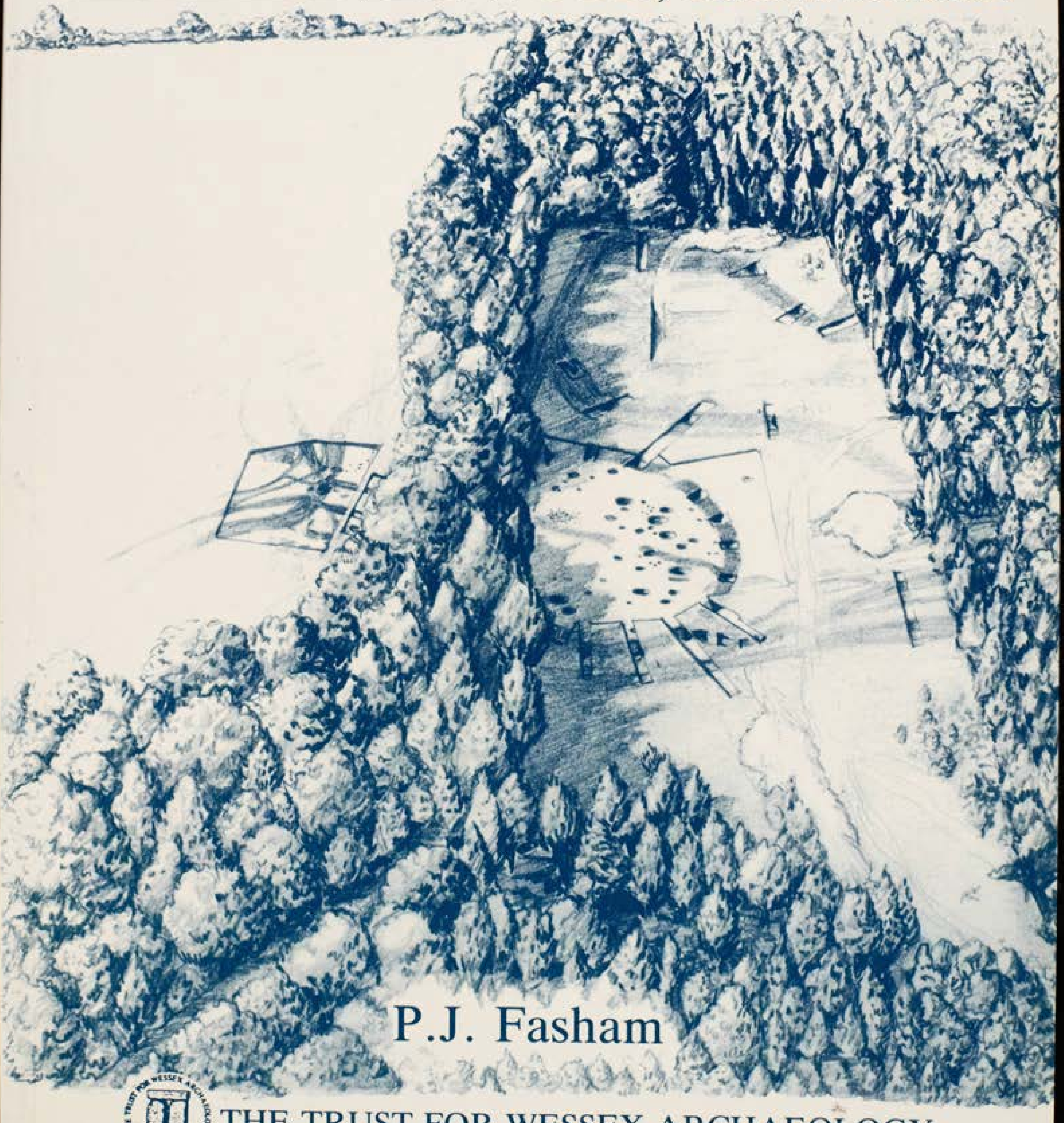
HAMPSHIRE FIELD CLUB

MONOGRAPH 5 GENERAL EDITOR K E QUALMANN

A BANJO ENCLOSURE IN MICHELDEVER WOOD, HAMPSHIRE



P.J. Fasham

THE TRUST FOR WESSEX ARCHAEOLOGY

A 'Banjo' Enclosure in Micheldever Wood, Hampshire

Hampshire Field Club and Archaeological Society: Monograph 5
General Editor: Kenneth E Qualmann

A 'Banjo' Enclosure in Micheldever Wood, Hampshire

(MARC3 Site R27)

by P J Fasham
with a Preface by Richard Bradley

and contributions by

Justine Bayley, Jennie Coy, Peter Fisher, David Haddon-Reece,
John Hawkes, Hazel Hawkes, Carole Keepax, Mick Monk,
Elaine Morris, Peter Murphy, Faye Powell and Peter Winham

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Preface

by Richard Bradley

The questions that archaeologists ask never stay the same for very long. When 'banjo' enclosures were first identified a few years ago, the first problems to resolve were their date and their role in the prehistoric economy. To a large extent these questions are answered in this informative monograph. It goes a long way towards establishing the chronological context of such sites and, perhaps unexpectedly, shows that a class of earthwork monument, whose very groundplan has been used as evidence of late prehistoric pastoralism, in fact was closely integrated into the mixed economy of Iron Age Wessex.

Having despatched the first generation of problems, others now take their place, but with the all-important difference that any new research will benefit from the careful excavation reported here. Having tackled individual sites in detail, we must ask how far 'banjo' enclosures can be treated in isolation, and in particular how we are to come to terms with a growing body of evidence which suggests that they formed only part of vastly greater complexes – complexes which in some cases contain several enclosures of this type. Such extensive areas of earthworks are by no means common, but their sheer scale invites comparison with Iron Age hill forts. We must seek to establish the status of such establishments in the contemporary pattern of settlement. Does the evidence currently available from 'banjo' enclosures characterise the roles of these complexes as a whole? This question will not be easy to answer, but that is the next step to take.

Secondly, we need to ask whether any of the 'banjo' enclosures might have played a specialised *social* role, for not only may they form part of extremely large dyke complexes: occasionally they can be found near to rich Iron Age burials, or on sites with surface finds of continental imports. This is particularly significant now that comparable earthworks are being discovered outside Wessex. In two cases similar enclosures are known around dyke systems that have been described as 'oppida': the North Oxfordshire Grims Ditch in the Cotswolds, and the Chichester Entrenchments in West Sussex. Other earthworks very similar to 'banjo' enclosures are known in Dyfed, where they seem to have been used as high status settlements during the later part of the Iron Age. Their characteristic funnel entrances may have provided a monumental approach to these sites, some of which contained large circular buildings. Such comparisons certainly provide food for thought. Having discovered so much about the 'banjo' enclosures in Hampshire, our research has only just begun. This monograph is a major contribution to that work, but it must be a spur to equally painstaking work in other areas.

One of the difficulties that we face when we discuss prehistoric society is the sheer difficulty of 'reading' the archaeological record. It is here that the present volume makes its second major contribution, for the authors take an unusually critical look at the ways in which that record had formed. They record the erosion of abandoned corn storage pits and document how different plants came to colonise the excavated area. The botanical remains from Micheldever Wood have already been reviewed in a paper which taught us important lessons about the problems and potential of this type of material. Now we are given an equally searching analysis of the animal bones and of the ways in which they can be studied most effectively. Taken in combination, this work provides an additional perspective on the study of this important site and helps to lay the foundations for a more disciplined approach to the interpretation of prehistoric settlement in general.

The publication of the Micheldever Wood 'banjo' enclosure is an important piece of research in its own right, and the authors are to be congratulated on the quality of their work. We can learn much that is new and useful from this report. Its publication should also raise our hopes of equally interesting developments in the future.

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Author's Preface

This report concerns a site first discovered by the remotest chance in 1973 and largely destroyed by a motorway ten years later. Delay in the construction programme enabled a few pits to be left open and monitored from March 1976 to the summer of 1979. Much of the basic work by the specialists and the author was completed by 1980. There has been no attempt to revise these texts, as to have asked all contributors to update their work would probably have meant that the report would never have been completed. The report therefore generally represents the 'state of play' in 1980. Pressures on the publication media in Hampshire and a lack of financial resources delayed the final production of the report. Fortunately the means to publish it are now available in the Monograph Series launched by the Hampshire Field Club and this chance find can be presented for general consideration.

P J Fasham
April 1987
Salisbury

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Acknowledgements

An excavation and report of this nature are essentially collaborative: most of the contributors to the project are listed on the title page. Missing are the field supervisors who did so much to enable the excavation to proceed — George Smith, Peter Bates, Abigail Borrow, Chris Butler and Sally Fasham. Permission for the excavation was readily granted by the Forestry Commission and the Sutton Manor Estate. The final drawings are the work of Rob Read and Stephen Crummy of the Trust for Wessex Archaeology. The fieldwork and most of the post-excavation work were completed under the auspices of the M3 Archaeological Rescue Committee and the remainder under the aegis of the Trust for Wessex Archaeology. The whole project has been funded by the Department of the Environment Directorate of Ancient Monuments (now the Historic Buildings and Monuments Commission for England), whose staff, successively Dr G J Wainwright, Dr C J Young and Mr S Dunmore, have given freely of their advice. The support of Professor Martin Biddle and Mr Collin Bowen, successive Chairmen of the M3 Archaeological Rescue Committee, is warmly acknowledged. I am grateful to Dr Wainwright, Collin Bowen, Brian Perry and Andrew Lawson for reading and commenting on the text. John Hawkes has proved a mainstay on this report and its associated archive as both have neared completion.

P J Fasham

Introduction

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Fig 1. Location

Chapter 1

The Site

Introduction

The proposed construction of the M3 motorway through central Hampshire from Popham to Compton led to a programme of fieldwork, survey and excavation under the auspices of the M3 Archaeological Committee. A preliminary survey of the entire route had been completed by 1973 (Biddle and Emery 1973). Part of the motorway was planned to run for 2.5 kilometres through Micheldever Wood and, hence, a detailed survey within the Wood was completed and various excavations carried out. This work has been referred to in the annual reports of the M3 Archaeological Rescue Committee (Fasham 1975, 1976 and 1978) and full reports of two large excavations in, or adjacent to, the Wood have been published (Fasham 1979, Fasham and Ross 1978, Fasham 1982). The results of the survey and small-scale analytical excavations have also been published (Fasham 1983). Certain aspects of the work have been discussed in a number of articles (Bowen 1975, Fasham and Monk 1978, Taylor 1979, Monk and Fasham 1980).

Site discovery (Figs 1 and 2)

The site was located on the west side of Micheldever Wood (SU 527 370) in the parish of Micheldever, towards the east end of a slight chalk ridge which rises and broadens towards the east. Located at about 111m OD (360ft), the site was situated on clay-with-flints which form a cap over the underlying upper chalk. In places, particularly in the centre of the enclosure towards the entrance, the chalk protruded through the clay-with-flints. Today there is no immediate supply of water, but surface water takes a considerable time to drain.

It is likely that most of the area now covered by Micheldever Wood had reverted from an agricultural use to woodland at the end of, or fairly soon after, the Roman period (Fasham 1983). In 1963, in parts of the Wood, the Forestry Commission planted Douglas Fir and Western Red Cedar which, in ten years, grew so densely as to be virtually impenetrable (Fig 2). These stands covered most of the area that was to be investigated and detailed survey was out of the question without felling the trees. The north-

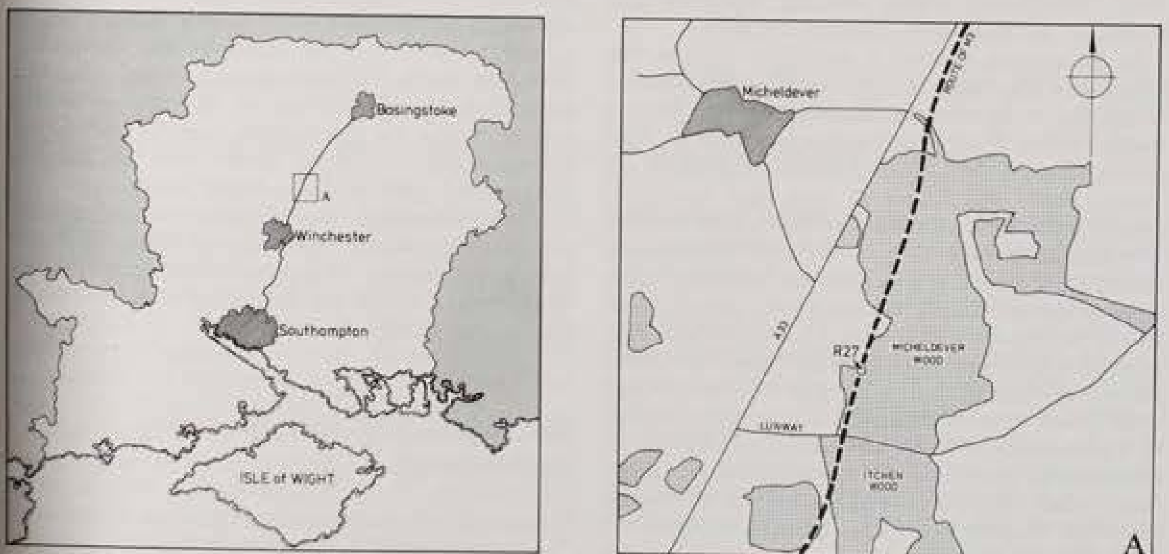

Fig 1. Location of the Micheldever Wood 'banjo' enclosure (MARC 3 site R27) in Hampshire.

Fig 2. View of the Micheldever Wood 'banjo' enclosure before the excavation. Photo: MARC 3.

west corner of the site was under beech planted in 1931. Two forest tracks running east-west and north-east to south-west bisected the area.

In the autumn of 1973 a geological test pit, 4m square and 12m deep, was excavated at the junction of the tracks by Ground Engineering Ltd for the South-Eastern Road Construction Unit (Fig 4). The pit cut through the V-shaped enclosure ditch of the 'banjo' and a few sherds of Iron Age 'saucepan' pottery were retrieved from the ditch. This was the first indication of a site in the area. Subsequent examination of the tracks and the relatively open areas under the beech, but not in the impenetrable stands of Western Red Cedar and Douglas Fir, revealed a bank and ditch crossing one of the tracks about 45m south of the test pit (Fig 4). The bank and ditch curved north-westwards until it was truncated by a post-medieval forest bank and ditch. The forest boundary earthwork ran north-eastwards and truncated other earthworks which emerged westwards from the Western Red Cedar plantation across the track to the north of the test pit. Mr A J Clark of the Ancient Monuments Laboratory was able to do a geophysical scan, using a fluxgate gradiometer, under the beech, but this was restricted by the presence of a collapsed metal fence which distorted the readings. Nevertheless, a length of ditch which proved to be part of the enclosure was discovered under the beech. Pits were also discovered along the track to the south of the test pit. In February 1975 a demonstration by Plesseys of a newly developed radio-navigation plotting system for the fluxgate gradiometer confirmed the earlier results.

These discoveries, plus the presence of extensive soil and crop marks in the adjacent field, suggested that a (substantial) occupation site lay under the Western Red Cedar and Douglas Fir stands on the line of the motorway.

Excavation and post-excavation methodology

Two small trial trenches were dug under the beech in the summer of 1975 to determine whether occupation levels might have survived at a distance from the earthworks. There was no evidence for such surviv-

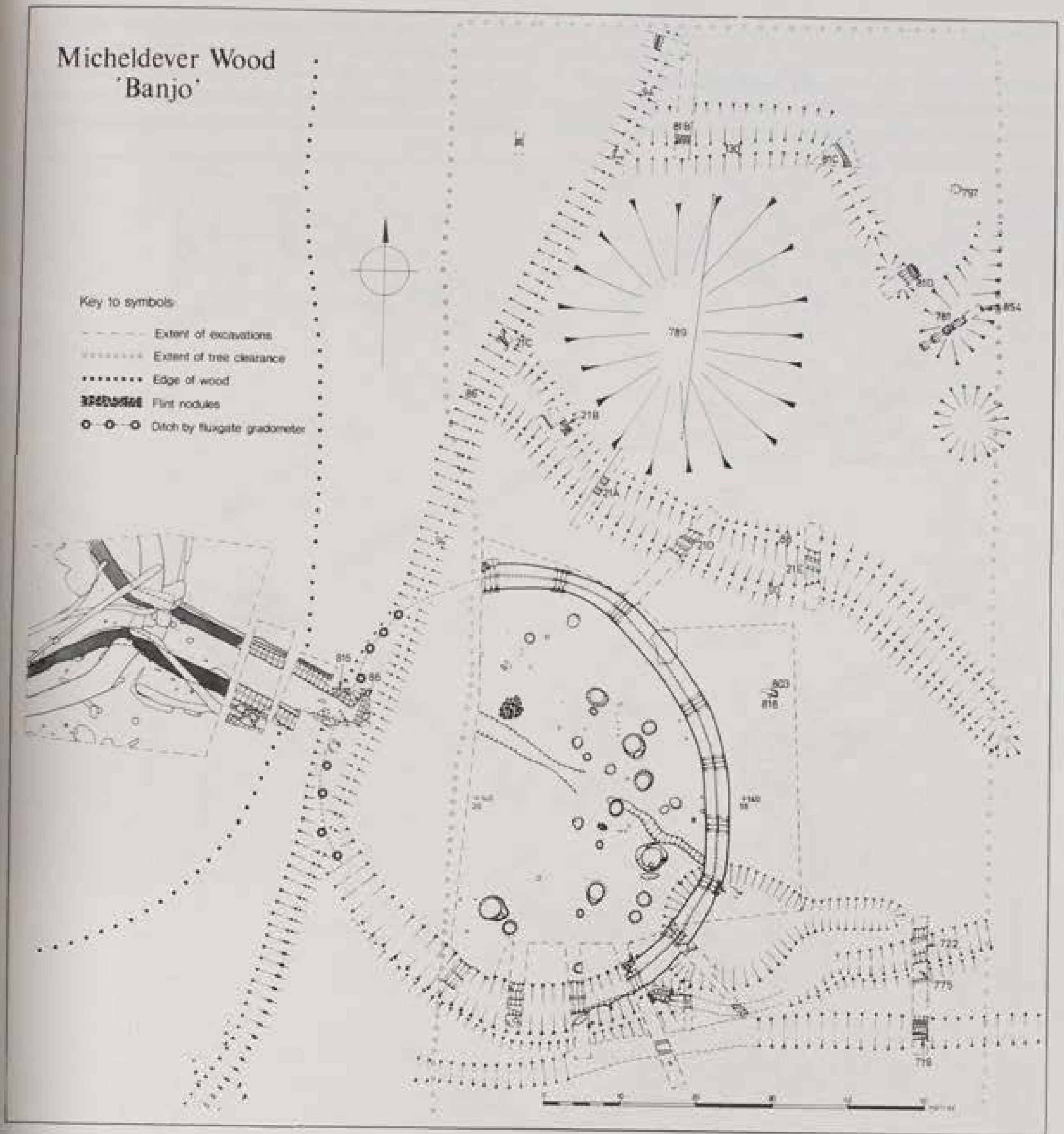

Fig 3. Micheldever Wood 'banjo' enclosure: general plan of the excavated features.

al. In the late summer of 1975 the South-Eastern Road Construction Unit cut swathes through the Wood defining the limits of the motorway. An area of about 1.75ha within the line of the motorway was clear-felled in an attempt to incorporate all the potential archaeological remains. Unfortunately, one earthwork was discovered to the south of the clearance (see Earthwork E4 in Fasham 1983).

The clearance revealed several earthworks. The most significant was a partial sub-circular enclosure with a ditch and external bank — correctly presumed then to be a 'banjo' enclosure. To the south of the enclosure were two earthworks running east-west. To the north, a ditch flanked by banks ran north-west to south-east. This earthwork skirted the south side of a large depression. Another bank and ditch ran along the north and east of the depression. No earthworks survived west of the post-medieval forest boundary already mentioned (Fig 4).

The results of the trial trenches indicated that little or no archaeological damage would occur if the topsoil, tree stumps and tree roots within the presumed interior of the enclosure were removed mechanically. A safety margin was left by all earthworks to prevent inadvertent archaeological damage. An area immediately to the south of the enclosure was also stripped, as were areas in the north-east and south-east corners of the clearing, but these proved to be archaeologically sterile, except for one feature, F797, in the north-east corner. All the

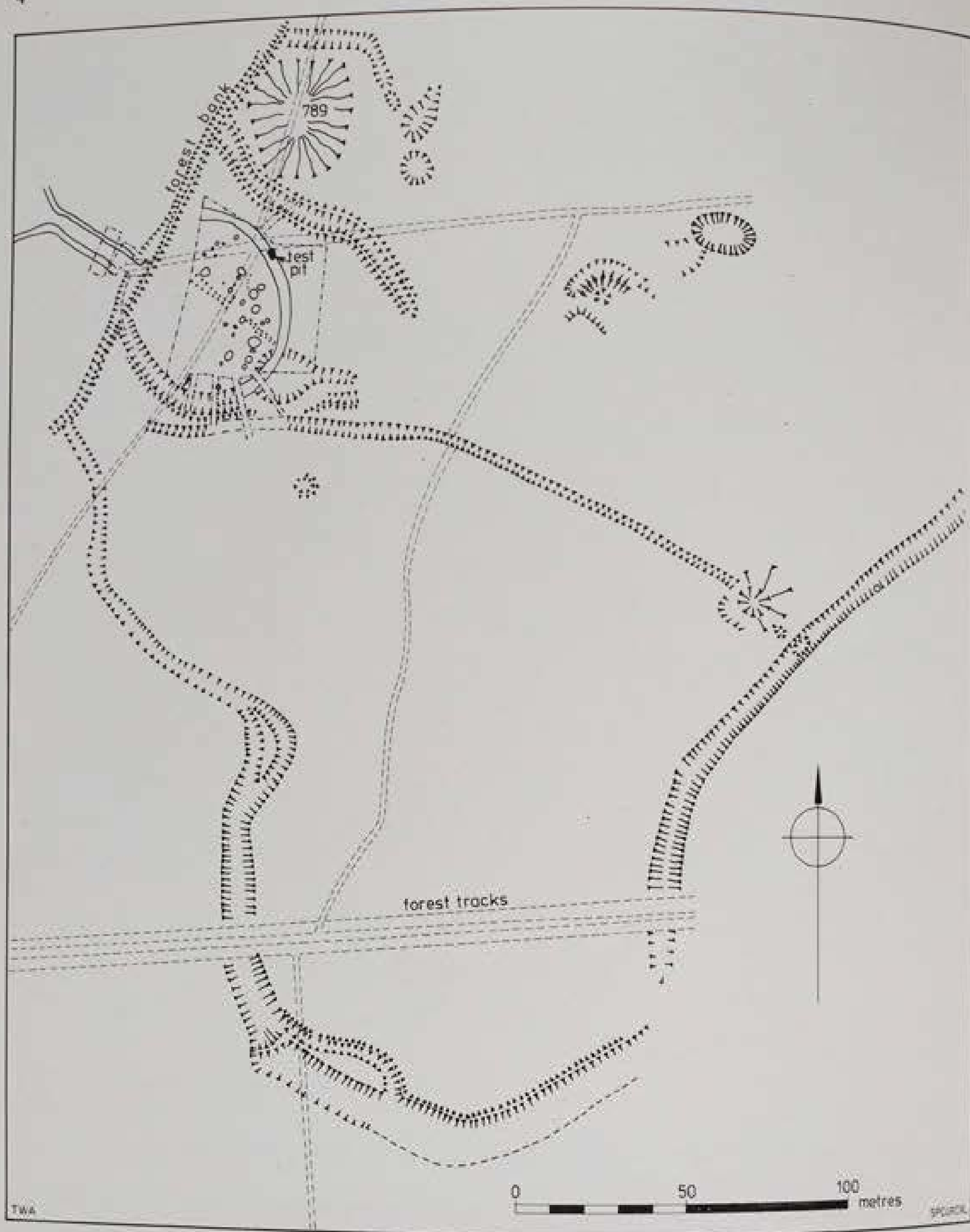

Fig 4. Plan of earthworks in the area of the Micheldever Wood 'banjo' enclosure.

earthworks were sectioned by hand. Features within the enclosure were excavated manually, all the pits being excavated by quadrants. Unique numbers were given to all contexts, small finds and samples. The trenches across the linear features were identified by an alphabetical suffix. An extensive programme of sampling for carbonised seeds, charcoal and small animal bones was instituted. The purpose of the programme was threefold: to obtain useful and quantifiable data for aspects of the site's environment (Griffith 1978); to assess artefact recovery rates from ordinary and sieved excavation (report in site archive); and to determine useful parameters for sampling procedures for carbonised remains (Fasham and Monk 1978).

Excavation took place from August 1975 to March 1976, during which time the Forestry Commission kindly permitted the excavation of a 5m square trench on one of the tracks at the presumed entrance of the enclosure. In December 1977 and January

1978 the area of the entrance west of the 5m square trench was also excavated and the ploughsoil was stripped from an area of about 700m^2 in the adjacent field to establish the length of the entranceway. The features revealed in the ploughed field were planned, but not excavated, in order to minimize archaeological damage.

Post-excavation work involved the analysis of features and artefact types to examine chronological and spatial distributions. It was possible to separate,

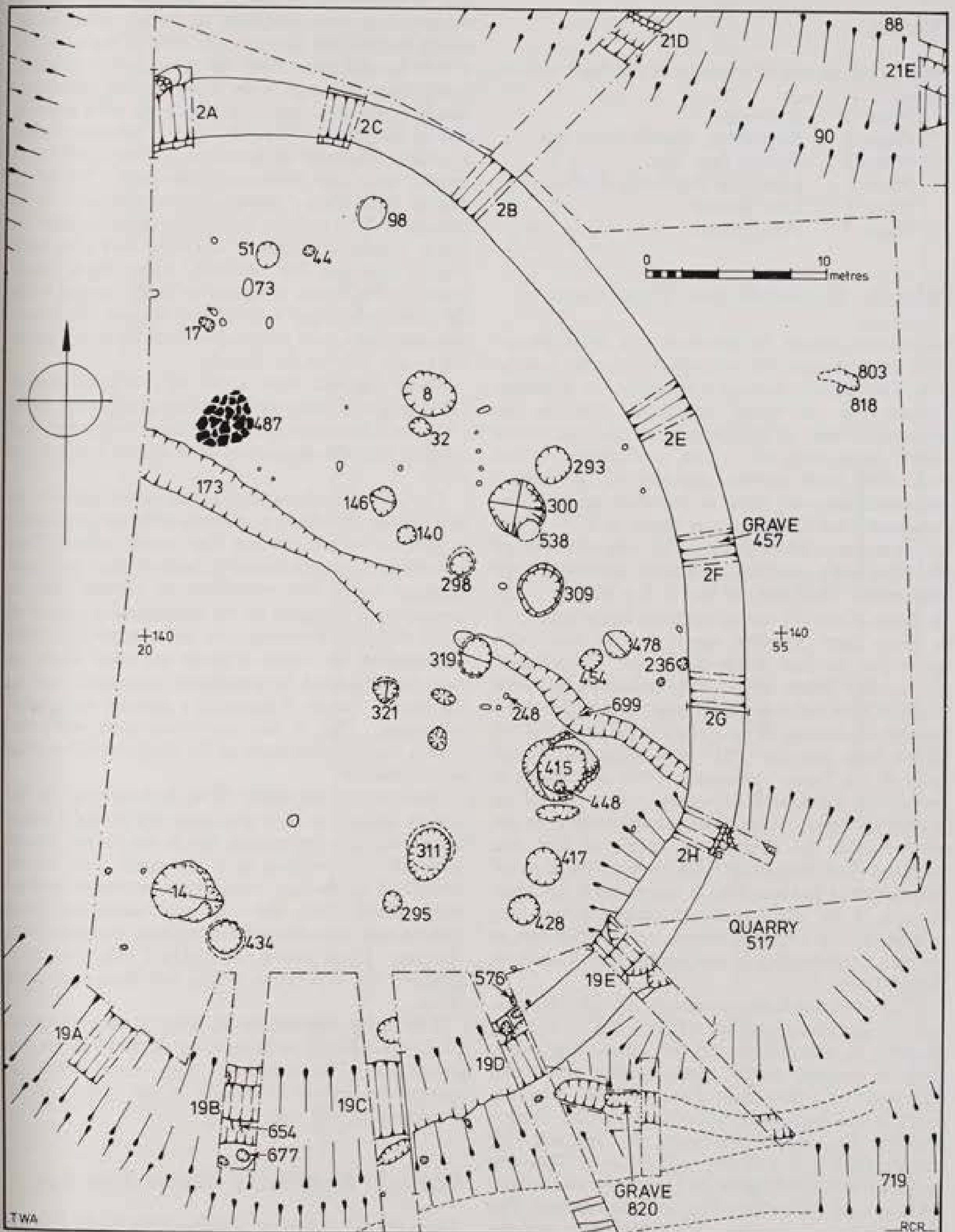

Fig 5. Micheldever Wood 'banjo' enclosure: interior of the enclosure showing features and sections referred to in the text.

within features, Iron Age and Roman deposits and all analyses are based on these divisions. Subject files were maintained. Computer manipulation of the data aided the work.

Phasing

The history of the site has been divided into six phases.

Phase 0	Uncertain
Phase 1	Early/Early Middle Iron Age
Phase 2	Middle Iron Age
Phase 3	Late Iron Age/Early Roman
Phase 4	Late Roman
Phase 5	Post-Roman

Phase 0. Uncertain (see Figs 3 and 5)

Six features cannot be allocated to a dated phase. F576 was a shallow (31cm deep) sub-circular feature of 1.22m diameter located just within the southern boundary of the 'banjo' enclosure. F797 in the north-east corner of the clearing was a sub-circular feature 34cm deep and 1.24m in diameter. It had been filled with various deposits of clay which contained charcoal. None of this charcoal has been identified. One flint flake was found in F797. F803 was an irregular linear scoop 2.25m long containing a flint flake and a greensand fragment probably from a quernstone. F803 was cut by F818, a shallow circular scoop. F173/699 was an irregular linear hollow up to 11cm deep running north-west to south-east across the interior of the enclosure. It contained pottery, flint flakes, animal bone and antler but these artefacts were not sufficiently diagnostic to provide a date for the feature. It was certainly cut by one of the Middle Iron Age pits (F319) and apparently by the ditch of the 'banjo' enclosure. F781 was extant as part of an earthwork depression. The end of an apparently linear depression was discovered in the north-east of the clearing. A length of 20m was recorded — it was about 10m wide at its terminal and narrowed to about 5m. It was about 0.5m deep. Because of the position of tree stumps it was only possible to cut a lateral trench, rather than one to obtain a cross-section. It was cut by ditch 81 and pit 854 of Phase 3.

F789 was a large, approximately circular, depression with gently sloping sides (Figs 6 and 7). It had a diameter of about 33m and was almost one metre deep. A machine trench was excavated across the depression to a maximum depth of 1.5m, at which depth it was impossible to excavate further using a machine. The sides of the feature were of chalk with a 5–6m wide spread of clay in the centre. This clay deposit is discussed below by Dr Fisher who visited the site after the cutting had been abandoned. For the purposes of his study, Dr Fisher deepened the cutting through the central clay pocket. Subsequently a thaw, after a fortnight of frost, caused the collapse of the section. The recorded field data are partially incomplete. Dr Fisher has contributed the following note:

Much of the fill was a white (5Y8/1) stoneless silty clay (J), with many large prominent, clear yellowish red (5YR5/8) mottles occurring on structural faces and as bands (*eg* H and I). Some of these layers thickened as their steepness increased, often lying nearly vertical and having a thickness of the order of a few centimetres. Most of these were certainly concretions although some had micro-laminations which are more commonly associated with deposition of illuvial clay. This fill, layer J, alternated with a sandier material of brownish yellow (10YR6/8) colour, with less prominent light grey (10YR7/2) mottles and black, manganous concretions. It is possible only to indicate the former linear mottles on Fig 6. A yellowish brown (10YR5/4) silty clay with few to common fine, distinct, sharp black manganous mottles was observed to be in contact with the chalk on either side of the feature. This last material had a very prominent platy structure parallel to the side of the feature.

These deposits were sealed by a line of stones (793) which in turn was sealed by a silty clay loam (792), which appeared to blend into the present soil profile, with the suggestion of a second stone layer (791).

The colour and mottling of the lower deposits in this feature are wholly consistent with the pedological process of gleying and clay translocation. This process is only widespread in soils of the chalkland plateaux where clay-with-flints, or plateau drift is present, and is caused by the impermeable nature of those deposits. Furthermore, the stratigraphic relationships of the lower deposits are most likely to have been formed by periglacial processes, and so the overall feature is probably a massive periglacial involution. This is also consistent with the powdered, structureless form of the chalk on either side of the feature.

The effect of the clayey fill in the lower part of the feature is likely to have given rise to a perched water table within the depression and so the feature would probably have worked as a dew pond. The recent woodland on the site would have increased evapotranspiration from the site, and associated deep rooting may have aerated the deposits, and improved drainage. Thus during the MARC3 fieldwork programme the depression would not have contained water.

The upper deposits of the feature probably relate to the postglacial accumulation of material in the depression. The stonelines may relate either to accelerated periods of erosion in the vicinity or to trampling of wet soil.

Phase 1. Early/Early Middle Iron Age

There are 137 sherds of possible Early/Early Middle Iron Age pottery. This was distributed in the entrance, the ditch immediately north of the enclosure and in the pits of the enclosure. There are no

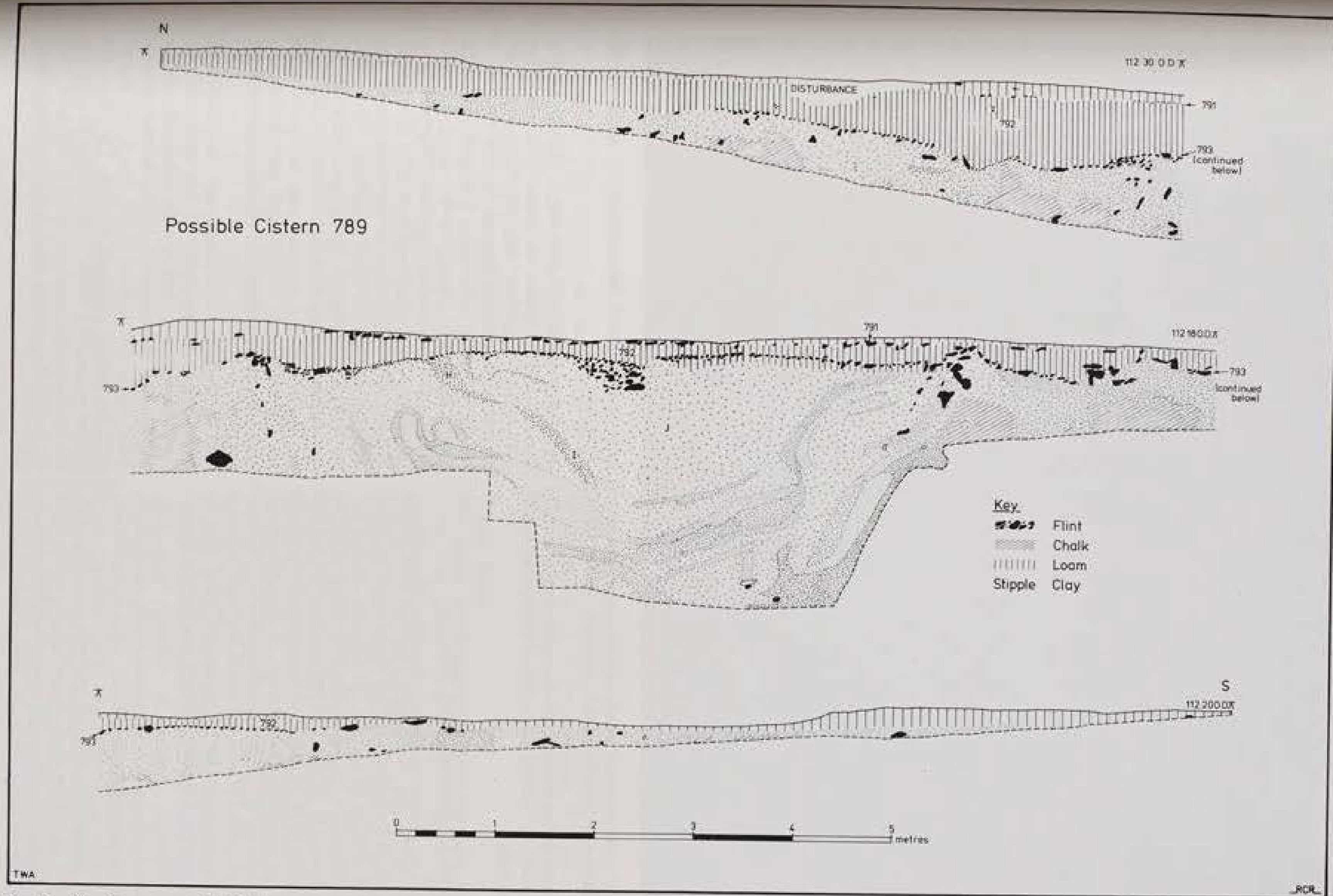

Fig 6. Section across F789 immediately north of the Micheldever Wood 'banjo' enclosure. For location, see Fig 3.

Fig 7. View from south of the machine-excavated section across F789 immediately north of the Micheldever Wood 'banjo' enclosure. Photo: MARC 3; scales 2m.

features dating to this period and the sherds must be regarded as residual — or not Early/Early Middle Iron Age.

Phase 2. Middle Iron Age

The 164m long ditch with external bank which enclosed a sub-circular area of 0.2ha was constructed in the Middle Iron Age. The entrance faced west. The junction of the enclosure ditch with the entrance was located in 1976. Aerial photography during 1976 and 1977 (Fig 8) indicated quite clearly that there was an elongated entranceway. A fluxgate gradiometer survey by the Ancient Monuments Laboratory in September 1977 did not reveal any clear pattern to the ditches in the field (Bartlett 1977) and thus the topsoil strip in the entranceway was done in December 1977.

The entranceway

The entranceway (Figs 9 and 10) was defined by ditches 897 to the north and 876 to the south which ran parallel for about 30m west from their junction with the enclosure ditch. At about 30m they splayed out in the manner typical of 'banjo' enclosures. The ditches were V-shaped in profile with very steep sides (Fig 11). Ditch 897 had been frequently recut. The causeway between these ditches was 4m wide. It was not hollowed, even where well-preserved in the wood. There was a group of five small post-holes about 3m along the entranceway. The post-holes could not be dated nor did they form any obvious pattern. The south side of the entranceway was damaged by Roman chalk quarrying. There were no features relating to an entrance structure. A gate structure may have been located just inside the junction of the antennae and entrance ditches but the small part of that area available for excavation had been damaged by a post-medieval forest bank.

It was possible to excavate only the junction of ditch 897 (numbered 816 in the field) and the enclosure ditch 2. The southern junction of the entranceway and enclosure ditches was under large beech trees. The bottom of 897 was 0.35m higher than the base of enclosure ditch 2. The fill of the ditches indicated a broad contemporaneity between the two, although enclosure ditch 2 may have been recut after the antenna ditch 897 had partially filled up.

