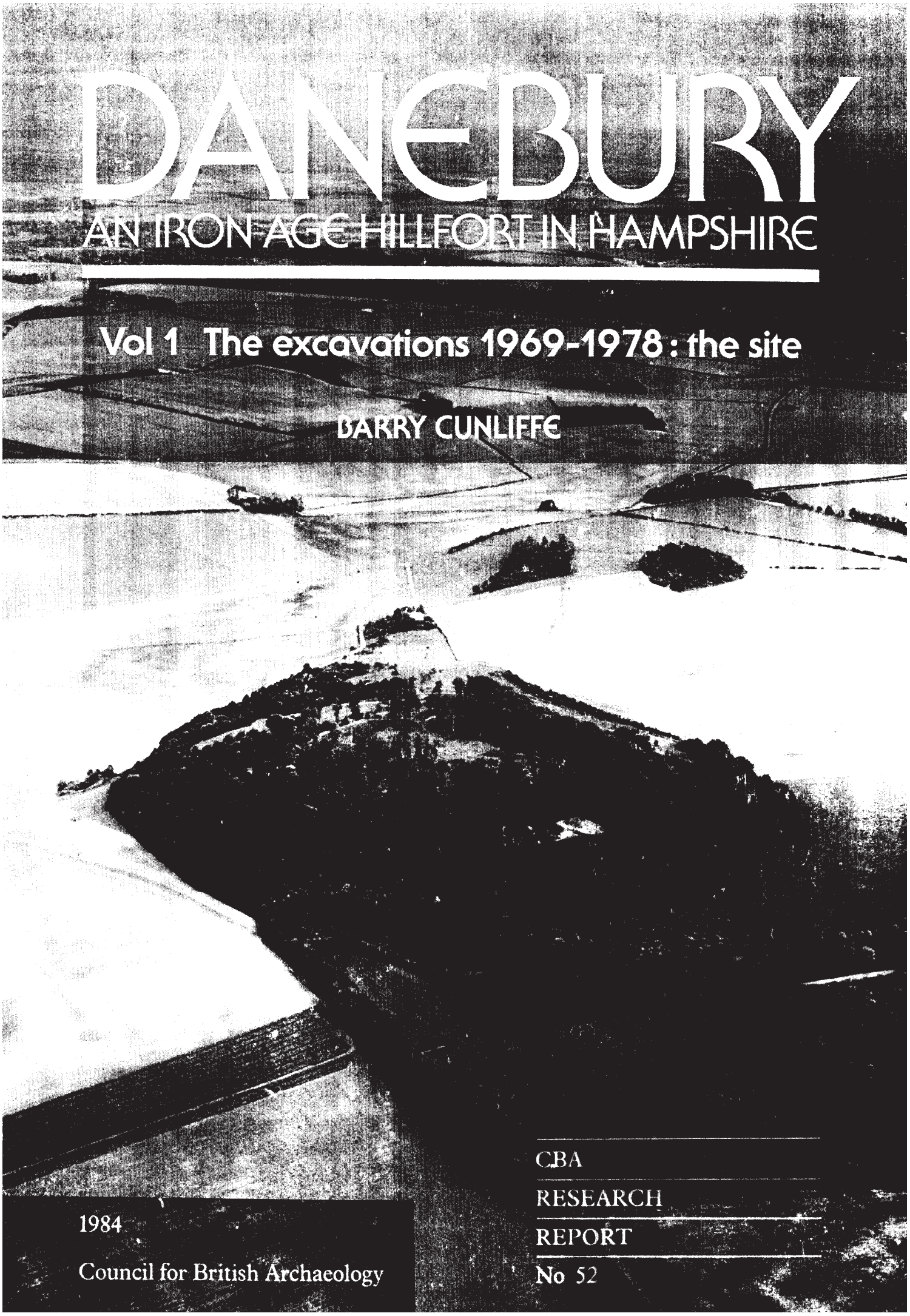
DANEBURY

AN IRON AGE HILLFORT IN HAMPSHIRE



Vol 1 The excavations 1969-1978: the site

BARRY CUNLIFFE

1984

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an Iron Age hillfort in Hampshire

Volume 1
The excavations, 1969-1978:
the site

by Barry Cunliffe

with contributions from
Lisa Brown, Verna Care, Rosamund Cleal, R Harcourt,
Bari Hooper, Gary Lock, Clive Orton, Bob Otlet,
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Alasdair Whittle

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Preface

The Iron Age hillfort of Danebury, in Hampshire, has been the scene of a major programme of excavation which began in 1969 and is still continuing. Although on-site activity is limited to no more than about six weeks in any year, the wealth of data recovered has been considerable and has brought with it problems of publication, not least how much to publish and at what stage. To wait for the completion of the project, now in its final five year programme, would be clearly unacceptable; interim reports, however useful, cannot provide the necessary detail for the academic world to use and to integrate into new research designs. Equally important is the fact that many colleagues have their research efforts bound up in the project and to delay publication would be unfair to them. For these reasons we have decided to publish the first ten seasons' work in full.

We offer three volumes. Volumes 1 and 2 are concerned with the site and the material remains from it, while volume 3, produced by the RCHM(E), presents a survey of the cultural landscape within which Danebury lies. The excavations from 1979 until the end of the project will be published in one or two more volumes, reserving a final volume for ancillary studies generated by the Danebury data-set.

The preparation of the first ten seasons of excavation for publication took four years to complete, the final manuscript being submitted to the publisher and the Department of the Environment in June 1982. That the preparation took so long was entirely due to the fact that all those of us involved were otherwise employed and could spend only part of our time on Danebury matters. Even so four years is not unduly excessive.

These reports were being finalized at a time when some of us were involved in the CBA/D oE Working Party on Archaeological Publication. The Working Party produced its report in January 1983, too late to determine the form of these Danebury volumes. Nonetheless some of the thought that went into the Working Party's paper has influenced the way in which the Danebury report has been constructed. It can not, however, be used as a true example of the effects of the Working Party's recommendations.

One overriding impression remains having compiled these volumes: that no excavation report, however detailed, can hope to be more than an interim summary of a site. To suggest otherwise would be naive or arrogant. A data-set of the kind derived from Danebury will continue to be reworked by students for the foreseeable future asking new and increasingly sophisticated questions. These reports merely advertise what is available and offer some general approximations to the truth which may help those interested in these matters to design new and more penetrating analyses.

Barry Cunliffe
Oxford
7.xii.83

1 Introduction

1.1 The hillfort and its previous history (Figs 1.1-1.3, Pls 1, 2)

Danebury, in the county of Hampshire, is an Iron Age fort situated on a hill rising to a height of 143 m above sea level, between 45 and 60 m above the surrounding level of the gently undulating chalk plain of Wessex (grid ref SU 324377). Three km to the east the chalk landscape is scored by the valley and flood plain of the River Test, which at this point is almost 1 km wide. To the west and south lies the Wallop Brook, a tributary of the Test, at its nearest a little less than 2 km from the fort. The Pillhill Brook and the River Anton, also tributaries of the Test system, cut narrow valleys into the chalk some 6 km to the north and east of the fort. Within the confines of the natural region thus delineated Danebury is situated at the highest point (Figs 1.1, 1.2).

