as possible settlement or cattle enclosures (Fowler 1983, 108). The latter seems best to fit the system identified here. The alignment of ***G***'s two near parallel linear anomalies has been determined by the north-facing scarp of the promontory. An incipient trend towards subdivision into smaller enclosures set within the larger linear system is apparent at ***H***.

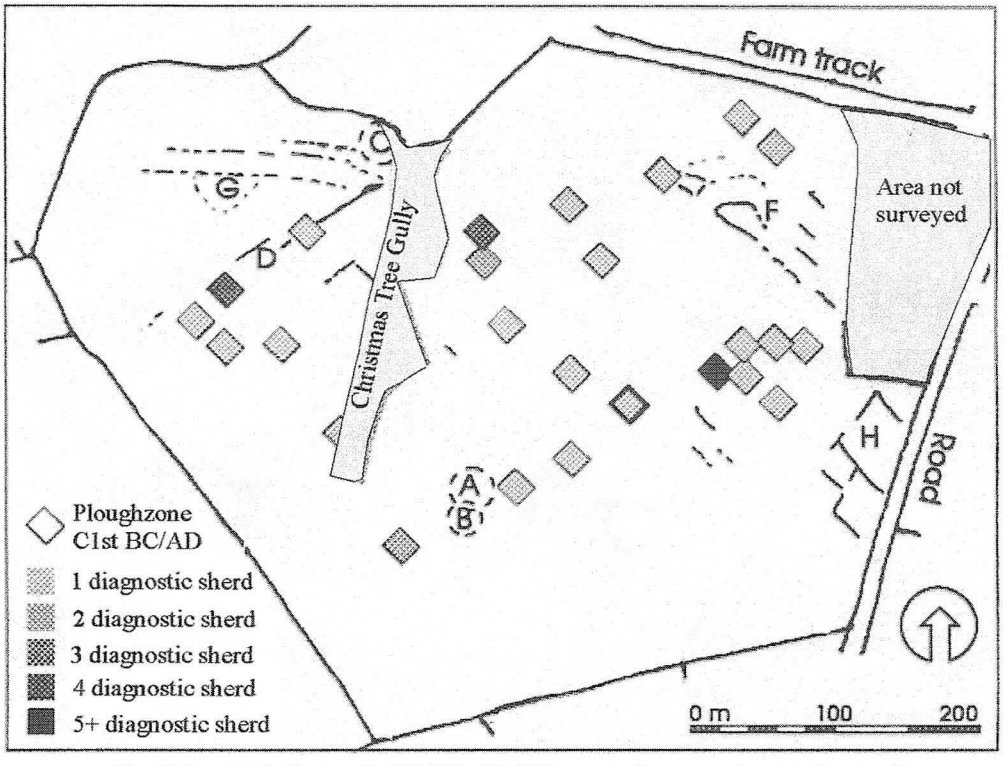

Fig. 5 System 3: diagnostic 100 BC–AD 200 pottery from test pits superimposed

Whether or not reworked, linear anomaly ***D*** must have remained a visible presence in the landscape, perhaps determining the orientation of some features, including trackways, which were integrated into and developed more fully in the succeeding system. The complete lack of Early and Middle Iron Age finds from ploughsoil and pit sampling might suggest that the area was predominantly for grazing, not settlement, but the poor survival of the friable pottery of the period provides an equally plausible explanation. The small block of enclosures, ***H***, may have served as cultivation plots or as stock enclosures where concentrations of manure would form without domestic waste prior to dispersal over other areas. However, the settlement of Cadbury Castle was its zenith in the later Middle Iron Age (Alcock 1972, 156–8) and at a comparable stage the landscape around the Hampshire hillfort, Danebury, became increasingly organised to suit the demand for a more varied and intensive agriculture (Cunliffe 1978, 22). This system seems insufficiently intensive for a population able to build and maintain a hillfort.

SYSTEM 4 (Figs 6 and 7)

The system not only represents a major realignment of the landscape architecture, but also a pronounced change in the intensity and nature of land use associated with marked spatial variation.

The west is very much influenced by the promontory boundary (***D***) which may comprise two parallel ditches set 10m apart, narrowing at the east end. Prolific dipoles to its north-west signify thermo-remnant magnetism, perhaps indicative of industrial activity.

The west end forms one of three discernible sides of a rectilinear enclosure (***I***) serviced by a double-ditched track which leads to its east corner, with 8–9m diameter penannular ditches on

either side of it. A wider arc in the east corner of the enclosure opens towards the track. A rectangle, of approximately 15 x 10m, adjoins the enclosure's north-east side. Its scale is loosely comparable with a 3rd-century AD stone *Building 1* (Leach and Tabor 1994, 4–5) and with two and three-roomed Romano-British structures uncovered at Catsgore, Gatcombe, Bradley Hill, and Cirencester (Leech 1982, fig. 20).

South of enclosure ***I*** an undivided area was bounded by a double-ditched trackway (***K***) which appears to have continued into the valley. To its east various activity zones were serviced by a track system, a branch of which respected the twin barrow before opening into enclosure ***I***. Rectilinear fields of 1 to 2ha (***L*** and ***M***) contrast with a small group of adjoining enclosures of less than 0.2ha (***P***) in the central area. Elsewhere there are strip fields (***R***, ***S***) of around 30m width.

Adaptation within the system can be observed in this south part of the field. A crook in the track and a ditch (***N***) showing as a weaker anomaly on the data plot seem to have enclosed over 1ha around the twin barrow. Subsequently the area was divided into irregular enclosures (***Q***) with short tracks which may well have been funnels for the sorting of livestock. The new enclosures appear to cut across the track, linking with its further ditch.

A ditch under *Building 1* (shown in Fig. 8 as ***VI***) had been open during the early Romano-British phase, but the wider distribution of ploughsoil finds suggests that it may already have been in use by the Late Iron Age. Although circular structures are known to have persisted into the 2nd century AD the three substantial penannular ditches compare in scale with round houses found on Cadbury Castle (Alcock 1972, figs 10 and 11). First-century BC/AD sherds predominate in the ploughsoil assemblage from this vicinity. A more localised concentration of similar material to the east of Christmas Tree Gully is close to oval feature J. In the east of the field an elongated