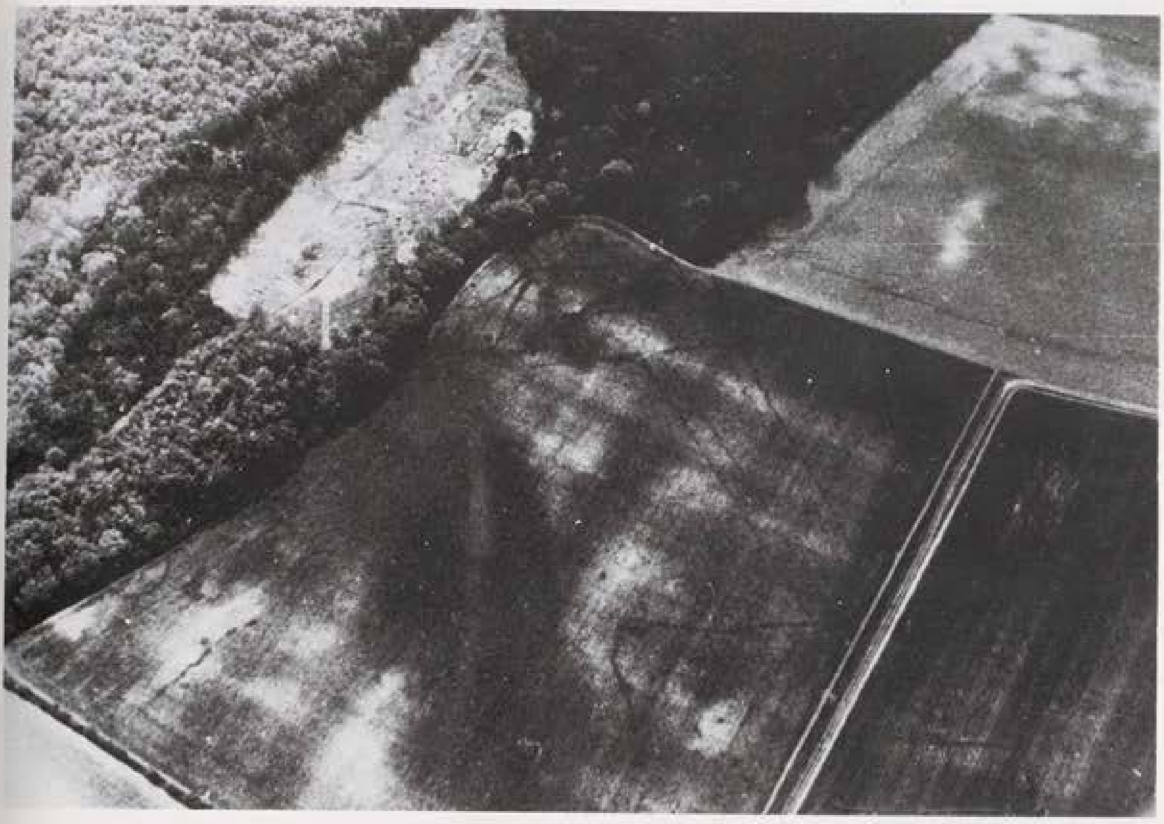

Fig 8. Aerial photograph (view from north) of the Micheldever Wood 'banjo' enclosure and cropmarks in the adjoining field to the west. Photo: R T Schadla-Hall.

The enclosure ditch and bank

The external bank survived for about 46m on the south side of the enclosure. The top of the bank was 0.39m to 0.60m higher than the top of the ditch. As excavated, the chalk bank was 2.2–2.8m wide and 0.16–0.2m high; the natural was preserved under the bank to a height of 0.1–0.2m above the surrounding level of natural. Adjacent to the bank the ditch was 2.06–2.39m deep and 3.0–3.8m wide at the top. The ditch was V-profiled with steeply sloping sides (Fig 12). Few finds were recovered either from within the bank, or from underneath it, but some worked flint was discovered including a scraper and an axe head. A length of bank was excavated between trenches 19C and 19D.

The bank, and in places the side of the ditch, had been removed, probably by Roman quarrying, from the northern part of the site. Where the bank had been removed, the dimensions of the ditch were 1.6–1.9m deep and 2.4–3.5m wide at the top. The nature and distribution of finds from the ditch are discussed below.

The pits, by J W Hawkes (sections on Figs 14 and 31)

A total of nineteen features are considered as pits although the criteria for selection are not closely defined. Size and shape have been the main factors determining typology. Little reference is made to chronology as all the pits are dated to Phase 2 with the exception of feature 98 which cannot be shown to be earlier than Phase 3.

Profile Shape

The shape classification comprises only two types. Type 1 are cylindrical pits with straight or slightly sloping sides where the mouth opening is, or can be inferred to be, approximately equal to the base diameter. The range covers a variety of sizes from the shallow features, equivalent to Bersu's (1940) classes A and B, to three of the largest features on the site, pits 14, 300 and 415. An assessment of the base diameter: depth ratios (Fig 13C) does not justify any further division on the basis of shape, although pits 14, 300 and 415 may be differentiated by depth and overall volume.

Type 2 pits have, or can be inferred to have, mouth openings smaller than their base diameter. This class includes all features conventionally termed bell, barrel or beehive and, as such, lacks the refinement of other classification schemes (*eg* Bersu 1940, Jefferies 1979). An examination of the two field sections available for each pit demonstrates that none of the features were regular with regard to the curvature of the sides or the angle of the sides to the base, the two main criteria employed by other

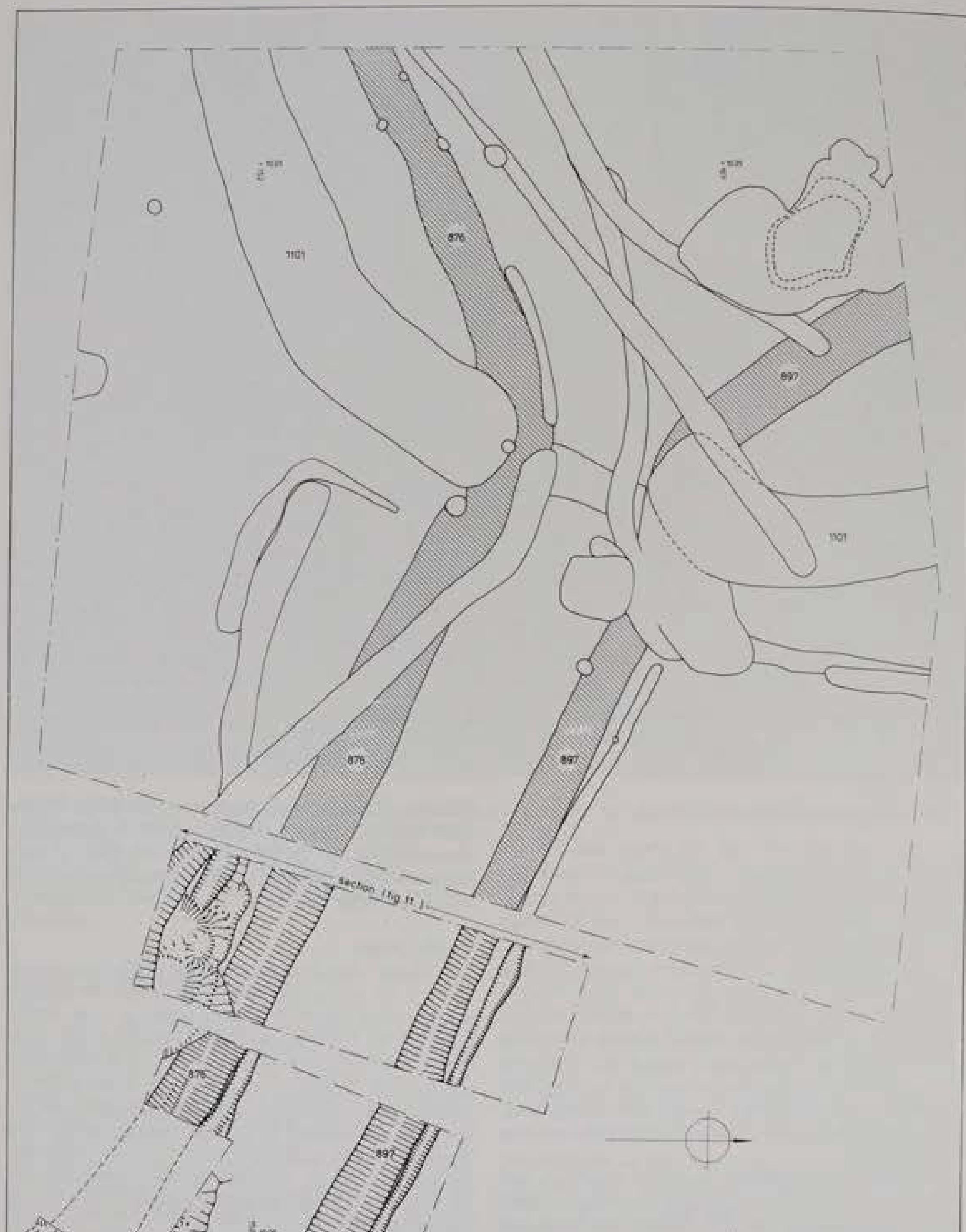

Fig 9. Plan of the entrance area of the Micheldever Wood 'banjo' enclosure.

Fig 10. View from east of the Micheldever Wood 'banjo' enclosure entranceway, from its junction with the enclosure bank and ditch. Photo: MARC 3; scales 2m.

typologies. Since the pits do not conform to the shape of regular solids it seems unwarranted to suggest a more precise typology on the basis of two arbitrary profiles.

Volume

Volumes have been calculated from measurements taken from the two cross-sections of each pit, using an average of the two results. Pits are considered to comprise up to three cylinders with diameters, measured at the mouth, the base and also at the neck/waist where a constricted profile is preserved. It must be emphasised that these volumes apply to pits as excavated and not to their original capacities; a consideration of the effects of weathering on some of the better preserved profiles (see below) suggests that pits may effectively double in size if abandoned without backfilling. Nevertheless a consideration of surviving volumes (Fig 13A) does suggest that some real differences are reflected — it is particularly notable that the four largest pits were all almost twice as large as any of the others. Other suggested size groupings are included for comparison with Fig 13C and show a less marked differentiation, in some cases approaching the limits of measurable accuracy; the relative volumes of pits are estimated to be consistent to only *c* 0.1m^3. It is unlikely that such fine size groupings of eroded pits are entirely valid.

The two dimensions likely to be preserved even in badly eroded examples are depth and base diameter, and Fig 13C shows that this relationship directly reflects the speculative size differential apparent in estimated surviving volume with few exceptions, although as might be expected only the four largest pits can be convincingly separated by this method.

Two explanations exist for this. Either all pits have eroded at a similar rate and the surviving volume is, therefore, directly proportional to the original, or the surviving volumes accurately represent original size. The well-preserved overhang apparent from the section of pit 319 can be compared with the same profile after the pit had been left unbackfilled for four years (Fig 51), resulting in an increase in volume by some 104% from 2.46m^3 to 5.03m^3. It can therefore be concluded that at least the Type 2 pits, which generally have well-preserved profiles, were backfilled shortly after their final use. The distribution of pits by size class is shown in Fig 13B.

The large pits

Features 14, 300, 311 and 415 were distinctive not

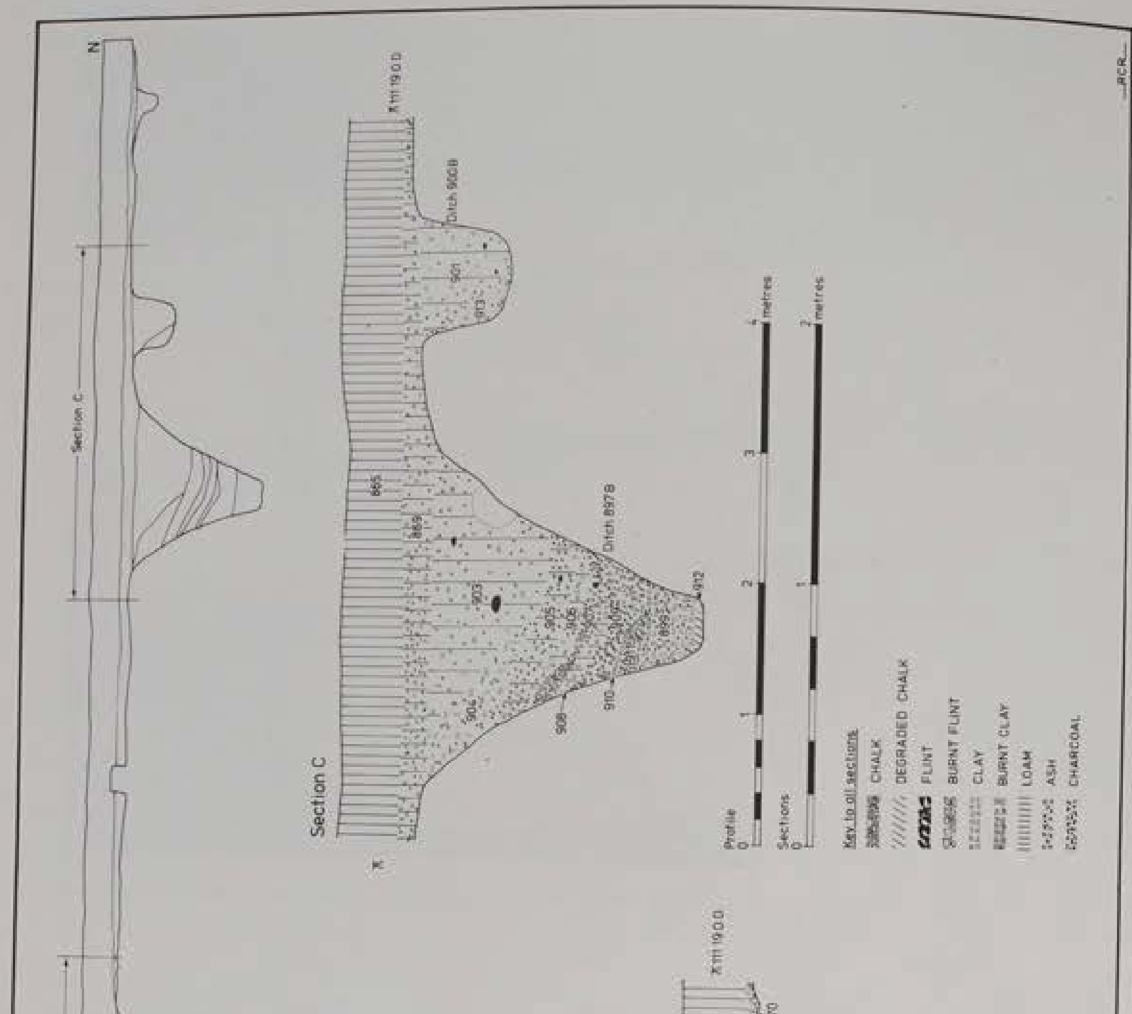

Fig 11. Micheldever Wood 'banjo' enclosure: profile and section through entranceway.

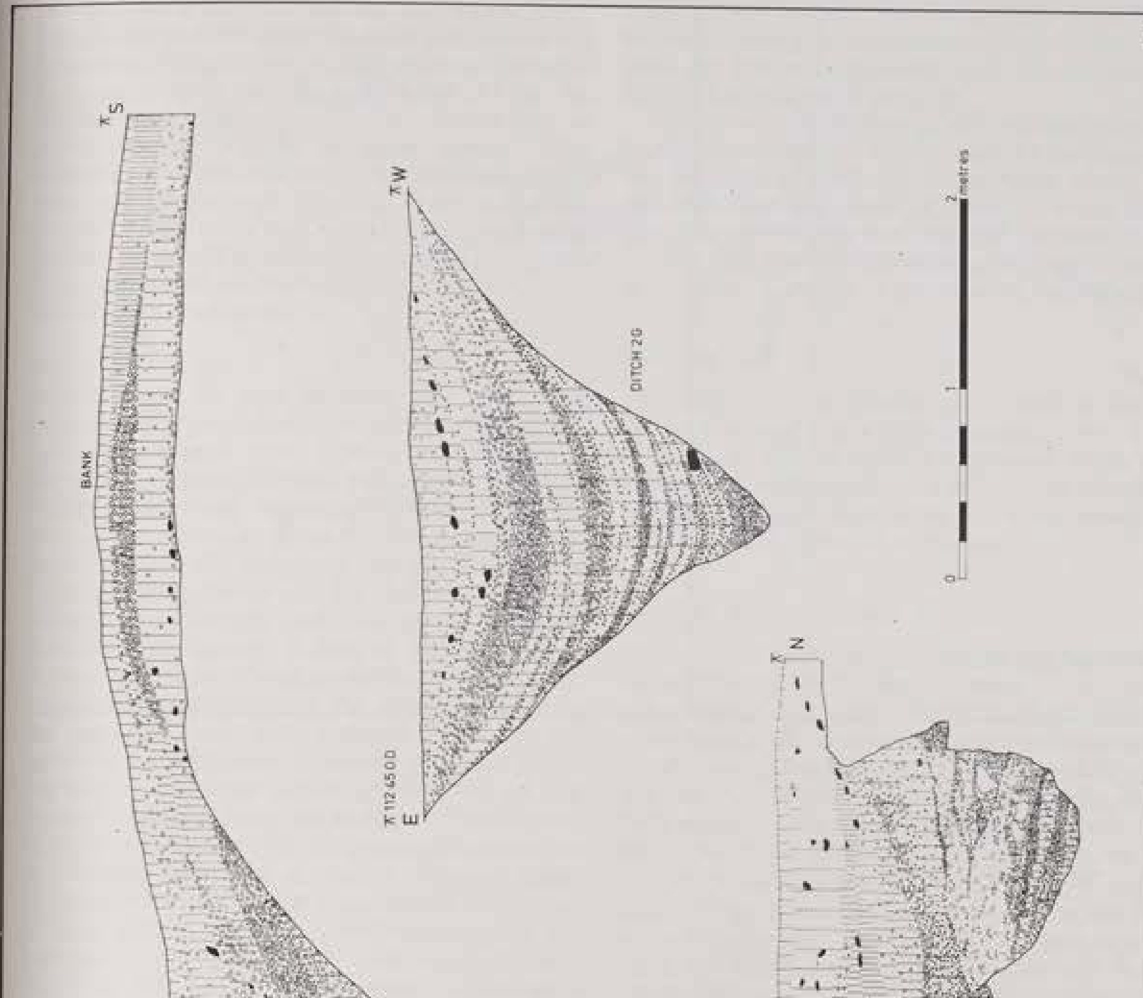

Fig 12. Micheldever Wood 'banjo' enclosure: sections through enclosure ditch. For locations, see Fig 5.

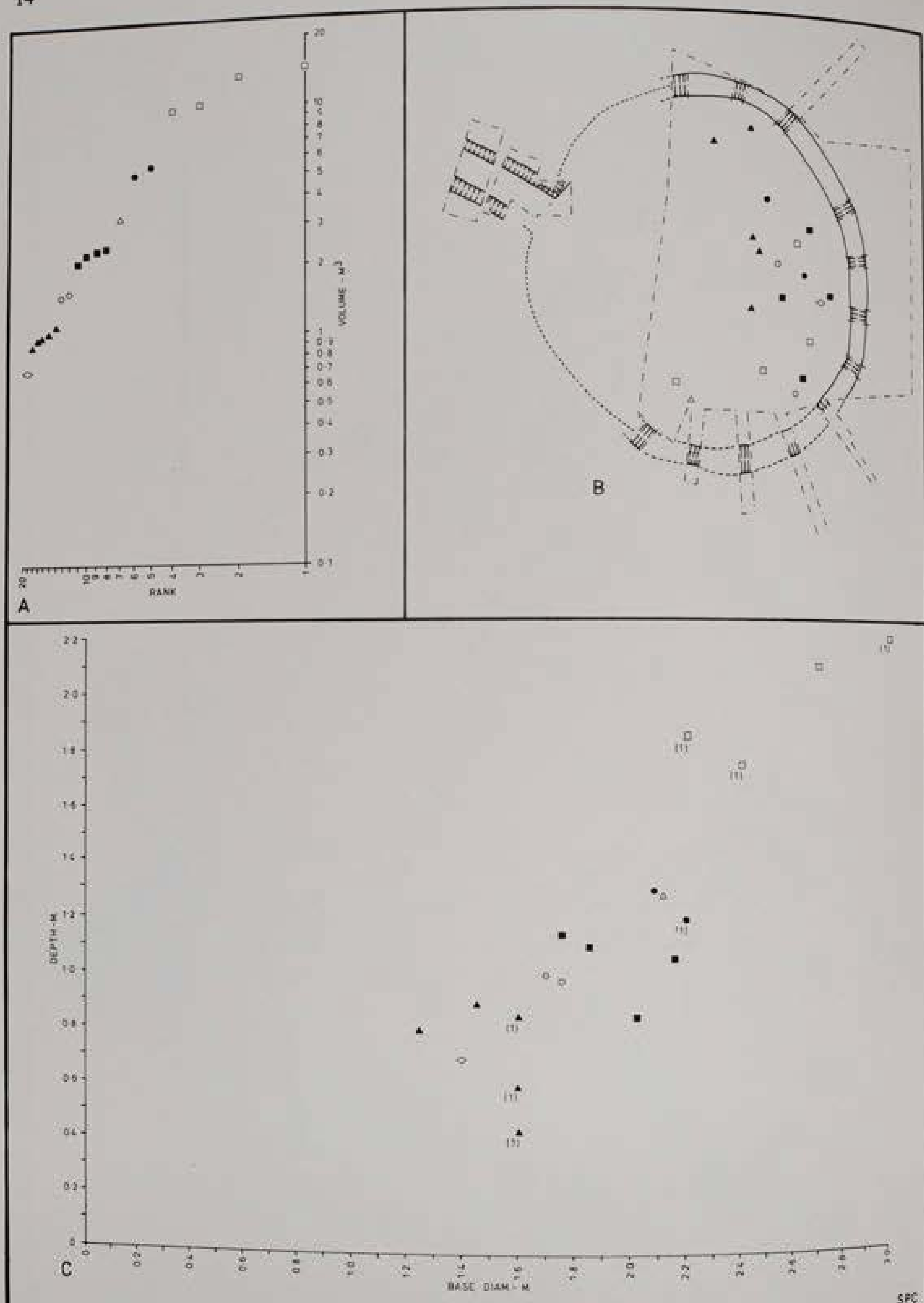

Fig 13. Micheldever Wood 'banjo' enclosure: the excavated pits. A) Volumes as excavated (symbols refer to suggested size groupings; scales are logarithmic). B) Distribution by size group. C) Base diameter to depth ratios (pits are of Type 2 unless otherwise indicated).

only because of their size but also their morphology. Pits 14, 300 and 415 were cylindrical and all four had pronounced irregularities in their sides interpretable as ledges to assist entering and leaving the pit. Pit 300 had an additional feature (pit 538) cut into its base. Although suitable for grain storage, large cylindrical pits may well have been better adapted to other agricultural uses of which silage is but one possibility (Reynolds pers comm). The distribution of these features (Fig 13B) shows them to be regularly spaced around the south and east of the excavated portion of the enclosure.

Other Type 2 pits
In addition to 311 there were ten type 2 pits. One example, 478, had a smaller pit, 608, cut through its base, but otherwise there were no modifications to the profiles. These pits were well adapted for grain storage, maximising volume whilst minimising the area of the opening. None of the examples was shallower than the suggested minimum depth for successful grain storage of 0.6m (Jefferies 1979, 15). Assuming all these pits (and these pits only) to have been for grain storage, a total of 21.41m^3 storage capacity would have been available, not taking into account the possibility that the volume of some of the pits may have been reduced by lining and assuming the arguments presented above for thinking that the surviving volume provides a good estimate of original capacity are accepted. This is something in the order of 15% of the storage capacity for the Middle Iron Age at nearby Winnall Down (Fasham 1985) and implies a population of only two or three people if Bersu's (1940) assumptions and calculations are applied. The distribution of these pits (Fig 13B) shows no particular concentration within the eastern margin of the enclosure.

Other types of pits
This last group comprises two shallow scoops, 146 and 321, and three pits, 321, 417 and 309, where a consideration of depth alone would suggest grain storage as a possible function were it not for their wide mouths. There is no real pattern to the distribution of these features (Fig 13B).

General considerations
Although not a functional classification, the morphological differences between Type 1 and 2 pits might best be understood in functional terms. Type 2 pits represent a specialised structure which is conventionally considered well adapted to grain storage, and it has been suggested that the process of cleaning out grain stores significantly contributes to their shape (Reynolds 1974). Type 1 pits lacked the attributes for successful grain storage, but from this negative evidence it is only possible to speculate on what they might have been used for. The larger Type 1 pits are related because of their size and morphology, but the other pits are not closely related either by physical size or probably function. A detailed analysis of pit fills (see pottery report) relates to the abandonment and not necessarily the usage of the feature, but the general absence of evidence relating to manufacturing on the site suggests the pits were probably used for agricultural rather than industrial purposes.

The overall distribution of pits was concentrated on the clay-with-flints area around the periphery of the site and avoided the central area where the clay-with-flints was absent or eroded. It seems likely that this central area was reserved for some other activity, and possibly contained a building of which no evidence survived at the time of excavation.

Feature 487

This feature was a roughly oval spread of broken flint nodules and burnt flints measuring about 2.5m by 0.9m. It filled a shallow depression which was 0.09m deep. Although there were no finds associated with the feature it seems likely that it was associated with the main phase of occupation.

Human burials (Figs 15 and 16)

There were twelve complete burials and six occurrences of fragments of human remains — four infant and two adult. Eight burials were of infants less than seven months old, three were seven to twelve months old and one was an adolescent. Of these burials there was one each in pits 428 (206) and 454 (207) and in ditch segment 19D (192). There were multiple burials in pits 8 (not illustrated) and 478 (153, 208 and 236) and in ditch segments 19B (169 and 193) and 2F (126). There were eight burials of infants less than seven months old, three of infants aged between seven and twelve months and one adolescent. Burial 126 in ditch section 2F was of two infants which may have been twins. The adolescent, 193, in ditch segment 19B and the possible twins were in graves; the others were apparently casual burials.

Phase 3. Late Iron Age/Early Roman (for location of features see Figs 3 and 5)

Most of the upper fills of the ditch, and of all but seven of the Phase 2 pits, contained material belonging to Phases 3 and/or 4. Additionally, a series of banks and ditches were constructed outside the enclosure and part of the enclosure bank and ditch was quarried.

Features within the enclosure

Seven features within the enclosure belong to Phase 3. They were mainly distributed in the northern part of the site. They consist of one straight-sided and flat-bottomed pit, F98, measuring 1.55m diameter and 0.87m depth; three shallower holes, F32, F44 and F448, which were all circular and ranged in diameter from 0.5m to 0.8m and in depth from 0.14m to 0.44m. The other features were shallow irregular scoops, F73 and F248, and a double post-

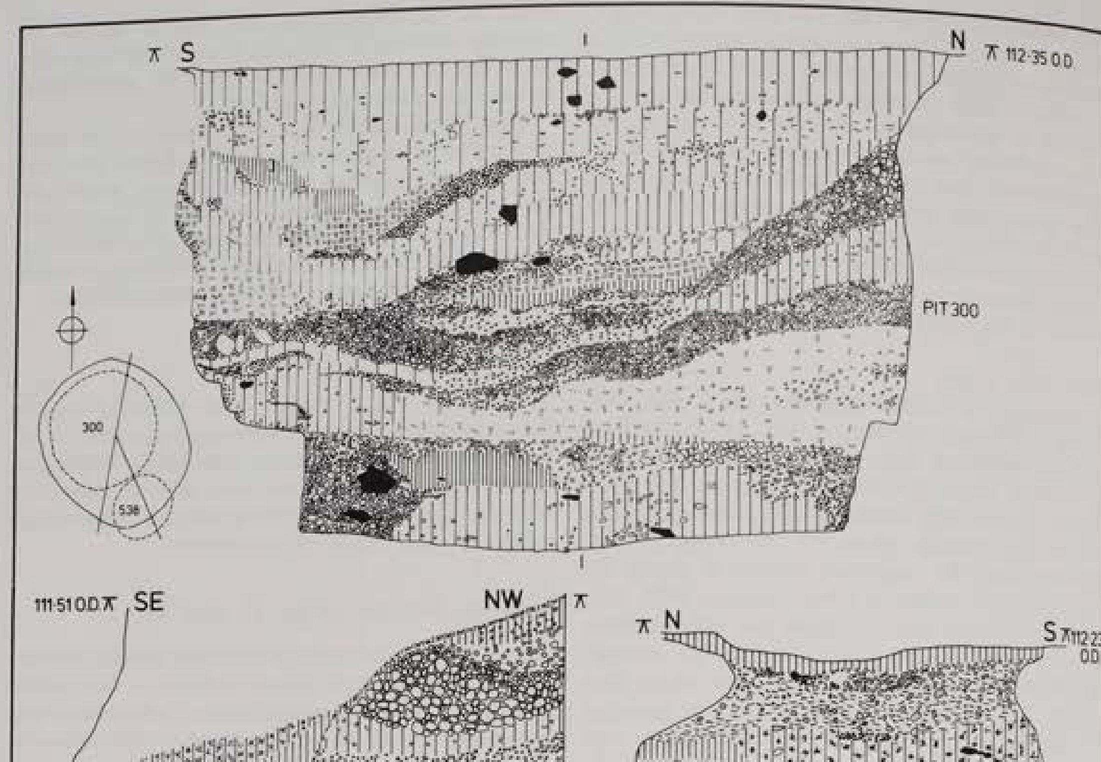

Fig 14. Micheldever Wood 'banjo' enclosure: sections through selected pits. For locations, see Fig 5.

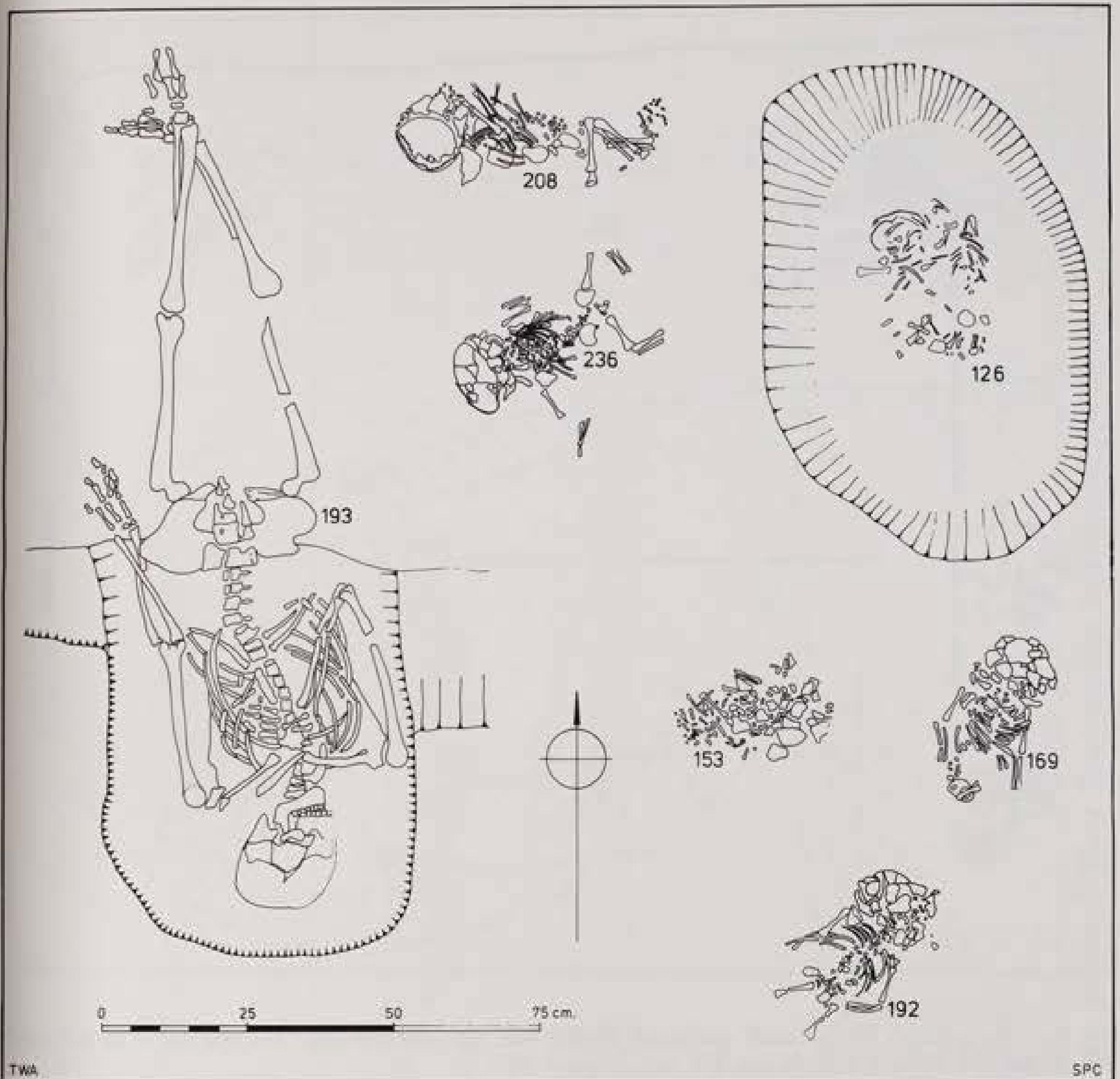

Fig 15. Micheldever Wood 'banjo' enclosure: Middle Iron Age inhumations – 126 in grave 457, ditch segment 2F (possible twins); 153, 208 and 236 from pit 478; 169 from ditch segment 19B; 192 from ditch segment 19D; and 193 in grave 654, ditch segment 19B.

hole, F17. F448 was cut into the top of the Phase 2 pit F415. Only F98 would seem to have had a grain storage capacity. Thirteen of the Phase 2 pits contained later Phase 3 material in their upper fills. There were hearths and burnt material in three locations in the north part of the enclosure ditch.

Features outside the enclosure (Fig 17)

Feature 677 was a small pit immediately south of the enclosure, cut into the upper lip of the ditch. Pit F854 was cut into the linear depression in the north-east corner of the clearing.

The major additional features were three banks and ditches.

Ditch 81 and bank 130

These features were identified as very slight earthworks. The total width of the features never exceeded 4.5m and the maximum height from the top of ditch 81 to the top of bank 130 was 0.2m before excavation. Estimating the width of this slight bank was not easy but it was between 0.5m and 1.5m.

The earthwork ran north-west from F781 and turned through 120 degrees to run west until it intersected with the later forest bank, F94, and ditch F86. To the west of the forest boundary marker, the earthwork did not survive, although the ditch continued. When excavated the ditch was shown to be cut up to 0.6m into the natural clay-with-flints and to be 0.8m wide at the top (Fig 17 shows a section).

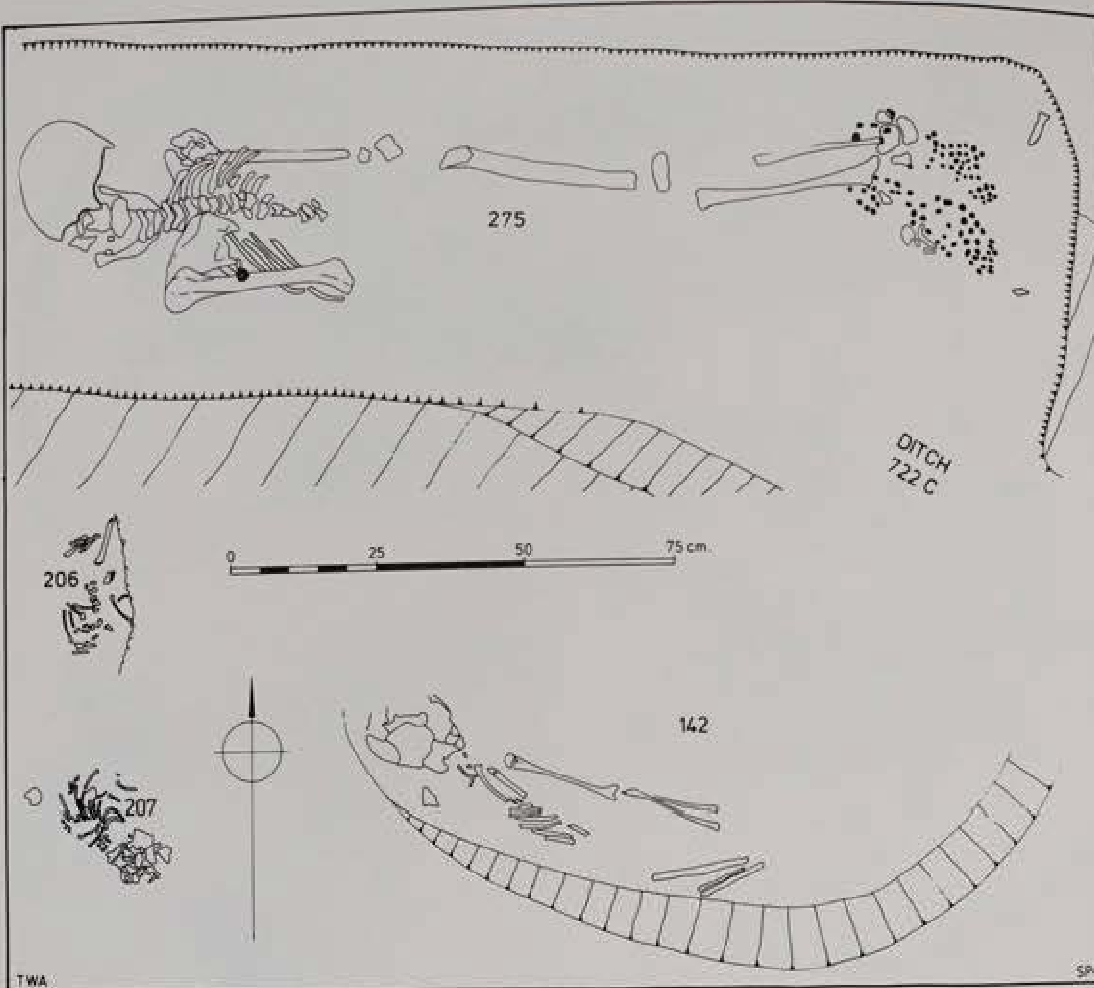

Fig 16. Micheldever Wood 'banjo' enclosure: Middle Iron Age inhumations – 142 and 206 in pit 428; and 207 in pit 454. Roman inhumation 275 was in grave 820.

The bank consisted of nothing more than a dump of the material excavated from the ditch.

Ditch 21 and banks 88 and 90

This earthwork configuration comprising a bank flanked by ditches extended for 86m on a sinuous alignment between the north side of the 'banjo' enclosure and the south side of F789. It started immediately east of the cleared area and extended west to the forest boundary ditch 86 and bank 94. It was not traced further west, where it did not exist as an earthwork. The earthwork was up to 9m wide, with the south bank, F90, being 2.0–2.5m wide, the ditch, F21, 2–3m wide and the northern bank, F88, being 2–3m wide. The maximum distance from the top of the ditch to the top of one of the banks was 0.4m. The banks consisted of material derived from the almost flat-bottomed ditch which, when excavated, was about 1.7m wide at the top, 0.4m wide at the base and cut 0.85m into natural (Fig 17).

Ditch 722 and bank 775

This east-west aligned arrangement of ditch with a southern bank survived for a length of 28m starting on the east side of the cleared area. It was traced a further 18m west by excavation and was shown to spring from the external bank of the 'banjo' enclosure on its south-eastern quarter. It skirted the south side the large Phase 3 quarry F517 and was cut by the Phase 4 inhumation, F820. As an earthwork it was 7–8m wide, the ditch occupying some 2.0–2.5m of the width. The maximum depth from the top of the bank to the top of the ditch was 0.6m. Where excavated, the bank consisted of a spread dump of clay and chalk material derived from the ditch which, while flat-bottomed, had a basal width which ranged from 0.85m at the east to 0.2m at the west, where the base was more rounded (Fig 17).