In broader view this part of the Wessex chalk massif gradually rises to the north to the scarp slope of Inkpen 24 km away, overlooking the valley of the River Enborne, a tributary of the Thames. The scarp is dominated by two hillforts, Walbury (297 m OD) and Beacon Hill (363 m). South of Danebury the chalk dips gradually until it disappears beneath a mantle of clays and sands representing the Tertiary deposits of the Hampshire Basin. In an easterly direction the Hampshire chalk land continues to the edge of the Weald where it bifurcates to become the North and South Downs. To the west it merges with the chalk uplands of Wiltshire.

For the most part the chalk downs are covered with a thin soil mantle 200-300 mm thick but in places patches of clay-with-flints cap the hilltops. The river valleys are filled to varying depths with colluvial and alluvial deposits.

The general topography of the Danebury region can best be appreciated from Figs 1.1 and 1.2. The hill itself is an eminence of middle chalk lying at the end of an elongated east-west ridge. The land falls away steeply on the north and west sides, but less steeply on the south. The slope is more gradual to the east in which direction the main entrance faces. Thus the position is commanding and provided with good natural defences while at the same time being easily accessible.

The natural soil cover of the hill is shallow and where the original, pre-rampart, turf-line was seen in the 1969 section, it was barely 150 mm thick. The soil lies immediately upon the chalk bedrock but occasional patches of clay-with-flints, filling fissures in the chalk, were encountered. The largest patch of clay caps the hill and was partially exposed in 1972. There is no evidence, from the filling of the pits or the composition of the ramparts, to suggest that the clay cover was more extensive in the 1st millennium BC. The hill is scarred, on its northern flank, by a deep gully across the upper end of which the main ditch and its 'counterscarp' lie. It is clearly an ancient feature of geomorphological interest quite probably of Pleistocene age (Fig 1.4).

No spring occurs on or close to the hill. The nearest water supply now is the Wallop Brook at Nether Wallop some 2 km to the south-west. It is, however, possible that the tributary valley, now dry, which runs closer to Danebury, may have contained springs in the 1st millennium BC: its nearest point to the fort is 1.3 km away. Whether or not the occupants provided themselves with a dew pond sited within the fortification is at present unknown but a man-made hollow partially lined by a naturally occurring outcrop of clay-with-flints was encountered near the entrance (p 127). Experience during excavation showed that it rapidly accumulated and retained water even during the light rains of summer. In all probability, however, the 'pond' was designed to catch surface run-off from within the fort to prevent it from washing through the entrance. In the centre of the fort, close to the highest point, where the largest patch of clay-with-flints occurs, surface undulations may indicate an early dew pond, but without excavation the suggestion cannot be tested, nor, if a pond existed, need it be Iron Age.

The earthworks of the hillfort can most readily be appreciated from Fig 1.4. Three distinct enclosures are represented: the *inner earthwork* with its massive rampart and ditch, enclosing 5.3 ha; the *middle earthwork,* attached to the south-east side of the inner enclosure adds a further 1.2 ha; while around the whole hilltop is a slighter *outer earthwork* which in all encloses 16.2 ha. The space between it and the inner defended area is approximately 5.3 ha in extent.

The *inner earthwork* can be shown to be the earliest of the defensive works consisting simply of a rampart fronted by a single ditch on the outer lip of which is a slighter counterscarp bank composed of spoil cleared from the ditch. Originally two entrances were provided: an east entrance which was subsequently elaborated and remained the main entrance throughout, and a south-west entrance which was abandoned and blocked during the life of the fort.

The *middle earthwork* was altogether slighter but it too consisted of a rampart and ditch fronted by a slight counterscarp. Excavation has suggested that it was added to the main enclosure before the east entrance was elaborated with its extensive hornworks; indeed the south hornwork blocked the trackway which led into the enclosure (p 21). It may have been at this time that the earthwork was slighted at two points, perhaps to provide access for animals.

The *outer earthwork* consisted of a ditch the spoil from which was, for the most part, thrown in a low bank on the downhill side. Several entrances were provided. One at the west side may have been sited to allow access to the south-west entrance of the fort; a second, on the south-east side, could be shown by air photography to be linked to a trackway which ran southwards through an area of Celtic fields (Fig 1.3). It is possible that another way in may have been provided along the deep natural gully on the north side of the hill.

In front of the east entrance the outer earthwork changes character. Its northern stretch continues in an approximately straight line for more than 1 km across the gentle sloping down in front of the fort, the only difference in form being that the bank is now on the inside of the ditch, while the eastern end of the circuit meets at right angles a separate length of ditch and bank which runs parallel to the northern ditch for 40 m or so, some 40 m from it. How far this earthwork extended is unknown but it does not appear on air photographs of the adjacent field.

The structure of the various earthworks, and the dating evidence for them, will be discussed in detail below (pp 15-45). Suffice it to say that the inner earthwork was the principal defensive structure throughout the life of the fort. The middle earthwork appears to have been added to it either as an additional defence or to provide corral space for animals. Finally, after the eastern entrance had taken on its final form, the outer earthwork was added at a consistent distance of between 20 and 40 m from the limit