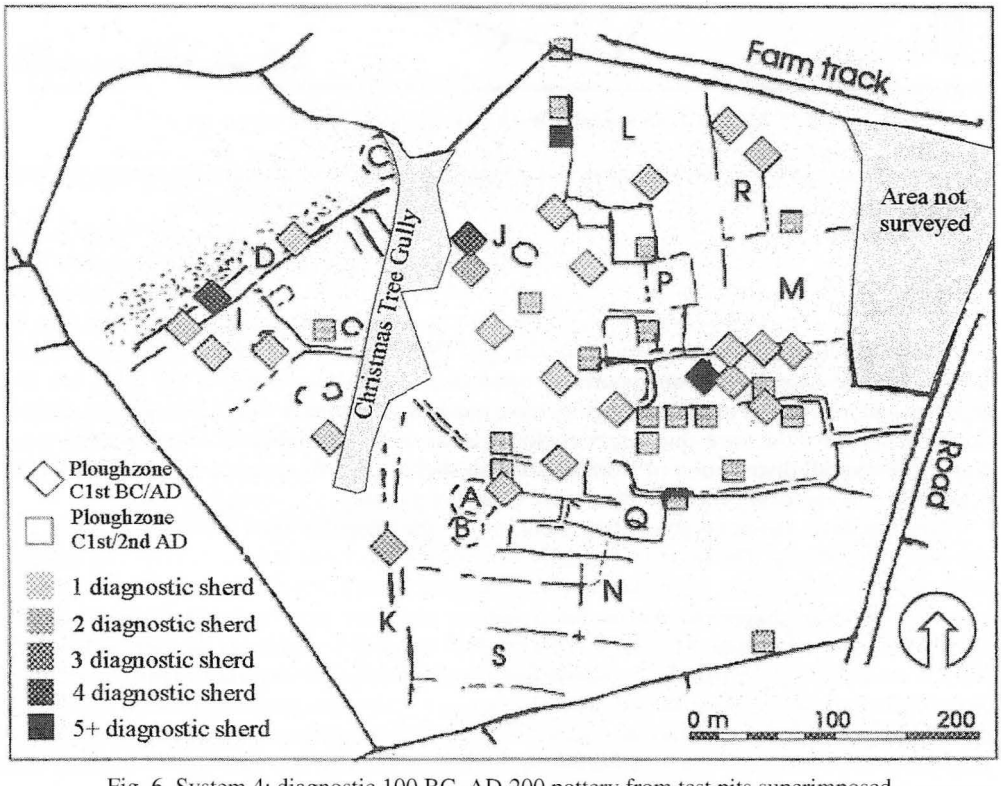

Fig. 6 System 4: diagnostic 100 BC–AD 200 pottery from test pits superimposed

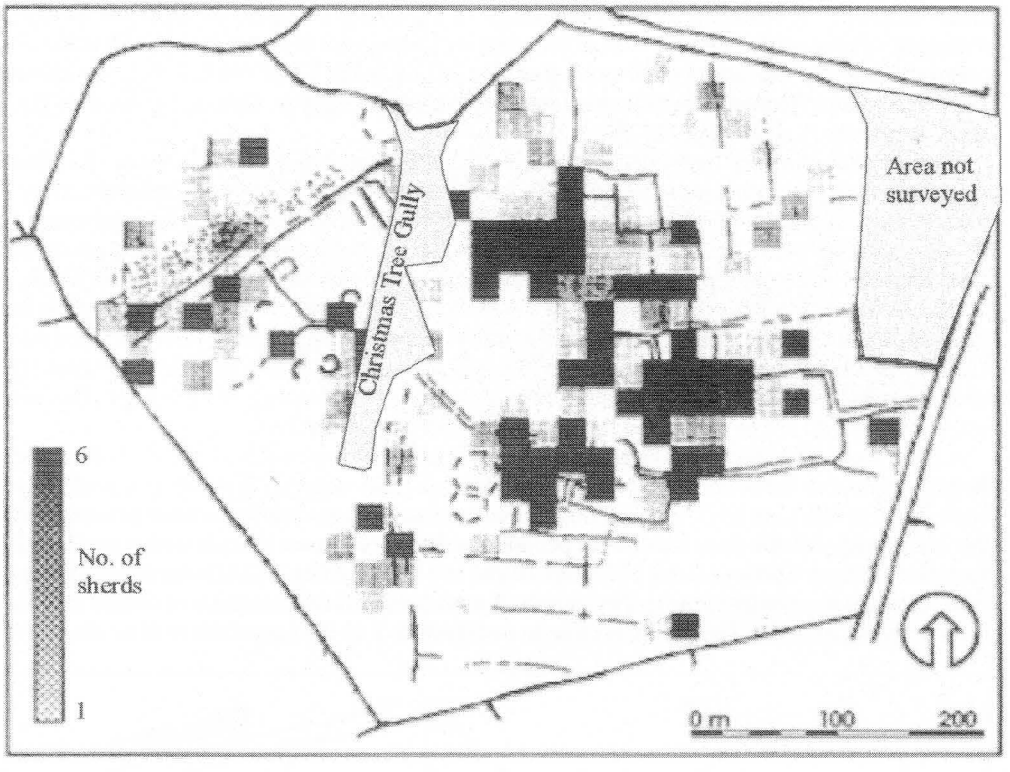

Fig. 7 System 4: all Romano-British ploughzone pottery superimposed

expanse of very dark soil coinciding with the highest density of diagnostic 1st-century BC/AD to 2nd-century pottery may have been a midden bounded by a forked track.

Interpreting Romano-British finds at Maddle Farm, Berkshire, Gaffney and Tingle (1989, 225–7) observed that the introduction of domestic waste into middens manuring arable land will generate a scattering of pottery, and that land virtually free of finds is likely to have served as grazing. The Sigwells survey has enabled us to identify bounded areas which can be distinguished from one another by their size and the intensity of sherd distributions within them. With the exception of an apparently open area in the centre north of the field, where a pipeline and iron debris in a levelled gully have masked some much weaker anomalies, there is strong support for the view that larger enclosed areas were not manured, whereas small areas were. The overall distribution of Romano-British sherds (Fig. 6) supports this hypothesis but regularities in enclosure form imply a more complex picture.

There are three distinct types of larger enclosure: the irregular open space, the oblong, and the elongated oblong. The first two fit easily into a grazing scheme but the last type, by analogy with medieval strip fields, seems laid out for ploughing. One elongated oblong (***R***) did produce a small number of diagnostic sherds, but ***S*** did not and there were very few Romano-British sherds generally. However, whereas ***R*** is 100m from a probable midden at the east centre of the field, ***S*** is some 200m from it. It is possible that manure dumps serving arable land at a distance from settlement would have lacked domestic waste, or nutrients might have been introduced directly by grazing the land (Carreté *et al.* 1995, 272). Alternatively crops requiring little manure may have been selected. Spelt or barley, for instance, require low nitrogen compared with emmer (van der Veen 1992, 145).

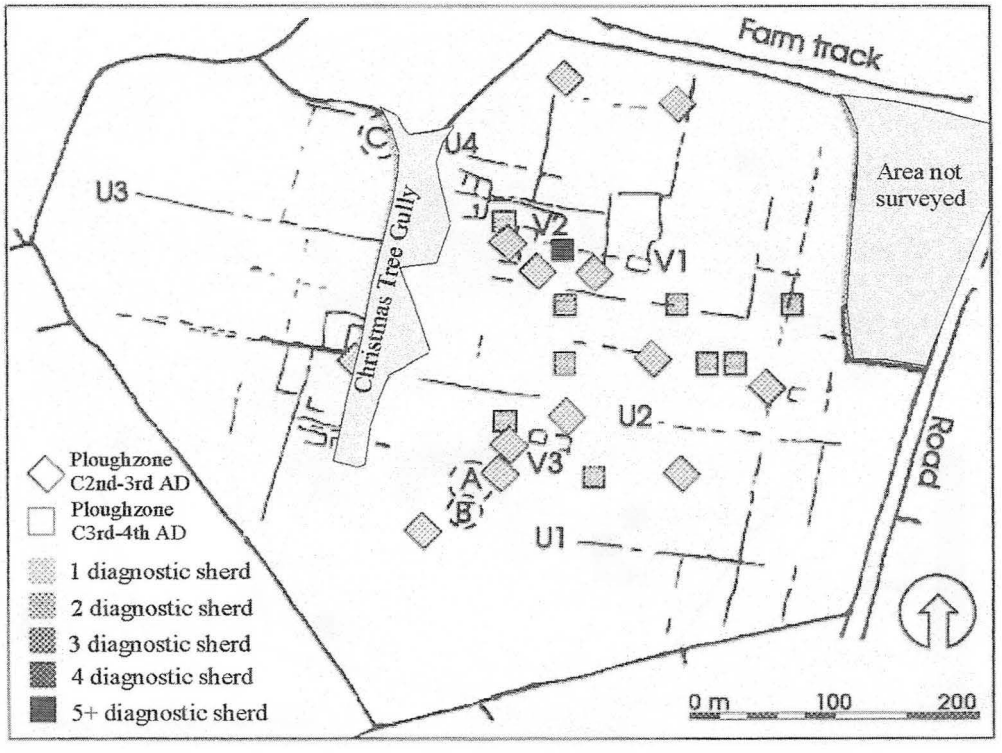

Fig. 8 System 5: diagnostic AD 200–400 pottery from test pits superimposed

The distribution of ploughsoil pottery, and that recovered from excavation, implies a less intensive use of the field in the later 2nd and early 3rd century. Whilst it seems unlikely that the area ceased to be used, the only foci of diagnostic material are around ***J*** and the north-west of ***Q***.