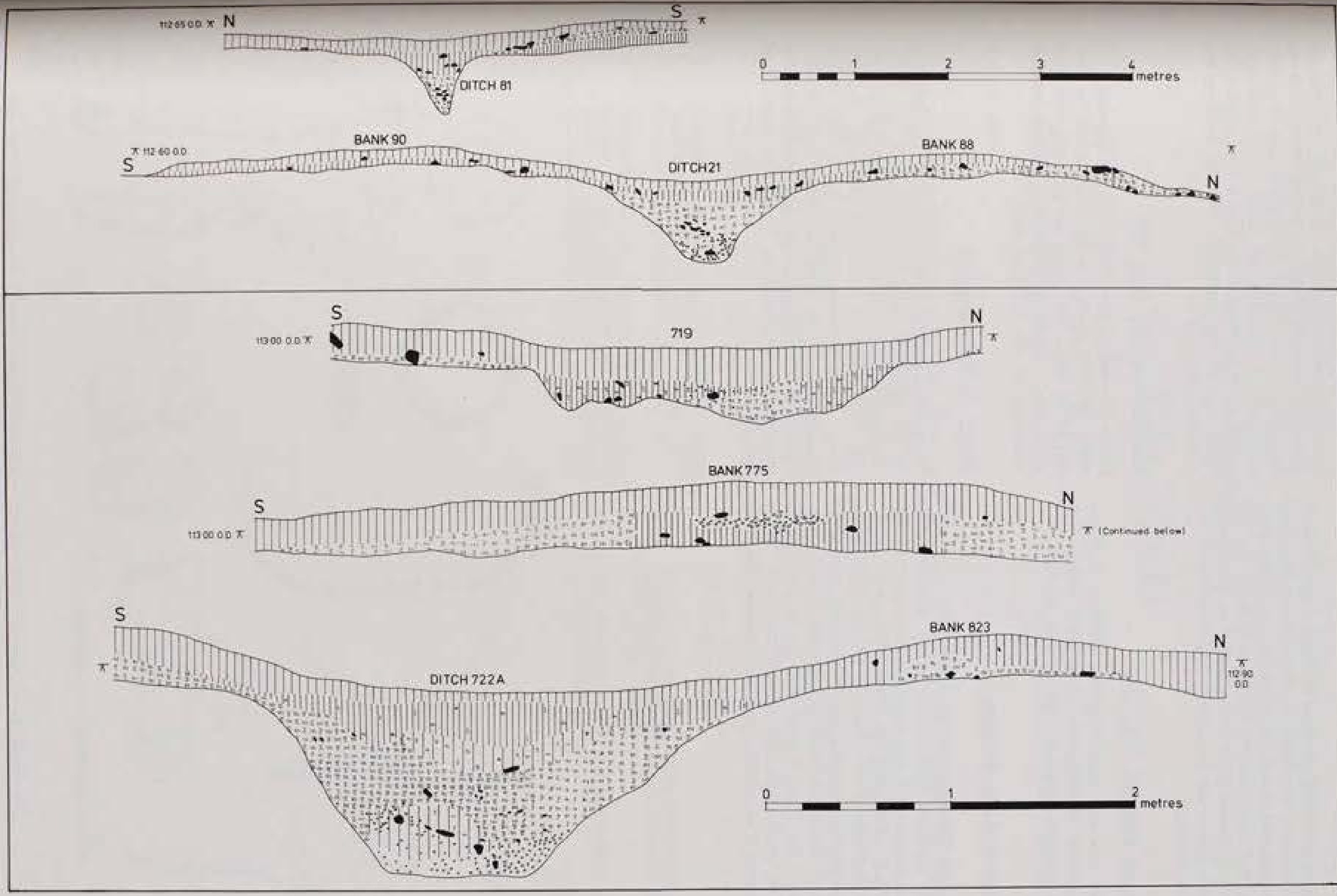

Fig 17. Sections through banks and ditches adjacent to the Micheldever Wood 'banjo' enclosure. For locations, see Fig 3.

The quarries

Massive quarrying occurred in Phase 3 and Phase 4. The northern two-thirds of the enclosure bank had been removed and in the south-east sector the quarrying had extended into the ditch as well. The full extent of quarry F517 was revealed by geophysical survey. There was also quarrying on the south side of the entrance.

Human remains (Fig 16)

There was one semi-complete skeleton and four occurrences of fragments of infantile bones. The semi-complete skeleton (206) was in pit 428.

Phase 4. Late Roman

The later Roman period was represented by a handful of ceramics from twelve layers. However, the burial in grave 820 may belong to this period. It was certainly cut through the Phase 3 ditch 722.

Hollow-way F719 (Fig 17) ran for 82m in an east-west alignment skirting the southern edge of the Phase 2 'banjo' enclosure and running roughly parallel with the Phase 3 ditch 722. As an earthwork it was up to 3m wide and up to 0.18m deep. When excavated it was shown to be worn almost 0.4m deep into the natural clay and was 1.95m wide. On either side were substantial ruts. Although this feature cannot be securely dated, it seems more likely to belong to one of Phases 2–4 rather than to a pre-enclosure or post-Roman phase. The principal reason for suggesting this is that it does respect the south side of the enclosure. For the sections see Fasham 1983, Fig 9.

Human remains (Fig 16)

Burial 275 was in grave 820, cut into segment C of ditch 722. The grave was 2m long, 0.6–0.7m wide and 0.52m deep. The burial was arranged with head to the west. The deceased had been wearing boots as evidenced by the 102 boot nails.

Phase 5. Post-Roman

The principal post-Roman element was the medieval or post-medieval forest boundary bank and ditch, F86 and 94, which ran south-west to north across the site. This has been described elsewhere (Fasham 1983). No earthworks survived to the west of the boundary, implying that ploughing had occurred right up to the old forest edge and emphasising the importance of Micheldever Wood as a reservoir of earthworks.

Chapter 2

The Finds

Metal finds, by R P Winham

Copper alloy

Coins

There were eight Roman coins, all from either the upper layers of features or from the topsoil. All but a sestertius of Antonius Pius and a coin of Carausius were of fourth-century date. The full details are in the archive.

Other copper alloy objects (Fig 18):

1. Simple ring, oval-sectioned. 5mm thick, 20mm diameter. Pit 300. Middle Iron Age.
2. Ring, single wire coiled once, with a diameter of 23mm. In four fragments, pit 300. Middle Iron Age.
3. Bracelet, two wires twisted together, forming a D-shaped object 45mm wide at the open end and 28mm deep. Enclosure ditch 19, segment C. Middle Iron Age.
4. Bracelet fragment, with one broken end and one end a terminal. The outer facet is ornamented with raised plain panels, each separated by three indented and two ridge transverse mouldings (Cunliffe 1975, 207–209, Fig 112. 42). Upper fill of entrance ditch 1101. Late Iron Age – Early Roman.
5. Dome-headed stud, 8mm diameter. Pit 300. Middle Iron Age.
6. Flat-headed stud, 8mm by 6mm. Pit 300. Middle Iron Age.
7. Fragment of channelled or grooved strip, 25mm long and 5mm wide. Pit 14. Middle Iron Age (late).
8. Fragment of strip, 19mm long, 2mm wide. Pit 14. Middle Iron Age (late).
9. Shaped strip fragment, in two pieces. Ditch 21. Probably Roman.
10. Two thin sheets, each 10mm wide, stuck together. Pit 415. Middle Iron Age.
11. Thin sheet, approximately 20mm diameter, with centre eroded away. Upper fill of enclosure entrance ditch 1101. Late Iron Age – Early Roman.
12. Semi-cylindrical fragment, 6mm wide, 58mm long. Pit 14. Middle Iron Age (late).

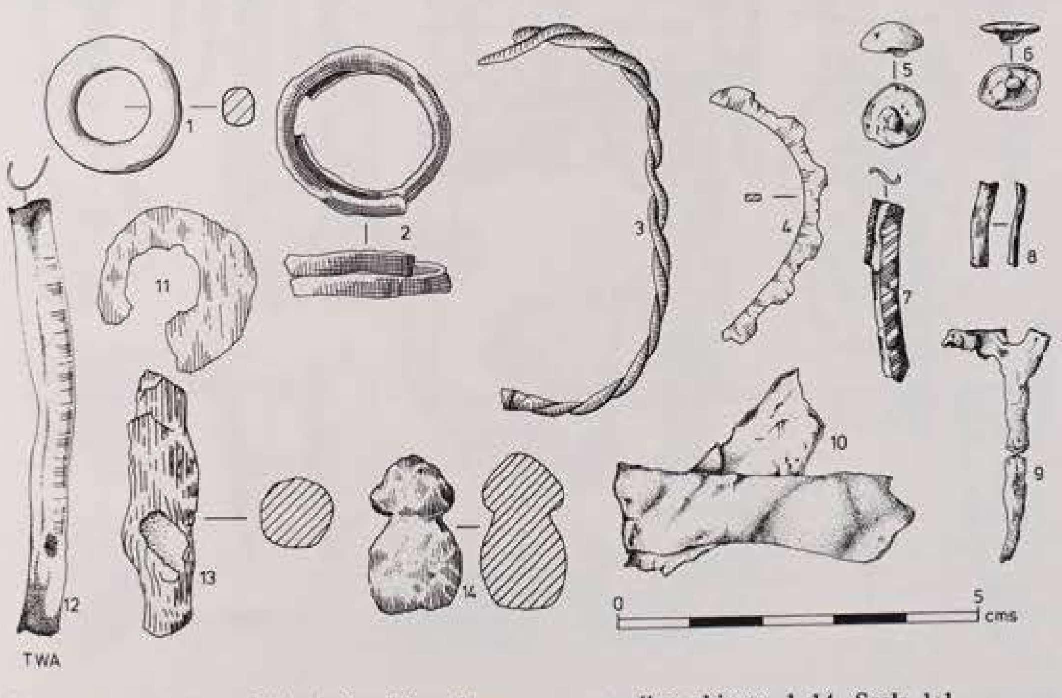

Fig 18. Micheldever Wood 'banjo' enclosure: copper alloy objects, 1–14. Scale 1:1.

13. Irregular rod-like fragment, 35mm long, 10mm diameter. Upper fill of entrance ditch 1101. Late Iron Age – Early Roman.

14. Heavy, knob-like object with a bulbous lower part and a domed top, with the central part narrowing. Overall length 20mm. Pit 300. Middle Iron Age.

In addition, fourteen bronze fragments were recovered (none illustrated). Nine came from pit 300, two from pit 538, one each from pits 14 and 140, and one from feature 709, a rut.

Iron objects (Fig 19):

15. Brooch, 35mm long, much corroded. Enclosure ditch 19, segment B. Late Iron Age – Early Roman.

16. Folding knife, iron blade with wooden holder and remains of a textile surviving. Drawn from X-rays. Grave 820. Roman.

17. Blade or chisel fragment, 80mm long, 22mm wide at one end and 8mm at the other. Pit 14. Middle Iron Age (late).

18. Broken knife blade. 130mm long, 35mm wide and 4mm

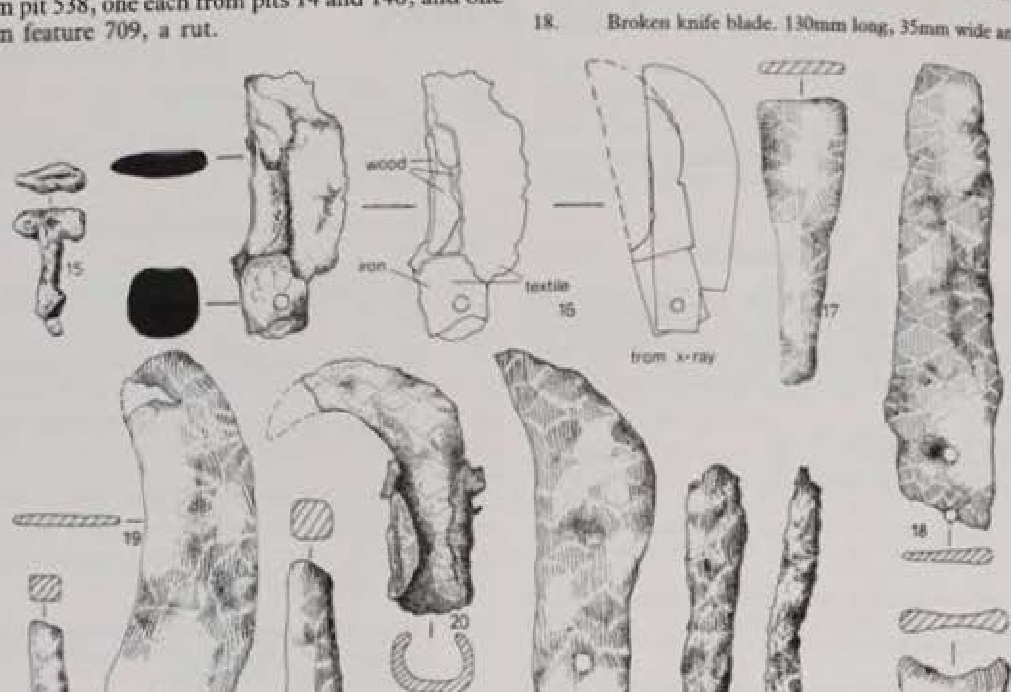

Fig 19. Micheldever Wood 'banjo' enclosure: iron objects, 15–32. Scale 1:2.

thick, with at least two rivet holes at handle. Pit 298. Middle Iron Age.

19. Slightly curving fragment, ? sickle blade. 115mm long, 35mm wide and 2mm thick. Pit 311. Middle Iron Age.

20. Socketed sickle, point of blade broken, remainder 85mm long and 20mm at widest point. Iron-replaced wood traces in socket. Pit 415. Middle Iron Age.

21. Sickle blade with one rivet and a rivet hole in the tang. Length 109mm, width 33mm. Bank 670, segment C. Middle Iron Age.

22. Strip-like object found in six fragments, three drawn. Pit 311. Middle Iron Age.

23. Iron object, one end circular, the other flat, splayed out like a dove tail, ? socketed chisel. Quarry 1085. Probably Roman.

24. Rod, 115mm long, 7mm wide, 5mm thick, rectangular-sectioned. Bank 670, segment C. Middle Iron Age.

25. Possible spike, 115mm long with a thicker end, square-sectioned, with pointed end. Enclosure ditch 19, segment E. Middle Iron Age.

26. Sheet, in three segments, largest drawn. Pit 415. Middle Iron Age.

27. Five plate or sheet-like fragments, largest drawn. Iron-replaced wood traces. Pit 293. Middle Iron Age.

28. Flat blade-like fragment with rivet and rivet hole. Topsoil, layer 978.

29. Wedge-shaped fragment, 73mm long. Topsoil, layer 220.

30. Pointed, needle-like object. Pit 14. Middle Iron Age (late).

31. Strip with a pointed end bent to an L-shape. Enclosure ditch 19, segment B. Late Iron Age – Early Roman.

32. Indeterminate object. Grave 820. Probably Roman.

Also recovered from the site, but not illustrated, were the fragmentary remains of a blade and handle from enclosure ditch 19, segment A; two flat pieces of iron from pit 701; an indeterminate object from enclosure ditch 19, segment D; and another from grave 820; and one, in fragments, from enclosure ditch 2, segment B. Indeterminate objects also came from scoop 151, pit 298 and pit 434. One fragment came from enclosure ditch 2, segment G, another from pit 293 and two from pit 140.

Recovered from the topsoil were one washer, three horseshoes, four indeterminate objects, three fragments, a hook on a ring, two chain links, a loop, a chopping block and a plate 53mm by 22mm.

Nails (Fig 20):

33. Round-headed nail, 37mm long, 3mm thick, head 13mm diameter. Ditch 1103.

34. Nail shank, 73mm long, 9mm thick, with irregular head 10mm across. Bank 987.

35. Circular-headed nail, 10mm diameter, shank broken at point. Ditch 879, segment B.

Fig 20. Micheldever Wood 'banjo' enclosure: iron nails, 33–44. Scales 1:1 and 1:2, as shown.

36. Nail with twisted shank, 64mm long, 5mm thick with irregular head, 7mm across. Causeway 724. Late Iron Age – Early Roman.

37. Nail with circular head, 20mm diameter, with 75mm long shank, 5mm thick. Topsoil, layer 221.

In addition 22 other nails were recovered. Nine came from topsoil layers, one each from pits 14 and 478 and two from pit 311. Four came from the enclosure ditch 1101 and one each from the enclosure ditch 2, segment B; bank 670, segment C; ditch 722, segment D; grave 820; and entrance ditch 876, segment C.

38. Coffin nail, 63mm long, 6mm thick. Head 17mm diameter. Traces of iron-replaced wood. Grave 820. Roman.

39. Coffin nail, 57mm long, 6mm thick. Head 20mm diameter. Traces of iron-replaced wood. Grave 820. Roman.

There were 102 shoe nails in grave 820, the following are illustrated:

40. Length 18mm, thickness 4mm, diameter of head 14mm.

41. Length 20mm, thickness 5mm, diameter of head 15mm.

42. Length 10mm, thickness 3mm, diameter of head 15mm.

43. Three fused together.

44. Two fused together.

The shoe nails were 10–25mm long with a mean of 17.7mm, a mean thickness of 4.5mm and a mean diameter of 14mm.

Iron-working debris, by J Bayley

There were only three artefacts which may be associated with iron working. There was a smithing hearth bottom, diameter 80mm, from Phase 2 pit 309; a piece of vitrified clay – clay heated to a high temperature in association with fuel ash – from Phase 2 pit 415; and a piece of dense iron-working slag from the topsoil.

The Pottery, by J W Hawkes

Introduction

The objectives of the M3 Archaeological Rescue Committee pottery analysis programme, and some discussion of comparative Iron Age and Roman material relevant to this area, are included in the pottery report for the nearby site at Winnall Down (Hawkes 1985) and are not repeated here at length. A description of the pottery by period is supplemented by a more intensive examination of 'key groups' from two pits and the enclosure ditch. The pits, features 415 and 14, are dated by radiocarbon assays respectively to the early and later parts of the Middle Iron Age, whilst the enclosure ditch illustrates the whole ceramic sequence of the site. No other features are included in this detailed survey as pottery is usually not present in useful quantities.

Sherds from the two pit groups and the enclosure ditch are used to illustrate the range; the drawings are arranged in layer order and include all vessels from features 14, 415 and 2/19 assignable to vessel form, excluding only fragmentary rims, undiagnostic bases, and sherds from pit 415 top layer 416, which contained large quantities of intrusive material. Vessel types not represented in the two pits or enclosure ditch are illustrated as 1–7.

Total numbers of vessel forms for the whole site are given in the text; a full correlation of forms by fabric and feature is held within the computer archive.

References to the publication of the Danebury assemblage and on-going work on the Easton Lane pottery were inserted in 1987, but the report is otherwise as completed in 1980.

Fabrics

The pottery was sorted microscopically at X20 magnification (by Ingrid Clifford and Charlotte Matthews), then grouped together on the basis of the major macroscopic inclusions (Table 1). No attempt was made to categorise fabrics by period except in obvious cases, *ie* fine wares, medieval and post-medieval fabrics. The chronological distribution of fabrics in terms of vessel forms represented (Fig 25) demonstrates that fabrics cannot readily be assigned to one particular phase, and fabrics not occurring as recognisable vessel forms are seldom capable of precise attribution. Microscopic sorting should ensure consistent fabric identification, and the accuracy of the macroscopic regroupings should therefore be of a high order. No considerations are made of the subtle variations within these groups, and detailed fabric descriptions are included in the Level III archive.

Thin-sectioning of seventeen sherds by Mr S Wandibba, University of Southampton, revealed the main inclusions to be of flint or sandy and glauconitic quartz, the fabrics being broadly comparable to those examined from Winnall Down (Hawkes 1985; Wandibba archive). This analysis was not sufficiently extensive to provide a check on the visually-sorted fabric groupings, and neither was it possible to equate any of the fabrics with particular sources. Materials could all have been obtained locally from outcrops of the Reading Beds 3km away at East Stratton, although two body sherds, from feature 14, layers 56 and 336, both fabric 27, were characterised by well-rounded medium quartz grains typical of the Dorset sand from the Poole Harbour – Wareham area (Wandibba archive).

On the basis of the pottery, four phases of activity are represented:

Phase 1.	Early/Early Middle Iron Age
Phase 2.	Middle Iron Age
Phase 3.	Late Iron Age/Early Roman
Phase 4.	Late Roman

Phase 1. Early/Early Middle Iron Age

Evidence for this phase is limited to sherds of fabrics recognised as belonging to the Early Iron Age at

Table 1. Pottery fabrics from the Micheldever Wood 'banjo' enclosure quantified by the number of sherds and weight in grammes.

Fabric Group	Description	Fabrics	Sherds Number	Sherds Weight
1	Early Iron Age Fine Wares	14, 15, 16	53	675
2	Organic			
	a. Fine	17, 19, 64	222	2,069
	b. Coarse	38, 39, 73	9	125
	c. Briquetage	28	19	102
	d. Organic, flint and grog	99	1	57
	e. Organic and flint	13, 90	49	680
3	Shell	25, 65, 87	14	204
4	Flint			
	a. Sparse/moderate	9, 11, 33, 37, 72, 76, 77, 97	613	10,771
	b. Common/abundant	2, 3, 8, 22, 42, 45, 46, 55, 96	2,794	42,074
	c. Flint and grog	10, 32, 53, 66, 74, 80, 84, 85, 86, 89, 95, 98	220	1,320
	d. Flint and chalk	81, 82	4	41
5	Chalk	30, 71, 78	134	1,858
6	Sandy, reduced			
	a. Blackened exterior	27, 35, 41, 43, 44, 51, 62, 67, 79, 83	1,066	9,541
	b. Fine/medium/sandy	6	290	1,522
	c. Coarse sandy	50, 54, 59, 68	105	840
7	Sandy, oxidised			
	a. Fine	24	43	384
	b. Medium	40, 61	42	221
	c. Coarse	18, 63	78	989
8	Grog	7, 52, 60	276	2,520
9	Roman Fine Wares and Imports			
	a. Samian	21	24	131
	b. Unknown	23	11	33
	c. Unknown	31	27	181
	d. New Forest Parchment ware	34	13	156
	e. Amphora	47	6	102
	f. New Forest colour coat	49	3	11
	g. Unknown	70	2	4
10	Medieval	75	2	4
11	Post-Medieval/Modern	26	1	2
Totals			6,121	76,617

Winnall Down (Fasham 1985): fabrics 8, 9, 10, 11, 13, 14, 15, 16, 17, 19, 25, 32, 38, 39, 72, 73 and 74. Fabrics 16, 32, 64 and 72 all occur as forms recognisably Middle Iron Age or later (Fig 27), and it is clear that their production at least is not confined to the Early Iron Age period. Comparable fabrics with sparse sand or organic tempering have now been recognised at Easton Lane (Hawkes in Fasham *et al*, in prep), where they were associated with undecorated saucepan pottery forms typical of Danebury CP6, *c* 400–300 BC (Cunliffe 1984). Haematite coating and diagnostically early decoration are absent. There are no features on the site dating to this period, and all sherds are therefore considered to be residual. The distribution of these fabrics was not limited by the enclosure, and sherds of early fabrics were also present in the entrance and in the field boundaries to the north suggesting that the pottery belongs to a pre-enclosure phase; a greater density of pottery in the pits than the enclosure ditch reflects the general distribution of pottery of all periods.

Phase 2. Middle Iron Age (Figs 21–24)

Six principal vessel forms can be attributed to this period; all are typical components of the 'saucepan pot' tradition of southern England and the range of decoration is conventionally regarded as belonging to the St Catherine's Hill – Worthy Down style, comparable to Danebury CP7, for which a date range of *c* 300–100 BC has been proposed (Cunliffe 1984).

Simple bowls

There are five examples, including three with de-

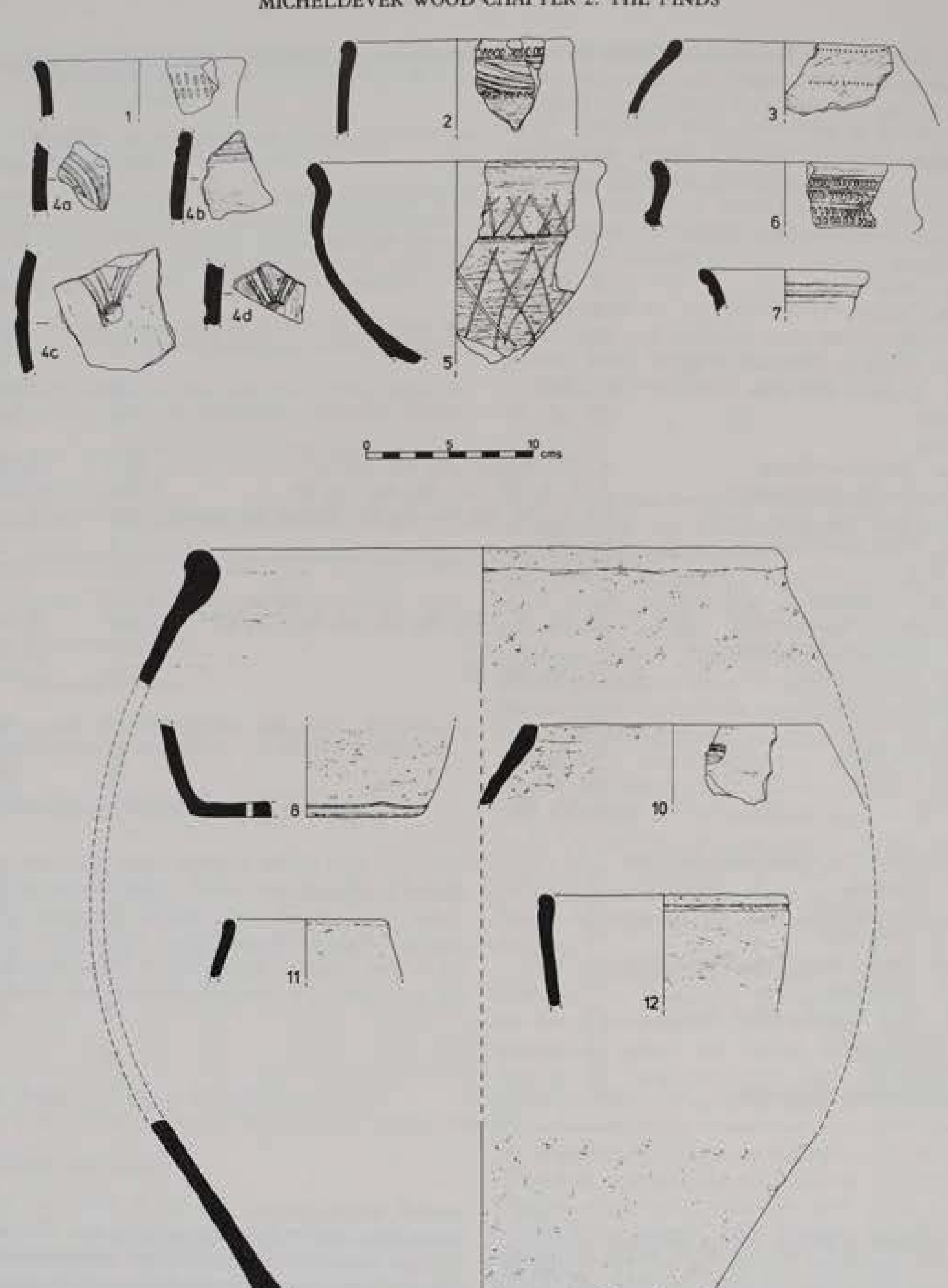

Fig 21. Micheldever Wood 'banjo' enclosure: Iron Age pottery, 1–12. Scale 1:4.

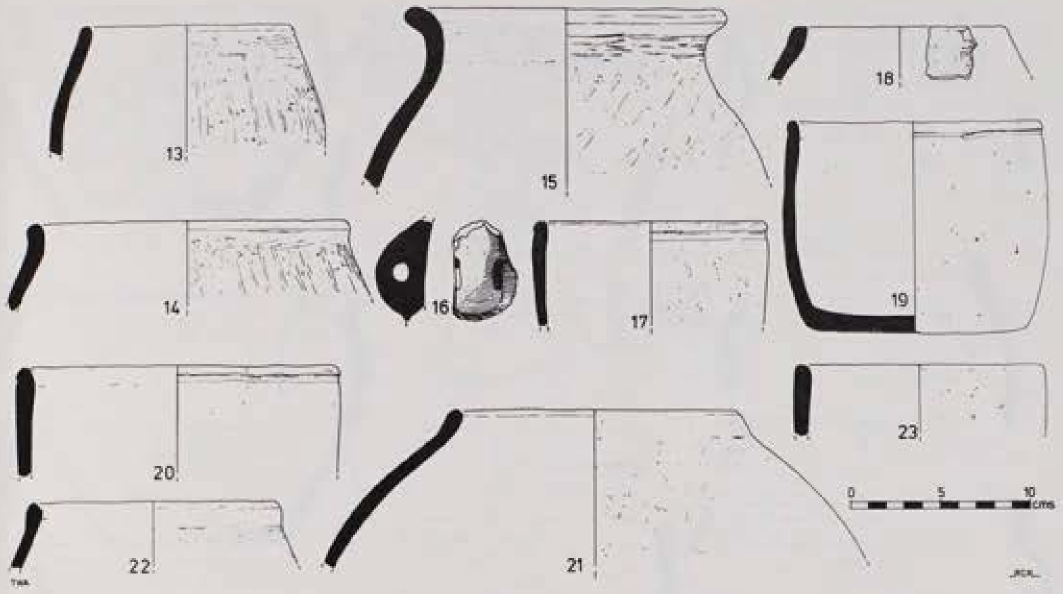

Fig 22. Micheldever Wood 'banjo' enclosure: Iron Age pottery, 13–23. Scale 1:4.

coration (all from feature 14). Three examples are burnished, two externally and one both internally and externally. One example has a 'protobead' rim (25), the others being plain and rounded.

Bipartite saucepans/narrow-mouthed jars
Seven examples, all undecorated with plain rims were found. Three examples are burnished, one externally and two both internally and externally. The degree of constriction at the neck is sometimes so marked that some examples are probably better considered as narrow-mouthed jars (*eg*, 15).

Straight-sided saucepans
There are fifty-one examples, only one of which is decorated (1). Twenty-six examples are burnished, nineteen externally and seven internally and externally. Ten examples have a single groove below the rim (19) and one example a double groove; there are twenty-nine protobead rims plus one internally thickened. The diameters of the rims suggest a preferred size range of between 12–16cm (Fig 29).

Incurving saucepans
There are one hundred and five examples, including seven decorated. There are six examples of oblique hatching between a single row of dots (*eg*, 2, 3), and one example where this design is doubled. The incomplete pendant swag design on body sherds only may also belong to this class of vessel (4), as may the one perforated base (8). Forty-four examples are burnished, thirty-seven externally and seven both internally and externally. Two examples have a single groove beneath the rim, and two a double groove. Rim diameters suggest a preferred size range of 10–16cm, although larger sizes are also common (Fig 29).

Outflaring saucepans
One example only was found, internally and externally burnished but undecorated, with a protobead rim (12).

Round-shouldered jars
Three examples were recovered, one burnished internally and externally, one burnished externally only; undecorated with plain rims (58, 59, 73).

In addition, a number of bead rim storage jars may also belong to this Phase. They are known to occur in association with saucepan pottery on other sites (see Cunliffe 1976, 21, for stratified examples), although on the basis of form alone they are indistinguishable from Late Iron Age examples.

Despite the number of fabrics represented in the Phase 2 assemblage (Fig 26), fabric 3 is overwhelmingly dominant, comprising 56% of all Middle Iron Age vessels.

The distribution of vessel forms was restricted to the pits inside the enclosure and the enclosure ditch itself, although scraps of Middle Iron Age pottery occurred over a wider area of the associated field system. Again more pottery was present in the pits than the ditch, but no real patterning of forms or fabrics is apparent in the interior. All the pits contained saucepan pot material, either forms or fabrics, in their early fill layers.

Phase 3. Late Iron Age/Early Roman

The apparent insignificance of the Roman invasion on domestic pottery production makes it impossible to divide late prehistoric from Early Roman. The distinction here is made between the late saucepan/pre-Gallo-Belgic assemblage of Phase 2; and the Late Iron Age, augmented by local copies of Gallo-Belgic

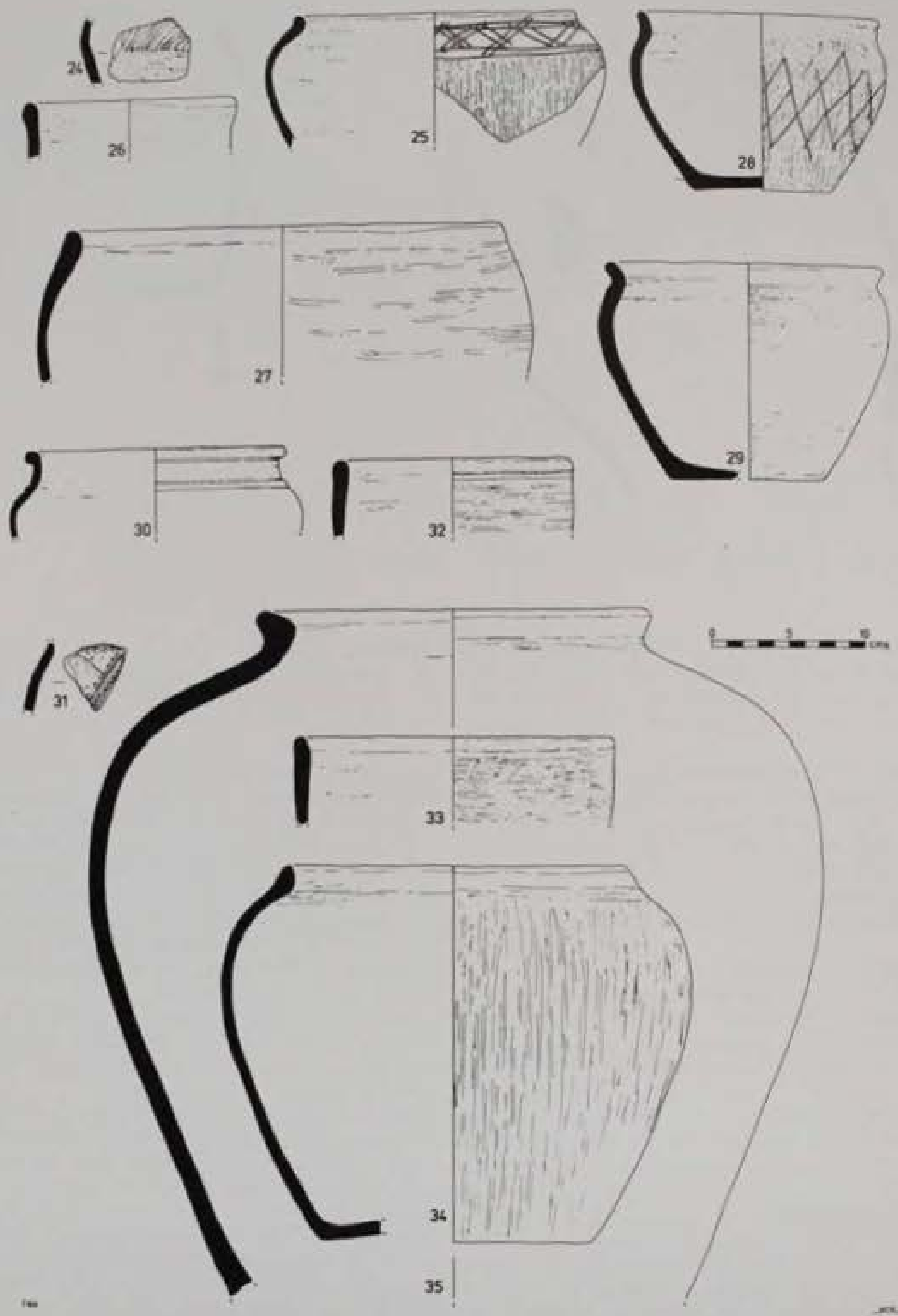

Fig 23. Micheldever Wood 'banjo' enclosure: Iron Age pottery, 24–35. Scale 1:4.

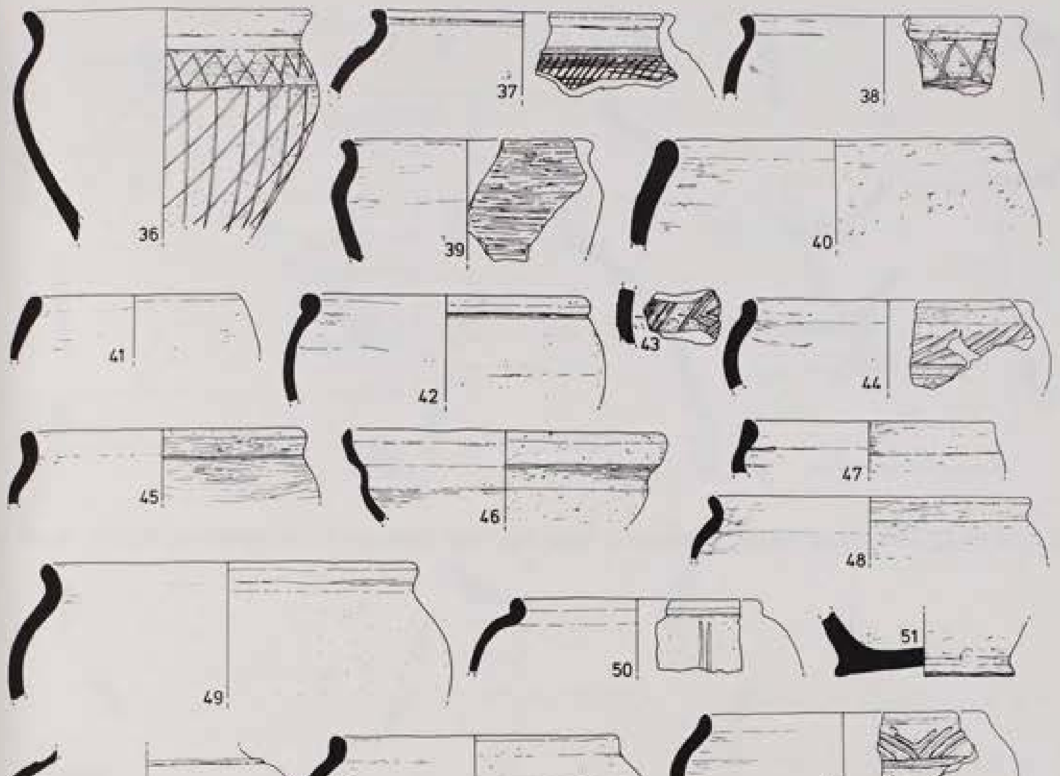

Fig 24. Micheldever Wood 'banjo' enclosure: Iron Age pottery, 36–65. Scale 1:4.

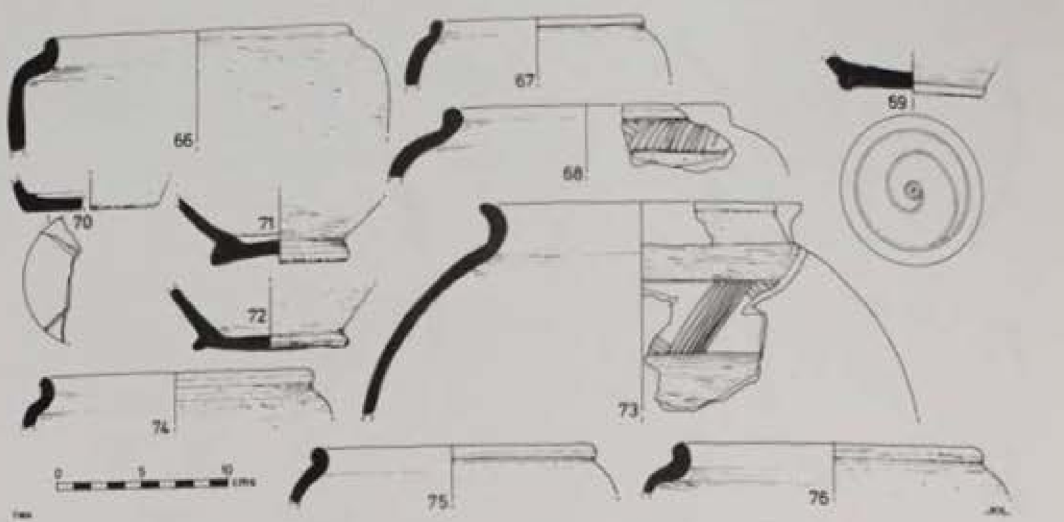

Fig 25. Micheldever Wood 'banjo' enclosure: Iron Age and Romano-British pottery, 66–76. Scale 1:4.