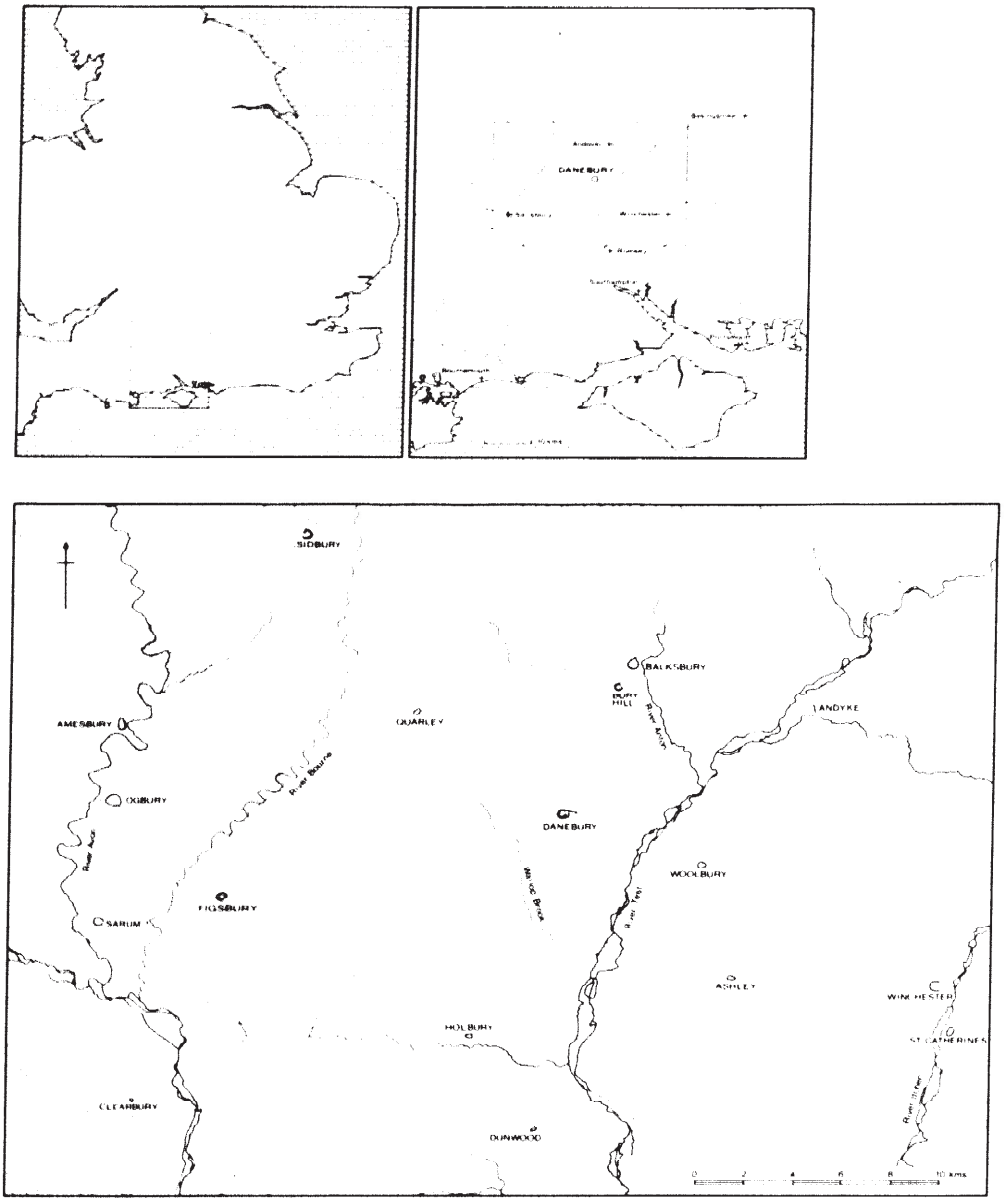


Fig 1.1 Location maps. The largest scale map shows principal Iron Age earthworks in the Danebury region. Contowrs at 76 and 152 m

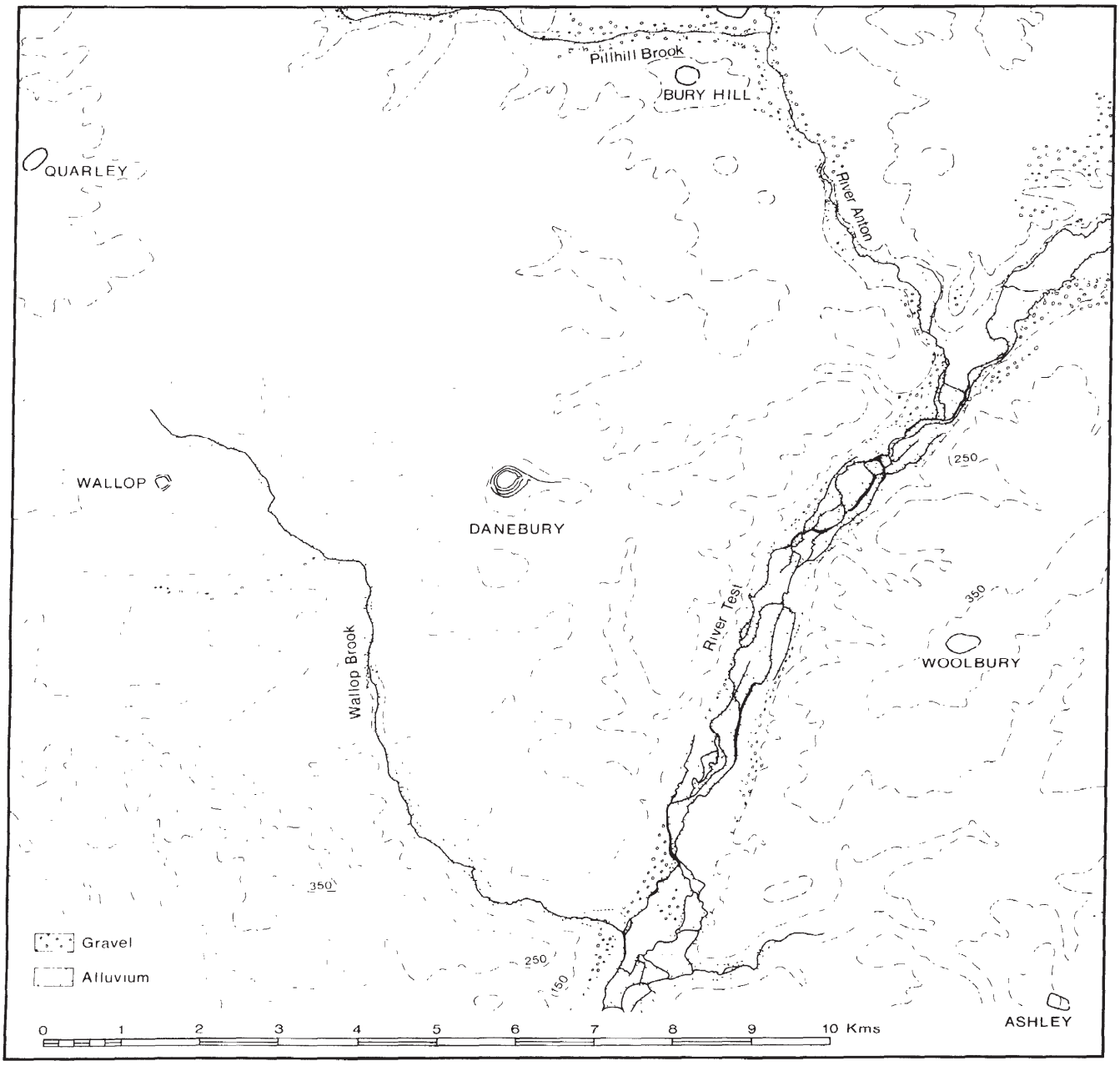


Fig 1.2 The Danebury locality. Soils and major Iron Age enclosures. Contours in feet