SYSTEM 5 (Figs 8 and 9)

System 5 represents a decisive break from its past. Three barrows survive and subdivided enclosures north of ***J*** are in an area where a slight bend in the track suggests continuity of an activity area. Otherwise, four parallel linear features (***U1***, ***U2***, ***U3***, ***U4***) provide a framework for an entirely new scheme, aligned with the modern farm track at 85–90m intervals.

In the east of the field, enclosures range from elongated oblongs perpendicular to the long boundaries, to broader oblong subdivisions, but south of the centre no perpendicular subdivisions are discernible. There are only sporadic signs of similar division west of Christmas Tree Gully (***T***), itself orthogonally related to the parallel linears. There are a number of very weak positive linears conforming to the system's alignment which may be boundary features.

Stone-founded buildings can be inferred with confidence at ***V1***, ***V2*** and ***V3***, the latter squarely over the main System 3 track. Like *Building 1* they parallel the prevailing alignment and are associated with 3rd and 4th-century AD ploughsoil finds. Excavation partially uncovered another building (*Building 2*; Leach and Tabor 1994, 4) perpendicular to the parallel linears, but masked from the gradiometer survey by a pipeline.

The distribution of middle to late Romano-British pottery again suggests variation in land use. Excavation of a concentration adjacent to ***V3*** identified a probable midden, and the possible midden on the east side of System 4 may have continued in use. *Building 2* lies to its west. The

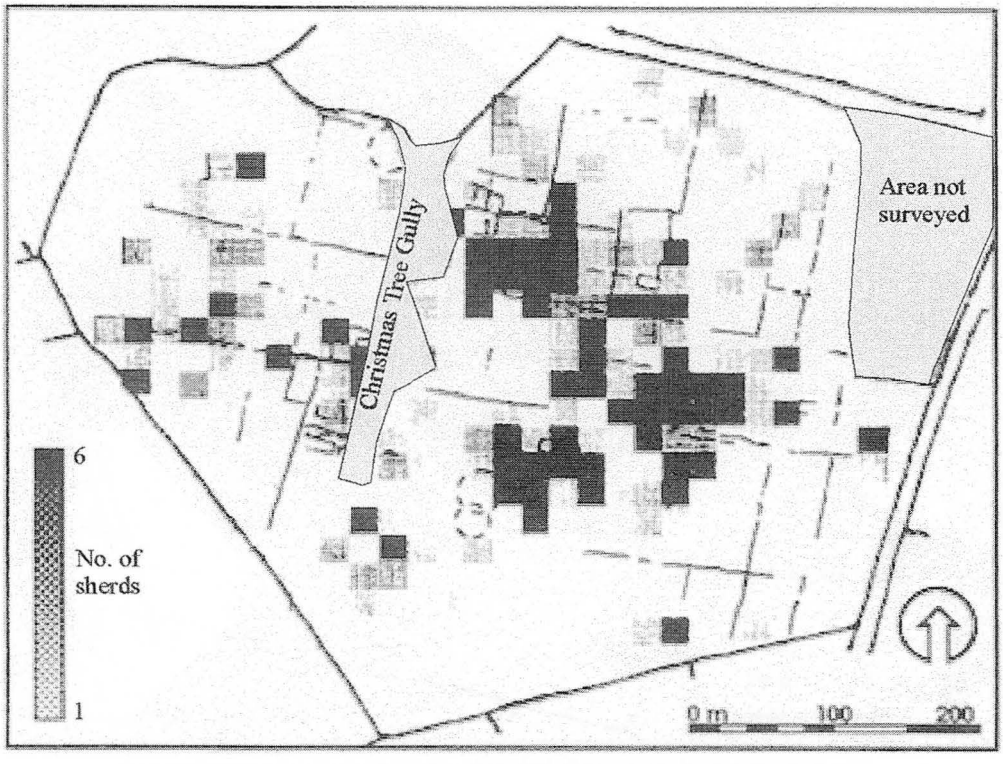

Fig. 9 System 5: all Romano-British ploughzone pottery superimposed

density of finds (not plotted here) around ***V1***, prior to excavation, suggests that it, too, was in close proximity to a midden. The general distribution of diagnostically 3rd to 4th-century AD pottery is much less widespread than that of Late Iron Age/Early Romano-British material. The lack of identifiable later material in the west of the field is so pronounced that it seems probable that the bulk of undiagnostic Romano-British pottery there (Fig. 9) belongs to System 4. Clearly the area was incorporated into System 5, but there can have been little manuring with the inclusion of domestic waste. A large open area in the south of the modern field lacks finds and seems likely to have been used for grazing.

The proximity of middens to the building complexes suggests that each was set within an arable plot, and that grazing lands were further away, perhaps held in common. The distances between each building complex vary from 60 to 130m. At Catsgore a series of 'farm' plots developed from around AD 120 to the 5th century along a 200m stretch of road (Leech 1982, figs 3–5) but the Sigwells settlement has been determined according to an emphatically preconceived plan. There is little evidence (holloways, double-ditched tracks) for routine links between different plots but access to the valley via ***T*** and the farm track seems to have become very well established. The importance of these routes may explain the continuity of activity in the vicinity of ***V2***. Between ***V2*** and ***T*** two adjoining enclosures appear to contain features associated with burning, suggesting a specialised function such as processing agricultural produce prior to its transportation to the valley.

The uniformity of the landscape architecture connotes external influence and control; a system not merely meeting subsistence needs, but extracting a surplus. It might imply that the state benefited, but a recent study of 19th-century AD Orkney has shown how new private landlords were ruthless in efforts to stamp their impression across the vestiges of long-standing field systems (Sackett 1998).