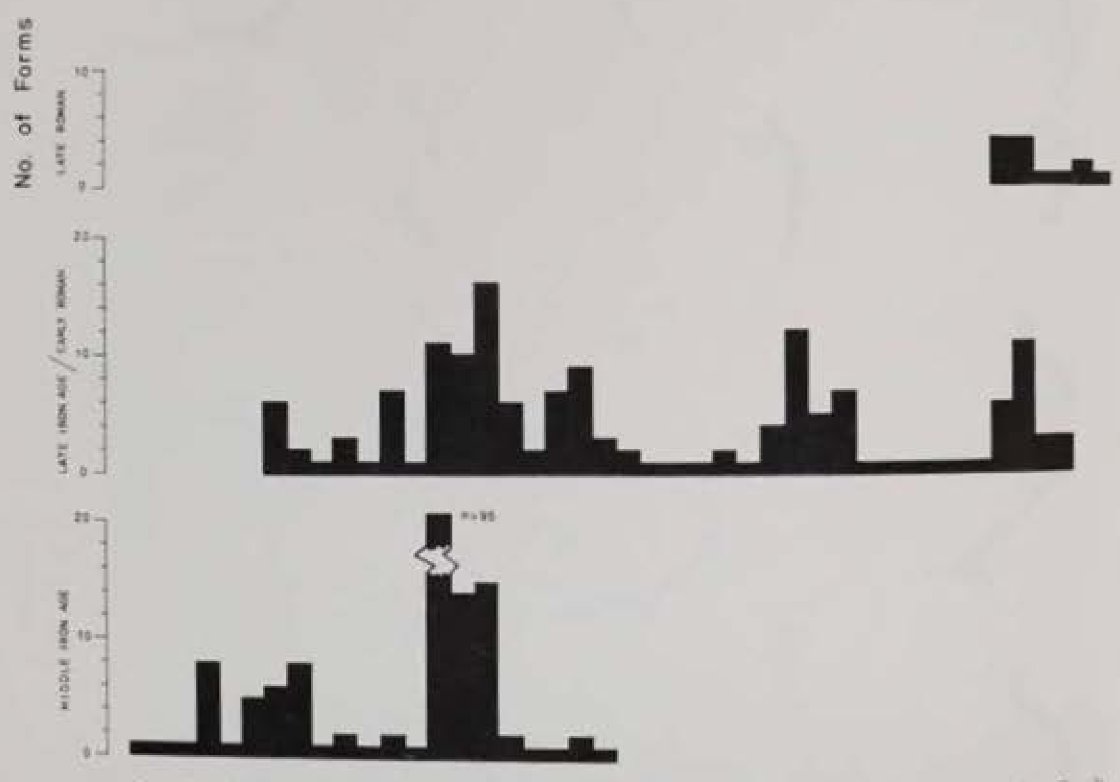

Fig 26. Micheldever Wood 'banjo' enclosure: histogram of numbers of vessel forms diagnostic to each Phase in each fabric.

types, the appearance of wheel-turned wares and the introduction of specialised Roman vessel forms. Most of these types can be paralleled by the first period assembly at Fishbourne (Cunliffe 1971, 175–216), where they must pre-date AD 75, and it is unlikely that this Phase extended much beyond the early years of the second century AD.

Bead rim jars

Seventy-one examples were found, with decoration

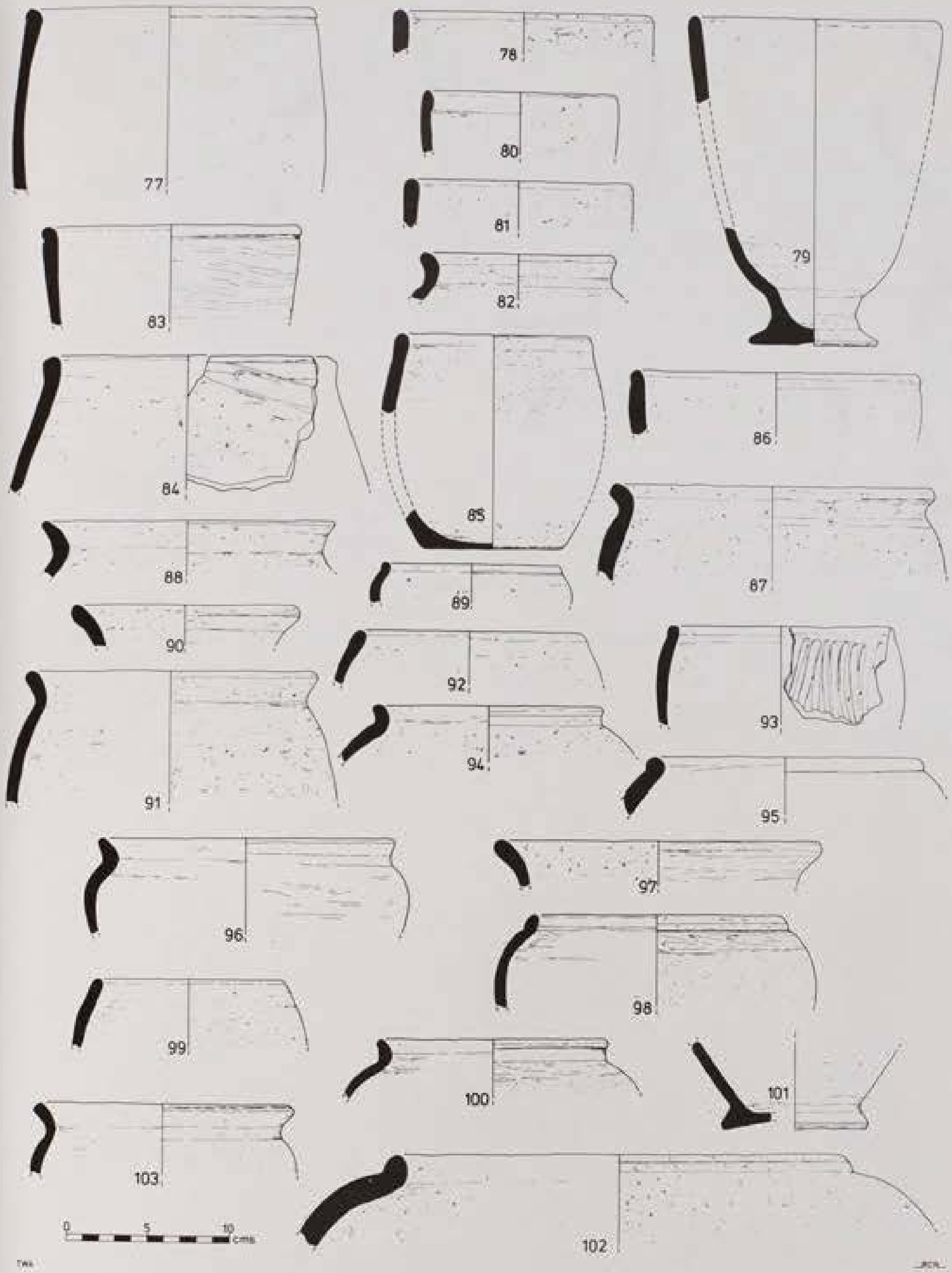

Fig 27. Micheldever Wood 'banjo' enclosure: Iron Age and Romano-British pottery, 77–103. Scale 1:4.

limited to two examples with tooling along the shoulder, and two examples with oblique hatching. Eighteen are externally burnished, and four are burnished both internally and externally. A considerable range of sizes is present, although no preferred size is evident (Fig 29).

Bead rim jars with chamfered rims

There are eight examples (*eg*, 74), none decorated, two externally burnished.

Upright or everted-rim jars

Forty-five examples were identified, one decorated with a chevron design (80) and one with a lattice design (5). Six examples are externally burnished. This class covers a wide range of vessel shapes ranging from the globular to semi-upright.

Necked jars

There are fourteen examples, seven with cordons (*eg*, 39) and one with a wheel-stamped neck and

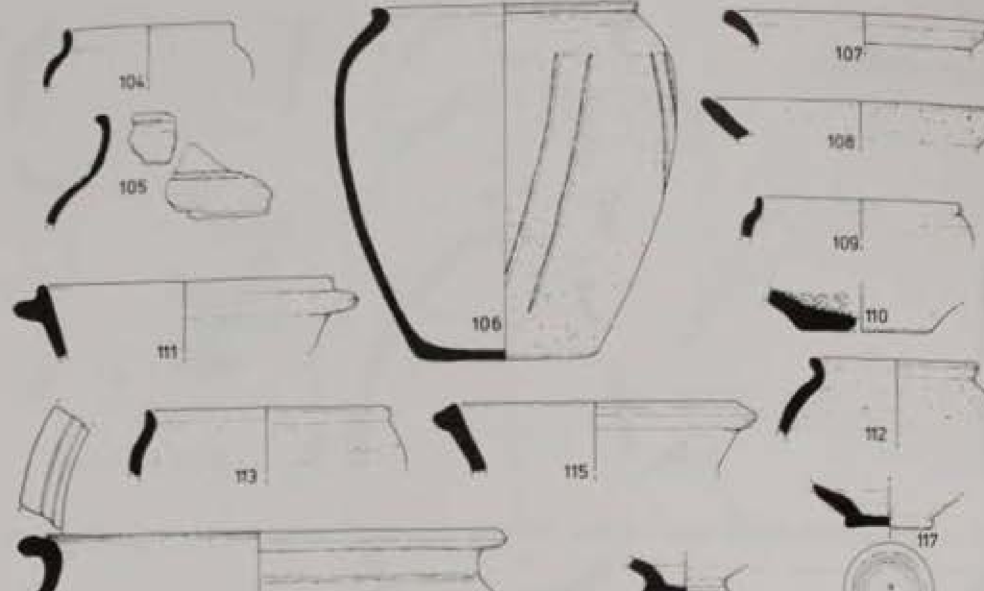

Fig 28. Micheldever Wood 'banjo' enclosure: Romano-British pottery, 104–117. Scale 1:4.

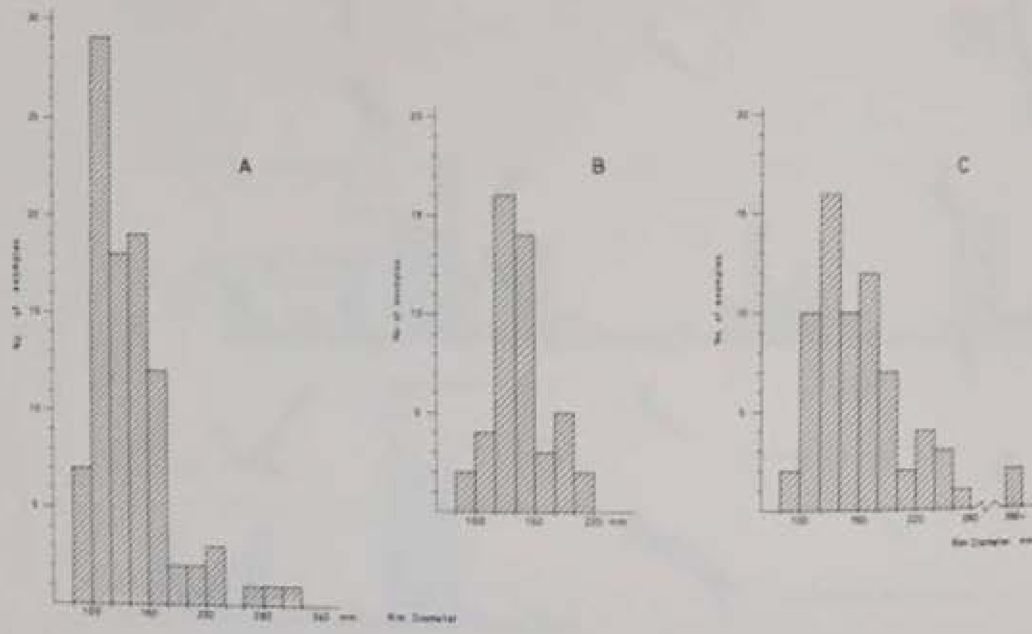

Fig 29. Micheldever Wood 'banjo' enclosure: histogram of rim diameters. A) saucepan pots with incurving sides (nine examples indeterminate); B) straight-sided saucepan pots (four examples indeterminate); C) bead rim jars (two examples indeterminate).

shoulder (6). Five examples are externally burnished, and one is both internally and externally burnished. Sizes range from 10–30cm diameter.

Other vessels
In addition there are three carinated, high-shouldered jars (*eg*, 75), four plain bowls or dishes (*eg*, 49), and fragments of a ring-neck flagon (7) and an indeterminate beaker. Sherds from four mortaria may also be of this Phase, although no forms can be identified. There are also a number of pedestal and footring bases.

Amphorae (identified by Dr D P S Peacock)
There are six sherds representing three vessels.

Feature 2B/1: one body sherd, possibly Dressel I but in an untypical fabric.
Feature 2G/476: four co-joining body sherds, probably Dressel I (less likely Dressel 2–4); similar to Peacock Fabric 1. *c* 50 BC–1 BC/AD.
Feature 19c/550: Dressel 1 rim, probably 1B, in Peacock Fabric 1. *c*.50 BC–1 BC/AD.

Comparatively more pottery of this Phase was present in the secondary silts of the ditch than in the pits. The ditch contained all the examples of amphora and some of the samian, the majority of which was found in the field boundaries. Of the features in the interior, only pit 319 (a flagon, 7) and pit 14 (two sherds of samian and two Roman bowls) contained anything but jars of this period.

Phase 4. Late Roman

Only four vessel forms are typologically of this Phase: the closed-mouth jar, flanged bowl (six examples, *eg*, 111, 115), fragments from two New Forest colour-coated indented beakers (Fulford 1975 type 27, not illustrated) and a parchment ware candlestick (Fulford 1975 type 96, not illustrated). Other less obviously late forms also belong to this Phase. There are at least four stratified examples of third–fourth century AD Alice Holt jars, although an estimated 30% of the unstratified topsoil greywares are also late Alice Holt (M Lyne pers comm). Pottery of this Phase, often associated with Group 8 grog-tempered fabrics, was recovered from the adjoining field, MARC3 site R26 (Fasham 1983).

Phase 1, pit 415, Tables 2 and 3

The stylised section (Fig 30) suggests discrete periods of rubbish disposal. The primary dump from layer 569 to layer 575 contained 218 sherds in addition to daub, burnt clay, loomweights, flint and burnt flint, quernstone and bronze. A depth of wholly sterile fill was followed by rubbish from layer 651 (iron, bone, shale, plus 15 sherds), and layers 529 to 536 (bone, flint, burnt flint and quernstone, plus 57 sherds). Teeth and three sherds from layer 648, one of which fits a sherd in layer 530, and one sherd and a struck flake from layer 518 may be interpreted as 'casual' loss rather than deliberate disposal. These three dumps are bracketed between two virtually identical carbon dates: 340 ± 70bc (HAR 2799) from the bottom layer 575; and 340 ± 110bc (HAR 2604) from layer 500 immediately above the third dump. Above this, layers 481 to 501 contained a socketed iron sickle (Fig 19. 20), flint and burnt flints, daub, bone and 57 sherds. None of the material in these layers need be later than the finds below, and they are included in the overall figures. The top layer, 416, included diagnostic Roman material and is discounted. There are a total of 351 sherds, of which over 90% are of Group 4

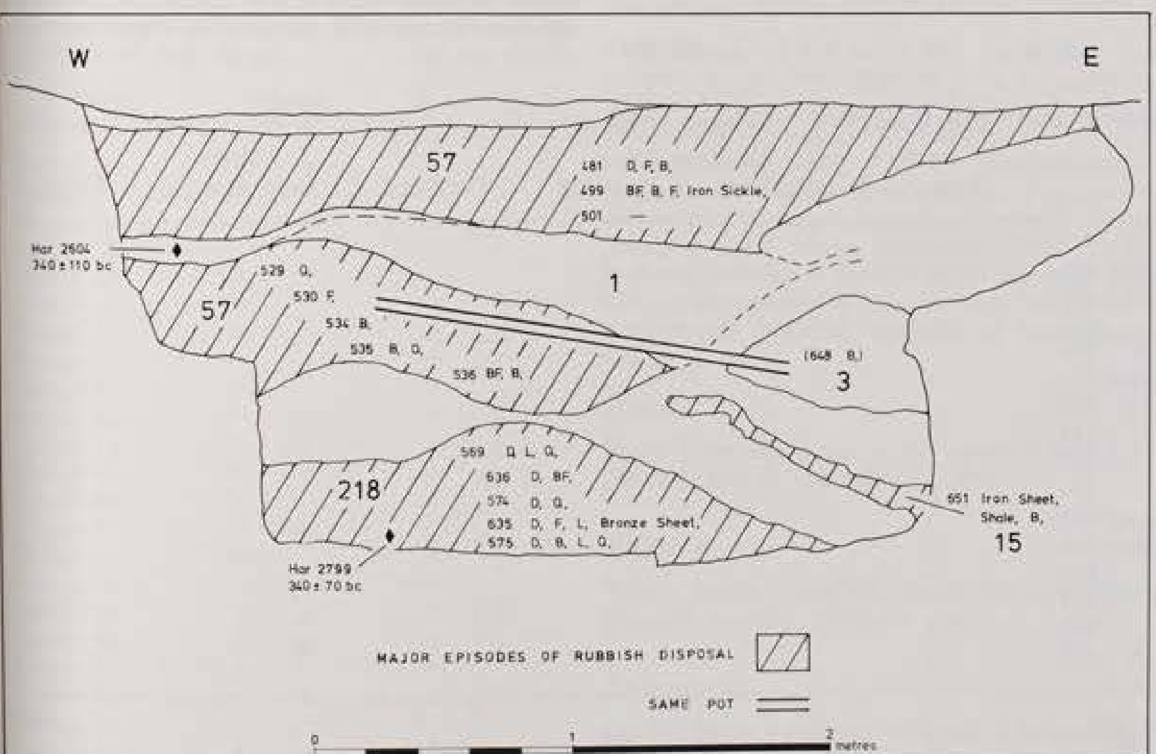

Fig 30. Micheldever wood 'banjo' enclosure: schematic section through pit 415 showing major periods of rubbish disposal. B = bone, D = daub and burnt clay, BF = burnt clay, F = flint, L = loomweight, Q = quernstone. Numbers indicate sherds of Iron Age pottery.

flint-tempered fabrics (Table 2). Only 50 sherds (14%) are burnished, and none are decorated.

Table 2. Micheldever Wood 'banjo' enclosure: pottery fabrics from pit 415 by number of sherds and percentage of all sherds from the pit.

Fabric	Sherds	Percentage
1	–	–
2a	13	3.7
2b	–	–
2c	–	–
2d	–	–
2e	1	<0.5
3	–	–
4a	1	<0.5
4b	320	91.0
4c	–	–
4d	–	–
5	–	–
6a	16	4.5
6b	–	–
6c	–	–
7a	–	–
7b	–	–
7c	–	–
8	–	–
9	–	–
Totals	351	100.0%

Of the seventeen identifiable vessels, sixteen are variants of the saucepan pot, the other being a bead rim jar (9). The volume of the Iron Age layers is calculated at 8.111m^3, giving a density of 43 sherds per m^3.

Phase 2, pit 14, Tables 4 and 5, Fig 31

Pottery was present in thirty-nine of the sixty layers, but no consistent depositional pattern is evident. Sherds from the same bead rim jar came from layers 116 and 54 respectively near the bottom and the top of the feature, implying the bulk of the fill was of one phase. Layers above 54 are excluded from the figures, although only layers 15, 30 and 35 contained diagnostic Roman material. Three radiocarbon dates were obtained: 120 ± 90bc (HAR 2780) from layer 75; ad20 ± 70 (HAR 2693) from layer 103; and 200 ± 70bc (HAR2770) from layer 354. These results, for what is basically a saucepan pot assemblage with a large proportion of bead rim jars, suggest a date at the very end of Phase 2 or even early Phase 3. A total of 709 sherds were recovered from the Iron Age layers (Table 4), of which the flinty (67%), chalky (7%) and reduced sandy fabrics (21%) are numerically the most important. There are twenty-five examples of fifteen decorative motifs, but the classic St Catherine's Hill—Worthy Down designs (*eg*, 4, 6) were absent from this feature. A wide range of vessel forms are represented (Table 5), of which less than 20% are saucepan pots. There are a total of 299 (42%) burnished sherds. The volume occupied by the Iron Age layers is 9.83m^3, giving an average of 72 sherds per m^3.

Table 3. Micheldever Wood 'banjo' enclosure: pottery forms from each layer in pit 415, excluding layer 416.

	Bipartite	Saucepan Types Straight	Saucepan Types Incurved	Outflared	Others Bead Rim Jar	Totals
Layer 481	–	2	2	–	–	4
499	–	1	–	–	–	1
501	–	–	–	–	–	–
┼ 500	–	–	–	–	–	–
Layer 529	–	–	–	–	–	–
530	–	1	–	–	–	1
534	–	–	1	–	–	1
535	–	1	–	–	–	1
536	1	–	4	–	–	5
Layer 651	–	–	–	–	–	–
Layer 569	–	–	–	–	–	–
636	–	–	–	–	–	–
574	–	–	–	1	–	1
635	–	–	2	–	1	3
* 575	–	–	–	–	–	–
Totals	1	5	9	1	1	17

┼ HAR–2604 340±110bc, * HAR–2799 340±70bc

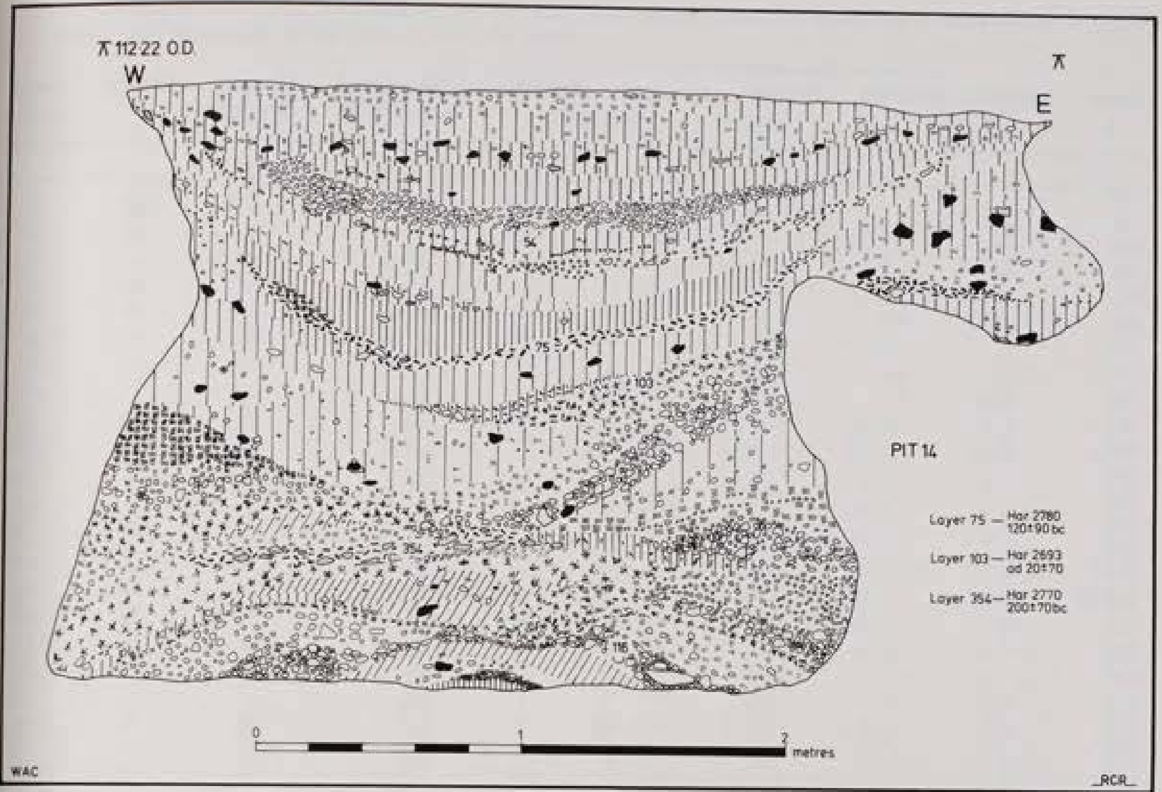

Fig 31. Micheldever Wood 'banjo' enclosure: section through pit 14. For location, see Fig 5.

Table 4. Micheldever Wood 'banjo' enclosure: pottery fabrics from pit 14 by number of sherds and percentage of all sherds from the pit.

Fabric	Sherds	% of feature
Group 1	3	‹0.5
Group 2		
Group 2a	4	‹1.0
Group 2b	–	–
Group 2c	–	–
Group 2d	–	–
Group 2e	–	–
Group 3	2	‹0.5
Group 4		
Group 4a	85	12.0
Group 4b	379	53.4
Group 4c	9	1.3
Group 4d	–	–
Group 5	50	7.0
Group 6		
Group 6a	121	17.1
Group 6b	9	1.3
Group 6c	20	2.8
Group 7		
Group 7a	3	‹0.5
Group 7b	–	–
Group 7c	12	‹1.7
Group 8	10	1.5
Group 9	2	‹0.5
Totals	709	100.0%

Enclosure ditch, Tables 6 and 7, Fig 12

Periodisation of the ditch fills has largely been achieved on the basis of vessel form. No significant differences in type or quantity of pottery were noted from along the length of the ditch.

The primary filling of all the ditch sections belongs to the Middle Iron Age and contained an almost pure saucepan assemblage (Table 6), with the Group 4 flinty fabrics dominant (Table 7). The pedestal base, in a heavily grass-tempered fabric (79), is indubitably of Iron Age date because of its stratigraphic position, although its appearance is Saxon.

Phase 3

Phase 3 saw an increase in the variety of both vessel forms (Table 6) and fabrics (Table 7).

Phase 4

Twelve layers contained identifiable Late Roman intrusive material (Tables 6 and 7).

Discussion

On the limited evidence available it is possible to suggest some general trends. The contrast between the material in features 415 and 14 suggests that, during the Middle Iron Age, there was a growing diversity in pottery manufacture reflected by the increased use of decoration and burnishing and the

Table 5. Micheldever Wood 'banjo' enclosure: pottery forms from pit 14, by layer.

Layer	Bowls	Saucepans Bipartite	Saucepans Straight	Saucepans Incurved	Bead Rim	Chamfered Bead Rim	Upright/ Everted	Others*	Totals
54	–	–	–	–	(3)	–	2	–	5
56	1	–	–	–	4	1	–	AC	7
336	1	–	–	–	2	–	1	B	5
69	1	–	–	–	–	–	–	–	1
337	–	–	–	–	–	–	–	A	1
338	–	–	–	–	–	–	–	A	1
70	–	–	–	–	2	–	3	–	5
75 ∤	1	1	–	–	–	–	–	–	2
84	1	1	–	–	–	–	–	–	2
67	–	–	–	1	2	–	–	–	3
344	1	–	–	1	–	–	–	–	2
346	–	–	–	–	–	–	–	–	–
104	–	–	–	–	–	–	–	–	–
202	–	–	–	–	–	–	1	–	1
634	–	–	–	–	–	–	–	–	–
353	–	–	–	–	–	–	–	–	–
354 @	–	–	–	–	–	–	–	–	–
112	1	–	–	–	–	–	–	O	2
139	–	–	–	1	–	–	–	–	1
136	–	–	1	1	2	–	1	–	5
114	–	–	–	–	1	–	–	–	1
115	–	–	–	–	–	–	–	–	–
359	–	–	1	–	–	–	–	–	1
116	1	–	1	1	(1)	–	2	–	6
361	–	–	–	–	–	–	–	–	–
Totals	8	2	3	5	17	1	10	5	51

Total Saucepans = 10

* Key to 'Others': A = round-shouldered jar; B = necked jar; C = carinated bead rim jar; O = amphora.

( ) = same pot. ∤ HAR–2780 120±90bc. @ HAR–2770 200±70bc.

Table 6. Micheldever Wood 'banjo' enclosure: pottery forms from the enclosure ditch by Phase (all layers).

	Phase 2	Phase 3	Phase 4	Totals
Saucepans				
Bipartite	1	2	–	3
Straight	8	2	–	10
Incurved	3	8	–	11
Bead Rims	2	13	3	18
Chamfered Bead Rim	–	4	–	4
Necked Jars	–	4	1	5
Upright/Everted	2	9	4	15
Flanged Bowls	–	–	4	4
Mortarium Bowl	–	–	2	2
Totals	16	42	14	72

availability of a wider range of vessel forms, particularly jars and bowls with foot ring bases, which are considered late features (Cunliffe 1976, 47). Fabrics were, however, an apparently conservative element, and their repeated appearance in assemblages of different dates suggests a continued exploitation of the same sources over a long period.

The possibilities of large-scale commercial production of pottery in the Middle Iron Age have been raised elsewhere (*eg*, Cunliffe 1978, 45), and there is evidence for the importation of non-local items in at least the later part of this period. In pit 14, two sherds tempered with Dorset sand were identified (Wandibba archive), and the grooving on the insides of some of the rims is reminiscent of the Glastonbury tradition (Cunliffe pers comm). At least one other sherd, the sandy wheel-stamped rim (6), is likely to have originated in the Wiltshire/Dorset area (Cunliffe pers comm). The quantity of pottery and the presence of diagnostic vessel forms only in the interior strongly suggest that the function of the enclosure was initially a domestic one.

Development into the Late Iron Age saw a proportional increase in the use of reduced, sandy fabrics and a decrease in the incidence of flinty fabrics unsuited to the new thin-walled bowls and fine jars. The emergence of these new forms is best

Table 7. Micheldever Wood 'banjo' enclosure: pottery fabrics from the enclosure ditch by Phase, shown by number of sherds and percentage of all sherds from the ditch.

Fabric Group	Number of Sherds Phase 2	Phase 3	Phase 4	Total	% of Phase 2	3	4
1	1	3	–	4	‹0.5	‹0.5	–
2a	57	17	–	74	12.3	2.3	–
2b	–	1	–	1	–	‹0.5	–
2c	–	1	–	1	–	‹0.5	–
2d	–	–	–	–	–	–	–
2e	–	–	–	–	–	–	–
3	–	1	–	1	–	‹0.5	–
4a	118	58	–	176	25.5	7.7	–
4b	192	270	60	522	41.6	35.9	31.7
4c	36	31	3	70	7.8	4.1	1.6
4d	1	–	–	1	‹0.5	–	–
5	2	24	2	28	‹0.5	3.2	1.1
6a	40	186	22	248	8.7	24.7	11.6
6b	1	48	58	107	‹0.5	6.4	30.7
6c	2	15	–	17	‹0.5	2.0	–
7a	2	6	2	10	‹0.5	‹1	1.1
7b	–	5	–	5	–	‹1	–
7c	–	20	7	27	–	2.7	3.7
8	10	52	29	91	2.2	6.9	15.3
9	–	14	6	20	–	1.9	3.2
Totals	462	752	189	1403			

considered to be a result of internal evolution facilitated by the availability of the potter's wheel (Cunliffe 1976, 47), supplemented by the importation and later adoption of continental vessel types. The relative lack of developed Roman forms suggests that occupation was not prolonged in the first century AD, and the almost complete absence of any fine wares from the interior makes it unlikely that the enclosure was still functioning as a settlement. The third and fourth century Roman material is not connected with the 'banjo' enclosure but with an occupation area not investigated, using the adjacent field system to the west.

Illustrations
Pottery from miscellaneous contexts:
Fig 21.

1. Feature 319 layer 320, Recorded Find 755. Fabric 3. Straight-sided saucepan.
2. F311/393, RF 831. Fabric 3. Incurving saucepan.
3. F311/560, RF 858. Fabric 44. Incurving saucepan.

4A-D. F311/593, RF 816. Fabric 42. Decorated sherds.

5. F311/393, RF 822. Fabric 44. Jar.
6. F311/393, RF 821. Fabric 44. Decorated sherd, unassigned jar.
7. F319/380, RF 780. Fabric 30. Flagon.

Pottery from pit 415 (excludes layer 416):
Fig 21.

8. Layers 635 and 575, RF 742. Fabric 3. Base.
9. 635, RF 747 and 757. Fabric 2. Jar.
10. 635, RF 761. Fabric 3. Incurving saucepan.
11. 635, RF 760. Fabric 27. Incurving saucepan.
12. 574, RF 758. Fabric 3. Outflaring saucepan.

Fig 22.

13. 536, RF 753. Fabric 3. Incurving saucepan.
14. 536, RF 752. Fabric 3. Incurving saucepan.
15. 536, RF 754. Fabric 22. Bipartite saucepan or jar.
16. 535, RF 746. Fabric 77. Countersunk handle.
17. 535, RF 744. Fabric 3. Straight-sided saucepan.
18. 534, RF 743. Fabric 3. Incurving saucepan.
19. 530 and 648, RF 759. Fabric 22. Straight-sided saucepan.
20. 499, RF 741. Fabric 3. Straight-sided saucepan.
21. 481, RF 739. Fabric 64. Incurving saucepan.
22. 481, RF 733. Fabric 3. Incurving saucepan.
23. 481, RF 738. Fabric 64. Straight-sided saucepan.

Pottery from pit 14:
Fig 23.

24. 361, RF 512. Fabric 3. Decorated sherd.
25. 116, RF 536. Fabric 44. Bowl.
26. 116, RF 540. Fabric 27. Straight-sided saucepan.

27. 116, RF 541. Fabric 22. Incurving saucepan.

28. 116, RF 544. Fabric 42. Jar.

29. 116, RF 555. Fabric 22. Jar.

30. 116, RF 537. Fabric 7. Jar.

31. 116, RF 538. Fabric 3. Decorated sherd.

32. 359, RF 507. Fabric 3. Straight-sided saucepan.

33. 136, RF 523. Fabric 3. Straight-sided saucepan.

34. 136, RF 524. Fabric 3. Incurving saucepan.

35. 136, RF 531. Fabric 77. Jar.

Fig 24.

36. 136, RF 528. Fabric 22. Jar.

37. 136, RF 529. Fabric 76. Jar.

38. 202, RF 516. Fabric 44. Jar.

39. 344, RF 511. Fabric 44. Bowl.

40. 344, RF 570. Fabric 22. Incurving saucepan.

41. 67, RF 572. Fabric 44. Incurving saucepan.

42. 67, RF 575. Fabric 27. Jar.

43. 346, RF 544. Fabric 42. Decorated sherd.

44. 84, RF 556. Fabric 3. Bowl.

45. 84, RF 547. Fabric 44. Bipartite saucepan or jar.

46. 84, RF 551. Fabric 11. Unclassified fluted bowl.

47. 70, RF 564. Fabric 42. Jar.

48. 70, RF 568. Fabric 68. Jar.

49. 70, RF 562. Fabric 35. Jar.

50. 70, RF 567. Fabric 63. Jar.

51. 70, RF 550. Fabric 22. Base.

52. 70, RF 553. Fabric 6. Shoulder with cordon.

53. 338, RF 520. Fabric 22. Round-shouldered jar.

54. 336, RF 501. Fabric 3. Bowl.

55. 336, RF 500. Fabric 3. Jar.

56. 336, RF 502. Fabric 45. Jar.

57. 336, RF 505. Fabric 35. Jar.

58. 336, RF 506. Fabric 27. Jar.

59. 336, RF 503. Fabric 63. Base.

60. 56, RF 601. Fabric 27. Bowl.

61. 56, RF 592. Fabric 44. Jar.

62. 56, RF 594. Fabric 3. Jar.

63. 56, RF 596. Fabric 3. Jar.

64. 56, RF 573. Fabric 63. Jar.

65. 56, RF 587. Fabric 24. Jar.

Fig 25.

66. 56, RF 597. Fabric 3. Round-shouldered jar.

67. 56, RF 581. Fabric 46. Jar.

68. 56, RF 599. Fabric 3. Jar.

69. 56, RF 588. Fabric 52. Decorated base.

70. 56, RF 590. Fabric 68. Decorated base.

71. 56, RF 600. Fabric 27. Base.

72. 56, RF 614. Fabric 27. Base.

73. 54, RF 620. Fabric 30. Jar.

74. 54, RF 607. Fabric 45. Jar.

75. 54, RF 615. Fabric 27. Jar.

76. 54, RF 608. Fabric 22. Jar.

Pottery from the 'banjo' enclosure ditch:

Fig 27.

77. Ditch segment 2A/layer 79, RF 1131. Fabric 3. Straight-sided saucepan.

78. 2A/107, RF 1137. Fabric 3. Straight-sided saucepan.

79. 2A/107, RF 1138. Fabric 64. Pedestal-base jar.

80. 2B/108, RF 1143. Fabric 83. Straight-sided saucepan.

81. 2B/118, RF 1146. Fabric 64. Straight-sided saucepan.

82. 2C/150, RF 1153. Fabric 46. Jar.

83. 2G/489, RF 1180. Fabric 3. Straight-sided saucepan.

84. 2G/552, RF 1233. Fabric 32. Incurving saucepan.

85. 2H/506, RF 1214. Fabric 64. Incurving saucepan.

86. 19B/548, RF 1241. Fabric 51. Straight-sided saucepan.

87. 19D/630, RF 1297. Fabric 2. Jar.

88. 19E/605, RF 1304. Fabric 60. Jar.

89 2A/16, RF 1125. Fabric 6. Jar.

90. 2B/49, RF 1134. Fabric 22. Bipartite saucepan or jar.

91. 2C/134, RF 1151. Fabric 22. Jar.

92. 2E/292, RF 1163. Fabric 83. Incurving saucepan.

93. 2E/292, RF 1164. Fabric 77. Incurving saucepan.

94. 2E/292, RF 1162. Fabric 25. Jar.

95. 2E/292, RF 1161. Fabric 79. Jar.

96. 2E/292, RF 1159. Fabric 79. Jar.

97. 2F/327, RF 1183. Fabric 3. Bipartite saucepan or jar.

98. 2F/327, RF 1188. Fabric 51. Jar.

99. 2G/464, RF 1203. Fabric 3. Incurving saucepan.

100. 19A/68, RF 1221. Fabric 3. Jar.

101. 19A/105, RF 1224. Fabric 63. Base.

102. 19B/477, RF 1243. Fabric 2. Jar.

103. 19C/450, RF 1258. Fabric 35. Jar.

Fig 28.
104. 19D/579, RF 1272. Fabric 6. Jar.

105. 19D/585, RF 1292. Fabric 53. Jar.

106. 19D/593, RF 176. Fabric 46. Jar.

107. 2A/3, RF 1090. Fabric 6. Jar.

108. 2A/4, RF 1098. Fabric 7. Jar.

109. 2A/4, RF 1103. Fabric 45. Jar.

110. 19C/302, RF 1246. Fabric 64. Mortarium.

111. 19C/302, RF 1247. Fabric 64. Flanged bowl.

112. 19C/302, RF 1251. Fabric 22. Jar.

113. 19C/303, RF 1253. Fabric 46. Jar.

114. 19D/432, RF 1274. Fabric 59. Jar.

115. 19D/553, RF 1264. Fabric 77. Flanged bowl.

116. 19D/553, RF 1262. Fabric 25. Base.

117. 19D/553, RF 1263. Fabric 83. Base.

Briquetage, by E L Morris

This report is based upon the same criteria as established previously in the briquetage report for Winnall Down (see archive for Winnall Down, Fasham 1985). In that similar archive report, three characteristics were examined of the ceramic material in question to determine if it could be briquetage: porosity of fabric; non-local clay source; and possible differentiation from pottery fabric sources. The first two points are primary requirements. Eventually, it is hoped that further work on the briquetage found at coastal salt-working sites will confirm the tentative identification in this report that some of the material provided for examination is indeed from the containers used to dry salt and transport it from the coast to sites inland such as the Micheldever Wood 'banjo' enclosure.

Macroscopic identification and vessel form

There are few pieces of possible briquetage. Out of 20 fragments, only 11 can be identified as possible briquetage. These fragments range in colour from pale, light orange to medium orange (Munsell 5YR 7/8 and 2.5 YR 6/8–5/8) when oxidised, to dark grey if reduced. Three types of firing were represented amongst these sherds: totally oxidised fragments (two); exterior surfaces are oxidised while the inner core area is reduced (seven); or nearly completely reduced (two). They are all body sherds and display varying amounts of vesicles which once contained organic material, identified from the impressions of plant stems left on the clay. Some of the sherds are harsh and sandy to touch with very few vesicles, while others are less harsh, rather sandy, and contain more organic material. None of the sherds appear to be from the same vessels, but all are probably from vessels similar to those identified at Winnall Down.

Microscopic analysis

Eight pieces were thin-sectioned for petrological analysis. These included several pieces of daub, in order to compare local clay sources represented by this daub, and the non-local (coastal) sources of the possible briquetage.