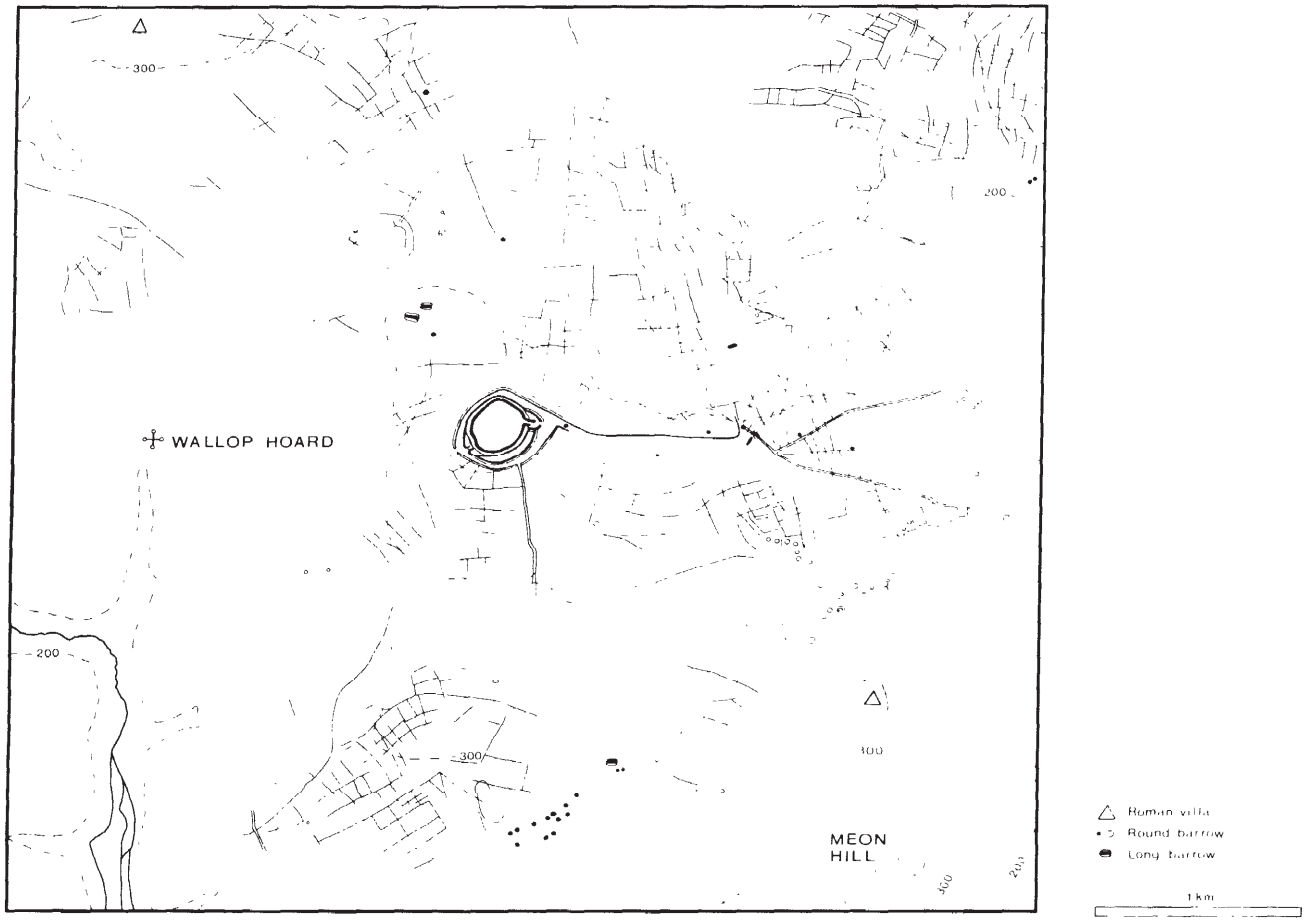


Fig 1.3 Danebury in its archaeological setting

of the other earthwork structures. The fact that the ditch was on the inside suggests that it was probably a stock enclosure. The linear earthwork, to which it was linked, would have been effective in aiding the round-up of animals and in enabling them more easily to be driven into the enclosures.

The neck of the ridge in front of the east entrance is deeply scored by trackways which cross the col in a general NW-SE direction, apparently making for the crossing of the River Test at Stockbridge. They have avoided the earthworks of the east entrance but have cut, in several places, through the outer earthwork. Associated with them are several irregular pits or quarries. These features evidently post-date the Iron Age earthworks and effectively block the entrance to the fort, but they are otherwise undated. One trackway, however, partially sectioned when the outer earthwork was being examined, produced a single sherd of Roman coarse ware from just above the worn surface. While some of the tracks could be as early as the Roman period most are likely to be medieval or later.

Of the other earthwork features deserving comment is the large circular mound, 25 m in diameter and 2 m high, which crowns the minor summit in front of the east entrance and is flanked on either side by the ditches of the outer earthwork. It is unexcavated and thus undated, but has been mutilated by an Ordnance Survey trig point set into the top. While it could be a Bronze Age barrow its prominent position in relation to the hillfort might suggest a 1st millennium BC date.

The entire site, which is now administered by Hampshire County Council, is carefully maintained as an area of archaeological and natural historical interest. When the original tree planting took place in the 19th century the counterscarp bank of the inner earthwork was chosen as the boundary of the clump and until *c* 1970 the area within was a beech wood interspersed with some fir and self-seeded sycamore. Much of the clump has subsequently been cleared and replanting with beech and other trees natural to the chalk has taken place in areas which have been archaeologically excavated. With the exception of the boundary of the clump, which will be maintained as a beech belt, the earthworks will not be replanted. Outside the clump the plant cover varies from yew thickets and scrub to open downland occasionally grazed by sheep. It is intended that this variety of natural chalkland vegetation should be maintained.

Danebury, or Dunbury as it was then called, was a

well-known landmark in the 17th century. It appears, schematically drawn but named, on the map of Hampshire in Camden's *Britannia* (1637) and is briefly described by John Aubrey in his *Monumenta Britannica* (vol 1, fol 155b and 158), though he confuses the two adjacent forts of Quarley and Danebury in his account. The physical nature of the site at this time is made clear in a document compiled of papers relating to a tithe dispute in Nether Wallop parish (private owner but photocopy 255 in HRO). The manuscript in its present form is 18th century but it contains material written in 1678 referring to the earlier years of the century when:

> Dunbury-hill . . . was anciently and till since the memory of man a warren and let to several tenants at rack rents and was entire to itself and (not a sheep common) had a lodge in it, only since the rabbits were destroyed they have fed their sheep there, and when it was a warren the sheep many time went over it and not questioned because the warreners rabbits trespassed as much on their sheep-down.

Further, we are told that about 60 years before the document was written (ie *c* 1618) between six and twelve acres of the hill within the defences and close to the lodge were 'broken up'. A second 'breaking up' took place some years later in 1655 at which time the parson sued for a tithe of all the newly cultivated land in the Summer Assizes of 1656.

The picture presented in these accounts is, then, of a hill occupied by a rabbit warren which gradually fell into disuse during the 17th century while attempts were made at improving the land. By the 1670s the warren had become defunct and the hill had been turned over to sheep grazing, a state in which it appears to have remained throughout the 18th century.

William Stukeley visted the site in 1723 and drew a charming water-colour sketch in his field notebook showing boldly-defined earthworks standing out in what would appear to be a stretch of open downland (Wilts Archaeol Soc Library, Devizes). Some years later, in about 1780, J B Malchair sketched a somewhat similar scene (Bodleian Library, Oxford). The hill remained grassland into the early 19th century when the entire enclosure was planted with trees to improve the appearance of the landscape.