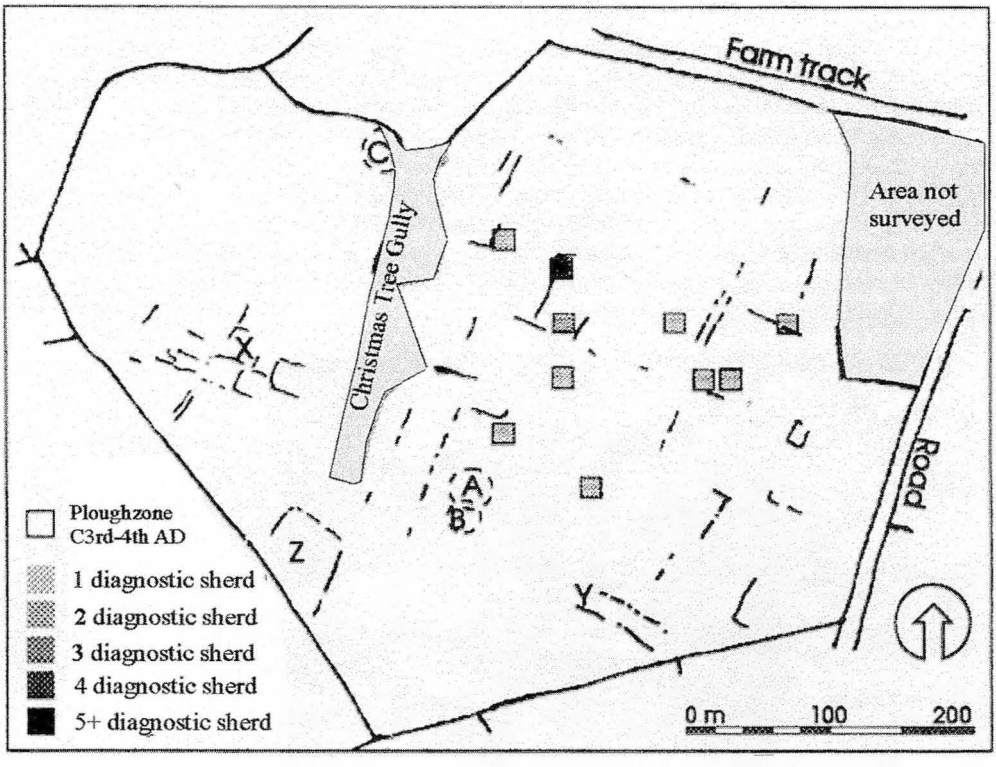

Fig. 10 System 6: diagnostic AD 300–400 pottery from test pits superimposed

SYSTEM 6 (Fig. 10)

System 6 bears the influence of system 5. A group of small plots, ***X***, have a skewed alignment along and over ***U2***. On the east side there are clear signs of landscape organisation; partially enclosing boundary ditches are likely to have been completed by now undetectable fences or hedges. Short lengths of double-ditched track and a possible droveway (***Y***) share their alignment with the modern road. Stock may have been collected in enclosure ***Z*** before being driven into the valley via holloway ***T***. The variation in enclosure size suggests a wide-ranging agriculture, from the small horticultural plot, through the cultivated strip, to open grazing.

Long-standing boundaries along the south-west and south-east of the modern field show that the system is unlikely to be later than medieval. The awareness of elements of the later Romano-British system makes an Early Medieval date possible, perhaps at a time when the political environment was stable and communities were prepared to invest in the sedentary wealth of an arable system, rather than relying on the mobility of livestock.

EXCAVATION OF THE LATE BRONZE AGE ENCLOSURE

In 1994–5 Peter Leach had directed excavations of two Romano-British buildings and a possible midden area on Sigwells (Leach and Tabor 1995, 4–6, fig. 7; 1997, 51–5). Over the two seasons only one prehistoric feature was positively identified. Cut by the footings of the east end of the building's south wall, a pit produced ceramic fragments from moulds for eight to twelve artefacts with Wilburton/Blackmoor metalworking attributes datable to the 10th century BC.

Following the completion of geophysical survey and ploughzone sampling in 1998 (above) it was decided that further undergraduate training excavations should target key anomalies to test the hypothetical chronology of land division systems. The sub-rectilinear enclosure ***W***, in the south-east of the field, was selected for the summer 2000 programme to test the hypothesis that it was an Early Medieval enclosure, based on its perceived respect for the Late Romano-British linear, ***U2*** (Fig. 8). During shovel testing the vicinity of the enclosed area had been notable for its comparative lack of Romano-British finds, despite the proximity of its north end to a broad band of dark soil rich in pottery of that period, thought to be a midden area. Excavation was conducted from June 1st to 12th by undergraduate and postgraduate students from the University of Bristol with members of Avalon Archaeology and the South East Somerset Archaeological and Historical Society, directed by Richard Tabor.

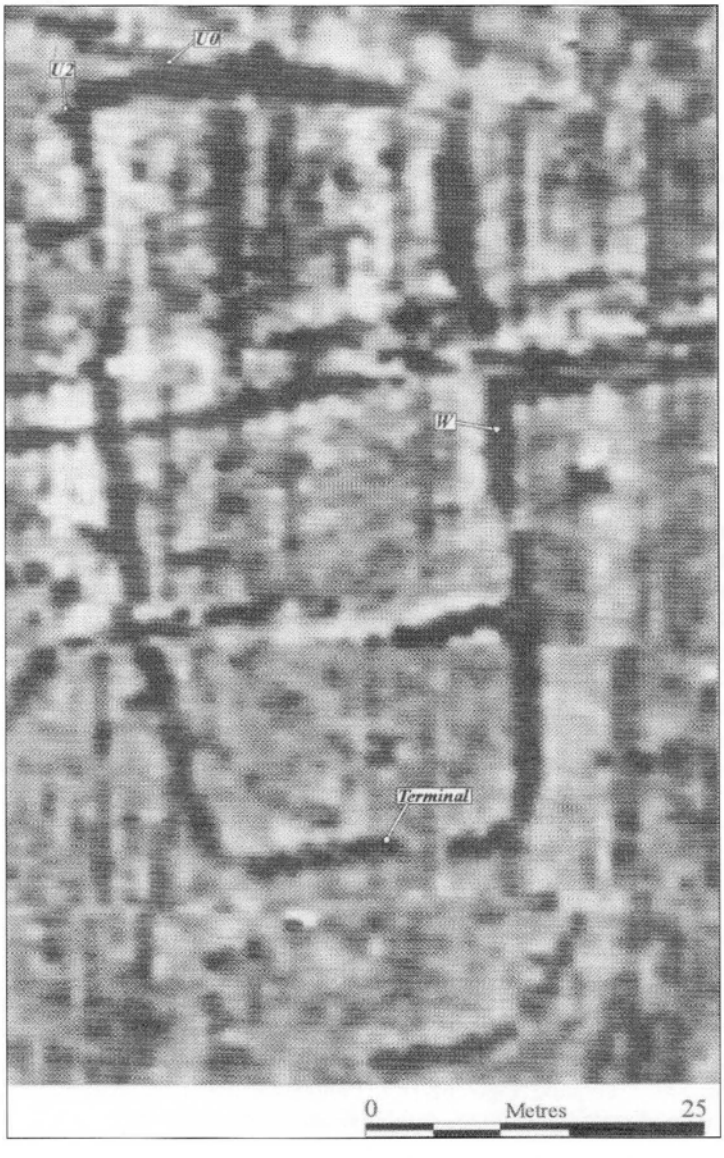

Fig. 11 Enclosure W (System 2). Trench 8 was sited at the north-west corner, and Trench 9 across the ditch terminal at the enclosure entrance on the south side

METHOD

Fifteen 20m square grids in a 5 x 3 mesh were re-surveyed by gradiometer, applying a finer sampling interval than was used during the pilot study (readings at every 0.5 m, along traverses spaced at 1m). The aim was to increase resolution, whilst ensuring that the excavation trenches were set out accurately (Fig. 11). A 10 x 6m trench (Trench 8) was sited at the north-west corner of the enclosure to test its relationship with two nearly parallel bisecting linears. At the south end areas of 5 x 5m and 3 x 3.5m (Trench 9) were opened to evaluate the speculated association with a rectangular anomaly apparently associated with the terminal of a ditch at the enclosure's entrance.