One fragment from layer 70 in pit 14 was selected because it was obviously a piece of daub. It is a mixture of two clays, one an iron-rich clay and the other an iron-poor clay, which are still distinctly separate. This separation is represented by a swirled texture to the matrix, probably due to incomplete wedging of the two clays, which may well have occurred together, with this layered effect, naturally. Neither of these clays contains more than 5% medium or small-sized quartz (0.2mm or less) in concentration. The quartz grains are sub-angular in shape and of average sphericity. There were no larger quartz grains in the single, prepared section. The iron-rich clay has abundant (about 30% of the total area matrix) dark red iron oxide fragments varying in size from very small up to 1.5mm across. Occasionally, the iron oxide contains small pieces of quartz. This daub fabric is not particularly porous since there are no vesicles.

A second section of possible daub fragments (pit 140 layer 177) showed that this material is also the same fabric as the above, iron-rich clay example. A third section of a possible daub fragment (pit 140 layer 207), which was flint and limestone (chalk) tempered, revealed this same, daub fabric matrix. Consultations with S Wandibba, Southampton University, confirmed that these oxidised, chalk-and-flint tempered fragments are not pottery, but daub plaster. Their irregular thickness supports this identification.

Five thin-sections of different vesicular sherds were examined to investigate several aspects: 1) to see if this possible briquetage group consisted of seven fabric types or just one; 2) to see if the fabric(s) were not made from local clays such as those used to make the daub described above; 3) to see how much organic material there was in the visually dissimilar fabric types; 4) to see if the fabrics were not made from clays like those used to produce pottery found on the site; and finally 5) to see whether any of this material was similar to the possible briquetage already examined from Winnall Down and Owslebury. Two general fabric types emerged from the examination.

R27–Briquetage fabric 1 was identified from three sections of sherds from different contexts: pit 298 layer 307; pit 146 layer 147; and pit 300 layer 301 – sherd 1. This fabric is characterised by an abundant amount (about 20%) of fine quartz (less than

0.1mm across) of sub-angular shape and high sphericity. The clay matrix contains only c 5% concentration of iron oxides, but also contains about a 1% concentration of fine, muscovite mica fragments. The interesting aspect of this fabric type is the variation in amount of organic material versus the amount of larger-sized quartz. Of the three sherds sectioned, one (pit 298 layer 307) has about 10% concentration of organic material but only 1% of larger-sized quartz, while the other two examples have 1–5% concentration of organic material and 5–10% larger-sized quartz. This variation within the fabric is probably due to slightly different preparation techniques, which is quite common amongst other collections of briquetage from single sources (Morris forthcoming). These variations are also reflected in the firing differences amongst the three sherds. They are definitely not from the same vessel. Nevertheless, close examination of the surface of these sherds by feel and hand lens will demonstrate their clay fabric similarity. This fabric is quite porous; it is not at all like the daub fabric, nor any of the pottery fabrics; nor is it at all like the possible briquetage from Winnall Down. Sherds assigned to this fabric 1 include: pit 17 layer 18; pit 8 layer 29; pit 311 layer 393; and pit 300 layer 317 – sherd 2.

R27–Briquetage fabric 2 is characterised by its unusually small amount of fine quartz – about 5% concentration and only 1% concentration of large quartz (0.2mm or larger). The fabric is very porous due to a 10–15% concentration of vesicles resulting from the loss of organic matter. There is a 5–10% concentration of iron oxides which infrequently measure up to 2.0mm across but which are generally very small. Only two sherds which belong to this fabric category (pit 311 layer 312; pit 300 layer 387) were sectioned. It appears at present that the latter sherd is slightly different from the former because of the addition of about 10% concentration of medium-sized quartz (0.1–0.2mm) to the general matrix, and organic inclusions. There are slightly fewer iron oxide inclusions as well as two fragments of limestone (chalk). With so few sections to examine, it is difficult to test this possible clay or preparation variability. Therefore (for this report) these two sections are being classified as a single fabric type with minor variations.

Future work may indicate that this fabric is similar to the organic fabric from Winnall Down. At present this is only a tentative suggestion, but a hopeful one. Preliminary work from a single sherd from Owslebury also suggests a common source of briquetage, and therefore salt production.

Conclusions and dating

This analysis has indicated that eleven fragments of probable briquetage, weighing a total of 58.0g, were recovered from the excavation. Two general fabric types were defined, which are very porous, are made with non-local clays, and are quite dissimilar to the pottery fabrics and firing techniques used in pottery production. At Winnall Down, possible briquetage very similar in appearance to this material was first found in Phase 4 contexts of Middle Iron Age date. A significant aspect concerning this material may arise from a comparison of the ratio of briquetage to pottery by weight from both of these and other Middle Iron Age sites in the region, which may help to interpret the activities on, or functions of, these sites. Source identification of this possible briquetage has not been attempted here, but will be part of a future wider study of salt production and distribution (Morris 1983).

Loomweights, by R P Winham

There were thirty recorded finds of loomweights or loomweight fragments, some finds containing more than one fragment. A minimum of 26 loomweights was represented.

The fabrics range from almost pure clay to a chalk-dominated fabric and three principal fabric divisions were isolated.

Fabric 1. Predominantly clay fabrics with some inclusions of chalk, flint and stone. Nine examples (see Winnall Down Fabrics 2 and 4, Fasham 1985).

Fabric 2. Clay, but about half matrix small chalk lumps. Seven examples (see Winnall Down Fabrics 1 and 6, Fasham 1985).

Fabric 3. Predominantly chalk fabric. Ten examples, all from pit 415 (see Winnall Down Fabrics 8 and 11, Fasham 1985).

All the loomweights appear to be triangular and three separate types were determined by the location of the perforations.

Type 1. Three perforations, all cutting across the apices of the triangle. 24 examples.

Type 2. Three perforations, but two of them starting from the centre of one side. One example.

Type 3. Two perforations, extremely thick. Only one example.

It was possible to measure the thickness of twelve examples (Fig 32). The majority are between 53–70mm thick. The Type 3 example is exceptionally thick at 86mm.

The diameter of the perforation varies from 4mm to 14mm and is not consistent within the length of a single 'channel'.

Most of the fragments were from pits, except for

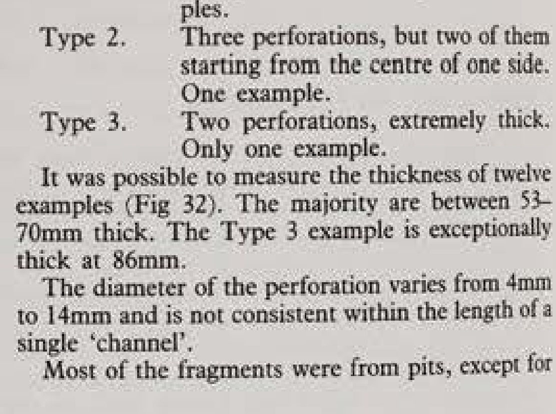

Fig 32. Micheldever Wood 'banjo' enclosure: histogram showing the thicknesses of twelve measurable Iron Age loomweights.

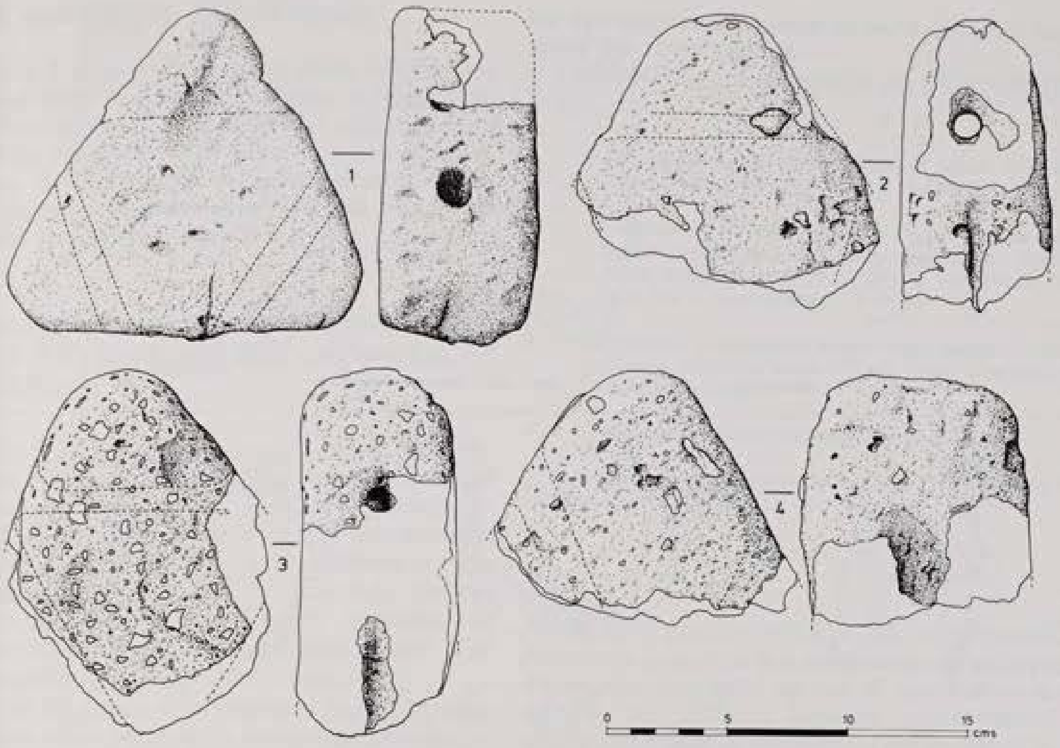

Fig 33. Micheldever Wood 'banjo' enclosure: loomweights, 1–4. Scale 1:3.

one in the ditch, cutting 19D, and one from outside the enclosure.

The following are illustrated (Fig 33). All are from the Phase 2 Middle Iron Age pit 415.

1. Type 1 loomweight. Almost equilateral sides of 140–145mm length. Thickness 54mm. Fabric 2.
2. Type 1 loomweight. Fabric 3.
3. Type 2 loomweight. Fabric 3.
4. Type 3 loomweight. Fabric 3.

Objects of baked clay

4,951g of baked clay were recovered. There are few recognisable artefacts, but the following are illustrated (Fig 34C).

1. Flat spindle whorl. 46mm diameter, 10mm thick. Central perforation, 9mm. Ditch 722C. Roman.
2. Small conical spindle whorl, or bead. Probably only partially perforated. 30mm diameter, 23mm height. Pit 434. Middle Iron Age.
3. Sub-circular clay disc or counter. 18mm by 16mm by 3mm thick. Pit 417. Late Iron Age – Early Roman.
4. Fragment of highly-fired rectangular clay bar of fabric similar to daub Fabric 1. 42mm by 35mm. Possibly piece of kiln or hearth furniture. Pit 98. Late Iron Age – Early Roman.
5. Block of baked clay with three deliberate, smoothed surfaces. Two impressions made by squarish stick. Possibly a hearth surround, by analogy with Gussage All Saints (Wainwright 1979, 102, Fig 77). Layer 69, pit 14. Late Iron Age.

Daub and burnt clay

78,824g of daub and burnt clay were recorded. 77,628g is daub, 1,176g is burnt clay.

The material came from most of the pits and the enclosure ditch; the largest single deposit of daub was 39,818g (51%) from layer 443 in pit 311.

There were two major fabrics for the daub:

Fabric 1. Numerous and apparent small-medium chalk inclusions with occasional flints or other stones. Dried/baked fairly hard to hard. 22,851g. The basic clay matrix is similar, in thin-section, to that of Fabric 2 (Morris archive). It is extremely chalky and resembles cob.

Fabric 2. Clay with occasional chalk lumps and rare flint or other stone and organic material. Friable-hard. 54,777g.

One fragment of Fabric 2 was thin-sectioned by E L Morris; see the description for the piece from layer 70 in pit 14 in the briquetage report (above 39, and archive). Fabric 2 was clearly made from the local clay-with-flints.

The Fabric 2 daub was frequently very well preserved with clear wattle, finger and leaf impressions. The Fabric 2 daub seemed to be about 30mm thick from the wattle impressions to the surface. The

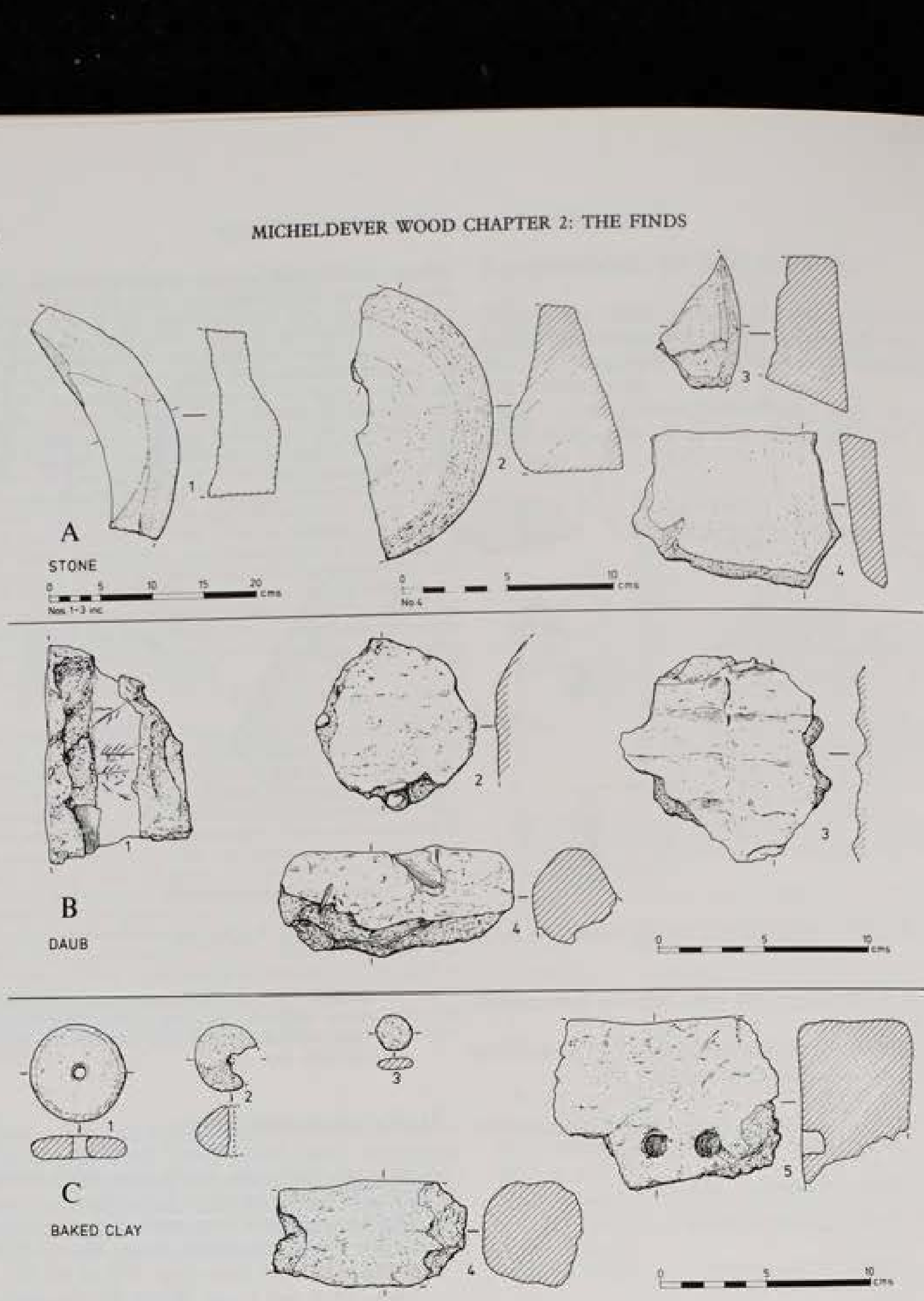

Fig 34. Micheldever Wood 'banjo' enclosure: A) stone objects; B) daub fragments; C) objects of baked clay. Scale 1:3.

surfaces were raised, some with fingertip impressions, some smoothed with brushes or something similar and some skimmed with a cream coloured slip, presumably a form of whitewash. Forensic analysis of the clear finger impressions did not reveal any traces of finger prints. The organic material in the Fabric 2 daub appeared mainly to be grass, but Dr P Edwards identified clear impressions of the frond of bracken (*Pteridium aquilinum*) on six pieces and probable impressions of bracken on six other pieces (full details in archive). These impressions were all preserved around the wattle impressions.

The daub *etc* was obviously derived from a variety of structures, as evidenced by the considerable range of surfaces, from flat to curved.

The following pieces are illustrated (Fig 34B):

1. Flat-surfaced daub fragment with three wattle impressions. Organic impressions on wattles. Surface skimmed with chalk-based cream coloured slip. Fabric 2. Pit 311. Middle Iron Age.
2. Daub fragment with curved surface. Fabric 1. Pit 14. Middle Iron Age.
3. Daub with conjoining finger impressions. Fabric 2. Pit 311. Middle Iron Age.
4. Curved fragment of daub. Fabric 2. Pit 311. Middle Iron Age.

Brick and tile, by R P Winham

A total of 7,323g of fragmentary brick and tile was collected from 50 different contexts. 3,200g (44%) came from topsoil or ploughsoil and a large proportion of the remainder came from the upper layers of features. As the material is so fragmentary no detailed analysis was undertaken. The full lists of the locations are in the archive.

Objects of stone – based on identifications by D P S Peacock and data preparation by R P Winham

Just over half of the 110 stone fragments and artefacts are greensand, frequently pieces of greensand quernstones (Table 8). The greensand is from the Hythe beds of Sussex, probably in the area between Midhurst and Petworth. The soft sandstone is from the Weald; the slate, which unfortunately was not securely stratified, is from Devon; millstone grit from the Midlands and the shale from Dorset. The other rocks are all fairly local in origin.

Most of the querns were imported from *c* 20 miles to the east where presumably a quern producing site awaits discovery. There are only three reasonable sized quern fragments, but they seem to be deeper than the majority of the contemporary ones in use on Winnall Down. As most of them come from the same source area in Sussex there is evidence either for two production centres or for a different functional use of the querns.

The following stone artefacts are illustrated (Fig 34A):

1. Two fragments of rotary greensand quern. Diameter 312mm, depth 160mm. Pit 415. Middle Iron Age.
2. Fragment of millstone grit upper rotary quernstone with hopper and slot for handle. Maximum diameter 264mm, depth 160mm. Upper fill of ditch 2, segment H. Late Iron Age – Early Roman.
3. Fragment of greensand upper rotary stone. Diameter 300mm, maximum depth 153mm. Ditch 2, segment H. Middle Iron Age.
4. Possible whetstone fragment. Ploughsoil.

Three probable chalk beads were recovered, two from pit 293 and one in pit 295. They are not illustrated.

Flint

About 1200 pieces of worked flint were recovered. About one quarter of this material was in the topsoil. There was a general spread of material in most features but with an apparent concentration of almost 300 pieces in the south of the enclosure in an area defined by pit 14 and ditch sections 19 B, C and D (see archive).

The important flints have been published in the general survey of Micheldever Wood (Fasham 1983, Fig 3).

Table 8. Micheldever Wood 'banjo' enclosure: stone artefacts.

	Pieces	Tiles	Worked	Bracelet	Quern	Whetstone	Totals
Greensand	19	–	–	–	45	–	64
Ferruginous sandstone	4	–	–	–	–	–	4
Sarsen	2	–	–	–	1	–	3
Shale	1	–	–	1	–	–	2
Millstone Grit	–	–	–	–	1	–	1
Sandstone	5	2	1	–	1	–	9
Chalk	–	–	4	–	–	–	4
Chert	2	–	–	–	–	–	2
Pebbles	7	–	–	–	–	–	7
Slate	6	–	–	–	–	–	6
Unidentified	2	1	–	–	2	3	8
Totals	48	3	5	1	50	3	110

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samples for charcoal, carbonise
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Mrs Denford examined a s
mites but for a variety of reason
the assemblages could not be p
No further work was done (se
Other environmental remai
siderable amount of useful in
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presented here at some length

Animal bones, by J P C

The study of the animal bone
vided the first case since the in
Remains Project where deta
some aspects of bone deposit
was possible. Animal bone stu
more usually geared to proc
report from a sample taken so
without the advice or
archaeozoologist) and interpre
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different species and parts o
however, long been familiar t
Behrensmeyer 1975) and Ame
prehistoric archaeologists (eg
1977, Noe-Nygaard 1977) but,
was started, was unfamilia
archaeologists.

Method of study

The study of the animal bones
two-way flow of information be
M3 Archaeological Rescue C
Griffith of the Faunal Remain

Chapter 3

The Environment

An extensive sampling programme (Fasham and Monk 1978) led to the collection of a large number of samples for charcoal, carbonised cereals and weed seeds, small animal bones, snails and mites. Mrs Mason selected, by random numbers, nine of the 78 collected snail samples and examined them in the manner described by Evans (1972). Only two samples contained snails and there were less than 30 in each of these samples. In view of the acidic nature of the local clay-with-flints it was decided that preservation of shells would only occur in isolated places and no further analysis was done (details in archive).

Mrs Denford examined a series of samples for mites but for a variety of reasons she concluded that the assemblages could not be proven to be ancient. No further work was done (see archive).

Other environmental remains produced a considerable amount of useful information and even though the reports have been abbreviated, they are presented here at some length.

Animal bones, by J P Coy

The study of the animal bones from this site provided the first case since the inception of the Faunal Remains Project where detailed investigation of some aspects of bone deposition and preservation was possible. Animal bone study in this country is more usually geared to producing a generalised report from a sample taken some time before (often without the advice or supervision of an archaeozoologist) and interpreting from it, perhaps in terms of economies, setting aside most taphonomic aspects. The differential survival of bones from different species and parts of the anatomy has, however, long been familiar to palaeontologists (*eg* Behrensmeyer 1975) and American and continental prehistoric archaeologists (*eg* Binford and Bertram 1977, Noe-Nygaard 1977) but, at the time this work was started, was unfamiliar to most British archaeologists.

Method of study

The study of the animal bones involved an intensive two-way flow of information between the staff of the M3 Archaeological Rescue Committee and Niall Griffith of the Faunal Remains Project. The major aims of this work were in three directions. First, the best possible methods of retrieval were attempted. This included careful manual retrieval by diggers, who were encouraged to regard bones as a valuable source of information, and extreme care at all subsequent stages in bone treatment until they reached the bone room. This ensured that ancient fragmentation could be studied in detail and results from different parts of the site could be compared with some degree of reliability – essential steps in interpreting the taphonomic processes.

Secondly, the study itself aimed to identify as far as possible each small fragment, spending more care than usual in identifying these to anatomical element and species and making a rough estimation of the proportion each fragment represented of a whole bone. Results from the sieving procedures were also studied. These procedures might have benefitted from more frequent, smaller samples and the use of manual wet sieving with finer mesh sizes.

Thirdly, further analysis then attempted to look at all the different types of information the bones could yield and assess their value to the interpretation of the economy of the settlement, the extent to which such evidence might be differentially preserved through time, and the relationship between the different types of information. The relationships between the variables – species, skeletal element, fragmentation, and type of deposit – were explored using multivariate contingency testing with the help of Tim Holt and Clive Richardson (Department of Social Statistics, University of Southampton).

This work was at the time very closely linked with the setting up of a computer-based methodology for animal bones (Jones 1978) and much of the methodology developed for the 'banjo' enclosure was subsequently included in an expanded version of the Jones system now in use at the Ancient Monuments Laboratory and the Faunal Remains Project. Niall Griffith's original report on his study of the animal bones from the 'banjo' enclosure (Griffith 1978) and its associated data have been used to produce this summary for publication. Some rewriting was made necessary by a reconsideration of the ceramics.

The bones

The bone sample is quite small (*c* 8,000 fragments altogether) considering the large number of questions asked. An additional 264 fragments, 51 of them identifiable to species, were obtained from the sieving. The use of a 3mm mesh size may have caused the loss of some of the small fragments, although tests with a 1mm sieve did not bear this out. There is no doubt that trench retrieval in the deposits from which samples were removed for sieving was poorer than usual, confirming that it is essential for diggers to be unaware of any difference in sampling between features. Table 9 shows the general distribution of the bone fragments found, according to associations with ceramics.

This shows that most of the bones recovered were derived from domestic cattle and sheep, or consisted of small unidentifiable fragments which probably came from these two species ('cattle-sized' and 'sheep-sized' fragments respectively).

The ovicaprid bones are all called 'sheep' here as many of them were definitely identified to this species by anatomical features and only two bones (a horn core in each Phase grouping) were identified as coming from goat. Further details of the domestic species are given in the section on metrical analysis.

The bird, amphibian, and wild mammal finds are listed in Table 10. Most of these came from Phase 2 layers and finds were unremarkable zoologically, consisting of species known to have been associated with man in the Iron Age: domestic fowl and house mouse (*eg*, Harcourt 1979, 155); and common and widespread species such as common toad, woodcock, mallard and vole. There are some unidentifiable amphibian bones so that frog may also be represented. The rabbit bone is likely to be intrusive, as it was not very deep in the ditch fill and this species was probably not present in pre-Norman Britain (Bourdillon and Coy 1980, 114). It is difficult to draw conclusions about the surrounding environment from these finds.

Ivoried, burnt, gnawed and butchered bones

The suggestion that 'ivoried' bones may have been roasted (Coy 1975) has been criticised on the grounds that the condition may have other possible causes, such as swift burial. Whichever theory is correct, and they may both be factors in the production of 'ivoried' bone, the distribution of these fragments may serve as an indicator of human activity on a site as they probably indicate either cooking or household activities, or swift burial of rubbish, all more likely in the living area of a settlement. Burnt bone may act as a similar domestic indicator.

Burnt and 'ivoried' bone are hard and would be preserved well compared with other bone on the site, but the amount of both involved here is not large enough to make these significant factors in differential preservation (Table 9).

All but one of the 292 ivoried fragments came from pits, as did the Phase 2 burnt bone; but in Phase 3/4 twice as many burnt bones came from ditch deposits as from pits. In Phase 2, 4.9% of the bones studied were 'ivoried'. Chi-squared testing confirms that overall expectations for ivoried bone are sheep orientated (because most of the fragments in the sample are sheep or 'sheep-sized'), but that cattle show a very much lower frequency of 'ivoried' bone than expected and the number of 'sheep-sized

Table 9. Micheldever Wood 'banjo' enclosure: species distribution of animal bone fragments in Phases 2 and 3/4.

	Horse	Pig	Cattle	Sheep	Dog	Other	C-size	S-size	Totals
Phase 2									
ivoried	1	3	7	62(1)	1	–	21	192	288
burnt	1	4	2	17	–	–	26	52	102
gnawed	11(5)+	20(6)	34(14)	13(7)	–	–	3(1)	20(5)	139
cut	2(1)	(1)	11(9)	6(6)	(1)	1*	1	2	41
all others	66	292	759	1035	52	22	999	2132	5357
Totals	87	326	836	1147	54	23	1051	2403	5927
Phases 3/4									
ivoried	–	–	–	2	–	–	–	2	4
burnt	1(1)	(1)	(6)	2(1)	–	–	2(3)	5(8)	30
gnawed	2(1)	6(14)	5(7)	17(11)	–	–	3	1	67
cut	–	–	8(4)	1(3)	(2)	1(1)*	2(1)	–	23
all others	81	133	290	319	32	5	725	721	2306
Totals	86	154	320	356	34	7	736	737	2430

Numbers in brackets indicate fragments from ditches. 'C-size' represents cattle-sized animal, probably cattle but could be from horse or red deer. 'S-size' represents sheep-sized animal, probably sheep but could be goat or roe deer or perhaps pig. * Cut antler was found but not included in these figures.

Table 10. Micheldever Wood 'banjo' enclosure: remains of wild animals, birds and amphibians.

	Species	Part	Feature	Layer
Phase 2				
red deer	*Cervus elaphus*	antler (cut),	8	83
	" "	tibia shaft,	8	113
	" "	antler,	14	56
	" "	pelvis	14	70
fox	*Vulpes vulpes*	L and R mandible, maxilla	19	138
stoat	*Mustela erminea*	most of skeleton	311	393
hare	*Lepus* sp	femur	319	507
short-tailed vole	*Microtus agrestis*	skull	293	392
house mouse	*Mus musculus*	remains 2 individuals	311	393
water vole	*Arvicula terrestris*	mandibles, hindlimb	293	413
common toad	*Bufo bufo*	tibiofibula	293	392
toad	*Bufo* sp	femur,	298	375
	" "	tibiofibula	298	378
common toad	*Bufo bufo*	partial skeleton	478	602
toad	*Bufo* sp	tibiofibula	298	375
wild/domestic duck	*cf Anas platyrhynchos*	L coracoid,	2	16
	" "	R femur,	2	16
	" "	L tibiotarsus	14	70
unidentified corvid (immature)	cf crow	L unlna, L and R femur	14	202
domestic fowl	*Gallus* sp	R ulna,	14	355
	" "	R humerus,		
	" "	R tibiotarsus,		
	" "	immature humerus	311	669
woodcock	*Scolopax rusticola*	R humerus	19B	548
Phases 3/4				
red deer	*Cervus elaphus*	antler (cut)	295	296
fox	*Vulpes vulpes*	craniel fragments	19A	57
			19A	138
rabbit	*Oryctolagus cuniculus*	mandible	19B	329

fragments which were 'ivoried' are higher than expected, compared with the sheep fragments. These results are highly significant (p = <0.001, 1,226 on 18 d f). They suggest that this condition of the bone was caused by something that is more likely to happen to sheep carcases and slightly more likely to be linked to considerable fragmentation, although there may be a somewhat greater chance of survival for small fragments if they are 'ivoried'.

For burnt bones, cattle again has a lower incidence than expected according to the distribution of fragments.

In Phase 3/4 only 0.2% of the bone was 'ivoried' and 1.2% burnt. Samples are too small to analyse for species bias.

Gnawing was noted on 2.3% of Phase 2 bones and 2.8% of Phase 3/4 bones. In Phase 2, 73% of these gnawed bones were from pits but gnawing in Phase 3/4 was equally distributed between ditch and pits. Chi-squared testing of the species distribution of gnawed bones in Phase 2 suggests a relative scarcity of gnawed bones in the small fragments, especially from cattle-sized animals, suggesting that the processes undergone by these excluded them from contact with dogs. On some sites preservation is a key factor governing recognition of gnawing and cuts on bones but there is no evidence from this site that erosion of the bone surface was any different in the different types of fragment.

Cuts were recorded on a variety of species and are interpreted as butchering and/or skinning marks. These include skinning marks on dog ulna and calcaneum, and butchery on horse mandible and scapula. There are also four bones showing polishing. Cuts were recorded on only 0.7% of bones in Phase 2 and 0.9% of those in Phase 3/4. Significance testing for species distribution again suggests fewer cuts than expected on sheep-sized fragments and (less significantly) cattle-sized fragments. There is no evidence that these were more eroded than the larger fragments.

A few bones were found with associations between 'ivoried' or burnt texture, gnawing, and cuts. The difficulty of making a consistent search for such features and the complexities of recording the results in detail led to the incorporation into current computer coding of fields for recording the position and description of gnawing and butchery and the state of preservation of each fragment.

Specific percentages

It is possible to use the fragment totals in Table 9 to assess the representation of the different species. In addition, Table 11 shows specific percentages for the three major meat species – pig, cattle and sheep – overall, and for ditch and pit assemblages in the two Phase divisions used in Table 9. Table 11A uses fragment numbers, excluding loose teeth, and Table 11B whole bone equivalents (WBE). WBEs are calculated by assessing whether fragments represent whole, half, more than half, or less than half a bone and totalling these fractions to give an approximation of the number of whole bones to which the fragments are equivalent. Small skull fragments are scored 0.05.

Table 11A. Micheldever Wood 'banjo' enclosure animal bones: species percentages derived from fragment frequencies. n = sample size.

	Phase 2		Phases 3/4		Overall
	pits	ditch	pits	ditch	
n	(1605)	(239)	(277)	(430)	(2551)
pig	14%	17	18	23	16
cattle	33	41.5	25	46	35
sheep	53	41.5	57	31	49
Total	100	100	100	100	100

Table 11B. Micheldever Wood 'banjo' enclosure animal bones: species percentages derived from 'whole bone equivalents'.

	Phase 2		Phases 3/4		Overall
	pits	ditch	pits	ditch	
n	(698)	(105)	(109)	(174)	(1087)
pig	15%	17	18	26	17
cattle	28	39	21	38	30
sheep	57	44	61	36	53
Total	100	100	100	100	100

There is a fairly close coincidence between results in Table 11A and 11B, although cattle figures based on WBE are slightly lower than those for fragments and the reverse is true for sheep. This suggests a slightly greater amount of fragmentation in cattle than with sheep. Chi-squared tests on the original frequencies involved in Table 11A show that results for Phase 3/4 ditch deposits are significantly different from what would be expected from overall results (p = <0.001, 84 on 6 d f), showing very much lower results for sheep than expected and significantly higher results for cattle and pig.

Table 11B frequencies also show that the sheep WBE is significantly lower than expected in the Phase 3/4 ditch and pig WBE is higher than expected (this fits the fragment results above), but that WBEs do not bring out the high value for cattle to the same extent. This discrepancy is mainly a measure of the fairly high frequency of small cranial and scapula fragments of cattle in these deposits.

Table 11 results are for identified fragments only. Results for the unidentified fraction, composed of fragments from 'cattle-sized' and 'sheep-sized' animals (probably cattle and sheep respectively) are in Table 12. Frequencies show a highly significant result for the Phase 3/4 ditch sections (probability = <0.001, 216 on 3 d f) where the percentage of sheep fragments drops lower than that for cattle, supporting the results for identified cattle and sheep bones for these features. Percentage figures are given in Table 12 as a quick guide to these differences.

Table 12. Micheldever Wood 'banjo' enclosure animal bones: division of 'unidentifiable' fragments into two size categories by percentage. n = sample size.

	Phase 2		Phases 3/4		Overall
	pits	ditch	pits	ditch	
n	(2665)	(816)	(645)	(942)	(5068)
sheep-size	70	67	55	41	62
cattle-size	30	33	45	59	38
Total	100	100	100	100	100

Separation into pit and ditch deposits is justified. Using lumped results for the Phases, while bringing out the greater concentration of pig compared with sheep in Phase 3/4, masks the relative similarity of the pit deposits in the two Phases.

Meat values

The proportions of meat produced by the three major food species, using the figures given for Gussage All Saints (Harcourt 1979, 155), were arrived at by multiplying the WBEs by the ratios 1 : 1.5 : 10 respectively for sheep, pig and cattle. WBEs were regarded as more reliable than fragment numbers for this exercise because of the specific differences in fragmentation suggested above. Results are shown in percentage form in Table 13.

Table 13. Micheldever Wood 'banjo' enclosure: estimated percentage meat contribution by the three major domestic species.

	Phase 2		Phases 3/4		Overall
	pits	ditch	pits	ditch	
pig	6	6	9	9	7
cattle	78	85	70	83	79
sheep	16	9	21	8	14
Total	100	100	100	100	100

These results indicate that cattle were providing the bulk of meat consumed but that sheep and pig together may have provided up to 30% of the meat. This ignores the possible role of horse meat which is difficult to assess on this site. Obviously, these values must have been subject to seasonal variation.

Meat-bearing Bones

A simple division of fragments into possible 'meat-bearing' and 'non-meat bearing' elements was attempted for the four contextual and three species divisions used in earlier Tables. The 'non-meat' elements include cranium and jaw, distal radius, distal tibia, and lower limb (loose teeth were omitted). Chi-squared testing was carried out where frequencies for the 'meat'/'non-meat' division appeared to show some bias.

Cattle fragments show somewhat more meat bones than expected in Period 3/4 pits ($p = <0.05$. Chi-squared = 10.37 on 3 d f), compared with other contexts. Otherwise, differences between species and context types are not significant. The anomalous results with Late Iron Age/Roman pits may only relate to the small sample size.

Bone densities (Fig 35)

These were calculated in two ways – as the number of bone fragments per cubic metre and as whole bone equivalents per cubic metre. Pit densities were on the whole higher than ditch densities and Middle Iron Age densities were generally higher than later ones. For the Middle Iron Age material the more densely filled pits were near the centre of the enclosure. Spatially, the three ditch sections with a high density of bone were near gaps in the distribution of pits and those with a low density were near concentrations of pits. If bone density is a measure of domestic activity, results suggest that the active centre of the site was the area defined by pits 140, 298, 319 and 32.

In general, the larger the pits the greater the amount of bone material in them. There was no significant difference between pit size and average fragment size or between bone density and average fragment size.

An attempt was made to link the bone density of the pits and ditch sections to the percentage representation of the species and, although low density pits (0–20 WBE/cubic metre) and high density pits (21–40 WBE/cubic metre) gave similar specific percentages, individual pits provided small samples and less consistent patterns both in terms of species and anatomical element. Consistency in species and element representation held for samples which had a WBE exceeding 363.

The relationship of bone density to the representation of ten selected anatomical elements – mandible, scapula, humerus, radius, ulna, pelvis, femur, tibia, astragalus and calcaneum – was also investigated in order to assess the loss of material that had occurred from the various species. This was calculated by comparing the representation of the ten elements (as measured by WBEs) with expectations for the number of individuals (assessed from the best represented element, usually the mandible). This illustrates greater conformity in loss between pits, whatever their bone density, whereas ditch results are distinctly different with the greater percentage of cattle material lost in the ditch being the most significant factor involved. These results suggest that different processes were at work in ditches and pits and that this was an opportunity to examine the nature of these processes in more depth. Although further study of the ceramics has altered the composition of the matrices used for this earlier multivariate study by Niall Griffith, the net changes are so slight that his conclusions hold and are presented below.

Middle Iron Age pits and ditches — relationship between four variables

Multivariate contingency testing on the relationship between the variables – species, anatomical element, fragment size, and deposit – was seen as an exercise to investigate the operation of depositional and preservational factors on the collection (or the part of it which was definitely associated with Phase 2 pottery), in the hope that some of these strands could be separated from the underlying evidence of Iron Age animal husbandry.

Variable 1 consisted of three fragment sizes, 0.75+, 0.5, and 0.25. Whole and 0.75 fragments were amalgamated because their frequencies were so low.

Variable 2, anatomical element, started with the ten bones chosen for the comparison of WBEs already listed in connection with percentage loss. They include the major meat-bearing bones, those which usually yield ageing data, and a range of durability from mandibles, which tend to survive for longest, to femur and ulna, which are often absent. Their nature allows a range of different types of fragmentation. They are all paired. Metapodials and phalanges were excluded because of the difficulty of weighting these components, which vary in number from species to species. Astragalus and calcaneum were included as representative of the lower limb, but it could be argued that they are frequently left on the carcase when lower limbs are removed. These ten elements were eventually reduced to seven for the bulk of the contingency testing by excluding mandible, astragalus and calcaneum. This was because the mandible fragments differently from other bones in pig but like mandibles of sheep and cattle. Astragalus and calcaneum are most often whole and low in numbers. Having recognised these points of aberrant behaviour it was decided to exclude these bones so that the data could be analysed as a matrix which was not dominated by these effects. The seven elements left were: scapula, humerus, radius, ulna, pelvis, femur and tibia.

Variable 3, species, contained the three common meat species, pig, cattle and sheep.