The first serious archaeological research can be dated to 1858 in which year the Rev Walter Blunt invited Augustus

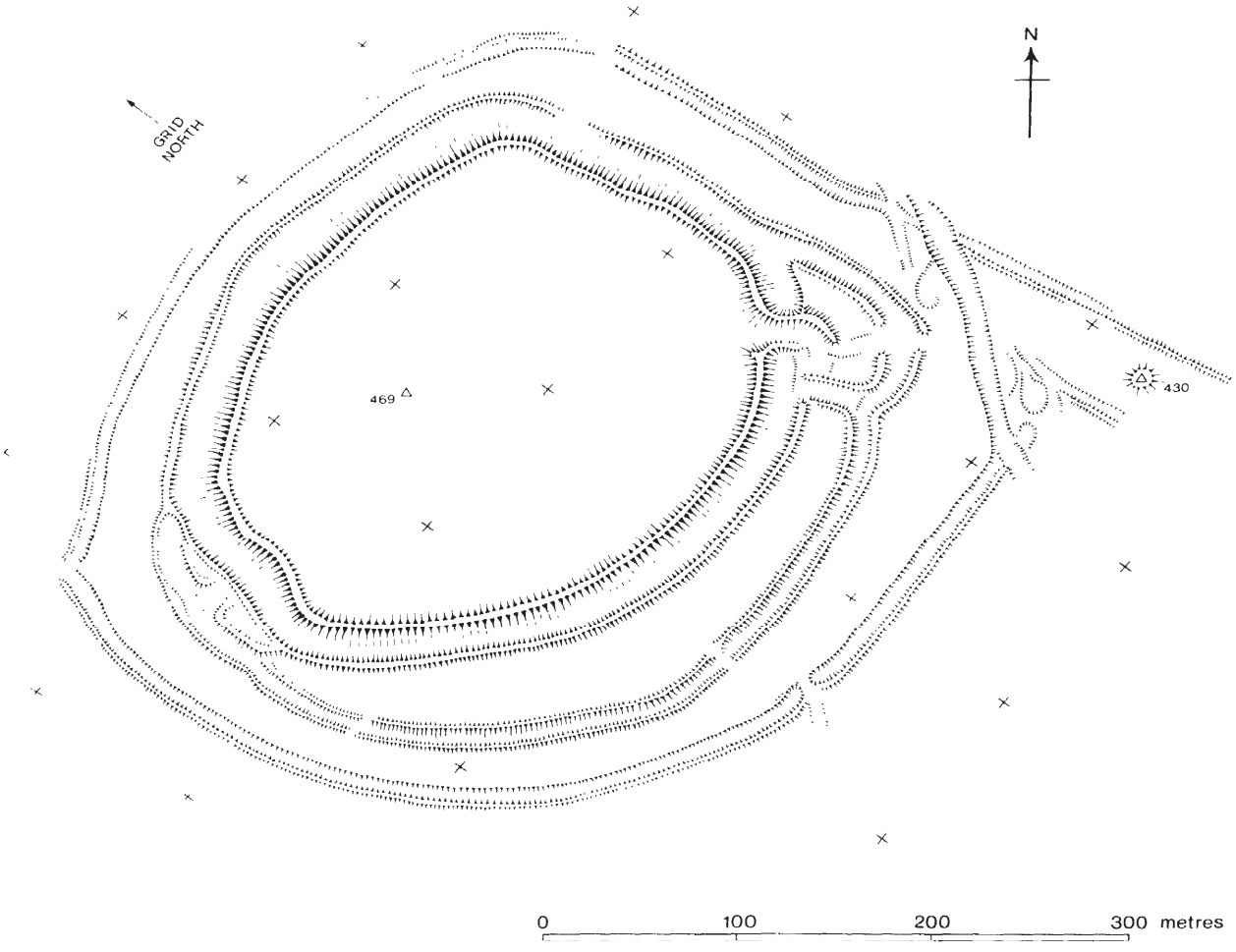


Fig 1.4 The earthworks of the hillfort. The crosses represent the intersections of the 100 m grid squares into which the fort has been divided

Franks, of the British Museum, to visit the earliest recorded excavation within the fort. Franks gives a brief account of the discoveries (1859, 241-2). It appears that a pit had been discovered by a gamekeeper in digging out rabbits in the southern half of the fort. It was totally excavated in his presence and proved to be '8 feet deep and 4 feet 10 inches in diameter . . . it was filled up with a mixture of chalk and earth, among which occurred one or two large flints'. The finds included animal bones and coarse, dark pottery. At least two other pits had previously been discovered, and when 'the surface of the inclosure was trenched to plant the fir *(sic)* trees with which it is now covered many antiquities and coins were found, now unfortunately disposed'. Franks goes on to note that in about 1845 some anvils and hammers of iron were discovered near the inner rampart (Winchester City Museum; see also Williams-Freeman 1910,295) and that shortly afterwards, a bone comb was found nearby (British Museum). A further find of about the same period was a silver Durotrigan coin (Vol2, pp 334-5) from 'one of the fosses' (British Museum; see also Evans 1864, 101). Franks concluded his report by observing, 'The very unfavourable state of the weather prevented any further excavation, but I trust that my visit will lead to a careful survey being made of this interesting spot . . .'

There matters rested but Danebury remained a great attraction for local antiquarians. It was not, however, adequately planned and described until as late as 1910 when the Hampshire field archaeologist, J P Williams-Freeman, published a detailed account (Williams-Freeman 1910, 293-308). The same illustrations with an extended description were reprinted a few years later (Williams-Freeman 1915, 147-59, 370). Air photographs taken in the late 1920s provided additional details which led to a further discussion of the site by Crawford and Keiller (1928, 88-92) but the beech clump was so dense that little of the Iron Age fort could be seen and discussion centred upon the tracks of various dates which cross the neck of land just outside the entrance, clear of tree growth.

By this time access to the site had become severely restricted by a protective landowner and few people were able to gain admittance. However in 1958 the entire fort and a large part of the surrounding area was acquired by Hampshire County Council and ten years later, after access had been arranged, it was opened to the public as an amenity area. Excavations began in 1969.

1.2 The excavation campaign

The excavation of 1969 was conceived of as a trial programme designed to explore the defences and to assess the potential of the site. A single trench was cut through the main rampart, its ditch, and the counterscarp, and the same trench line was continued to provide sections of the middle earthwork and the outer earthwork. In addition limited trial excavation of the main (eastern) entrance was undertaken and a small area was explored within the fort contiguous with the rampart section. The latter showed that Iron Age occupation was dense and at the same time highlighted the destructive effects of tree roots.

By this stage it had become clear that the beech clump covering the fort was suffering severely from beech bark necrosis-a fungal infection of the bark which leads rapidly to the death of the tree. Some trees had already been removed and as the canopy was broken so the wind began to cause considerable damage, uprooting much of the more spindly growth. The management programme developed at this time envisaged an extended period of felling, lasting for many years, accompanied by systematic replanting, but only after archaeological excavation had first cleared the area to be planted. Archaeologically sensitive areas, such as the entrance, the ramparts and ditches, and the deeply stratified levels preserved behind the ramparts were to be left and grassed as the tree cover thinned.

This programme meant that considerable traffic concerned with the various aspects of woodland management would have to pass into and out of the fort through its original Iron Age entrance. With this in mind the second season of excavation (1970) concentrated upon the main entrance. The aims were simply to recover the structural history of the entrance features and to clear the site so that a road of railway sleepers could be laid to protect it from wheeled vehicles. A summary of the first two seasons' work was published in the form of a first interim report (Cunliffe 1971).