There were new shoots of linseed (Trench 8) and maize (Trench 9) at the time of excavation, which was by hand. General finds were recorded within 1m squares, by context; most special finds were recorded three dimensionally to within .01m. The brown topsoil was removed using mattocks, contexts below that by trowel.

TRENCH 8

The ploughsoil (8001) comprised a sandy loam with sparse limestones. The thinly spread finds were mainly of Romano-British pottery, some flint and occasional modern structural debris. Across all but the westernmost end of the trench, where it sealed a stone-filled linear feature (8003) and natural rock, the ploughsoil overlay a brownish red coarse silt (8002) which was devoid of modern material. There was an increased frequency of fairly abraded Romano-British pottery and flint, and over a dozen hobnails. Bronze Age pottery occurred intermittently, as well as clay metalworking mould fragments. This soil (8002) seems likely to be a Romano-British, or later, formation.

No features were visible in the coarse silt but it sealed 15 discernible cuts, ranging from amorphous disturbances of the bedrock to coherent postholes and three ditches (Fig. 12). Generally, the enclosure ditch (F003) had a truncated 'V'-profile (Fig. 13, A–B), excepting a length of 3–4m east of the enclosure's north-west corner, where there was an internal step or ledge (Fig. 13, E–F). In that corner, at the interface between 8002 and the ditch's upper fill of a more clayey granular reddish brown silt (8005) was a closely set scatter of large to small rounded limestones burnt to blue and red hues (8016; Fig. 13, G–H and Fig.14). A degraded limestone 'slate' lay above the scatter, separated from it by a thin band of silt, and two angular unburnt fragments of Pennant Sandstone were found on end amongst the burnt stones. The scatter sloped downwards from the north edge of the ditch towards its centre.

The silt sealed a layer of sub-angular limestones set in a grainy reddish brown clayey silt (8018) which extended throughout the ditch, generally sloping downwards from its inner side. At its most dense the layer resembled bedrock, but elsewhere it appeared as a thin scatter of rubble. There were some small charcoal fragments, with rare Late Bronze Age pottery, bone and flint.

Layer 8018 sealed a reddish brown clayey silt including up to 20% small to medium yellow limestones, a few of which were burnt to red or blue hues, but only a little charcoal (8020). It overlay up to 90% small to large yellow limestones set in a yellow red coarse silty clay, biased towards the inner edge of the ditch (8022). This layer in turn sealed a basal deposit of subangular gravelly limestones set in a roughly equal measure of yellow clay. The angular stone sides of the ditch showed no signs of collapse, indicating that there had been little erosion.

There was marked patterning in vertical distribution of ceramic fabrics. From the upper rubble to the basal gravel and clay, fabrics were almost exclusively akin to those described by Leslie Alcock as Cadburys 4 and 5 (see below). Single Romano-British sherds occurred in each of contexts 8016 and 8005 in assemblages otherwise dominated by fabrics characteristic of the Early or Middle Bronze Age. The percentage of Romano-British finds in the upper fill of the ditch was higher in Trench 9.

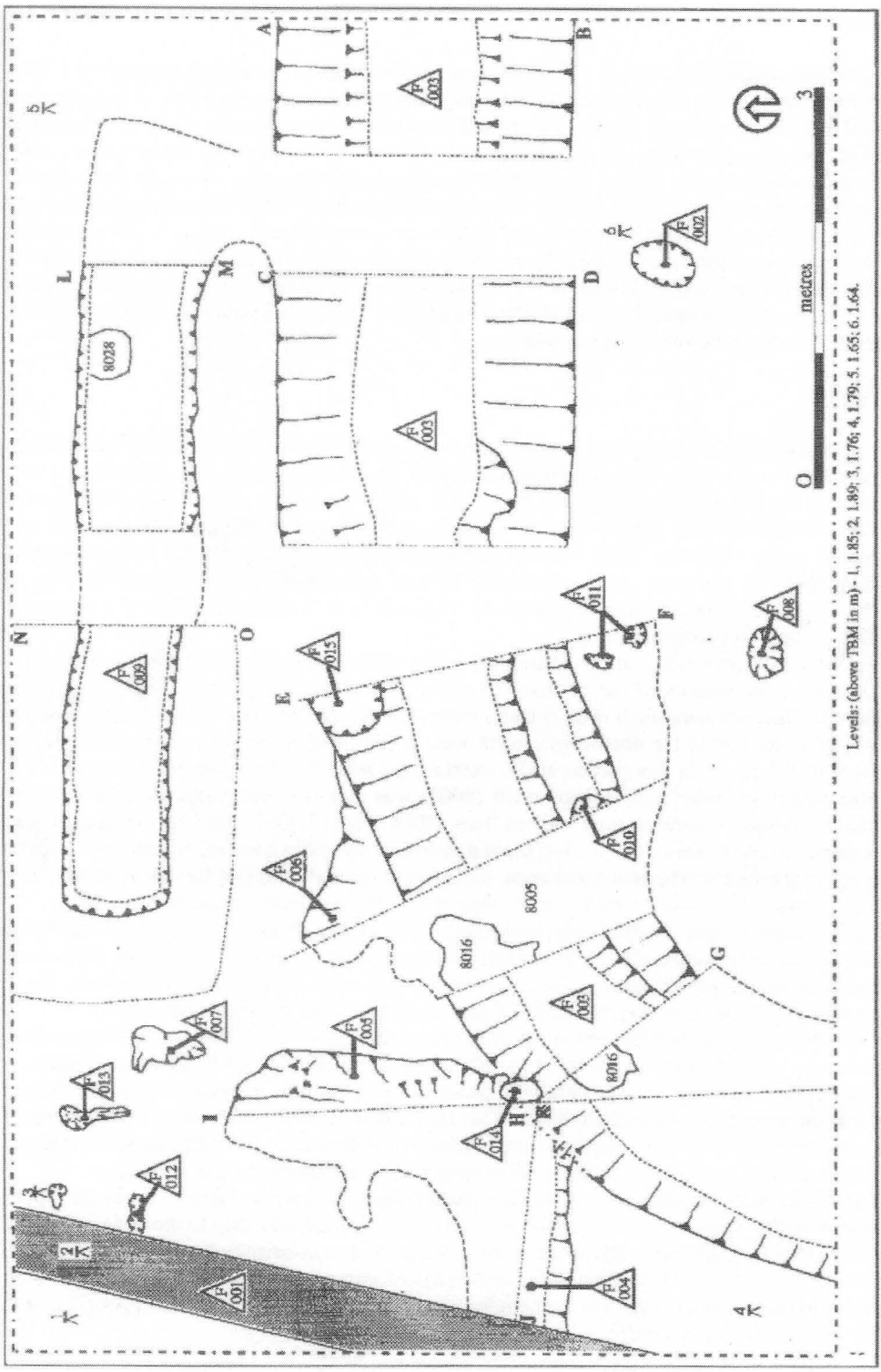

Fig. 12 Trench 8 plan (after excavation)