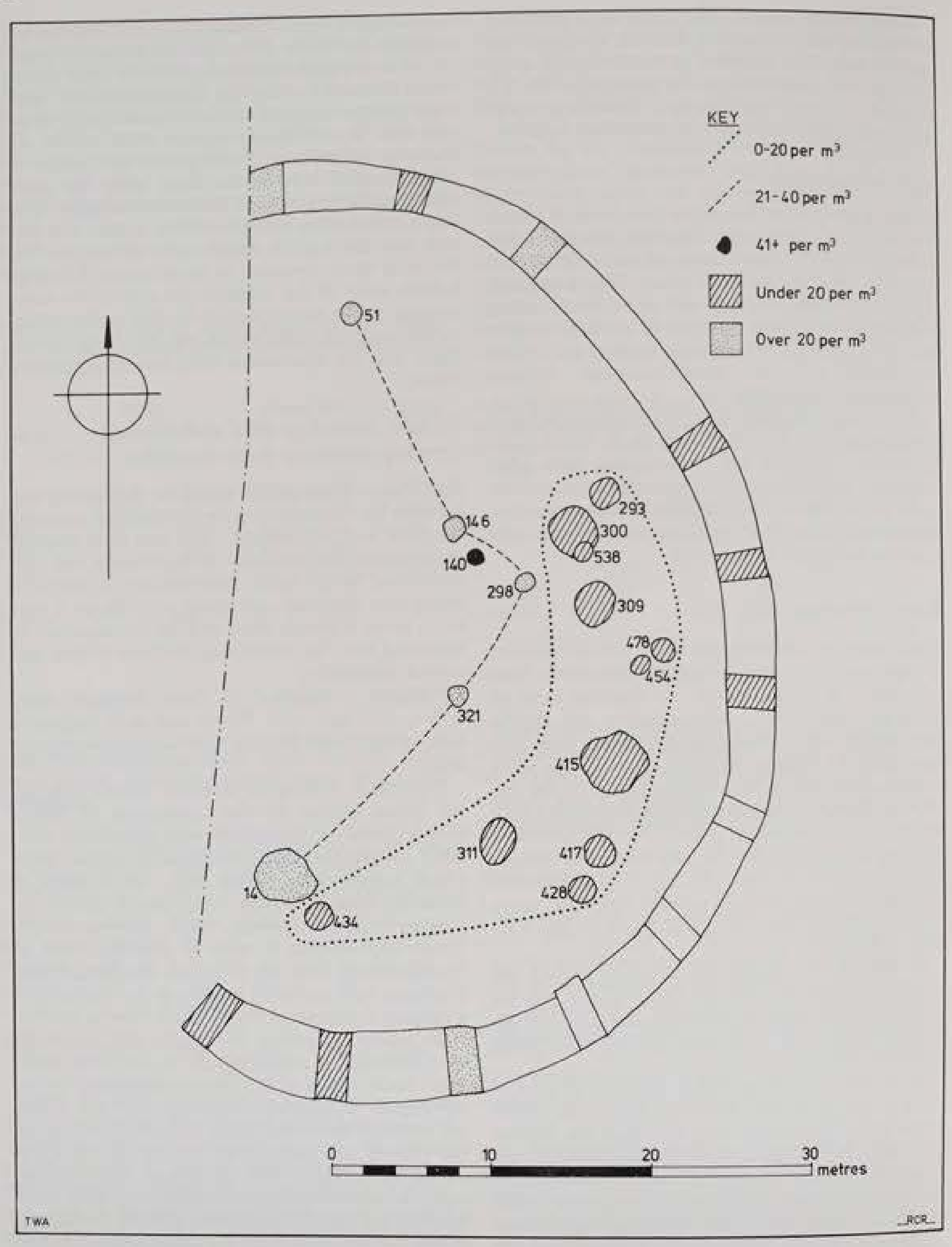

Fig 35. Plan of features within the Micheldever Wood 'banjo' enclosure showing densities of animal bone fragments recovered.

Variable 4, deposit type, contained two types only – pits and ditches – and represented bones from Middle Iron Age deposits only. The analysis did in fact include a fifth variable, settlement, as the results from three collections were used, but this will be ignored for this account.

Programmes provided by Professor Holt for the University of Southampton ICL 1900 series computer were used to fit log-linear models to this matrix of data. The results of the study are considered under two headings – main effects and interactive effects. Interpretation is attempted for each effect.

Main effects

Variable 1 – there were overall many more 0.25 fragments than 0.5 or 0.75+ fragments. This is most probably the result of complete utilisation of the carcases after death.

Variable 2 – there were overall more humerus, radius and tibia, and fewer pelvis, femur and ulna. Distal humerus, distal tibia and proximal radius have relatively early fusion times and a high specific gravity (Brain 1976, 111) so that this is most probably a result of differential survival rather than a result of butchery, which would not necessarily be the same for all species.

Variable 3 – there was overall more sheep than cattle bone and more cattle than pig.

Variable 4 – the pit sample was larger than the ditch sample. This was unfortunate, and any future study of this type should ensure that sufficient material from ditches is excavated if it is to be compared with pit results.

Interactive effects

The model that was fitted hypothesised interactions between variables 1 and 2, 2 and 3, 2 and 4, 1 and 3, and 3 and 4. This gave a chi-squared value on 78 degrees of freedom of 86.04, giving a probability of 0.249. A more perfect model could have been fitted by taking more and more variables into account but a balance between what the data will support and the regularities which unite the data in significant ways and can be simply understood has to be struck. To look at the individual interactions:

Interaction 1,2 (fragment size and anatomical element)
Variations were not great but 0.5-size ulna fragments were up at the expense of 0.75+ specimens. The shape of the ulna may make it more likely to fragment in this way or appear to be 0.5 when it is not. The 0.25 pelvis fragments were also overrepresented. This may be either a result of the shape of the pelvis – it is more susceptible to multiple fragmentation – or more complete utilisation.

Interaction 2,3 (anatomical element and species)
These variations were more marked. Humerus and femur were least variable between the species. There was marked variation between species in tibia (pig down and sheep up), radius (cattle down and sheep up), pelvis (pig down and cattle up), ulna (pig up compared with others), and scapula (sheep down, pig up). These specific differences could be brought about by different kill patterns, butchery, or bone specific gravity. An additional variable – age – would need to be considered to sort this out.

Interaction 2,4 (anatomical element and deposit)
Both scapula and tibia were more plentiful in the pits than ditches. Scapula shows the weakness of the rather crude size classification, as one scapula can produce many fragments which would be coded 0.25, and a 0.5 or 0.75 fragment as well.

Interaction 1,3 (fragment size and species)
Variation was large here. Sheep fragment size behaved similarly to the total results. Cattle 0.25 fragments were well up while pig 0.25 were heavily down and 0.75+ up. There does seem therefore to be a slightly greater chance of cattle fragmenting to smaller pieces, as already suggested in Table 11. On the whole, pig bones were from younger animals, so that their tenderness, small size, and more easy disarticulation may have led to the use of different cooking methods. These results do support the general hypothesis that large animals' bones are broken down more, but this is a theory that should be treated with caution as it depends upon the equal chance of retrieving and recognizing these 'small' fragments from both small and large species.

Interaction 3,4 (species and deposit)
There were more sheep fragments in the pits than in the ditch, while the converse was true for pig. The two main interpretive possibilities are that species were deposited differently in the two types of deposit and that they preserve differently under the two different situations, as may be represented by slow-filling ditches and quickly buried pit deposits. Any combination of these two could also occur. Peripheral movement of pig bones has been noted on other sites (Meadow 1975, 280).

Three factor interaction
Two small collections of Iron Age material from other settlements were used to introduce a fifth variable. The model fitted across the three sites together was a more complex one which hypothesised interaction between 3,4, and 5; and 1,3, and 5 as well as the interactions already mentioned above. This means that the size of fragment/species interaction and the species/deposit interaction described above were also site-related so that the points made for the 'banjo' enclosure under those headings do not *necessarily* hold for other sites.

Sample size was too small for other variables to be included in these studies, although it was clear that it would have been useful if state of fusion and part of the bone (distal, proximal, shaft *etc*) could have been included. If time had permitted it might have been useful to substitute these for fragment size. With a bigger sample, a smaller matrix – for example, one bone, one species – would also have given a different level of focus on the data. The computer coding scheme in use now should allow further studies of this kind for Winnall Down (Fasham 1985).

Ageing from jaws and epiphysis fusion

Binford and Bertram (1977, 105) illustrated that differences in the age of animals whose bones were exposed to dog destruction affected the pattern of survival of the different anatomical parts.

This also works in reverse, as assessments of age from epiphyses in particular must take into account differential preservation related to age. The same may apply to jaws (Binford and Bertram 1977, 98). These matters are discussed in a general way by Maltby (1982).

Griffith analysed 67 sheep jaws from Iron Age layers according to the method of Payne (1973) and grouped them as shown in Table 14. This suggested that the kill was spread over 2½ years from the age of 6 months to 3 years (using Payne's estimates for actual age). These results, although closest to results for a 'meat strategy' as described by Payne, diverge from them considerably. Griffith also suggested that the small representation in Stages A and B may be due to non-survival of very young jaws.

figures, cattle, for example, showed a loss of 48% from the fused epiphyses (all fusion groups) and 16% loss from the unfused epiphyses. Corresponding figures for sheep were 55% loss from fused and 13% for unfused. Pig figures were rather low for detailed analysis.

The picture for epiphyses is therefore extraordinarily complex and, for this small sample at least, there may be nothing gained from the evidence of epiphysial fusion until more is known about this aspect of differential preservation.

Animal sizes

Few bones were measurable, but all possible measurements were taken, according to the methods of von den Driesch (1976), with withers height calculations according to the recommendations of von den Driesch and Boessneck (1974). All measurements are available at the Faunal Remains Project.

Pig remains were all judged to be from domestic animals and typical of Hampshire Iron Age pigs with third lower molar lengths of 28.5–37.5mm.

The cattle were small with calculated withers heights from metapodial bones of 105–116cm (using the intermediate value for steer). Sheep withers

Table 14. Micheldever Wood 'banjo' enclosure: age groups for sheep mandibles.

Payne group	A	B	C	D	E	F	G	H	I	Totals
Suggested age	0–2m	–6m	–1y	1–2	2–3	3–4	4–6	6–8	8–10y	
Number of mandibles	1	3	16	15	8	10	12	2	0	67
%	1%	4	24	22	12	15	18	3	0	100%

It is likely that sheep kill patterns in the Iron Age did not mirror any particular strategy.

Cattle and pig, with only 26 and 27 jaws respectively, provided an insufficient sample for searching analysis.

Study of the epiphysis frequencies according to early, middle, middle/late, and late fusion groups, by Griffith, showed that only the Middle Iron Age sample was large enough to justify detailed analysis. In this, early-fusing, fused bones were over-represented. This supports results obtained in the multivariate contingency testing for humerus, tibia and radius. The figures are not given here as they are difficult to interpret and could be misleading, mainly because each animal represented by a fused, early-fusing bone could in addition have provided a wide variety of other fused and unfused epiphyses depending upon its age. Griffith attempted a more detailed analysis by associating the epiphyses in each group with each other group with which they could be consistent.

From this he derived predicted numbers of epiphyses for each category (fused and unfused, within each fusion group). When compared with the observed heights from various bones ranged from

53cm (tibia) to 60cm (metacarpus).
heights from various bones ranged from 53cm (tibia) to 60cm (metacarpus).

Horse withers heights ranged from 116cm (femur) to 140cm (tibia) – 11 hands to 14 hands. The dogs were in general about the size of a border collie, but this must not be interpreted as evidence of their function. A dog radius gave a withers height of 49cm (Harcourt 1974, 154).

The measured bones used to derive the figures above generally fit within the range of the Gussage All Saints material (Harcourt 1979) except that one of the pig molars and one cattle withers height were larger. Most of the measurements were for bones in the Middle Iron Age deposits and there were too few measurements from the other Phases to make any size comparisons.

Conclusions

This is the largest assemblage of animal bones from a 'banjo' enclosure to have been analysed in depth (but see also Clutton-Brock, in Perry 1982). The mixture of species from the site indicates that its function was quite varied. Although cattle would have provided most of the meat, sheep and pigs were strongly represented in terms of individuals.

The type of bone deposits examined suggest human occupation, and bone densities, in Period 2 at least, point to the focus of this activity.

Although the site provided an opportunity to attempt a comparison between pit and ditch deposits, the latter deposits were too small for this to be carried very far, although the investigations described here did suggest great differences in deposition, preservation, or both, between pits and ditches. There were also considerable differences in the patterning of remains between the three major species investigated, with pig fragments showing important differences. The use of Whole Bone Equivalents added to this information.

Most importantly, the detailed investigations by Griffith (1978) for this site showed the many ways in which the data can be interpreted and misinterpreted. From this study it is possible to develop ways of testing bone collections for compatability before comparing results from two sites. Only in this way will it be possible to recognise the real differences between sites or periods which are not the result (for example) of a difference in the types of deposit sampled. An assessment of the effect of several of the variables will be essential to this process as will an appreciation of the differential behaviour of bones from animals of different ages.

The human bone, by F V H Powell

This report is a summary of the human bone material; a more complete report is included in the archive (Powell 1978). In total, fourteen complete skeletons were represented. Miscellaneous bone from mixed features may represent more.

There were eight infant skeletons of less than seven months of age; three infant skeletons of between seven and twelve months of age; one female adolescent of twelve to fifteen years; one young male adult of eighteen to twenty years; and one male adult of advanced age. The remains were found in pits, in the enclosure ditch and in graves cut into the enclosure ditch. All but burial 275 in grave 820 were within the enclosure; frequently two or three burials were found in one feature. There were no apparent graves in the pits; rather, the remains had been dumped.

Burials in the ditch

Burial 126 in grave 457 consisted of two skeletons of probably newborn infants (Fig 15). The skeletons were laid on top of one another and only the uppermost was recorded in plan.

Both skeletons were more or less complete. One maxilla has a molar visible in the crypt. The mandibles are complete though unfused at the mental symphysis. Four loose teeth were included — all were unerupted. These are three incisors and one mandibular molar. It is possible that these two infants were twins. They were buried in the same feature and layer and have marked uniformity in their measurements. The greatest difference is 1mm in some of the long bone measurements. A unique closeness is surely indicated. Grave 457 in segment 2F, Middle Iron Age.

Burial 192 (Fig 15) comprised a complete infant's skeleton of approximately 6 months of age. Though the facial bones are missing, the mandible is complete in two halves, the mental symphysis not being fused. Four deciduous incisors and four deciduous molars can be seen in their crypts. Segment 19D, layer 630, Middle Iron Age.

Burial 193 (Fig 15) in grave 654, was the complete skeleton of an adult male of approximately 18 to 20 years. The muscle markings are moderate. The epiphyses of the long bones have fused, though those for the innominates are not completely fused. The central epiphyses have fused in the vertebrae, however; the line of fusion is still visible. The first sacral vertebra is unfused to the rest of the sacrum. Cribra orbitalis is present in the left orbit. A wormian bone is present to the left of lambda. A small round lesion is present on the right parietal near the sagittal suture. The cause of this lesion is unknown though it is probably not due to an injury. There is the possibility that it may represent the early stages of myeloma. Segment 19B, layer 639, Middle Iron Age.

Burial 169 (Fig 15) was a complete infantile skeleton of approximately 6 to 7 months of age. Tibiae and fibulae and a humeral epiphysis found elsewhere in this ditch segment probably belong to this skeleton, as those elements were not found in layer 580. Both halves of the mandible were found, with the mental symphysis unfused. Three deciduous teeth are in their crypts, about to erupt. They are the right central incisor, and the left and right deciduous molars. Segment 19B, layer 580, Middle Iron Age.

In layer 154 of ditch segment 2C were two infantile tibia (left and right) both without epiphyses, and in segment 2E, layer 440, were two adult parietal fragments with the sagittal suture. Both these occurrences are probably Middle Iron Age.

Burials in pits

Pit 8 produced two infantile skeletons. One is a complete skeleton of an infant of less than seven months and the other is an incomplete skeleton of an infant of the same age. In both cases the mental symphysis of the mandibles shows no sign of fusion and no teeth have begun to erupt. Middle Iron Age.

Pit 478 contained three infantile skeletons, all in layer 492 (Fig 15): burials 153, 208 and 236.

Burial 153 was the remains of a newborn or pre-natal infant. Burial 208 was that of an infant of 8 months to 1 year of age. Though only three fragments of the mandible survive, loose deciduous teeth from the maxilla were recovered. These are one central incisor, one canine, and three molars. The third infant, burial 236, was more fragmentary but could be aged as less than one year. In all three cases the development of the vertebral column and the bones of the skull was used to determine age. Middle Iron Age.

Pit 428 contained burial 142, the skeleton of a 12 to 15 year old female adolescent (Fig 16). The left orbit of the skull shows cribra orbitalis and a supercilliary notch. The palatine suture of the maxilla has not completely fused. Both left and right deciduous first molars had been retained into adult life. As a result, both second permanent molars had to erupt at a 45 degree angle into the mouth. The right deciduous molar shows marked attrition with loss of most of the enamel. There is slight attrition on the permanent molar and enamel polish only on M2. The third permanent molar had not erupted though the crypt was present. The mandible is complete. Alveolar loss was observed around the incisors with a slight build-up of calculus on all the mandibular teeth. The dental formula is:

				~~d~~						d					
(8)	7	6	5	4	3	2	~~1~~	1	2	3	4	5	6	7	(8)
(8)	7	6	5	4	3	2	1	1	2	3	4	5	6	7	(8)

A portion of another atlas of a larger and older individual was found with the vertebrae of the adolescent.

In layer 439 were a distal femoral epiphyses, the proximal end of a right ulna, three metatarsals, and one phalange. These bones probably belong to the skeleton from burial 142.

Also in pit 428 (layer 532) was skeleton 206 of an infant of probably 10 to 11 months (Fig 16). The skeleton is fragmentary but all elements are represented.

Pit 454 contained the incomplete skeleton of a newborn infant, burial 207 (Fig 16). Middle Iron Age.

There were also infantile bones in pit 14, layer 84, and pit 98, layers 100, 101 and 135. The former is Middle Iron Age and the latter Late Iron Age—Early Roman. There were three adult parietal fragments from Middle Iron Age pit 454.

Burial in a grave

Burial 275 was that of an adult male of mature age. The long bones are large with marked muscular attachment. Extensive arthritis was found throughout the joints of the body, particularly at the shoulder and in the vertebral column. The centra of the vertebrae are degenerated with pitting and erosion. Ventral and dorsal lipping produced marked ankylosis. The ribs too show signs of osteoarthritis with severe degeneration and lipping of the facets and heads. The left tibia has the proximal end missing with the distal end fragmentary. However, it is apparent that a partially-healed old fracture occurred at the distal end. Osteitis had developed as a result of the fracture.

The cranial vault is complete but the facial bones are very fragmentary. There is a severe degree of osteoporosis of the right orbit extending through the sinuses into the left orbit. The sinuses have been totally destroyed. Both mastoid processes display severe infections. The cranial surface is very rough and pitted which may be due to a scalp infection of some sort. The coronal suture of the skull is completely obliterated laterally and slightly obliterated centrally. The sagittal suture is nearly completely obliterated. Probably Roman in grave 820.

The plant economy, by M A Monk with a contribution by P Murphy

This report represents a combined assessment of the work carried out on the palaeoethnobotanical samples from this site by myself (M A M) and Mr P Murphy, to whom I am most grateful for access to, and use of, his earlier report on 140 of the samples recovered.

Sampling and recovery

The excavation provided an ideal opportunity to evolve a sampling and recovery programme for plant remains in the 'rescue' situation, using the specially designed M3 flotation machine (Lapinskas 1974).

Soil samples of 6,400cc each were taken from each layer of 50% of the exposed features, exclusive of post-holes, which owing to their stiff clay contents, were found unsuitable for flotation recovery.

In addition to this overall sampling strategy the entire contents of three pits were sampled by layer for purposes of a sampling experiment (fully discussed in Fasham and Monk 1978 and Monk and Fasham 1980).

The floated material (flot) was collected in a series of sieves of mesh sizes 1mm, 500 micron and 250 micron. All the flots recovered with the aid of these sieves produced large quantites of modern roots and also a number of modern seeds, even in samples from the bottom layers of some of the shallower pits. The presence of this material is in part the result of earthworm activity and partly the result of the root disturbance itself. These post-depositional disturbances are likely to have upset to a varying and unaccountable degree the stratigraphic relationship of many of the finds, but this disturbance is likely to be only peripheral, as the content and texture of each layer still appeared distinct; the disturbance probably has little effect on the overall picture of the pit.

Preservation of charred remains

Of the 640 samples sorted, 85% produced charred plant remains in the form of fragments of cereals and 'weed' seeds. The remains were, in general, poorly preserved, many of the grains being puffed and distorted. The representation of wheat glume bases was generally high, and although this was partly because the wheats were present in higher numbers than barleys, the rachis material of the latter tends to be less resistant to charring than wheat rachis and glume bases. Generally the proportion of carbonised cereal grain and seed fragments in the samples varied in frequency with the overall presence of carbon (wood *etc*), but in some of those samples that yielded a high proportion of carbonised wood, the cereal and 'weed' seed fragments were not correspondingly high.

Data presentation

The material from this site has been compared using three different methods: percentage presence (Hubbard 1975); percentage dominance (Renfrew 1972, Hubbard 1975); and percentage of grain fragments. Because the basic premises on which these calculations were made differ, the results are correspondingly different, although each method has its validity (see Monk forthcoming for discussion). Ideally all three methods should be taken together to allow for the differences, but for the purposes of this report only percentage presence and dominance are given (Table 15).

Table 15. Micheldever Wood 'banjo' enclosure: percentage presence and dominance analyses for cereal and grasses only, based on 472 Iron Age samples and 85 Roman samples.

Percentage Presence Analysis

	Iron Age	Roman
Hordeum vulgare/hexastichum	16	9
Hordeum sp	41	39
Triticum dicoccum	6	5
Triticum spelta	48	29
Triticum sp	59	36
Avena sp	7	4
Bromus sp	32	15

Percentage Dominance Analysis

	Iron Age	Roman
Hordeum vulgare/hexastichum	4	7
Hordeum sp	16	33
Triticum dicoccum	1	1
Triticum spelta	25	15
Triticum sp	22	–
Avena sp	1	2
Bromus sp	12	3
Gramineae (large)	5	–
Gramineae (small)	1	–
Galium sp	1	–

The plant economy

The majority of the plant fragments identified were of cereals, and the major component of these was the wheats (*Triticum* sp). Where specific identification was possible (mainly of the spikelet forks and glume bases and some well-preserved grains) the most common constituent of the wheat group was Spelt, *Triticum spelta*. Overall, barley fragments were found in fewer numbers. The presence of some rachis material and twisted grains suggests that the 6/4 row hulled barley *Hordeum hexastichum/vulgare* was the main component of the barley group present. The significance of this difference in representation between wheat and barley is uncertain, as it is fairly marginal.

The evidence from the three totally sampled pits shows a layer to layer percentage dominance variation in the two major cereal taxa present. The overall frequency of material was low (an average of 1.1 fragment per sample) with one or two exceptions, suggesting localised concentrations of fragments within these contexts (*eg*, layer 412, pit 293).

The interpretation of charred remains in the pits

The grain/glume base ratios for layers 293 and 298 in the pits (Table 16), and several other of the samples, show a preponderance of glume bases (chaff) over grain for the wheats. Such a high representation of glume bases might be expected had the grain been stored with its glumes still attached (*ie* in the ear) and then subsequently overcharred in the roasting process necessary to remove the glumes prior to threshing or domestic use – grinding to produce 'bread' flour. However, the large numbers of weed seeds present (see Table 16 for grain/weed seed ratios) would suggest that this material was in fact

Table 16. Micheldever Wood 'banjo' enclosure: ratios of grain to chaff and grain to weed seed in pits 293 and 298. Details for individual cereal taxa are in the archive.

Pit 293	Grain:chaff	Grain:weed seed
Layer 294	1:1.7	1:0.35
Layer 325	1:1.3	1:0.94
Layer 375	1:1.64	1:1.8
Layer 334	1:0.15	1:0.78
Layer 392	1:0.91	1:1.79
Layer 412	1:0.14	1:1.42
Layer 413	1:0.23	1:1.28
Layer 486	1:1.62	1:1

Pit 298		
Layer 299	1:5.1	1:0.66
Layer 303	1:0.16	1:0.41
Layer 306	1:0.35	1:0.23
Layer 307	1:1.87	1:0.55
Layer 314	1:1.09	1:0.53
Layer 375	1:1.62	1:0.39
Layer 377	1:1.16	1:0.83
Layer 378	1:0.28	1:0.95
Layer 394	1:2	1:1.22

waste from threshed and cleaned grain. Much of the grain itself was poorly formed, shrivelled in appearance, and many of the barley grains were unfilled laterals. The material has the appearance of waste from stage 12 in the crop processing sequence recently outlined by Hillman (Hillman 1984 and 1985).

Amongst the significant weed contaminants present were large seeded grasses of the *Bromus mollis/secalinus group* (Chess/Brome, known collectively as the *Eubromus* group). It has been suggested by Hubbard that the high representation of *Bromus* on British and continental sites indicates that Brome was being grown as a crop in its own right (Hubbard 1975). The basis on which he makes this interpretation is, however, open to dispute at a site level. The high concentrations of *Bromus* from the Iron Age sites at Owslebury, Portway (Murphy 1977a) and the 'banjo' enclosure in Micheldever Wood seem to correlate very well with the high incidence of Spelt at these sites, raising the likelihood that Brome was in fact more likely to have been a weed of this species and not a crop in its own right.

The presence of cereal waste material demonstrates that crop processing entailing threshing, winnowing, preliminary cleaning, roasting, pounding, secondary and sometimes tertiary cleaning was taking place on or near the site. It seems then that this waste material was either burnt because it was unwanted and disposed of in disused storage pits (if that was their primary function in every case) with other agricultural and domestic rubbish, or more likely, was accumulated in special 'chaff' stores and systematically used as tinder to fire kilns, ovens and possible domestic hearths. Such a practice is still commonplace today in other paperless, traditional agricultural societies in the Near East. In Turkey for example, the clay bread ovens are pre-heated with chaff waste, sometimes with twigs and cow dung added, the weed seeds in the dung being carbonised along with the weed seeds in the chaff waste (Hillman pers comm). This technique is extremely efficient at heating since, within a short time, the oven is hot enough to take the bread dough; the glowing heat created by the chaff and dung being radiated by the clay walls inside the oven. When the oven is judged sufficiently hot, the charred chaff *etc* is raked out and the dough put in. A similar technique, minus cow dung, and using an inverted pot over a stone slab heated with chaff has been recently described by David (1977, 307); allegedly such a technique has had a long history in British cookery. It is more than likely that the charrings raked out from these ovens could end up in midden areas like pits, if they were not being spread on the fields as fertiliser. In Britain before the days of mains drainage and sanitation the cinders from fires were used to help break down and filter the aroma from the organic matter in cess pits (Monk 1977).

In eleven of the twenty-six sampled contexts for which it was possible to produce a grain/chaff ratio for the wheats, grain exceeded the glume base/spikelet fork element by between 1.3 and 3. The samples with such ratios also contained fewer identifiable fragments than those where the grain to glume base ratio favoured the latter. The explanation for this is not clear though it is likely that the material had derived from grain that had been totally processed, had been stored and was being prepared for grinding when it was accidentally burnt and disposed of in a midden pit. Alternatively, this material may represent waste from storage material that had been burnt during the process of sterilising storage pits by fire and disposed of with other rubbish in the pits (Reynolds 1974).

Discussion of plant remains by Phase

Most of the deposits sampled for plant remains are, by ceramic association, Middle to Late Iron Age in date (Phase 2) but some samples came from late Roman deposits (Phase 4), particularly the upper layers of pit 298 (layers 299 and 303) and pit 293 (layer 294) which were probably filled by natural deposition in this phase.

Phase 2. Middle Iron Age

In most of the samples from this Phase, wheats were the single most prominent taxa recovered, and of these, fragments that could be identified to species were in the main spelt (*Triticum spelta*). Also present, though in smaller numbers, were grains and glume bases that resembled the other main hulled wheat, Emmer (*Triticum dicoccum*). The identification to this species can only be tentative especially in the case of grain because the spikelet grains of spelt can resemble emmer. Given the predominance of spelt, many of the dubious grains may also belong to this species, especially since very few glume bases were identified as emmer. Nevertheless, the occurrence of emmer is not unusual in Iron Age contexts. A recently recovered deposit of carbonised grain from the Breidden hillfort in Montgomeryshire was made up almost totally of emmer (Hillman pers comm).

Spelt was however the main wheat staple for the Iron Age and Roman periods in southern Britain, and has been found in large numbers from other Iron Age sites in central southern England including Winnall Down, Portway, Owslebury, Winklebury (all in Hampshire) and Fifield Bavant and Rotherley in Wiltshire (Monk 1985, Murphy 1977a and Jessen and Helbaek 1944, Helbaek 1952). Applebaum (1972) argues that the winter hardiness of spelt (it is much less susceptible to frost than the other cereals, Percival 1921, 326) may have insured its popularity with the Iron Age communities of northern Europe.

Of secondary importance in terms of numbers of fragments identified, but none the less significant, was barley (mostly six row hulled barley *Hordeum vulgare/hexastichum*). This barley group is, once again, found on many Iron Age sites and at Owslebury and Winnall Down actually predominated over the wheats (Monk 1985).

The hulled wheats, particularly some varieties of spelt, were harvested before they were fully ripe because on ripening the rachis becomes brittle and causes the spikelets to shatter and seed themselves, a genetic characteristic retained from the wild progenitors of the wheats (Percival 1921). These features of spelt varieties necessitated drying or parching the grain both to extract some of the moisture content (to harden the grain) and to facilitate the separation of the grain from its tightly fitting glumes. Corn drying would also have been necessary for most crop species in northern climates, given the higher propensity for damp harvests in these areas. For both of these reasons grains of all species would at drying time have been exposed directly or indirectly to heat from an open fire, a situation which could easily lead to accidental charring. It is possible that barley may have been less exposed to charring than wheat as it may have been less necessary to parch it to remove unwanted glumes (although barley is, however, often roasted, particularly after it has sprouted and prior to grinding in the malting process). If, however, it can be argued that barley would have been less exposed to fire than wheat it is likely to be underrepresented relative to wheats in samples of charred material.

The slight weighting towards spelt may in fact mirror a real situation, especially since wheat production would be well suited to the mineral rich soils of the superficial clay-with-flints in the catchment area of the 'banjo' enclosure. The contrasting concentration of barley production at Owslebury and Winnall Down could be similarly explained by recourse to the soil preferences of barley, a hardier crop than wheat in its soil requirements and more likely to thrive on the dry chalkland soils around these two sites. Several recent papers have emphasised the consideration that should be given to soil/sub-soil type when interpreting past agricultural preferences (Dennell 1977, Marshall 1978). This approach is certainly valid, but with qualifications, especially when the studies are based on present-day soil types which are likely to have undergone considerable alteration since the Iron Age. It could also be argued that to suggest that crop preferences were determined simply by soil type does not leave much room for the influence of cultural choice.

Several other species were tentatively identified in the Iron Age samples, including grains of naked barley and rye. Naked barley has been found from other Iron Age contexts including Fifield Bavant and Hembury while rye has been recovered from samples at Maiden Castle, Winklebury and Fified Bavant (Helbaek 1952). The identification of rye is however tentative because deformed grains of spelt can often resemble rye, especially likely to be the case in the absence of confirmatory evidence from rachis material.

A number of indeterminate grains of oats were also found but, in the absence of their lemma bases, it is not possible to ascertain their species. The cultivated oat *Avena sativa* has however been found in Iron Age contexts at Maiden Castle and Fifield Bavant (Helbaek 1944 and 1952). Of the grasses, only *Bromus* sp (Brome grasses) could be adequately determined; the high representation of Brome has already been commented upon.

There were, in addition, a large number of leguminous (family Leguminosae) species, particularly *Trifolium* (Clovers), *Medicago* (Malick) and *Vicia* (Vetches) groups. Although some of the members of the *Vicia* group have in the past been actively cultivated, this possibility cannot be proved for the Iron Age material and the occurrence of these species is more likely to reflect their status as weeds of cereals. The common vetch *Vicia sativa* was grown in south and central Europe as a fodder crop in the nineteenth century (Pierpoint Johnson 1862, 80). There were however two tentative identifications made of fragments of the cultivated pea *Pisum sativum*, but minus hilums. Peas have been recorded from other Iron Age sites, including the Glastonbury lake village (Reid 1916, 629).

In addition to those already mentioned, quite a range of weed seeds was recovered including *Galium* sp (cf *aparine* – Goosegrass or Cleavers) *Polygonum convolvulus* (Black Bindweed), *Rumex* sp (the Docks), *Chenopodium album* (Fat Hen), *Lithospermum arvense* (Corn Gromwell), *Plantago* sp (the Plantain group), *Valerianella dentata* (lambs Lettuce, Corn Salad), *Stellaria* sp (Chickweed), *Cerastium* sp (Mouse-ear Chickweed) and *Chrysanthemum segetum* (*Corn marigold*). Many of these species/genera are specifically weeds of cornfields; *Galium* sp (cf *aparine*) being an indicator of autumn sown cereals. Several of the species represented here, like *Chenopodium album*, *Stellaria* sp, *Galium* sp, *Atriplex* sp and *Hyoscyamus niger* (Henbane), are also found in ruderal habitats (nitrogen-rich areas) around human habitations. The eradication of all these weed species, some of which are particulary pernicious, from cereal crops would have posed quite a problem for the Iron Age farmer. The only other notable find from Iron Age samples was a carbonised cherry stone (*Prunus avium*), a small reminder that the wild fruit and nut harvest in the autumn was being utilised to supplement the diet at this time (Murphy 1977b).

Phases 3 and 4. Roman

The remains from these Phases came mainly from the upper layers of pits 8 and 293. In all there were 85 samples of Roman date and from these the range and representation of the cultivated and wild species appeared to be similar to the remains from the Iron Age samples. However the total percentage presence of these samples shows the barleys (*Hordeum* sp) at 39% in comparison with the wheats (*Triticum* sp) which had an overall percentage presence of 36%, 29% for spelt alone. This difference of 3% is hardly significant and could arise from the inherent bias of a small number of samples. The influence of the imposition of Roman order on the small native farmsteads has yet to be adequately studied (Applebaum 1972 provides the most up-to-date study), though as might be expected, the demands of a standing army and the development of a cash crop system of husbandry on larger estates would have had their effects on crop husbandry.

Spatial distribution of the plant remains across the site

A dominance analysis was carried out for the two major cereal taxa recovered from those contexts of Iron Age date.

The resulting spatial comparison between the wheats and barleys suffered from a number of biases, particularly the disproportionate number of samples from different contexts. The large number of samples from the totally-sampled pits heavily weighted the distributional study. However, the insight into the stratigraphic distribution of plant remains in these pits has been invaluable in suggesting that there was probably a similar alternate dominance by layer or groups of layers of wheat and barley in all the pits sampled. In the case of pit 293, wheats were dominant in the upper layers and barley in the lower, whereas in the case of pit 298, the situation was reversed. The tentative interpretation of this evidence is a short term, perhaps seasonal, variation in the deposition of tinder waste from ovens and kilns into the pits, the implication being that the 'chaff' waste produce from crop-processing of different crops was kept and used separately. Whether such a rigid practise of 'chaff' use is the explanation for the alternate dominance of wheat and barley cannot be proved but there is some evidence to suggest that traditional agricultural societies managed their waste from crop processing separately, only amalgamating the chaff stores at the end of the season (Hillman pers comm). Such an amalgamation is suggested for layers 375–378 in pit 298 which show an equal dominance of wheat and barley.

The likelihood of this alternate dominance of wheat and barley in all the pits makes the results of any distributional study based on only a few samples from each pit at best difficult to interpret and at worst invalid. However, the exercise was carried out and some information, within the limits of the study, was obtained to suggest the localised dominance of barley waste in three areas, around pit 51 in the north of the site, around pit 293 in the centre of the excavated area, and around pits 311 and 428 in the southern part of the site.

A parallel distribution study was made on the average number of fragments in each context in order to establish any localisation of deposition of tinder across the site, but the small variations from pit to pit did not amount to a pattern that could be interpreted on the present evidence. The net result of both distribution studies was inconclusive.

Charcoal, by C A Keepax

Seven hundred and ninety samples containing wood charcoal were examined, of which 45 were completely unidentified due to the extent of charring or because the charcoal was knot wood. The samples

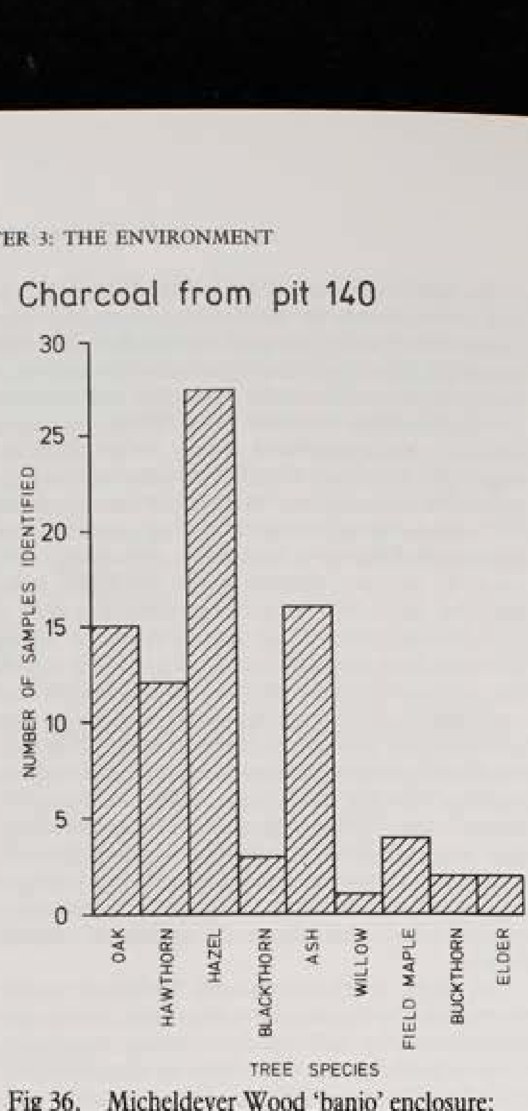

Fig 36. Micheldever Wood 'banjo' enclosure: histograms of wood charcoal species identified from pit 140.

were normally single pieces collected during excavation and not derived from flotation and thus less than 3% of the samples contained more than one taxon.

The following tree types were identified (in approximate order of frequency of occurrence): hazel (*Corylus avellana* L), oak (*Quercus* sp), 'hawthorn-type' (Rosaceae, subfamily Pomoideae), ash (*Fraxinus excelsior* L), *cf* blackthorn (*Prunus* sp), maple (*Acer* sp), elder (*Sambucus nigra* L), buckthorn (*Rhamnus catharticus* L), willow (*Salix* sp), holly (*Ilex aquifolium* L), 'poplar' (*Populus* sp), alder (*Alnus glutinosa* (L) Gaertn, one sample) and hornbeam (*Carpinus betulus* L, one sample). Most fragments were identified to genus level, but specific names are given when there is only one native species. Willow and poplar are difficult to separate, but it seemed likely that both types were present. A histogram of charcoal from the Middle Iron Age pit 140 is shown in Fig 36.

It appears that sufficient samples were identified from this site to provide a full picture of the tree types represented in the deposits. The number of taxa identified increased as the first 300 samples were examined, but after that point no new types were recorded.

It may be of some interest to compare these identifications with data from 100 lowland sites examined at the Ancient Monuments Laboratory (Keepax 1977). The five generally most common species (hazel, oak, 'hawthorn', ash and blackthorn) are also the most common within the 'banjo' enclosure. In contrast, alder, birch and willow are usually fairly common but are virtually absent from the 'banjo' enclosure.

It is extremely difficult to interpret these results because most of the charcoal from the site was scattered in pits and ditches and therefore the original context is unknown. It is likely that much of the wood utilised on the site could ultimately have been used as fuel.

A simple 'fuel selection' hypothesis could however be used to explain the charcoal results. The four most common species (oak, ash, hazel and hawthorn) provide good fuel (Edlin 1949) and therefore may have been preferentially selected. Alder and willow (present in only a few samples) are poor firewoods unless well seasoned (Edlin 1949). However, oak, hawthorn, hazel, blackthorn and ash are all very common species of mixed oak forest, scrub, hedges *etc* on many soil types (Clapham *et al* 1962) and their abundance at the Micheldever Wood site might equally reflect their availability. Alder and willow generally prefer damp conditions and their virtual absence could also be interpreted as relating to environmental factors.

If a desired tree was not available locally, this could have been imported into the site. The taxa identified were therefore not necessarily present in the vicinity of the site. However, none of the tree types identified are obvious imports. Field maple and buckthorn both occur mainly on calcareous soils today (Clapham *et al* 1962).

The results probably represent the selective activities of man, largely within the local environment. Without supporting evidence (*eg* pollen analysis) it is impossible to establish the extent to which these results are influenced by man or the environment.