From 1971 until 1978, for a period of between four and six weeks each year, the interior of the fort was systematically stripped. By the end of that time l·211 ha had been totally cleared, 23% of the enclosed area. The programme was to some extent conditioned by the pace of tree clearance but the first aim was to obtain a section about 30-40m wide across the fort from one rampart to the other-a distance of some 230m. This was accomplished between 1971 and 1975 and showed that there was considerable variation in the structures represented from one part of the fort to another. One particularly encouraging result was the fine degree of preservation of the stratified levels in the quarry hollows behind the ramparts. This offered the opportunity of establishing a chronological sequence and of examining, in detail, the structures of the individual houses and of their associated levels. The work of 1971-5 was summarized in a second interim report (Cunliffe 1977).

The final stage of the programme (1976-8) concentrated upon an area adjacent to the main entrance, partly to see how the plan of the features in this region differed from the first sample and partly to provide the opportunity of examining extensively another area of deposits stratified behind the rampart; the area chosen was the only site free of trees. The excavations of 1976-8 together with later work were summarized in a third interim report (Cunliffe 1982).

The completion of the first ten-year programme of excavation in 1978 provided the occasion for a reassessment. At that stage two decisions were made: to publish the results of the first ten years, which form the body of this report, and to begin a new programme of exploration designed to last five years in the first instance. The second programme differs from the first in that it attempts to explore larger areas but avoids areas of deep stratigraphy. A more significant difference is that while all the shallow features, such as postholes, slots, stakeholes, and gullies, are totally excavated, only 20%) of the pits, chosen strictly at random, are examined. The rationale behind the decision is that: (a) pits are less subject to destruction and disturbance by tree roots and burrowing animals than other features; (b) the number of pits already excavated (more than 1000) is large enough to provide a reasonable sample of type, filling, and artefacts; (c) by leaving 80% of the pits unexcavated, but accurately located, it will be possible for anyone in the future to increase the total sample by selecting, from a known population, an additional number to excavate according to whatever sampling procedures are in vogue at the time. The new programme thus has the advantage of concentrating on the strictly rescue problem of the site and developing our notions of the settlement plan, while at the same time leaving for posterity a sufficiently large sample of unexcavated material to encourage further study.

1.3 The recording system and the presentation of the report

1.3.1 Site recording

The recording system was designed to suit the complexities of the site and to make the subsequent manipulation of the data as simple as possible. The spatial basis of the recording was a metric grid which was imposed upon the entire site dividing it into 100m squares each of which was identified by a letter (see Fig 4.1). Thus within each grid square a feature could be given a grid reference to locate it, the degree of precision depending upon the number of digits chosen. In practice, six-figure grid references were used which allowed features to be identified to an accuracy of 100 mm. The reading was taken in the centre of each circular feature (postholes and pits) and at selected points along linear features.

Each feature was given a unique number prefixed with a letter referring to a range of fixed category types:

P	pit
ph	posthole
G	gully
F	feature (a miscellaneous category including all large quarries)
H	hearth/oven
SI	slot (used for cut and filled trenches)

Thus a pit would be known by its unique number, eg P873, but it would also have a unique grid reference, in this instance P501608. The identification numbers were recorded in a series of index books immediately they were assigned, as the actual feature was labelled on site. One advantage of the system was that if labels became detached during excavation the feature could be reidentified immediately by its recorded grid reference. Another advantage is that the grid reference can be used in the computer program allowing the possibility of spatial plotting of selected characteristics.

Within each feature the discrete stratigraphical units were assigned consecutive numbers. Thus a pit with six distinct contexts would have the layers numbered l-6.

Where areas of stratified deposits were found, usually in the lee of the ramparts (but sometimes in the centre of the fort), a unique series of layer numbers was used without prefixes. The only significant exception to this rule was in the excavations of 1969 and 1970, which were concerned with the entrance and defences. Here the individual trenches were given numbers and the stratigraphical contexts were numbered separately in each.

All features and layers were described by the individual supervisors in numbered notebooks for which the feature index books served as the principal indexes. The basis of the site planning was the 10 m grid square drawn at a scale of 1:20; but sometimes, in the case of extensive homogeneous layers, planning was at 1: 50. All sections were drawn at 1: 10.

The primary site archive consists of notebooks, section drawings, plans, and photographs. No primary descriptive recording was on loose sheets or index cards.

1.3.2 The publication research design

As an essential preliminary to publication it is necessary to consider how much research effort should be expended on the raw data-a consideration that can only be made on academic grounds in the full knowledge of the entire site data base and in the light of current research aspirations within the period. The principles adopted here will be presented briefly.

Site history

a High priority was given to defining site 'history' in terms of structural development. Thus the defensive sequences have been researched fully, and are presented in detail, while the essential elements of the stratified sequences behind the ramparts are described and correlated. A description of each archaeological context has not been considered relevant even at microfiche level. Anyone wishing to examine this kind of detail must return to the primary site record.

b To relate the stratitied elements of the site to the numerous isolated features it has been necessary to create a relative chronology using pottery, the most prolific artefact, as a relative chronological indicator. For this purpose a series of ceramic phases was defined and a number of tests instigagted to examine their validity. This aspect of the ceramic study was given high priority. It absorbed a considerable amount of research time and involved extensive use of computer facilities.

c To calibrate the relative chronology a programme of radiocarbon dating was instigated. The potential of the site was such that the programme was designed to demonstrate the degree of reliability of radiocarbon dating in late 1st millennium BC contexts. The programme of a kind not hitherto attempted and makes a significant contribution in the general theoretical field.

Site function

a Since few hillforts have been adequately sampled some attention was given to questions of site function. At the simplest level the full range of structures has been defined and described. In the case of rare structures, eg rectangular structures and circular structures (?houses), each is described and illustrated in the printed text. For more common features, eg the rectangular post-built structures, a sample is described in the printed text, the rest on microfiche. With very numerous feature-the pits-a sample is published in the printed text, and a larger sample is given on microfiche; for the rest reference must be made to the site archive. No attempt has been made to list, describe, or explain all the many thousands of postholes. Various methods of approaching the problem will form part of the continuing research programme.

b The spatial relationships of structures seen against change with time are discussed. More work is possible in this field but is best undertaken in the light of new evidence from the current excavation.

C Problems of intrasite variability as reflected in various artefact assemblages are considered at a fairly simple level. We believe that more sophisticated patterning will become apparent with further research and through a study of entire artefact assemblages. The computer recording program has been designed with questions of this kind in mind. This area of study will form a major element of the ancillary research programme.

d The collection of animal bones is by far the largest stratified collection from any prehistoric site in Britain. For this reason it has been studied in detail in its entirety and the results computerized. Much research effort has been expended on this material. The preliminary results are presented here but research continues.

e Floral material was collected in two ways: by judgment sampling and by random sampling. The study presented here, from an analysis of the random sample, is a detailed consideration of the data. A programme of random sampling is continuing.

f The artefact collections have been studied in some detail with scientific analysis being undertaken wherever

it was thought that evidence would be obtained about the origins of the material or the technological processes involved in production. The analytical work carried out on the glass, bronze, and iron from Danebury contributes to broader national programmes.