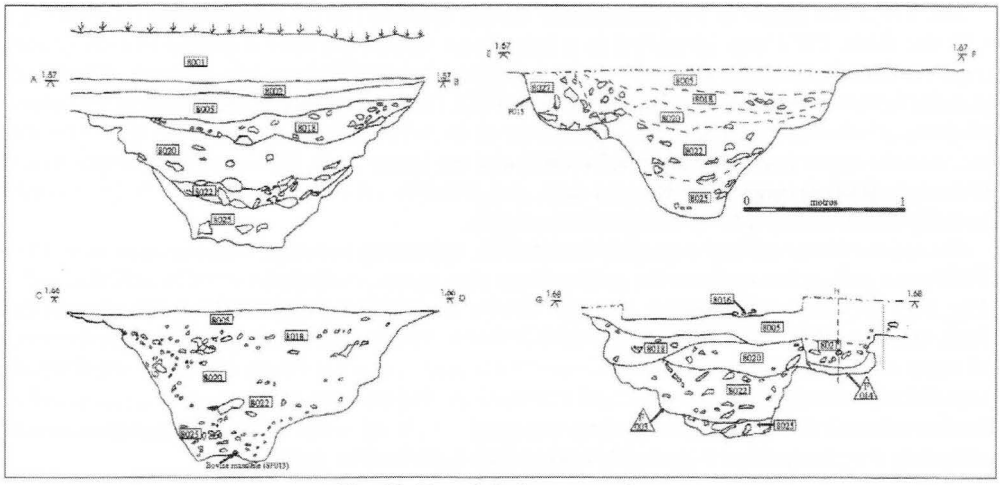

Fig. 13 Trench 8: feature sections

Other finds included an abraded fragment from a metalworking mould, flint and fragmentary bone. A single bovine mandible was found on the base of the ditch, sealed by 8025 (Fig. 13, C–D and Fig.15). Other examples were found in the west terminal of the south entrance to the enclosure (Trench 9, F003) and in the linear ditch nearly converging with the north end of the enclosure (F009). These singular deposits are comparable with five examples found in the middle fills of a Bronze Age ditch at Milsoms Corner.

Fig. 14 Trench 8: burnt stones on the upper fill of the north-west corner of enclosure ***W***

Two linear anomalies in the gradiometer survey appeared to have specifiable relationships with the ditch. F004 was identified as a long linear within the later Romano-British system (Fig. 11, ***U2***). Excavation showed it to be a shallow 'U'-profiled cut into bedrock, filled with granular brownish red coarse silt (8006). Cut by F001 (an unexcavated stone-filled cut, presumed modern), it is butted with the north-west corner of ditch F003. It was not possible to distinguish between the upper enclosure ditch fill (8005) and the linear's fill. However, the complete lack of finds in 8006 favours a pre-Roman date, and possibly a date earlier than F003. It was only partially excavated as a 1.8m longitudinal section.

The second linear cut had a roughly box profile, appearing to merge with the enclosure ditch (F003) at a very acute angle on the gradiometer plot, but on excavation found to fall short of it (Fig. 11, ***U0***). Finds were sparse. A single bovine mandible lay against the north edge of the ditch, set on a rubble fill (8019). Otherwise bones were few and in a fragmentary condition in all contexts. Stone artefacts included a quern fragment, several struck flints, amongst which were flake/blades showing use wear, and a tipless leaf-shaped arrowhead. Apart from an intrusive Romano-British sherd (8011) the pottery was grog-tempered, some with additional grits. It was extremely fragmented but is probably earlier than Late Bronze Age.

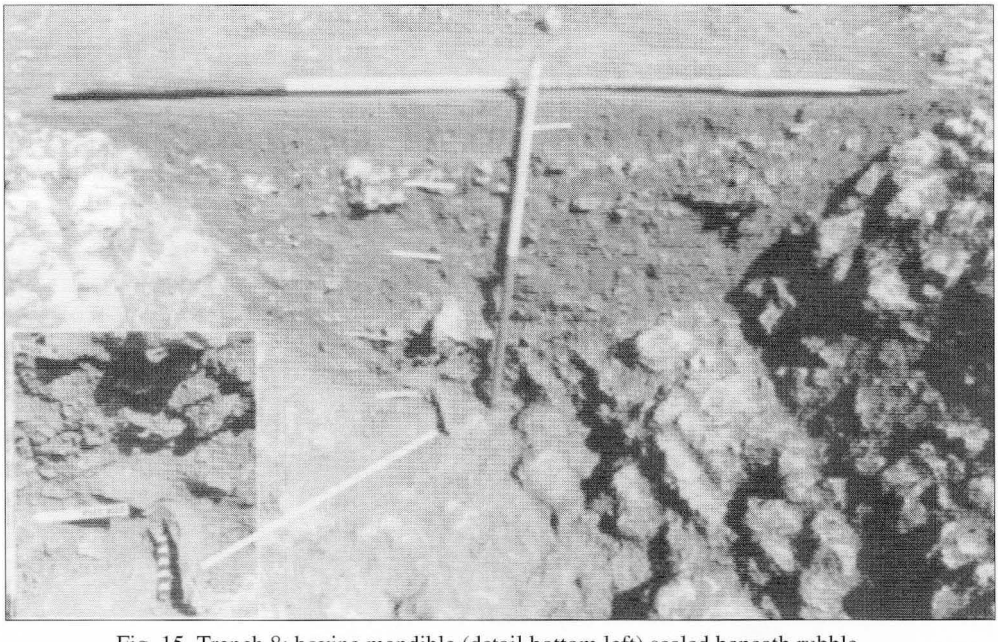

Fig. 15 Trench 8: bovine mandible (detail bottom left) sealed beneath rubble layer at base of north end of enclosure ditch W

TRENCH 9

The ploughsoil was a medium brown sandy loam incorporating 5–15% medium to small limestones and bands of rotting crop roots and stalks (9001). Finds were very sparse, comprising occasional bone fragments, struck flints and hobnails and mainly Romano-British pottery. The soil lay directly over bedrock, which had been much disturbed by the plough, removing the upper parts of rock-cut features and blurring their definition.

The southern part of Trench 9 successfully located an anomaly identified by the gradiometer survey as the west ditch terminal of the enclosure entrance (Fig. 16, F009). Cut as a truncated 'V'-profile, the upper fill comprised a slightly reddish silty loam (9010). Finds were fragmentary

bones including sheep/goat teeth, several fragmentary flint chippings, Romano-British and Bronze Age pottery, an iron nail and a modern iron screw. This sealed a generally closely set rubble of small medium to medium large yellow limestones, some burnt to red and blue hues, set within reddish brown, slightly clayey red silt (Fig. 17, 9011). The deposit was thickest on the north side of the ditch, thinning markedly towards the south. Bones included limbs and teeth of sheep/goats and, most strikingly, an almost complete bovine mandible with teeth (Fig. 18); in addition to a fire-blackened dished sandstone there were three flints, including a burnt core; and two pot sherds consistent with Cadbury 5 fabrics.

The rubble sealed a roughly equal mixture of slightly reddish brown coarse sandy clayey silt and small limestones, the thickest part of the deposit in the centre and north side of the ditch (9012). Amongst the splintered and larger pieces of sheep/goat bone was part of a mandible with two intact teeth. All but one small fragment of flint showed varying degrees of re-cortication. Pottery was consistent with Cadburys 4 and 5, including the internally bevelled rim of a straight-sided vessel. Layer 9012 sealed a second dense rubble comprising up to 90% small to large limestones, some burnt, set in a coarse yellow brown silty clay (9013). In it were a very few splintered bones, a single flint and a single pot sherd of a fabric consistent with Cadbury 4. A find of particular note was a fairly flat, fossil-bearing sandstone, apparently a corner fragment from a larger worked stone. It had been blackened by fire on one side and a hole had been drilled close to the corner. Below this was a basal deposit (9014) with no bone, a single recorticated flint and three sherds consistent with Cadburys 4 and 5.