Resources and time meant that it was possible to examine only a few of the samples that had been processed by flotation and it was decided to examine pit 293. Thirty-one of the flotation samples from pit 293 were randomly selected for identification. Most of these were very poor in charcoal and seldom contained more than 10 fragments. This made detailed comparison between samples impossible. The following seven taxa were identified from the feature: Rosaceae, subfamily Pomoideae (*eg* hawthorn), *Corylus avellana* L (hazel), *Quercus* sp (oak), *Acer* sp (*eg* maple), *Prunus* sp (*eg* blackthorn), *Fraxinus excelsior* L (ash) and *Alnus glutinosa* (L) Gaertn (alder, one sample only). All of these were present in the 790 hand-excavated samples.

There were few differences between the hand-excavated and flotation charcoal results for this feature. The same taxa were present, apart from tentative identifications of one fragment each of *Ilex* sp and *Rosa* sp in the hand-picked material, and the presence of *Fraxinus* sp in a few of the flotation samples. The latter was, however, represented in hand-excavated samples from other features. The proportions of the various taxa were roughly similar, apart from a rather larger amount of Pomoideae in the flotation samples. The significance, if any, of this is not yet apparent.

Radiocarbon dates

Seven radiocarbon dates were obtained from three pits. They were selected in order to assist the development of a sequence for the ceramics. As Table 17 reveals, the dates from pits 14 and 415, especially the latter, are consistent, but the two dates with medieval determinations do not belong in this sequence. These two are anomalous.

Observations on the radiocarbon dates, by D Haddon-Reece, Ancient Monuments Laboratory

The seven radiocarbon results for this site, all from charcoal, are listed in Table 17; they give dates for three pits. It has been possible to derive a statistical group mean date for each pit, and to calibrate the final dates using the R M Clark (Clark 1975) calibration curve.

Table 17. Micheldever Wood 'banjo' enclosure: radiocarbon dates.

Harwell Number	Context		Date	
HAR 2770	pit 14	layer 354	2150±70bp	200bc
HAR 2693	pit 14	layer 103	1930±70bp	20ad
HAR 2780	pit 14	layer 75	2070±90bp	120bc
HAR 2799	pit 415	layer 575	2290±70bp	340bc
HAR 2604	pit 415	layer 500	2290±110bp	340bc
HAR 2800	pit 140	layer 206	750±80bp	1200ad
HAR 2795	pit 140	layer 201	830±90bp	1120ad

Amalgamation of measurements

A straightforward arithmetical mean would be incorrect, as both the date and its error term need to be taken into account for each result. Appropriate techniques are given in Wilson and Ward (1978) and Topping (1972); these are used both by AERE Harwell and the Ancient Monuments Laboratory (Haddon-Reece 1984).

If it can be assumed that the dates in a group are replicate determinations of the same chronological event, apparent differences representing no more than random variations in sampling, the group can be tested for consistency. This assumption – the Null Hypothesis (N H) – is essential to the test. If the test fails, the N H must be abandoned, evidence for a real difference in age of the samples must be accepted, and no melding allowed.

In this examination of Micheldever Wood results, it can be assumed that the pits were backfilled rapidly, which is supported by the pottery evidence for a single Phase. Samples may therefore be thought of as contemporary and the test is admissable.

Applying the test to each pit in turn it was found that, on the basis of the statistics, there is no reason to reject the assumption that the samples are contemporary, and that the pits themselves are not. The dates may therefore be fused as in Table 18.

Calibration of amalgamated results (Table 19)

These amalgamated dates have been calibrated with the R M Clark curve. Ranges are given rather than plus/minus terms, as they have more meaning. The conventional 68% confidence range corresponds to +/−1 standard error, and the 95% range to +/−2.

It is noticeable that in pit 14 there is an inversion of dates, layer 103 being apparently younger than layer 75 which covers it. This anomaly is frequently observed in radiocarbon dating, and has no real validity; the different dates could easily be random variations within the overall distribution. The same explanation applies to pit 140. The effect, however, does emphasize the need to take account of the plus/minus terms.

The seemingly medieval date of pit 140 cannot be explained by examination of the radiocarbon results. The two dates given readily fuse under the statistical process, no fault could be detected in the statistical process, and no fault could be detected in the scientific assay. Jill Walker, of the Isotopes Measurements Laboratory at Harwell reports that:

'Neither sample was of optimum size but they made 3.5g and 2.6g of benzene respectively and the yields in the chemical processes were good (=90%). There is no problem with the delta–C13 values (a useful quality control): −26.1%, and −24.9%, are typical values for charcoal.

Basically, therefore, I can find no technical reason for doubting the results of these samples and fear we can be of little assistance in explaining them.'

It was noted, however, that pit 140 was shallow. The charcoal could derive, for instance, from the burning of a medieval tree which had rooted into the pit, or from burrowing creatures disturbing the layering; rodents or moles, for instance.

Table 18. Micheldever Wood 'banjo' enclosure: radiocarbon dates amalgamated by contexts.

	Context	Depth (cm)	Harwell number	Date (bp)	Amalgamated date (bp)
Pit 14	354	180	HAR 2770	2150+/−70	
	103	120	HAR 2693	1930+/−70	2050+/−70
	75	100	HAR 2780	2070+/−90	
Pit 415	575	170	HAR 2799	2290+/−70	2290+/−60
	500	50	HAR 2604	2290+/−110	
Pit 140	206	60	HAR 2800	750+/−80	785+/−60
	201	30	HAR 2795	830+/−90	

Table 19. Micheldever Wood 'banjo' enclosure: calibration of the amalgamated radiocarbon results.

	Melded result	Calibrated result	68% range	95% range
Pit 14	2050+/−70 bp	95BC	180–25BC	340BC–AD110
Pit 415	2290+/−60 bp	420BC	450–390BC	510 –270BC
Pit 140	785+/−60 bp	AD1230	AD1180–1290	AD1070–1340

Chapter 4

General Considerations

There is no doubt that the enclosure falls into the class of site that has been defined by Perry and Bowen as a 'banjo' enclosure (Perry 1982). These small circular or semicircular enclosures with an enclosed area of between 0.2 and 0.6 hectare (½ to 1½ acres), or an internal diameter of 50 to 80 metres, are approached by 18–85m long entranceways delineated by parallel, or almost parallel, ditches some 4m apart. The ditch systems often continue beyond the extremities of the entranceway to form larger complexes which frequently encompass the original 'banjo' enclosure. Where the complexes survive as earthworks the banks of the 'banjo' enclosure and the entranceway are always external to the ditches. The distinctive morphologically defined shape must be a manifestation of a functional purpose or purposes.

There are perhaps fifty 'banjo' enclosures known, distributed mainly in Dorset, Wiltshire and west of the river Meon in Hampshire with some outliers in Somerset, Kent, Surrey and Oxfordshire (Fig 37). This distribution, particularly within Wessex, is reasonably consistent with that of the Bronze Age linear ditch system (Bowen pers comm). There is a marked concentration of the enclosures around Micheldever in central Hampshire. No 'banjo' enclosure has been totally excavated and only three have been investigated by excavation. At Blagden Copse,

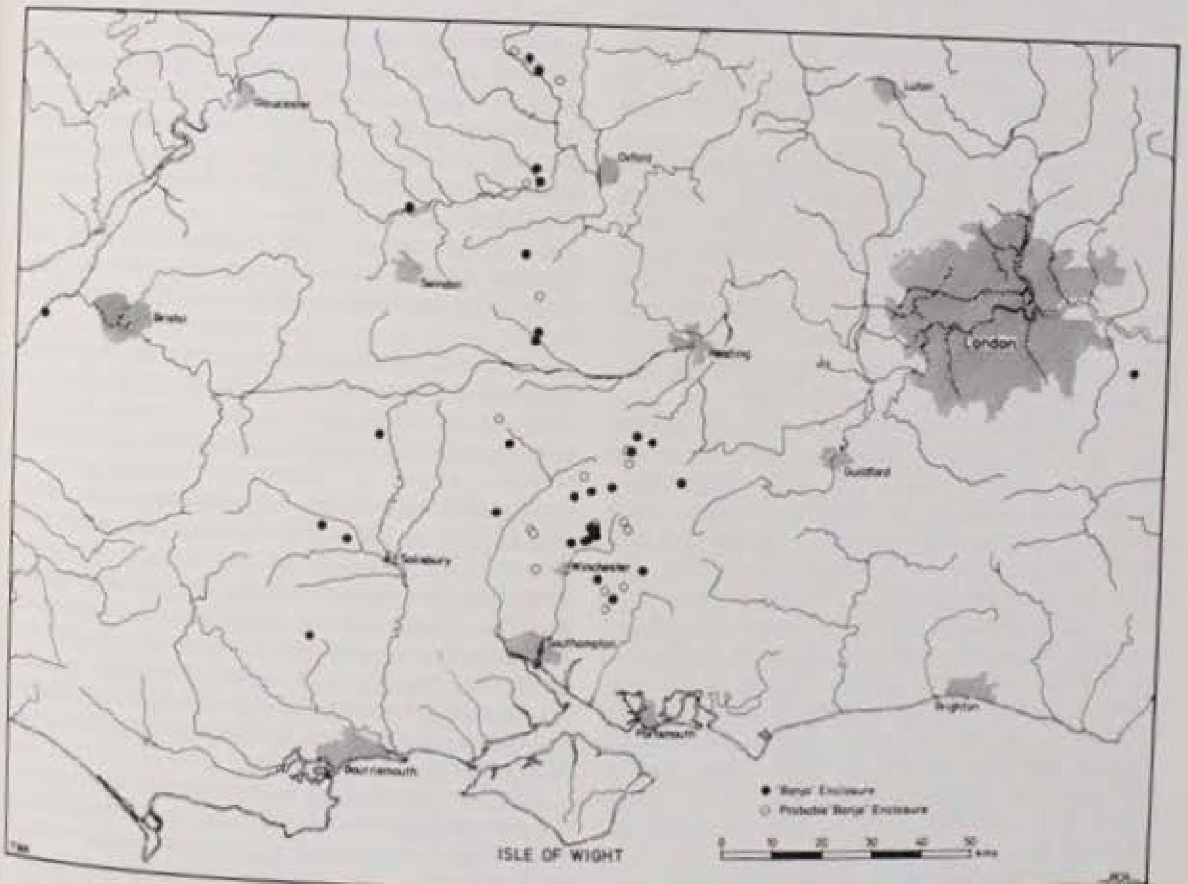

Fig 37. Distribution of 'banjo' enclosures in central southern England.

a series of trenches was cut across the entranceway ditches (Stead 1968). The entrance area and about a quarter of the interior of the enclosure at Bramdean has been excavated since 1965 (Perry 1972 and 1982). In Micheldever Wood, about two-thirds of the interior of the enclosure and a large part of the entranceway has been examined. The site at Owslebury (Collis 1968 and 1970) does not meet the criteria for a 'banjo' enclosure.

The Micheldever Wood 'banjo' enclosure saw its main period of occupation in the last two centuries BC. The possible dew pond to the north of the enclosure may have been a contemporary source of water. Although difficult to reconstruct, the immediate environment around the site is likely to have contained both arable and pasture fields, woodland – probably managed – and a certain amount of scrub. There were impressions of bracken (*Pteridium aquilinum*) on some of the daub fragments. The bracken may have been used for bedding for animals, as it has been by hill farmers in Britain until recently, and therefore would likely have been growing very locally to the site. It is a plant characteristically found in oak and birch woodland on light, rather acid, soils but one which does not tolerate very dense shade and is usually found in rather open areas or woodland margins. The clay-with-flints adjacent to the site might have provided a suitably acidic soil for bracken. It grows vigorously after woodland clearance and can dominate grassland which is subject to regular fires or heavy grazing (Dr Edwards, University of Southampton, pers comm). This perhaps indicates a variegated and exploited local environment.

The presence of the bracken fern has implications for livestock. Grazing animals are liable to eat the young fronds in the spring, especially if the weather delays the growth of grass. Bracken however is toxic and produces more than one type of agent harmful to livestock. The toxic effect varies from breed to breed and is more acute in some animals than in others (Evans 1976). Wild boar controlled bracken in German forests by rooting up the rhizomes.

The exhaustive experimentation with the animal bone data has indicated the potential for major interactive studies. Pigs are well represented, perhaps kept partly in the woodland fringes, even perhaps to control the bracken. Together pig and sheep may have provided almost one-third of the meat, but interestingly the recovery of bones indicates that more fragments of pig bones occurred in the ditch than sheep, while the densities in the pits are reversed. Although factors relating to the preservation of bone may be a cause of these observed differences, it seems more likely that human agencies and the manner in which these species were regarded accounts for the differences. Cattle would have provided most of the meat for the community.

The comprehensive study of the carbonised cereal and weed seeds indicates that crop processing was occurring within or near to the site. The work would have involved threshing, winnowing, cleaning (perhaps two or three times), roasting and pounding. The rubbish derived from these activities could have been swept into adjacent and abandoned storage pits or may have been used as a form of kindling for fires and ovens. When the charred material was raked out of the fires or the hearths it would most likely have been dumped into a convenient pit. Dr Monk rightly refers to midden areas and thus raises the possibility of rubbish dumps existing above ground. Such dumps may have been only temporary and pushed into the pits once the grain had been emptied out. There is no extant evidence from this site for middens.

Spelt wheat was the dominant cereal remain and presumably was the major cereal crop produced around the 'banjo' enclosure, as indeed it was for most of southern Britain at this period. The weed *Galium* sp (*cf aparine*) is indicative of autumn sowing and here there may be a clue to the local agricultural cycle with some cereals being sown in the winter. Several of the weeds that can be identified are often found in farmyards and around human habitations and include the poisonous henbane. Root crops and peas and beans have no real contact with fire in the normal course of events and thus are very rarely preserved amongst the carbonised cereals. Undoubtedly though, these vegetables would have been grown and indeed fragments of the cultivated pea were discovered by Dr Monk.

The Iron Age burials were discovered in the pits and ditches. The ditch burials were in what appeared to be deliberate graves whereas the inhumations in the pits were within the back-fill, the rubbish, of the pits and with no apparent graves. There was a very high incidence of child burial with only one adult of 18–20 years being buried.

A national survey of pit burials showed that less than one-third, 54 out of 174 recorded burials, were of children less than two years old (Whimster 1981, Fig 5).

The child burials included a newborn or perhaps pre-natal child, and two newborn children of unique closeness buried in the same grave – these two may have been twins. During the Iron Age the tradition of burial in pits or ditches does seem to reflect a certain lack of concern for conventional funerary rites (Whimster 1981, 191). It is hard to imagine that the partly-filled pits and ditches of the 'banjo' enclosure were used deliberately for the burial of young children to the exclusion of adults. The adults must have been buried or cremated elsewhere; the pattern of funerary practice in the Iron Age remains egnimatic. It would seem logical that the deceased infants buried within the 'banjo' enclosure were the children of the occupants of the site.

The site was modified in the first century AD with the extended system of outer ditches and the east-west aligned track skirting the south side of the enclosure ditch. The function of these ditches is not clear, but around many 'banjo' enclosures there are similar configurations. It is not too surprising that there were modifications. All working systems of agriculture and settlement are dynamic by nature and these modifications are to be expected.

The topographic aspect of 'banjo' enclosures might seem at first glance to give a clue to function. Of the seventeen sites on Fig 38 only four have entranceways which point downhill in the general direction of a valley bottom and only three are aimed at a valley containing a stream or river, or one likely to have contained a river. These three sites are located 1km, 1.65km and 2.3km from the River Itchen. Geological conditions may have been more of an influence in terms of location. Most of the area in Fig 38 is on upper chalk with a certain amount of alluvial material in the river valleys and patches of clay-with-flints covering less than 10% of the surface area. However, of the 'banjo' enclosures in that area, five are located on clay-with-flints; two are within 50m, five within 500m and the remaining five are 650m to 2500m removed from the clay-with-flints. Within the central portion of Fig 38 almost half the area is covered with clay-with-flints and within that 3km by 7km area are to be found eight of the probable 'banjo' enclosures. It is possible that enclosures in Micheldever Wood might have developed as a consequence of the sub-soil type demanding a different agricultural regime.

The enclosure at Bramdean (Perry 1972 and 1982) is situated adjacent to a Roman villa but the general concept of 'banjo' enclosures and their relationship to Roman sites needs some thought. Only two of the seventeen sites are immediately adjacent to a subsequent Roman site with some pretentions – that is, where at least stone walls have been recorded. The other sites range, in distance from a substantial Roman site, from 200m upwards to several kilometres. Roman sites with only timber buildings and enclosure ditches, which may form a lower stratum of Romano-British society, almost certainly are present amongst the palimpsest of crop and soil mark sites which tend to cover central Hampshire. It is perhaps not too surprising that 'banjo' enclosures are to be found on land later utilized in the Roman period and indeed, as with the site in Micheldever Wood, were themselves adapted in the period after the conquest.

The internal evidence from the Micheldever Wood 'banjo' enclosure seems to firmly indicate that the site was not just used but was also lived in. There was no substantial structural evidence for post-holes in the entranceway, but the long approach must relate to a specialised function. It is only speculation, but that function is almost certainly associated with one or more aspects of animal husbandry providing a facility for gelding, shearing, branding, slaughtering etc. The animal bone evidence does tend to suggest that the beasts were not slaughtered in any substantial way on this particular site. At Bramdean (Perry 1972) the ten post-holes in the gate area were interpreted as a double gate of a single phase which, if connected longitudinally, would have provided a small enclosed area of 3.8m by 3m. It could well be that this is where the activity took place. One other possibility that modern horse riders have noted is that the diameters of the enclosures in Micheldever Wood are comparable to the size of the circle used today for training horses on the end of a rope, although this would not be feasible if there were permanent or semi-permanent structures. The small structure in the Bramdean enclosure has proved suitable when reconstructed for the individual handling of sheep (Perry 1982). The two dozen or so pits at Bramdean seem to be spread around the perimeter of the enclosure in a similar way to pits in the enclosure which is the subject of this report. The distribution of pits in the 'banjo' enclosure at the south east of Micheldever Wood (Fasham 1983, site R39) has been suggested by limited geophysical scanning to be peripheral to the entrance. High levels of phosphate concentrations in the middle of the site are interpreted as evidence for a central activity area. In the excavated site, there was a central open zone and the distribution of animal bone fragments indicates a diminution of rubbish disposal away from the central area. Within the central area at Bramdean was a sunken activity area with a tightly compacted floor of burnt and unburnt flints measuring about 4m by 3.2m. Just inside the entrance of the Micheldever Wood 'banjo' enclosure, Feature 487 was a smaller 'floor' of burnt and unburnt flints; such a floor may have been used for threshing grain.

Even though a post-built house was not excavated, all the recovered evidence from the enclosure indicates that the site was occupied, if not within the actual sub-circular core enclosure, then in part of the immediately adjacent complex, and that people, definitely young children, died and were buried there. Cereal crops were preserved and stored within the enclosure and ovens and hearths may have been used although no evidence survives. Aspects of animal husbandry were probably practised in the entranceway.

Thus, this one 'banjo' enclosure seems to have been lived in, and associated with the normal farming practices relating to animal and crop husbandry. The evidence from Bramdean, the only other 'banjo' enclosure to be extensively excavated (Perry 1972 and 1982), suggests a similar set of functions for that enclosure. Such a rustic interpretation of separate enclosures, even when located fairly close to one another, would seem acceptable with the entranceway denoting a specialised function.

There are examples of multiple 'banjo' enclosures such as New Farm, Weston Patrick (Perry 1972, Fig 29) and Hamshill Ditches (Bonney and Moore 1967) where the specialised animal husbandry function of this enclosure type must have been emphasised. There is no real point, assuming that they are contemporary, in having two or in one case at least three identical enclosures within the settlement complex if they are to be used in the same way as the single enclosure excavated in Micheldever Wood. Apart from multiple 'banjo' enclosures it may be

Fig 38. 'Banjo' enclosures in central Hampshire and the distribution of clay-with-flint deposits and substantial Roman buildings.

possible to indicate groups of 'banjo' enclosures which are linked to linear ditches, such as Blagden Copse (Stead 1968), or groups where the entrance-way ditches turn and encompass the core enclosure itself, as at Bramdean (Perry 1982). This makes the overall area of the site quite large (Perry pers comm). The spatial distribution of the enclosures shown in Fig 38 could indicate that they were on the periphery of a larger settlement zone and that their entrances were indeed pointing towards the centres of their respective estates. However, the prehistoric settlement pattern north of the River Itchen between Winchester and Alresford is varied. The first 1–1.5km north of the river seems to be dominated by it whereas the pattern changes away from the river.

The excavation of two-thirds of the core enclosure of a 'banjo' site in Micheldever Wood has demonstrated the need for wider considerations of landscape use, and for a further consideration of the contemporaneity or otherwise of later prehistoric agricultural and settlement patterns perceived from aerial photographic information. The 'banjo' enclosure still seems to be a development relating to agricultural expansion in the later part of the last millennium BC with a specialised function or functions relating to animal husbandry, but where occurring singly, nevertheless, very much a part of an integrated, efficient and progressive farming mechanism.

Chapter 5

The 1979 Re-excavation and the floral regeneration

The three-acre clearing in the Wood was abandoned on March 31st 1976. Five of the pits were left open with the intention of returning to re-excavate them at an unknown moment in the future. Two factors created the uncertainty over the timing: the most obvious was the construction date of the M3 motorway; the second – and in the end deciding influence – was the continued financial support of the Department of the Environment to the M3 Archaeological Rescue Committee. The decision to run down the M3 Archaeological Rescue Committee's grant aid meant that any further fieldwork on these pits needed to be completed in August 1979, although the site was not bulldozed until June 1983.

There were two separate objectives in returning to the site. The re-excavation of the pits would provide some empirical examples of the processes by which pits weather and decay when no human influences, *ie* rubbish disposal, are involved. An opportunity would also be provided to record the floral recolonisation of the cleared area.

The Re-excavation of the pits

Although the topsoil had been removed from the surface of the interior of the enclosure around the pits, the superficial covering of clay-with-flints on the surface of the chalk remained. While this may not adequately compensate for lack of turves and topsoil in the weathering process, it nevertheless formed a very useful alternative deposit to erode into the pits and must have acted in a manner not too dissimilar to a topsoil. Temperature and rainfall data have been collected from various local sources for the

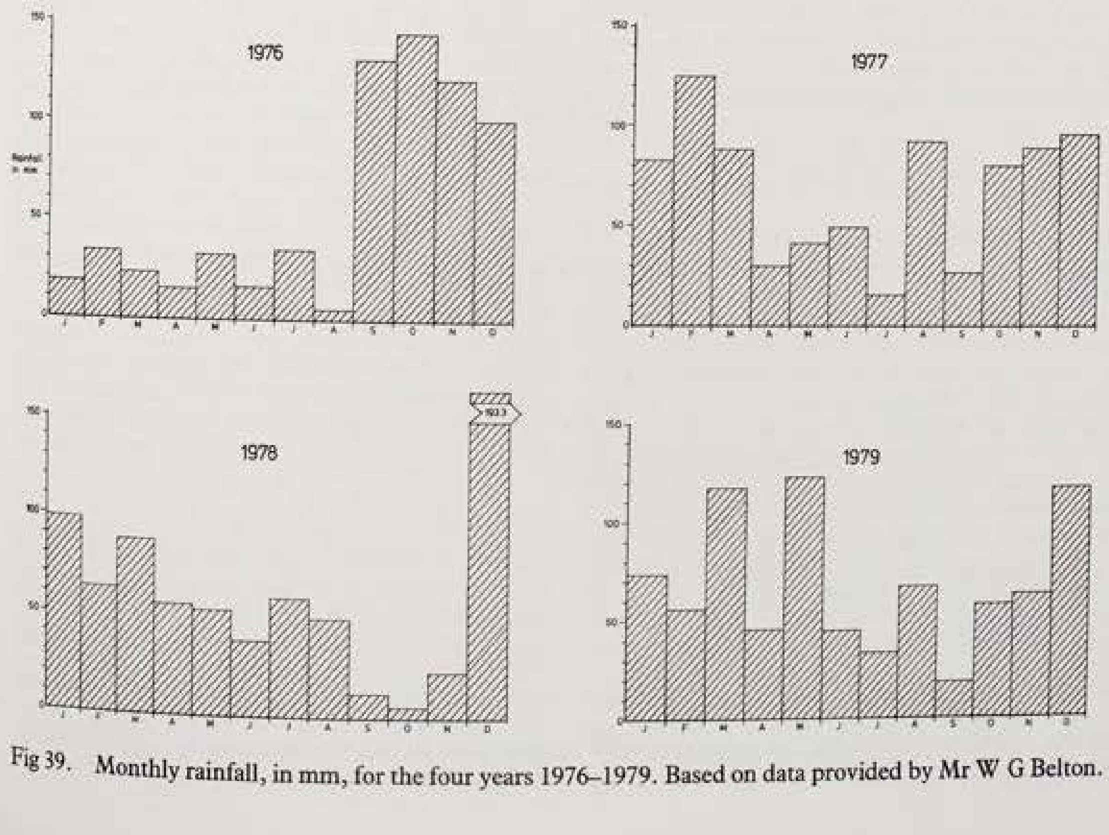

Fig 39. Monthly rainfall, in mm, for the four years 1976–1979. Based on data provided by Mr W G Belton.

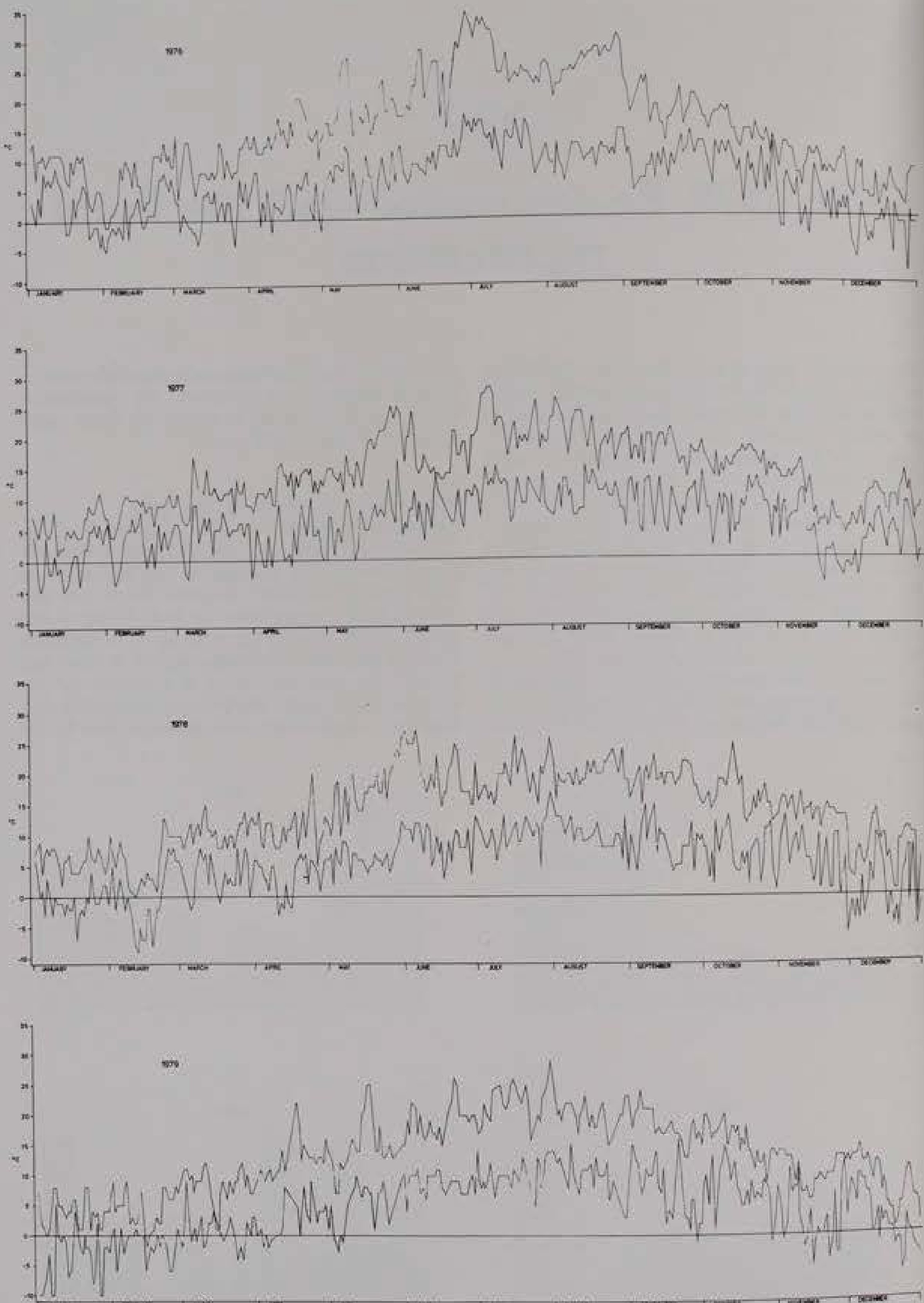

Fig 40. Minimum and maximum temperatures for the four years 1976–1979. Based on figures provided by the Forestry Commission and the Ministry of Agriculture Fisheries and Food.

years in question. Monthly rainfall accumulations for the whole period were provided from his private research at East Stratton, three kilometres north-east, by Mr W G Belton the Head Forester at Micheldever Wood. The Forestry Commission from their Micheldever Wood office, one kilometre north, kindly made available the temperature records for March to September from 1976 to 1979. The Forestry Commission only record summer temperatures as part of their estimation of fire hazard. The remaining winter temperatures for 1976 to 1979 were collated from the records maintained by the Ministry of Agriculture, Fisheries and Food on the Bridgets Experimental Husbandry Farm about three kilometres to the south. The rainfall is displayed in Figure 39 and the vicissitudes of the daily temperature on Figure 40.

Five pits had been left open in March 1976 when the remaining dangerous holes were backfilled. The five pits (8, 14, 140, 311 and 319) provided a varied range of profiles and sizes. They had all been excavated in quadrants originally so there were two sections available and these sections were relocated with a reasonable degree of accuracy in 1979. Thus the profiles and sections are comparable even though there are some unavoidable discrepancies. There is no point in attempting a detailed description, context by context, of each pit as a large amount of general data is recorded on the various illustrations. Pertinent aspects of individual pits will be discussed.

In general terms, it is quite possible to identify deposits which are largely caused by the wintering process of freeze and thaw, culminating in the chalk shattering away from the sides of the pits. Such deposits are layers 3, 8, 13 and 31 in pit 14, layer 1 in pit 11, layers 2 and 4 in pit 140, layers 3, 8 and 10 in pit 8 and at least layers 6 and 12 in pit 319. Sometimes this shattered chalk had been reworked by subsequent freeze-thaw into a deposit of powdery chalk lumps with a surrounding matrix of a silty-clay texture such as layer 16 in pit 311. These were normally fairly thin layers of silt-clay textures derived from the surrounding clay-with-flints. Layers 4 and 7 in pit 8 were presumably a wash into the pit from the surrounding clay-with-flints, particularly in the south side. Both layers 4 and 7 contained a high frequency of small to very small sub-angular chalk fragments amongst the friable sub-angular blocky soil component. There were also examples of clay fines being washed over the overhang or shoulder of the pit before it collapsed.

Pit 8

Pit 8, when excavated, best resembled a cylinder although there was a shoulder/overhang on its north-west side (Fig 41). Its diameter at its mouth extended from 2.2m to 3.0m in 1975/6, and from 2.8m to 3.0m in 1979. The volume of the pit increased by 20% from 5.16m^3 in 1975/6 to 6.2m^3 in 1979. The erosion of the side had occurred mainly on the south side, which had eroded back from near vertical to an angle of 50°. The shoulder on the west side had collapsed but possibly not until late in the winter of 1976/77 or even in the winter of 1977/78; layers 7A and 7B providing the humped effect of a collapsed shoulder.

Pit 14

Pit 14 (Figs 31, 42–46) one of the largest pits excavated, had profiles which were suggestive of a beehive pit with a shoulder/overhang on the entire perimeter and with a ledge on the east side. Its 1976 diameter at ground level was 2.6m to 3.5m which dimensions had enlarged to 3.6m and 4.4m by August 1979. The volume of the pit had increased by over 50% from 14.22m^3 to 21.6m^3. The greater part of this weathering and enlargement occurred on the east side where the shoulder was perhaps most pronounced and where the ledge was situated. The early stages of weathering must have included the shearing off of the shoulder, landing in the bottom of the pit on top of a thin deposit of washed-in clay, in the form of an annular ring. The shoulder seems to have collapsed during the first winter. Pit 14 was sufficiently close to the beech trees on the west side of the site for the leaves to have fallen into the pit, and thus seasonal indicators were present to enable an estimate to be made of the chronology of the depositional sequence (Fig 46). By comparing the sections on Fig 31 and Fig 46 it is possible to detect traces of the annular ring deposit derived from the shoulder in the bottom of the Iron Age sequence just as clearly as in the base of the modern example. In the Iron Age, a small volume of rubbish had been thrown into the centre of the bottom of the pit and the annular ring had formed around that. Once this had happened the pit was filled with domestic refuse interleaved with bands of weathered material from the pit sides. The infilling process, at least for the lower 1–1.5m of the Iron Age pit, was probably quite rapid.

Pit 140

Pit 140 was a beehive pit of shallow depth (Figs 47–49). It had a ground level diameter of 1.1m–1.2m with a neck constricted to 0.95m. The original volume of just over 1m^3 increased by 84% to 1.88m^3 when re-excavated. There was a substantial covering of clay-with-flints over the chalk in the vicinity of this pit as can be seen in Figure 47. The shoulder element of the pit was cut through the clay-with-flints. Following heavy rain and a sharp frost on the night of 9–10th February 1976, when the temperature dropped to −3°C, the overhang collapsed into the pit and provided a dump in the shape of an annular ring (Fig 48). Unfortunately, as there was a lot of clay-with-flints around pit 140, the collapsed overhang, layer 5 in the 1979 re-examination, is not readily discernible in section (Fig 49) amongst a mass of redeposited and reworked clay-with-flints. Decalcification of the deposits may have been a factor in the creation of a mass of similar deposits.

It is quite clear that, when abandoned in the Iron Age, the pit had been backfilled fairly rapidly with

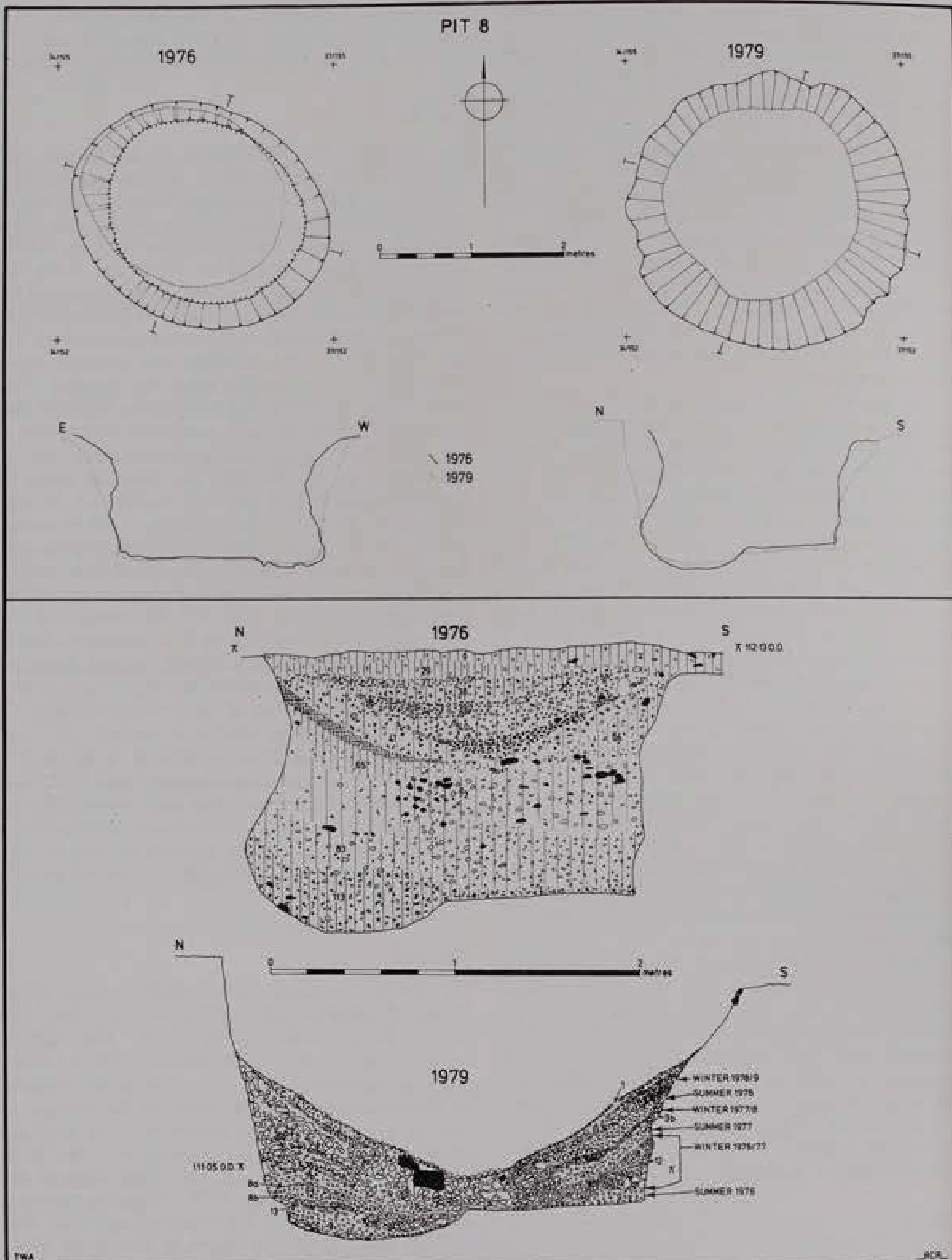

Fig 41. Micheldever Wood 'banjo' enclosure: plans, profiles and sections of pit 8, showing changes between the time of original excavation in 1976 and re-excavation in 1979.

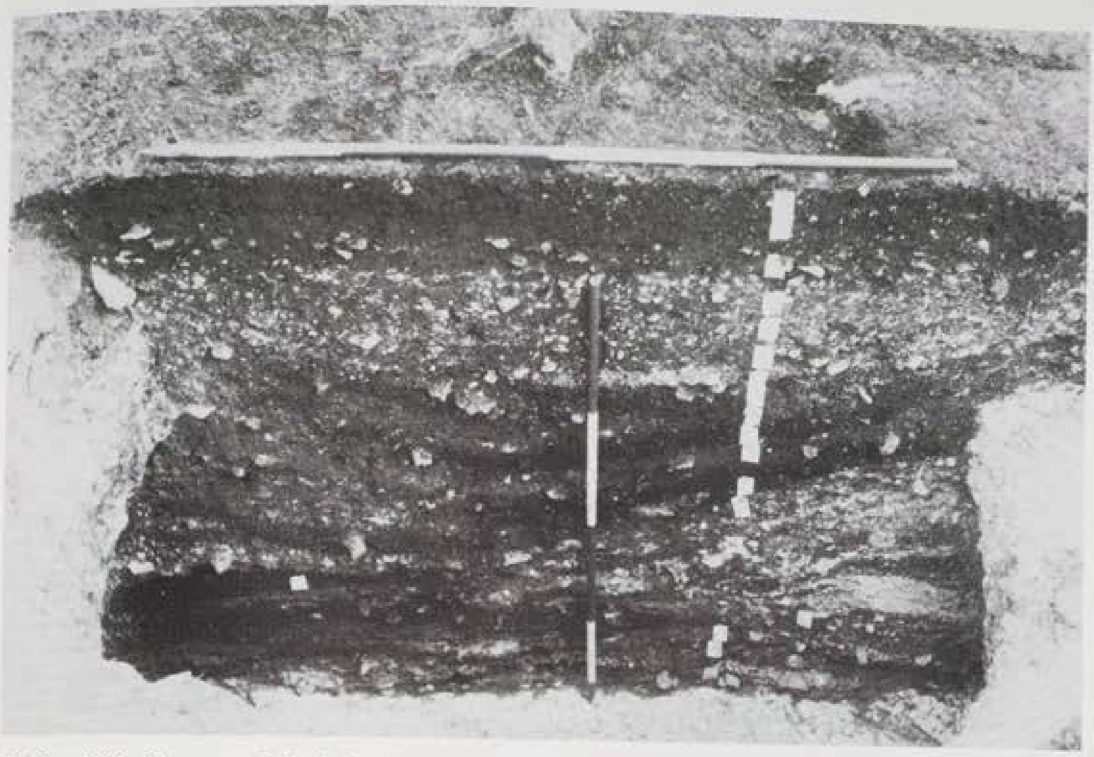

Fig 42. Micheldever wood 'banjo' enclosure: view (from south) of half-section through pit 14 as originally excavated in 1976. Photo: MARC 3; scales 2m.