Context

a Detailed studies to examine the position of Danebury in the context of southern Britain have not been undertaken because they are not considered to be appropriate to an excavation report. However, comparative material has been considered where it is relevant. While it would be interesting to compare aspects of the Danebury assemblages with other sites the disparity in sample sizes limits the value of comparative quantitative studies. Further quantitative studies involving other southern British sites are, however, being undertaken as part of the ancillary research programme. Analysis of pottery fabrics, ores, imported stone, etc enable aspects of the exchange networks involving the site to he examined.

b A survey of the Danebury region was instigated and has been brought to a state of completion by the Royal Commission on Historic Monuments (England). It is published as Volume 3 in the Danebury series. Some general models, generated by a consideration of this survey, are offered here. Others will be possible when further ancillary research has been completed.

1.3.3 Publication

Much has been written in recent years on the practicalities and philosphy of archaecological publication. Here we have tried to remain faithful to the recommendations of the *Frere repor* (DoE 1975).

The results of the first ten years of excavation are presented in two volumes: Volume 1 deals with the site, structures, and sequence; Volume 2 presents the material remains discovered and concludes with a brief synthesis. A third volume, compiled by the RCHM (E), presents a survey of prehistoric and Roman remains in the Danebury region. Two further volumes are planned: Volume 4 will describe the results of the excavation programme of 1979-83, while Volume 5 will present a range of ancillary studies generated by the Danebury programme. A continuation of the excavation programme will require further volumes.

In Volumes 1 and 2 have presented, in printed form, what we consider to be the minimum necessary for the potential of the site and the nature of the data to be fully appreciated. Where data are of special interest, either because of their unsual character of because the sample size allows interesting generalizations to be made, they have been presented rather more fully. These volumes are the Level Iv publication.

Microfiche presentation has been used extensively for purely descriptive and statistical information and for supplementary notes (See 1.3.5 below). Much information has also been recorded on computer (see 1.3.4 below). The data files generated, together with the microfiche, constitute the Level III publication.

The Level II archive, consisting of photographs, site plans, sections and notebooks, conservation record sheets, card indexes and files of correspondence, Trust papers, newspaper cuttings, etc, are present retained in the Institute of Archaeology, Oxford, pending the completion of the programme, after which they will be curated by the Hampshire County Museum Service.

The artefacts and samples (Level I data) are being transferred from the Institute to the County Museum as research is completed.

1.3.4 The computerization of the Danebur y arc hive

by Gary Lock

Introduction

The computing of Danebury is being carried out at The Research Centre for Computer Archaeology, North Staffordshire Polytechnic, Stafford on an ICL 2960 running under the operating system VME/K KSV 17.50. This was scheduled for upgrading to VME 2900 during 1982.

The work is a research project within itself concerned with the collection and storage of large amounts of archaeological data and their subsequent retrieval and analysis. Although the system so far developed is site specific it should be recognized that certain sections of it, for example the suite of programs to analyse animal bones, could be applied to any data set of a suitable format.

The decision to computerize Danebury was necessary owing to the large amounts of data produced by excavation. For example, there are 50,000 lines of information referring toover 100,000 individual animal bones. Even the simplest analysis could not be carried out by hand on a data file of this size, therefore justifying the extra resources necessary for computerization. Subsequent advantages and disadvantages of computerization have become apparent. What isobvious, though, is that computerization must be an integral part of large-scale excavation which is given due consideration right from the initial costing and planning stage.

Information collection

Data preparation and entry into a computer are arduous tasks which are time-consuming, expensive, and error-prone. Because the computerization of Danebury was not envisaged from the onset of the excavations large amounts of data had to be transcribed from site records on to suitably formatted data sheets and then on to a machine-compatible medium, in this case punch cards. Each of these stages is a potential source of human error and the whole process is inefficient. Data capture must be an ongoing process the whole of which can be streamlined by transcribing from site and laboratory records into a micro-computer, thus eliminating one of the transcription stages. The data are then edited on the micro before transference to the mainframe for processing. The possibility of on-site micros is not considered here as excavation at Danebury takes place for only four weeks each year and this pressure of time does not produce a suitable environment.

The information from the excavation and post-excavational analyses that has been collected by human observation and decision-making must be organized in a consistent and unambiguous manner to make it machine-compatible. The Danebury data, like most other archaeological data, consist of a mixture of numerical (measurements) and qualitative (mutually exclusive categories of coded observations). Computing has the advantage of forcing the archaeologist to prepare data in a standardized logical way although s/he should not be restricted by the limitations and disciplines of the computer. The data structure of each of the Danebury files was designed by the specialist worker concerned to contain the maximum amount of information with free text comments where needed.

The data structure within each file is hierarchical,

described here according to the USASI Standard COBOL definitions.

1 An Elementary Data Item (equivalent to a Field)-each smallest piece of information relevant to the current process whether input, retrieval, or other analysis. These are, therefore, variable. For example, the coded description of a pot form could be:

Class	Type	Form	Variety
J	A	1	.1

If retrieving on Class the first character would constitute the required field whereas if retrieving down to the Variety level the field would include all four characters.

2 A Record-a collection of Elementary Data Items grouped together to describe one thing.

3 A File-a collection of logically related records. The records in all Danebury files are stored sequentially by context number.

The standardized coding of archaeological data, especially when presented on a computer printout, can give a false impression of objectivity and validity. These data are no more objective than those in the site recording books from which they were taken. Computers do not solve the problem of standardization of recording between any two site supervisors.

Information storage

The term 'Data Base' is much abused in archaeology and will not be used here to describe the Danebury data files. True Data Bases are, however, becoming more commonplace in archaeology (Gaines & Gaines 1980) as in other fields where large amounts of information are stored and retrieved. A Data Base is essentially automatic. The user need not be aware of the efficient internal organization of the data but is simply asked questions and presented with answers in natural language usually on a Visual Display Unit. Data Bases are also capable of continual expansion with new data being entered as a series of answers to questions which are then automatically verified and stored in the appropriate place. Flexibility is another essential attribute. Data Bases should not be application specific but open to interrogation through any level of the data with retrieved results capable of ranging from the general to the specific.

The Danebury information is stored in a series of files that are arranged in a simple two-level hierarchy. The main file contains individual context information and a series of sub-file indicators which control access to the sub-files. The sub-file indicators themselves are hierarchial-for example, any small find at all or a specific category of small find. At the time of writing six sub-files exist containing information on animal bones, pottery, small finds, briquetage, querns, and posthole coordinates (all described more fully elsewhere).

The total storage space used is 10 Megabytes with the animal bone file being the largest at 5 Megabytes. Because of this large amount of data it was decided to use a mainframe computer. Storage and processing would not have been impossible on a micro-computer but would certainly have been very slow and tedious. The files are stored on magnetic tape when not in use and moved onto disk for processing.