Pottery from Enclosure Ditch W

Twenty two sherds, from a total of 75 recovered from the sections of enclosure ditch ***W*** in Trenches 8 and 9, were regarded as indeterminate. The remaining 53 sherds, most with a maximum dimension of less than 40mm, were classified according to a fabric type series developed in analysis of the pottery at Milsoms Corner (Tabor 2002). This has been adopted as the basis for the South Cadbury Environs Project prehistoric series, in conjunction with the ceramics from Cadbury Castle. The simple inclusion descriptions of sherds recovered from the ditch are: A: grog; B: grog and quartz; E: shell and calcite; F: limestone and shell; G: limestone, calcite and shell; I: shell, quartz and calcite; K: grog and shell; M: calcite and limestone; O: unidentified small spherical grits; P: calcite and grog. A and B are Middle Bronze Age or earlier fabrics. E corresponds with Ann Woodward's Late Bronze Age ceramic assemblage 4 or Alcock's Cadbury 4 (Barrett *et al.* 2000, 28; Alcock 1980, 687) whilst F, G, I, K and M conform most closely to ceramic assemblage or Cadbury 5, a group designated as Early Iron Age by Woodward (Alcock 1980, 689–91; Barrett *et al.* 2000, 28, table 2). Recent discoveries by one of the authors at Milsoms Corner suggest that at least some of these latter fabrics may have originated in the Late Bronze Age (Northover *et al.* forthcoming). Y is an inclusive group for all Romano-British sherds from the ditch. The vertical distribution of these fabrics is summarised by sherd count in Table 1.

Most sherds were from the bodies of vessels and displayed few diagnostic attributes of form. Of those that did, two were from the 'upper rubble' context 8018 (Fig. 19). *80002*: internally bevelled rim of a straight-sided vessel with burnished or lightly incised near horizontal linear decoration. Calcite inclusions predominate, with some limestone and shell plate and sparse flint (fabric G). *80019*: slightly flattened rim of a straight-sided or open vessel. Calcite inclusions predominate, with some plate shell and sparse limestone and grog (fabric G). Two more were from middle fill contexts 8022 and 9012. *80001*: thumbnail impressed wall or shoulder. Includes mainly calcite, with some quartz, limestone and occasional shell plate (fabric I). *90005*: slightly internally beveled rim of an upright vessel. It includes calcite with some shell plate and rare limestone (fabric G). The sample of formally diagnostic sherds is too small to corroborate the chronological range suggested by the fabrics, but comparisons with the Milsoms Corner ditch, including its analogous pattern of bovine mandible deposition, makes a Late Bronze Age date

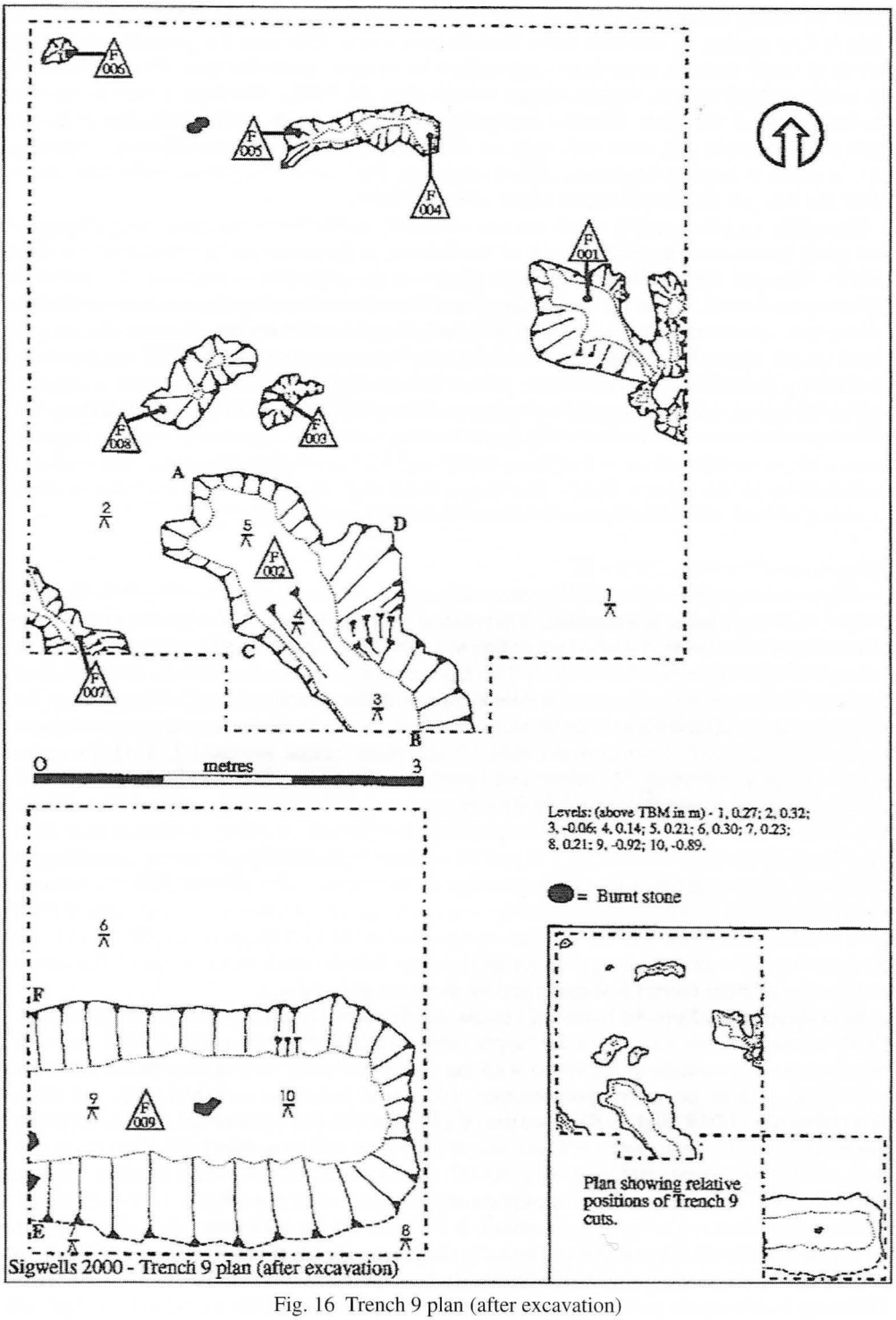

Fig. 16 Trench 9 plan (after excavation)