Fig 43. Micheldever Wood 'banjo' enclosure: view (from north) of pit 14 prior to re-excavation in August 1979. Photo: MARC 3; scale 2m.

Fig 44. Micheldever Wood 'banjo' enclosure: view (from south) of half-section through re-excavated pit 14 in 1979. Compare with Fig 42. Photo: MARC 3; scale 0.5m.

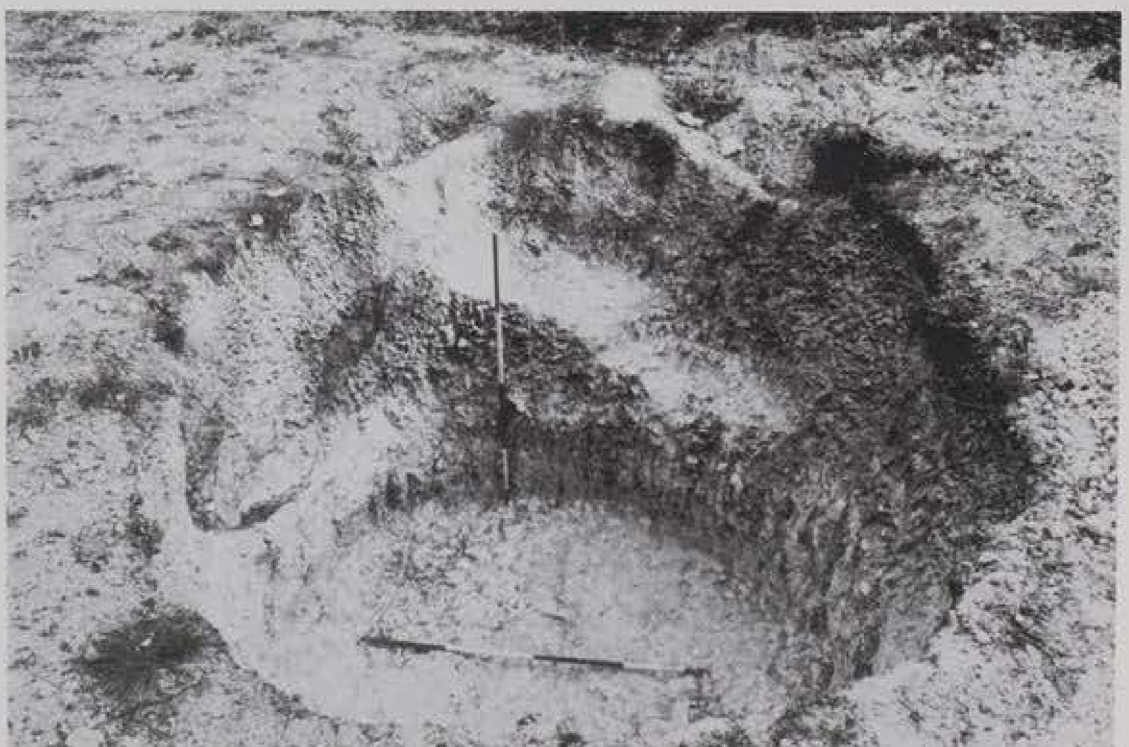

Fig 45. Micheldever Wood 'banjo' enclosure: view (from east) of pit 14 after re-excavation in 1979. Photo: MARC 3; scales 2m.

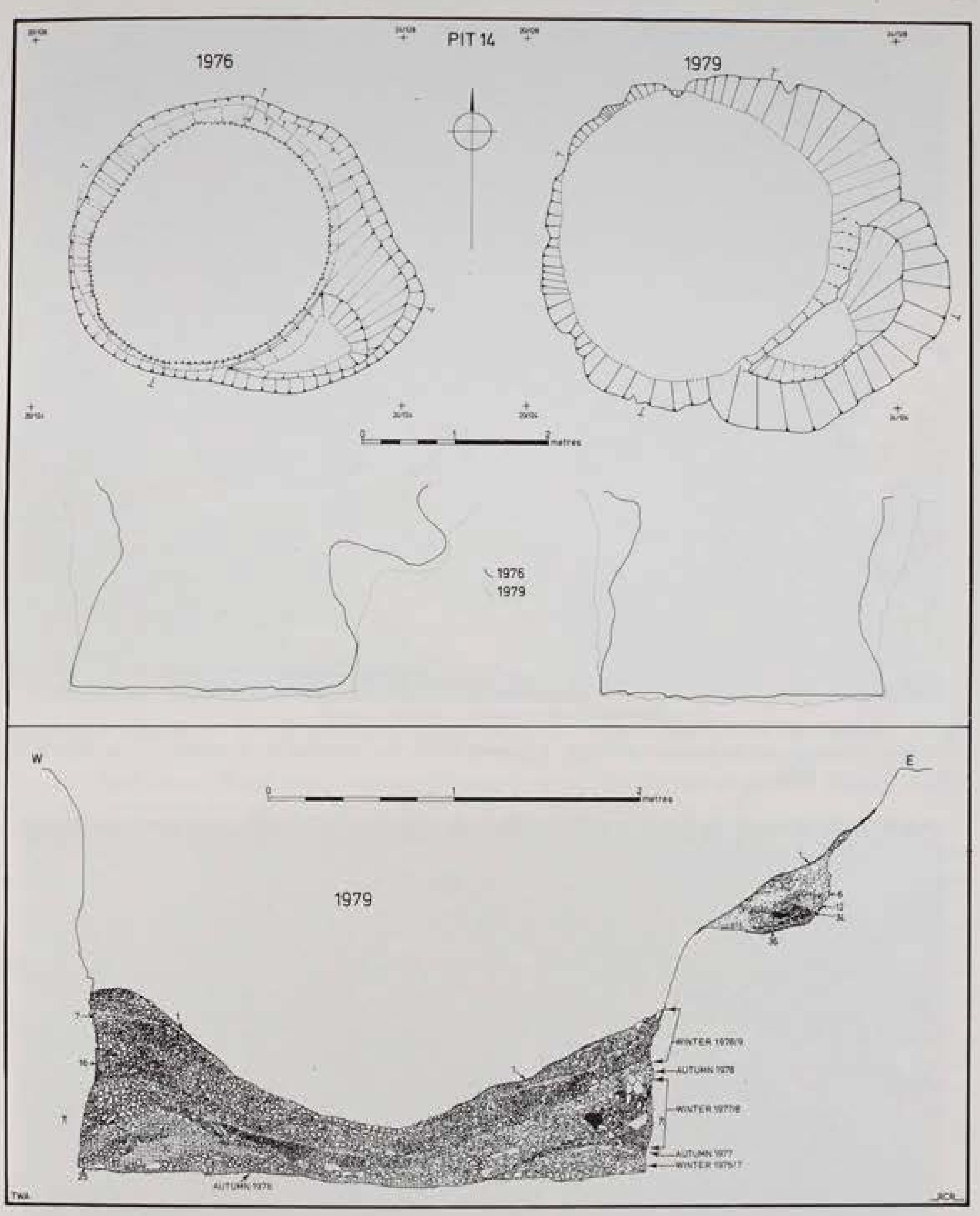

Fig 46. Micheldever Wood 'banjo' enclosure: plan, profiles and sections of pit 14, showing changes between time of original excavation in 1976 and re-excavation in 1979. The 1979 section should be compared with that on Fig 31.

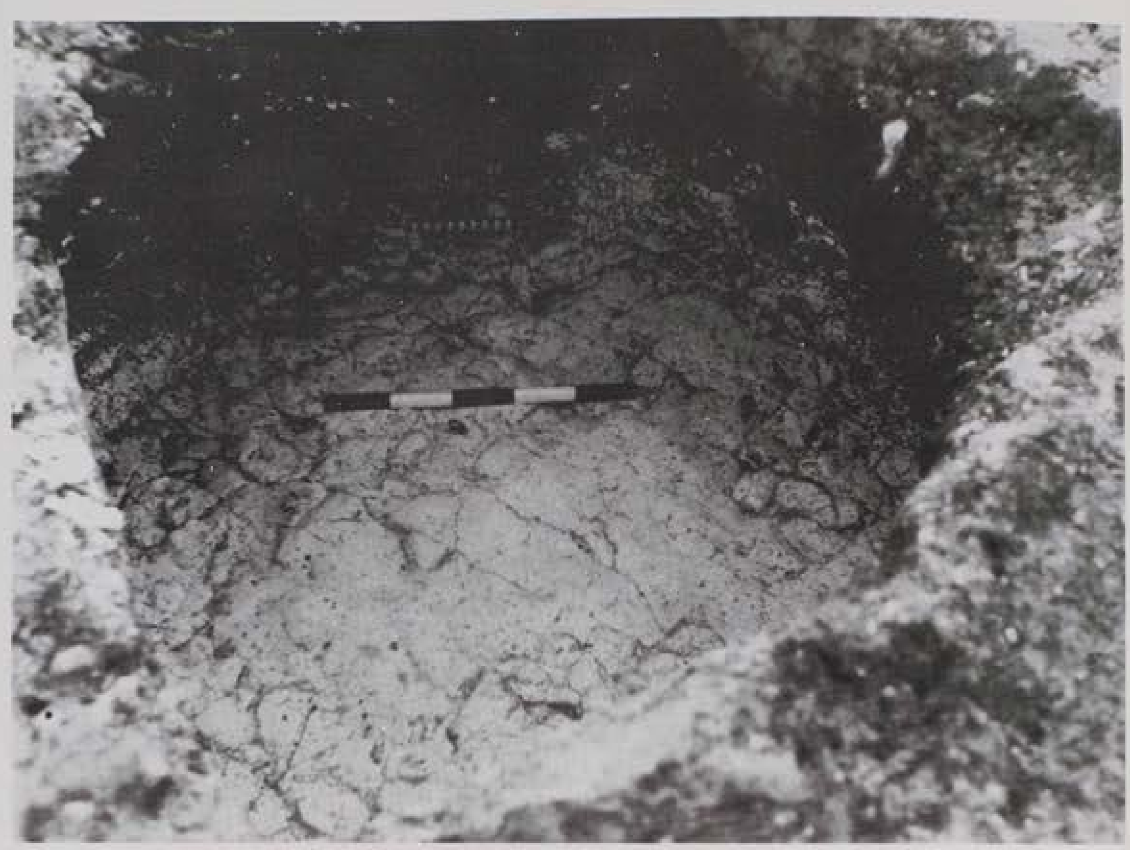

Fig 47. Micheldever wood 'banjo' enclosure: view (from north) of beehive pit 140 as originally excavated in 1976. The 0.5m scale on the bottom of the pit is directly below the extent of the shoulder. Photo: MARC 3; scales 0.2m and 0.5m.

Fig 48. Micheldever Wood 'banjo' enclosure: view (from west) of beehive pit 140 with collapsed overhang in the bottom of the pit. The collapse occurred on the night of 9/10th February 1976. Photo: MARC 3; scales 0.5m and 0.2m.

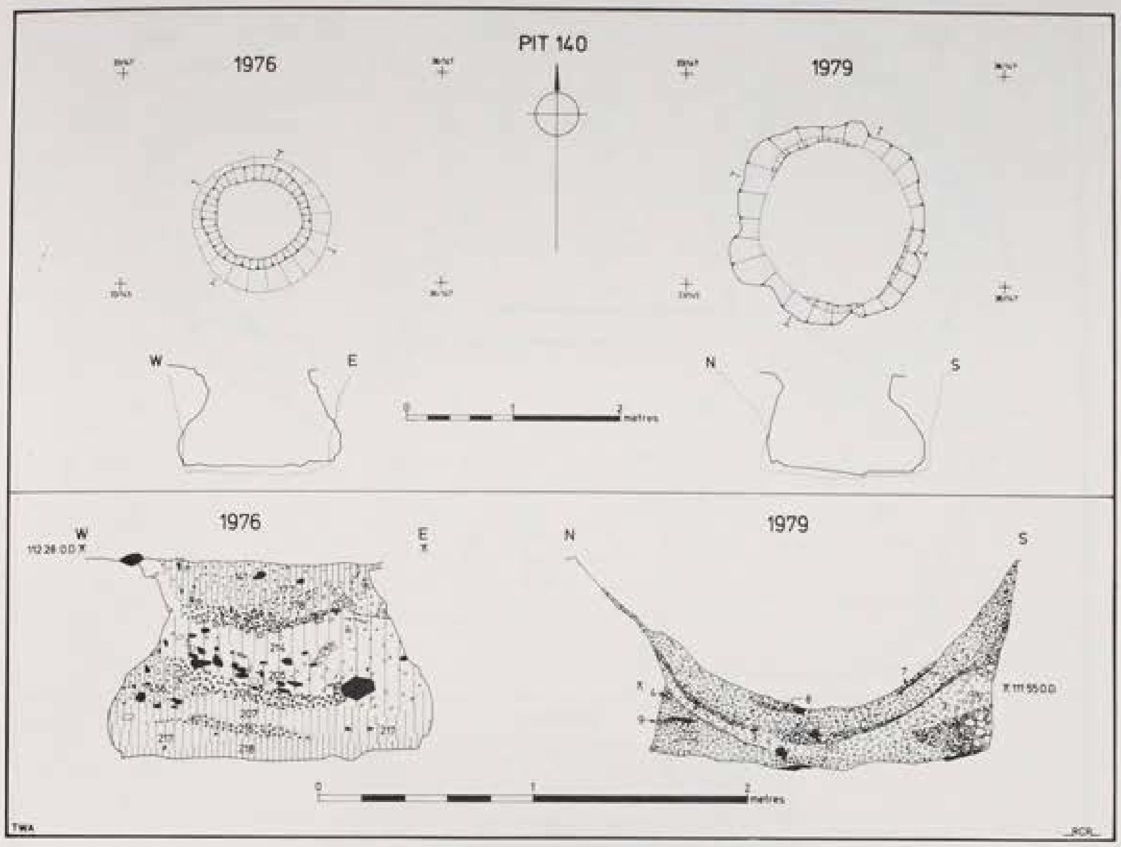

Fig 49. Micheldever Wood 'banjo' enclosure: plans, profiles and sections of pit 140, showing changes between the time of the original excavation in 1976 and re-excavation in 1979.

rubbish deposits rather than being left to weather naturally.

Pit 311

Pit 311 was a large pit of beehive shape with a ledge or step in its south side (Fig 50). In 1976 this oval pit had surface dimensions of 1.9m by 3.0m which had enlarged to 3m by 3.7m in 1979. There was a 47% increase in pit volume from just under $10m^3$ to $14.6m^3$. The south side had weathered back almost sufficiently to remove any traces of the ledge and the overhang around the rest of the pit had collapsed in the familiar annular ring, layers 12, 14 and 19 in the 1979 re-excavation. The 1976 excavation showed a small volume of material collapsed onto a primary rubbish deposit and the pit then being filled mainly with rubbish up to the base of the ledge on the south side. Indeed the rubbish was thrown across, or even from, the ledge.

Pit 319

Pit 319 was another good example of a beehive pit with original ground level dimensions of 2.1m to 2.2m which enlarged to a circle of 2.9m diameter (Fig 51). The constricted neck expanded from 1.15m–1.3m to 2.1m–2.2m and the volume increased by over 100% from just under $2.5m^3$ to a little over $5m^3$. The profile of the pit, of course, had altered completely so that the top of the pit was everted at a 45° angle rather than being a beehive. The collapsed beehive is again manifest in the form of an annular ring of clay and chalk, layer 14, but this time the weathering process subsequent to the initial collapse was more complex and must involve secondary and tertiary collapses from the overhang zone, as well as side-weathering below. The evidence from the original excavation for this feature once again points to a rapid sequence of deliberate back-filling. The neck of this beehive pit could not have survived if the pit had been left empty for any period of time.

Discussion

Pits were a fundamental element of Iron Age life and, as such, have been considered in some detail by various writers from Bersu (1940) to Wainwright (1979). Today they are no longer considered as dwelling places and are reckoned to have had functions related to the need for general storage of agricultural material during the course of a winter. It is now generally accepted that grain storage was the main function of such pits and indeed this point of view has already been argued for some of the pits from the Micheldever Wood 'banjo' enclosure

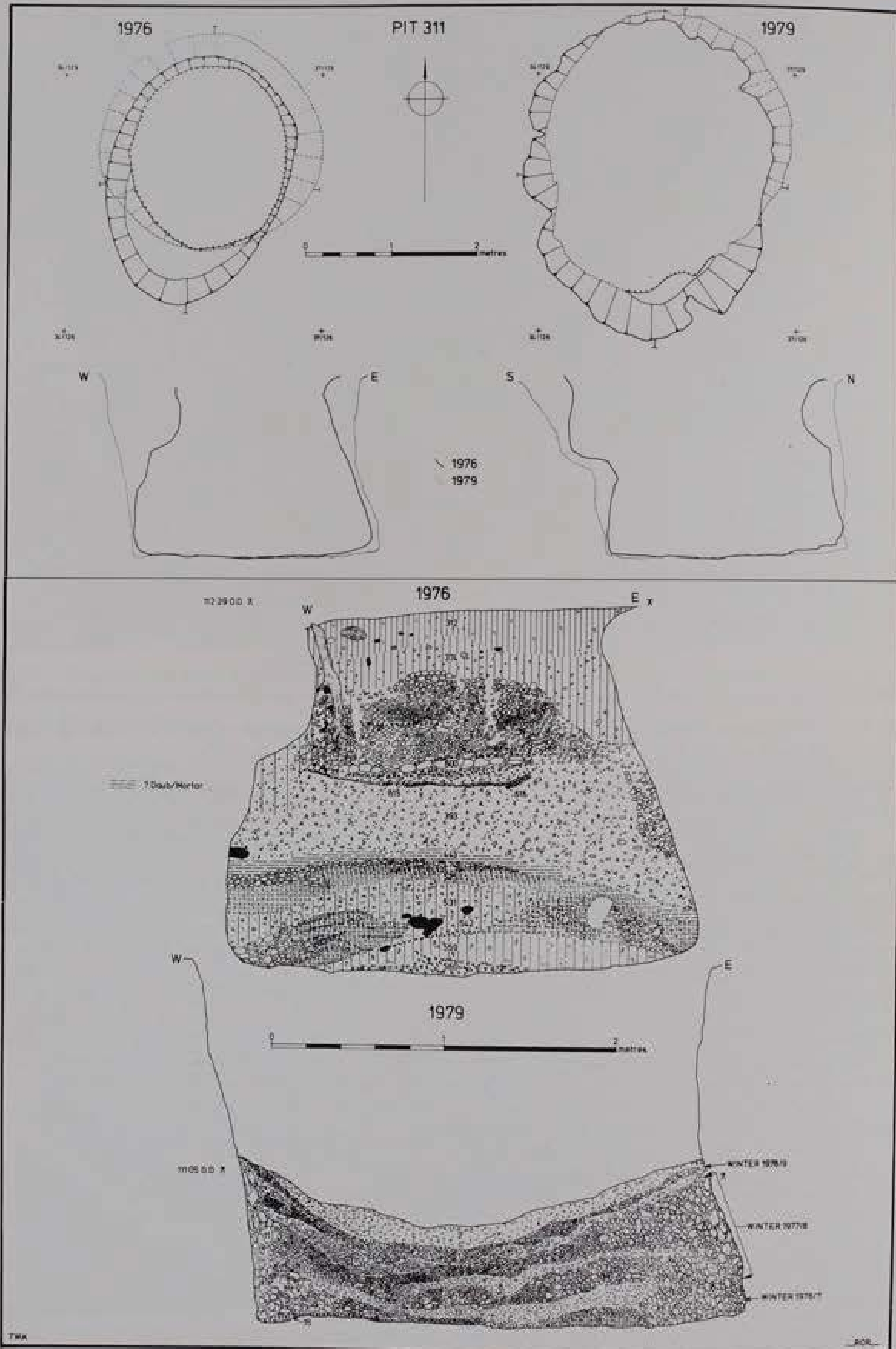

Fig 50. Micheldever Wood 'banjo' enclosure: plans, profiles and sections of pit 311, showing changes between the time of the original excavation in 1976 and re-excavation in 1979.

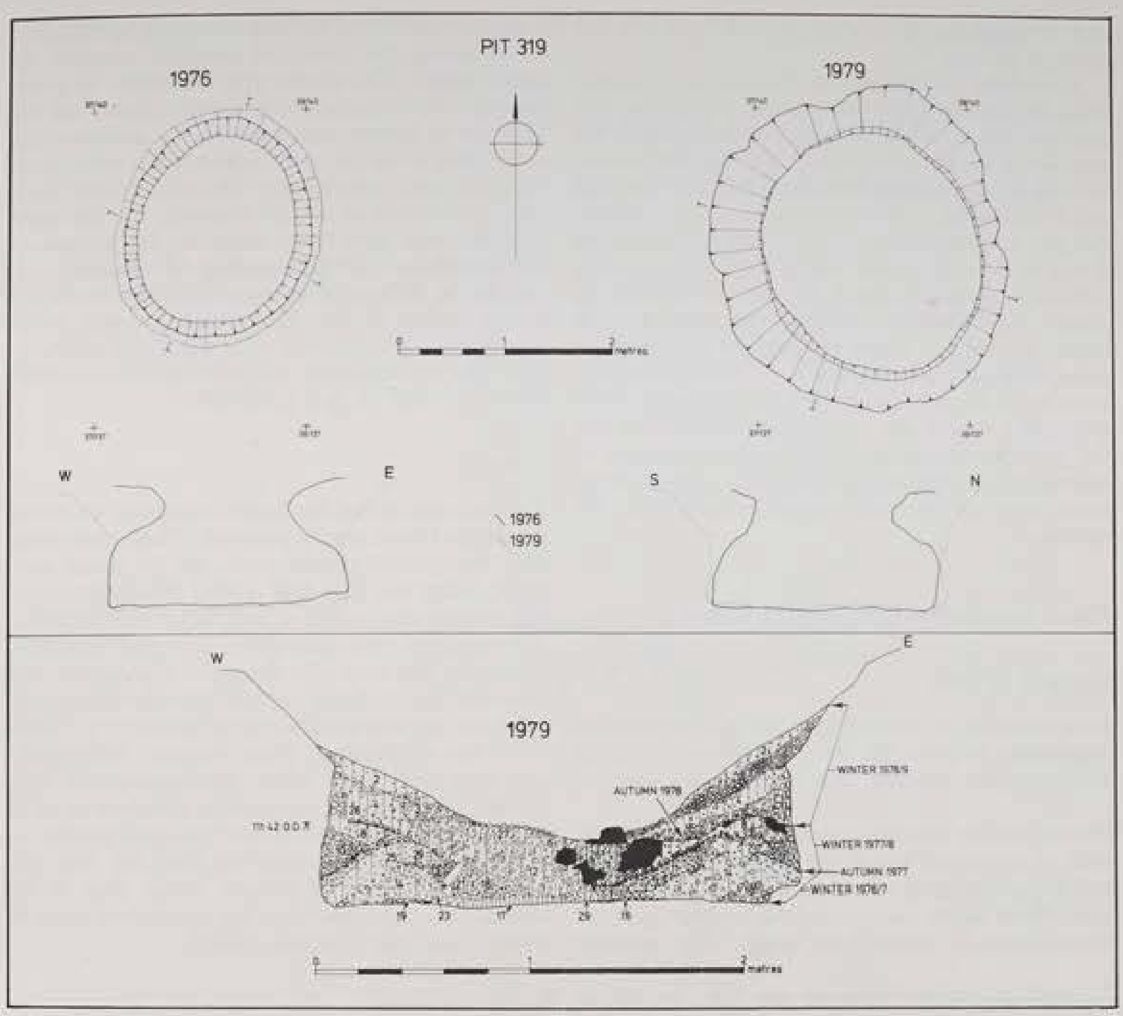

Fig 51. Micheldever Wood 'banjo' enclosure: plans and profiles of pit 319, showing changes between the time of the original excavation in 1976 and re-excavation in 1979; and re-excavated section (1979), which should be compared with that in Fig 14.

(Monk and Fasham 1980). Whether or not the stored grain was for consumption, as implied at Gussage All Saints (Jefferies 1979), or was for seed grain (Fasham 1985), can never be firmly resolved. However, for those who have indulged in guessing possible prehistoric populations for individual sites based on the number, shape and volume of pits, there are new factors to be taken into consideration.

The volume of all the pits studied has increased by 20% to over 100% and the percentage increase is variable. The increase does not seem to relate to original size and profile, although the two smallest pits, which also happen to be the two best examples of beehive pits, did increase their volume by the highest percentages. Thus any rationalization of pit volumes ought to include some consideration of the problem of silting and decay. The experimental earthwork at Overton Down saw a fairly intense rate of decay in the first four years, which included two mild winters (Jewell and Dimbleby 1966). The small beehive pits are perhaps the most interesting. The observations recorded here indicate that the small beehive pits with pronounced necks and everted mouths still extant in the 'banjo' enclosure must have been backfilled very rapidly when abandoned in the Iron Age, or the overhang would have collapsed. This implies that such pits must have been kept full for most of their working life, otherwise they would have become redundant after a few months. If pits were used for storing seed corn, then the storage season would start in August and end in late September for autumn sowing or in February or March for spring-sown crops (Monk and Fasham 1980). This would leave the pits vacant for four to ten months annually, and even when the pits were vacant for the summer months, there would have been a certain amount of weathering. Reynolds (1974) has argued that the optimum shape for grain storage is the beehive and that it is more logical and practical to store seed grain rather than grain for domestic consumption in a pit. Once the pit has been opened it is very difficult to remove a small part of the grain and to reseal the pit in order to achieve an efficient level of storage.

Apart from the prevention of unnecessary weathering by leaving pits open during the spring and summer, the needs of livestock treatment within the confines of the enclosure would provide every incentive not to have hazards into which animals could fall and break limbs. It does seem reasonable to assume that pits had functions other than grain storage even if one of these functions was as basic as temporary rubbish disposal to protect the pit and maintain its shape. The immediate infilling with rubbish of an empty storage pit might remove the likelihood of green algae (*Clorella vulgaris* and *Clorella ellipsoida*) growing on the walls of a chalk pit (Reynolds 1974) although it would still probably be advisable to fire the pit before re-use in an effort to exterminate all microfloral or botanical growth that might emerge either from the previous season's crop or from the rubbish.

Plant recolonisation, by H Hawkes

General points

Recolonisation of cleared ground is a continuous progression of plant life from a short to a long life cycle, roughly divisible into a series of stages.

Pioneer: mainly annuals or multi-generation annuals such as groundsel which can grow, seed and have seedling offspring of several generations in one summer. These plants may come from long buried seed or be blown or carried from nearby open ground.

Intermediate: mainly biennials and some perennials which are able to survive the winter and smother new annual plants starting from seed in the spring. These plants mainly come from long buried seed, with some fresh importation from nearby open ground.

Hedgerow/Woodland Clearing: mainly non-woody perennials, plants which once established can smother all new biennial and annual seedlings. There is a large proportion of creeping or rhizomatous plants spreading from woodland areas and climbing over and smothering other plants.

Early Woodland: appearance of short-lived trees such as beech, maple *etc*, over a ground of woodland perennials such as fern and bracken. The shade effect of these trees banishes many clearing plants allowing a dominance of ferns and bramble. The trees come mainly from long-buried seed.

Climax Woodland: long-lived trees such as beech or oak, giving dense shade and eliminating all ground cover plants except those tolerating dense shade.

The absence of topsoil within the enclosure was a major factor in hindering the development of secondary and post-secondary recolonisation, both by removing the buried seeds of secondary species, and by removing the source of nutrients required by larger plants. The plants were indicative of a calcareous soil: clematis is a lime loving plant, and the presence of figwort and marsh thistle indicates that some parts of the site were relatively wet when these biennials were germinating. The only known modern introduction is Oxford ragwort. All the other species could have been found in the immediate neighbourhood. Notwithstanding the variations created by the differential removal of topsoil, it was felt that a record of the recolonisation would be of interest to all concerned with woodland regeneration. The recolonisation was examined in five different zones (Fig 52 and Table 20).

Zone 1

This area was within the 'banjo' enclosure, where the topsoil had been totally removed. There was about 50% vegetational ground cover. All the plants were small, many less than half normal flowering height, presumably due to lack of soil, water and nutrients. The majority were annuals or first year biennials, indicating that even this degree of colonisation was relatively recent. Some vigorous growth was impinging from the woodland areas (*eg* ground ivy, brambles), but otherwise all plants occurred individually and were well-spaced across the clearing with bare ground in between. The dominant species were all of types commonly found on newly-opened ground (*eg* ragwort, mayweed), suggesting that this area was still in the process of primary cover. Due to the virtual absence of topsoil, it had taken three years to achieve one year's normal growth.

Zone 2

The unexcavated enclosure ditch was Zone 2. Between the various excavated sections the upper fill of the ditch contained a certain amount of loam even though the topsoil had been removed. Visually, there was differential growth along this part of the ditch. There was about 70% ground cover. The plants were somewhat stunted, growing to about two-thirds of their normal flowering height.

A mixture of annuals and biennials were present, indicating that Zone 2 was in a transitional stage between open ground annuals and the long-term cover of biennials and perennials. In some parts, plants were grouped together to almost cover the ground, but in other parts large spaces existed between plants. The dominant species were mayweed, an annual and primary coloniser, and thistle, a biennial secondary coloniser.

Zone 3

The backfilled pits and ditch segments comprised Zone 3. These features were backfilled from the spoil heaps and would therefore include topsoil and other nutrient-bearing soils. Ground cover was total. The plants were all large and healthy and all had reached

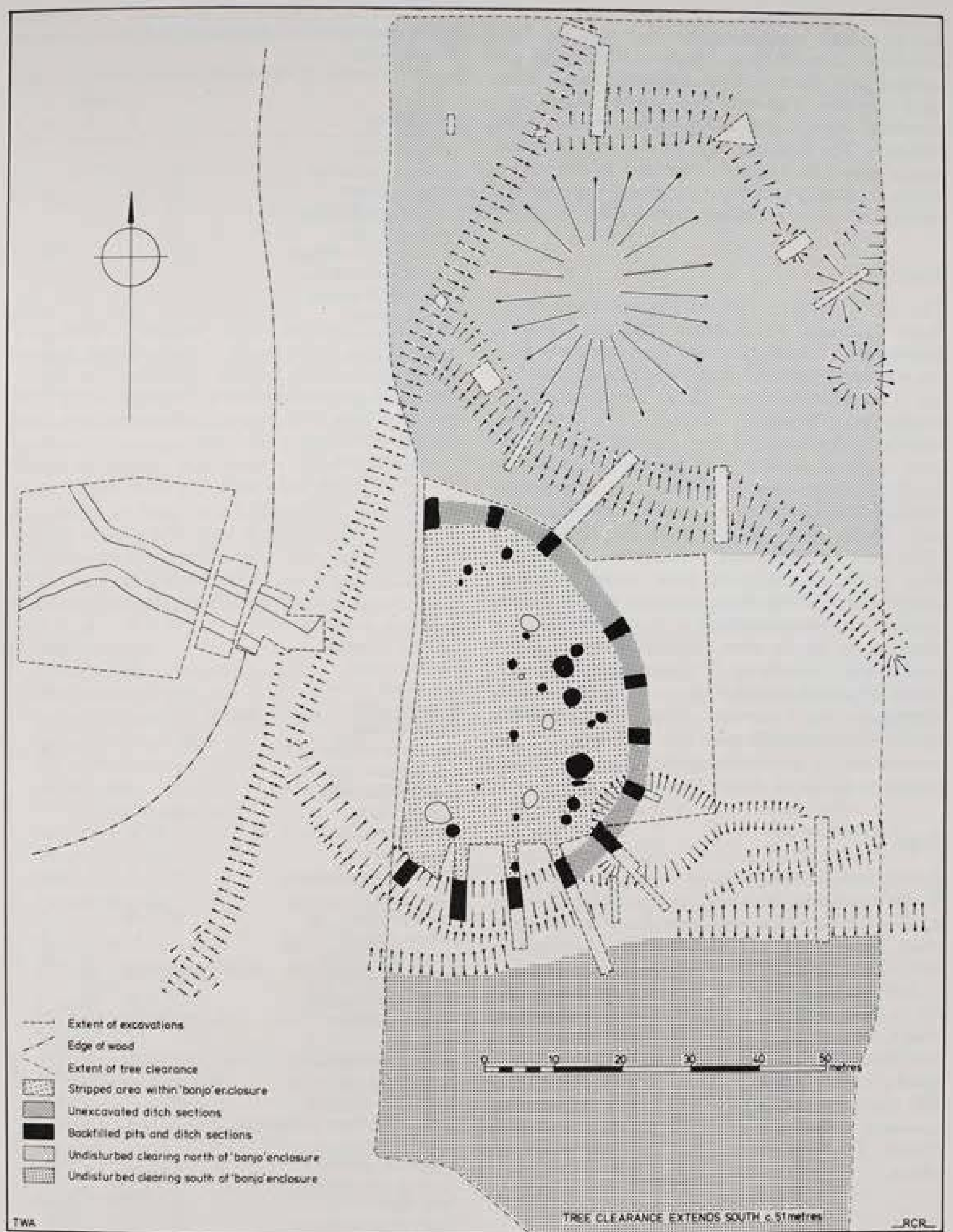

Fig 52. Micheldever wood 'banjo' enclosure: plan showing the five zones in which the recolonisation of the site was examined.

normal flowering height. They were mostly biennials and perennials, indicating that this area had been colonised for some time. All the available area was covered, and plants were competing for space. There were two tiers of growth: low-growing plants were entwined beneath the tall-flowering stems of the biennials. The dominant species were of types commonly found in rough pasture and in ditches (*eg* teasels, nettles and thistles), suggesting this zone was undergoing an intermediate colonisation stage.

Zone 4

The undisturbed part of the clearing south of the 'banjo' enclosure was Zone 4. The topsoil had not been removed although it had been compressed by the movement of humans, bulldozers and Landrovers. Ground cover was 100%. The plants were healthy and abundant although there was some stunting of flower stems due to competition. Plants grew to about two-thirds of their normal flowering height. Rabbit damage had caused dwarfing of small trees, thus slowing the natural progression to woodland. Plants were mostly perennials, indicating a rapid and well-advanced colonisation, and there were often several layers from mosses, through low-growers and climbers, to trees. The dominant species were often woodland or hedgerow plants (*eg* common St John's wort, clematis). There was a particularly wide variety of plants typical of established woodland clearings (*eg* wood spurge, woody nightshade, dog's mercury). The presence of some two or three year old trees also indicates that this area had swiftly recolonised and was moving towards complete woodland cover.

Zone 5

Zone 5 was the undisturbed clearing north of the 'banjo' enclosure. This area was probably the least disturbed, apart from that around the possible dew pond, F789, having had only a few hand-dug trenches and very little machine or vehicle disturbance.

100% ground cover. Plants were large and healthy, with several layers of growth from low-growing plants, through ferns and broom, to tall trees. There was much competition for space. The dominant species were woodland plants (*eg* fern, brambles). The trees were of quick-growing type which colonise clearings before the slow-growers such as beech appear. The area had reached the early woodland phase.

Table 20. Plants found at the Micheldever Wood 'banjo' enclosure and the relative frequency of each species within the different zones.
Key: A = Abundant; F = Frequent; O = Occasional; R = Rare.

	Zones				
Plant Name	1	2	3	4	5
Acer campestre					F
Agrimonia eupatoria	R				
Arctium minus	O	O		F	O
Arenaria serpyllifolia	O				
Betula pendula	O				
Campanula trachelium				R	R
Centaurium erythraea				R	
Cerastium fontanum	O				
Cirsium arense	F	A	A	F	O
Cirsium palustre	O			O	
Cirsium vulgare	F	A	A	O	
Clematis vitalba				A	
Clinopodium vulgare	F	O	O	A	
Corylus avellana	R			O	F
Crataegus monogyna				R	O
Cytisus scoparius					F
Dipsacus fullonum	R	O	A	R	
Dryopteris filix-mas					A
Euphorbia amygdaloides	R			F	O
Fraxinus excelsior				O	F
Geum urbanum				R	
Glechoma hederacea	O	F	A	A	F
Heracleum sphondylium			O		R
Hypericum perforatum	F	O	R	A	
Lathyrus pratensis					O
Mentha arensis		O	A		F
Mercurialis perennis				F	
Myosotis arvensis	O				
Odontites verna				R	
Origanum vulgare				R	
Petroselinum segetum			O	O	
Plantago lanceolata	O				
Plantago major	O				
Prunella vulgaris	F	F	A	A	
Quercus robur				O	
Ranunculus parviflorus	F	F	A		
Rosa canina					O
Rubus fruticosa	F	R		A	F
Rumex crispus				R	
Rumex obtusifolius				R	R
Rumex sanguineus	O	R	O	O	
Scrophularia nodosa	O	R	O	O	
Senecio squalidus	F		R	R	
Silene alba				R	
Solanum dulcamara		O	O	O	O
Stachys sylvatica			A	F	F
Taraxacum officinale	R				
Tripleurospermum maritimum	F	A			
Urtica dioica	R		O		O
Verbascum thapsus	R	O			
Veronica serpyllifolia	O				
Viola hirta	O			F	
Viola reichenbachiana	O			F	
Various Grass Species	O	F	A	F	A

Chapter 6

The Archive

The archive consists of a computer record and manual, field records in the forms of notebooks for 1975/6 and individual context sheets for both the 1977/78 investigation of the entranceway and for the 1979 re-excavation of the pits, field drawings, post-excavation drawings and ordered files in the different classes of artefact and feature types. All these records, apart from the computer print-out, are on microfiche as listed below. The finds, field records and the archive have been deposited with the Hampshire County Museum Service (Accession Number A 1978 15). A copy of the microfiche is housed with the National Monuments Record.

Field records	
Plans, sections of excavation (also earthwork survey of Micheldever Wood)	Aperture cards 1–68
Detailed special plans	Microfiche 70
1975–76 excavation records 1–864	Microfiche 1–10
1977–78 excavation records 865–1104	Microfiche 10–14
Recorded find and plan indices	Microfiche 63
Sample records	Microfiche 15, 18–36, 64–68
Geophysical survey	Microfiche 71, 87
1979 Re-excavation, pit 14	Microfiche 37, 38, 109, 110
1979 Re-excavation, pits 140 and 311	Microfiche 39, 111, and 112
1979 Re-excavation, pit 8	Microfiche 40, 108
1979 Re-excavation, pit 319	Microfiche 41, 106, 107
1979 Re-excavation level book	Microfiche 103–105
1979 Re-excavation photographic index	Microfiche 105

Post-excavation records	
Metalwork	Microfiche 42, 43
Brick and tile	Microfiche 44, 45
Loomweights	Microfiche 46, 47
Flint	Microfiche 48–50
Daub and clay	Microfiche 51–54
Querns and other stone objects	Microfiche 55–57
Human bone	Microfiche 58–59
Pottery (Level III) and sherds	Microfiche 16
Sherd index	Microfiche 17
Pottery analysis notes	Microfiche 60–61
Briquetage	Microfiche 62
Ditch sections and pit volume calculations	Microfiche 69
Phase plans	Microfiche 71
Recorded finds, post-excavations list	Microfiche 72–73
Plant communities, recolonization, temperature and rainfall data	Microfiche 74
Charcoal	Microfiche 75
Seed identification	Microfiche 76, 77
Pit data	Microfiche 77, 78
Matrices	Microfiche 79–83
Miscellaneous papers	Microfiche 85, 86
Radiocarbon dates	Microfiche 88
Bracken	Microfiche 89
F789, Water Cistern	Microfiche 90
Mites and snails	Microfiche 91
Worked bone, antler, slag, shell and glass	Microfiche 92, 93
Animal bones	Microfiche 94–102
Draft report	Microfiche 113–116

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