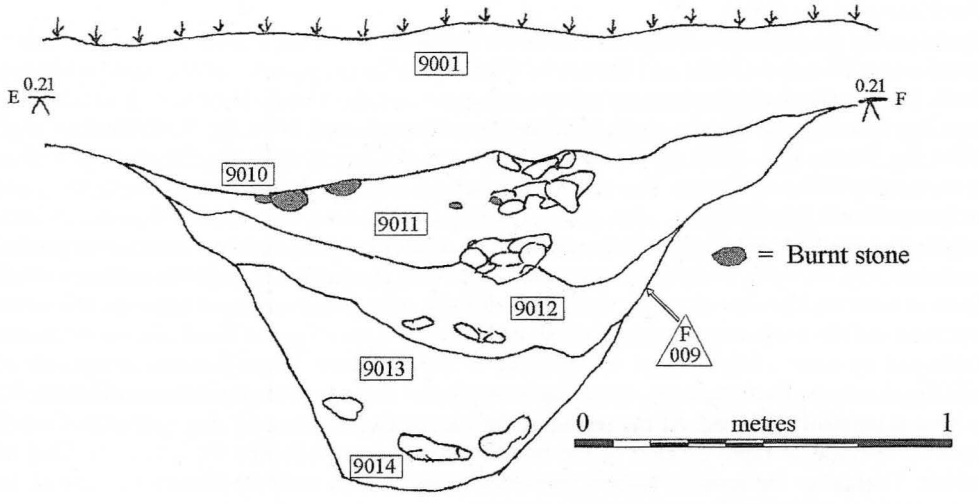

Fig. 17 Trench 9: section E–F across F009; scale 1:20

most probable. The predominance of the earlier fabrics A and B, mixed with Romano-British fabrics in the upper fills, illustrates the proximity of significantly intensive earlier activity. Thus, the comparative lack of those fabrics in the middle and lower fills of the ditch requires explanation. Either the enclosure was created and maintained on a stable land-surface, such as pasture, or the ditch filled so rapidly that there was no opportunity for the earlier material to be trapped in it. In the latter scenario cultivation during the Romano-British or a later period would have mixed and spread earlier and later artefacts which were subsequently trapped in the shallow residual channel formed by the upper ditch silts.

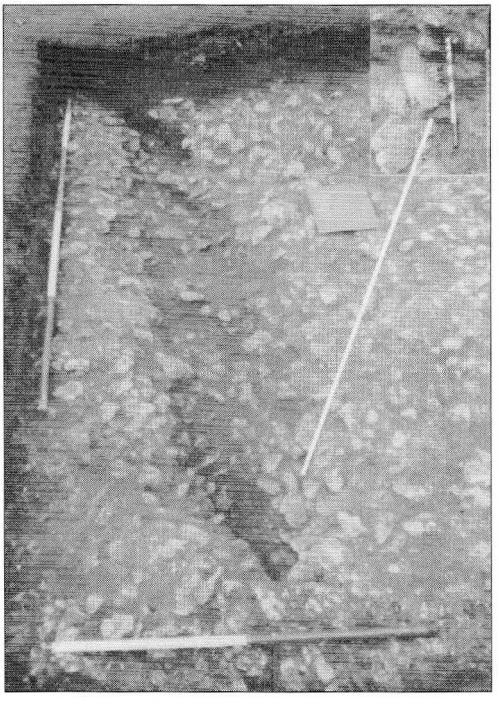

Fig. 18 (left) Trench 9: bovine mandible (detail top right) in upper rubble of enclosure ***W*** southern entrance ditch terminal

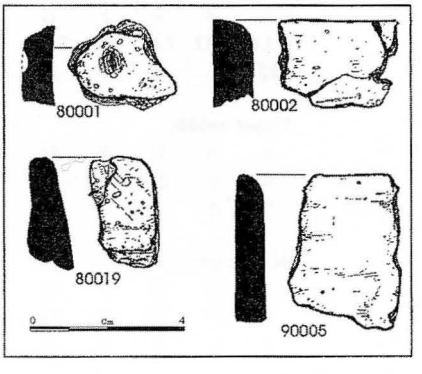

Fig. 19 Late Bronze Age pottery from Trench 9 ditch terminal; scale 1:2

The Filling of the Ditch

Based on the geophysical survey, as well as the character of the excavated feature, it is safe to assume that Trench 8 / F003 and Trench 9 / F009 are different portions of the same enclosure ditch. The profile is similar to many other examples from the Middle Bronze Age to the Early Iron Age found on the Wessex chalk and elsewhere (Barrett *et al.* 1991, fig. 5.32; Bradley *et al.* 1994, fig. 34 etc; Ellis 1990, fig. 7; Fasham 1985, fig. 9; Gingell 1992, fig. 22; etc.), as well as at the nearby Milsoms Corner. The disposition of rubble fills suggests that like the latter it had an internal bank, but the history of its use is significantly different. Whilst the weight of evidence implies that the Milsoms Corner ditch was filled by deliberate and natural processes over several centuries, the Sigwells enclosure's uneroded sides and predominantly rubble contexts result from at least two phases of rapid, deliberate filling, with some variation between the south entrance and the north-west corner. At both ends there is a thin layer of basal silt, satisfactorily explained by even a brief period of exposure to the elements. There follows an episode of infilling dominated by limestone, implying strongly the integrity of the bank from which the fill is almost certainly derived. At the terminal the succeeding mixture of clay and gravel result from an episode of rapid erosion of the unstable bank, soon followed by a final infilling of rubble. Thereafter the residual hollow remained a trap at least until the Roman period and, in some sections of the ditch, until the 20th century.

DISCUSSION

The application of gradiometry over a large area has identified a succession of humanly modified landscapes from which specific settlement and agricultural activities have been inferred, ranging from the Bronze Age to the early medieval periods. The discovery that enclosure ***W*** dated to the

Upper ditch fill

A	B	E	F	G	I	K	M	O	P	Y		
53.6	3.57	7.14	0	7.14	0	3.57	3.57	0	0	21.4	100	Percentage
15	1	2	0	2	0	1	1	0	0	6	28	Sherd count

Upper rubble

A	B	E	F	G	I	K	M	O	P	Y		
0	0	25	0	50	0	25	0	0	0	0	100	Percentage
0	0	1	0	2	0	1	0	0	0	0	4	Sherd count

Middle silt/gravel

A	B	E	F	G	I	K	M	O	P	Y		
0	25	50	0	25	0	0	0	0	0	0	100	Percentage
0	2	4	0	2	0	0	0	0	0	0	8	Sherd count

Lowest rubble

A	B	E	F	G	I	K	M	O	P	Y		
0	0	23.1	7.69	15.4	7.69	7.69	23.1	7.69	7.69	0	100	Percentage
0	0	3	1	2	1	1	3	1	1	0	13	Sherd count

All ditch contexts

A	B	E	F	G	I	K	M	O	P	Y		
28.3	5.66	18.9	1.89	15.1	1.89	5.66	7.55	1.89	1.89	11.3	100	Percentage
15	3	10	1	8	1	3	4	1	1	6	53	Sherd count

Table 1 Vertical distribution of pottery in Late Bronze Age enclosure ditch

Late Bronze Age, rather than the post-Roman period indicated that whilst it is surely legitimate to draw chronological and functional hypotheses from geophysical maps, great care must be taken in identifying possible relationships between anomalies. In retrospect it is easy to see that U0, rather than U2, determined the alignment of the enclosure's north ditch.

In broad terms we may suggest the following outline chronological and functional hypotheses: Some of the pronounced changes in landscape architecture can be accounted for by periods of dereliction, but the transition to a system of fields in the later Iron Age may well reflect a pressing need to re-organise production in the face of economic and population expansion. Equally, the dramatic transformation of the later Romano-British landscape may illustrate the ascendancy of individual private land ownership, and production of a surplus. Detailed boundaries and relatively prolific pottery of the 1st to 4th centuries AD provided an opportunity to test assumptions about the significance of enclosure form and size and low-density artefact distribution, which hitherto have been treated separately.

Variations in intensity of settlement and the character of land use shed important light on the social and economic conditions of Cadbury Castle's development. The techniques applied at Sigwells are being extended already to much larger areas around the hillfort. They will be enhanced by geochemical survey over spatially and chronologically identifiable plots, supplemented by limited excavation. The completion of this programme will provide a more coherent body of information, allowing the fullest contextual narrative so far achieved for a British hillfort.

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