Information retrieval

Processing is performed by specific programs written in COBOL or FORTRAN after discussion with the specialist worker concerned. Because the programs are application specific a higher level of recall and precision is attained than through automatic Data Bases, recall being the proportion of relevant material actually retrieved in answer to a search request, and precision being the proportion of retrieved material that is actually relevant. The Danebury files have so far only been processed individually. When the system is operating fully, random access between the files will allow for much more powerful information retrieval exercises. Information can be retrieved from each file at different levels:

1 The file in full as it stands
2 Selected complete records
3 Selected fields from all records
4 Selected fields from selected records

Simple descriptive statistics such as counts, percentages, mean and standard deviation can accompany any of these retrievals. This capability of multivariate listings alone makes a very large selection of information available which is essential to the basic analysis of the site. Summarizing the data into a manageable format is important when such large amounts are involved. Comparative counts and listings for each ceramic phase of the site have been widely used.

Sorting on a specific key data item within a record is an important part of information retrieval. Hierarchical sorts in ascending or descending order are possible; for example, the records in the animal bone file have been sorted to produce a listing in species order sorted by bone type within each species. Again this is a powerful tool which produces results unobtainable by hand for such large data sets.

Statistical analyses

Data sub-sets can be extracted from the files for more detailed statistical analyses. There are many possibilities involving the use of commercial packages such as SPSS and BMDP (discussed elsewhere) as well as independent programs. A completed analysis involving the BMDP package to seriate the pits is described elsewhere (fiche 4, frames A3-4). A suite of programs incorporating a spatial analysis of the posthole distribution to identify possible 4- and 6-post structures is under development (Fletcher & Lock 1981).

The archive

The computer files will eventually form part of the site archive. It is envisaged that printouts and/or copies of the files on magnetic tape will be available to specialist workers.

Further information about the computing work is provided elsewhere as follows:
The computing of the pottery: fiche 8, frames A3-4
The computing of the pits: fiche 4, frames A3-4
The computing of the briquetage: fiche 11, frame C12
The computing of the animal bones: fiche 16, frame A2.

1.3.5 The microfiche supplement

A considerable body of data is presented in the microfiche supplement. Full cross-referencing is given in the main text and on the contents pages introducing each section. For ease of reference a contents list is provided here (pvi).

1.4 Acknowledgements

To offer adequate thanks to the many hundreds of people who have contributed to the success of the excavation is an impossible task. Nearly 1000 volunteers have taken part in the excavation, many of them from abroad, from America, France, Germany, Belgium, Holland, and Finland. Without their willing efforts the excavation would have

been impossible, and they must take pride of place in the long list of acknowledgements.

The inspiration for the excavation came from Cohn Bonsey, then Hampshire's County Land Agent, later to become the County Recreation Officer. Throughout he has been a constant and enthusiastic supporter of our programme, in the early years himself taking on much of the site support work. As his duties have increased he has delegated the practical preparation to his assistants David Dixon, Roger Brake, and Chris Thomas, but has retained a close interest in the excavation and remained an ardent supporter in County Hall. Each year, through the good offices of Colin Bonsey's department, the site has been fenced and prepared for excavation, essential supplies have been maintained throughout the season, and when work has been completed the excavation has been refilled and replanted. Everything has run smoothly in the capable hands of the site wardens Brian Bretton and Vic Mart in.

In the early years the excavation was administered by a committee which in 1974 became the Danebury Trust. The Trust, under the chairmanship of the late David Pumfrett and more recently Councillor Maurice Jones, has been a pillar of strength, always ready with advice, support, and encouragement. They have ensured that the elected representatives of the County Council have been kept informed of our work.

Financial help has came from a variety of sources. The Department of Environment, recognizing the rescue nature of the work, have been prepared to contribute towards the cost of preparing the publication. We have been fortunate to have had the constant cooperation of the Department's inspectors, Geoffrey Wainwright, Christopher Young, and Steven Dunmore. Generous and regular financial support has also come from the Hampshire County Council, the British Academy, the Society of Antiquaries, and the John Lewis Partnership. Grants have also been received from the Dulverton Trust, the Hampshire Field Club, the *Sunday Times,* and the BBC.

I have always been particularly fortunate in enjoying the close support of a number of friends and colleagues who have worked devotedly for the project. Jo Chaplin, Robin Fergusson, Judi Startin, Bill Startin, Tim Ambrose, Mike Rouillard. Sue Rouillard. Lisa Brown. and Cynthia Poole have all made outstanding contributions undertaking administrative duties, site supervision, recording, and a host of other tasks while offering constant moral support to the director. I have many fond memories of this decade.

I have directed the excavation throughout with the exception of 1974 when Bill Startin deputized. Our task was made lighter by a team of skilled supervisors who undertook site recording: Tim Ambrose (1970-6), Phil Banks (1973, 1976), Dave Batchelor (1974-5), Mike Fulford (1970), Patrick Green (1969-70), David Knight (1976), Rowena Loverance (1975) Caroline Malone (1978), Brendan O'Connor (1971-4), Roy Platt (1977-8), Cynthia Poole (1977-8), 'Adrian Rance (1971), Sue Rouillard (19768). Ken Smith (1972-5). Bill Startin (1971-3), Nigel Sunter (1969), Ian White (1976), Alasdair Whittle (1978).

To all we record our grateful thanks. On-site treatment of finds was undertaken by Frances Cunliffe (1969-70), Sue Evison (1971), Robin Fergusson (1972-3); Rose Annable (1974), Margaret Herdman (1975). Sue Morris (1976). Caroline Malone (1977), Penny Plait (1978).

The organization of the camp, from 1969-73 at Stockbridge Secondary School and after 1974 at Fullerton Bridge Station, has been in many capable hands. A vital contribution has also been made by Jim Kennedy who from 1977 onwards has cleared topsoil from the site using a mechanical excavator with breathtaking skill and delicacy. Of the digging team I will mention only Fred Horne who first joined us in 1971 and has returned in every subsequent year; he symbolizes the devotion of the volunteer force.

The preparation of this report has involved an enormous amount of work shared by a number of people, many of whom appear as contributors on the title page. To all of them I wish to express my deep gratitude not only for producing reports of high quality but for responding with such efficiency and understanding to my barrage of questions and reminders; their tolerance has been remarkable. Much behind-the-scene work goes on largely unnoticed. Among those who have made a major contribution in this area are Sue Rouillard, Judi Startin, Myra Shackey, Tim Ambrose, Cynthia Poole, and Lisa Brown. Though many of their names occur elsewhere in these paragraphs their contribution in helping to order the vast bulk of data must be acknowledged here.

I have been fortunate to have had the support of two University Departments and their staffs during the course of this work. At Southampton, from 1969 to 1972, technical assistance was provided by Nick Bradford and David Leigh, who also undertook site photography. From 1972 the staff of the Institute of Archaeology have played vital role in forwarding the work. Mike Rouillard and Alison Wilkins have prepared the vast majority of the illustrations for these volumens, Bob Wilkins and Nick Pollard have undertaken object photography and have produced publication prints from the site negative collection, Sue Rouillard, Judi Starting, Sarah Pollard, and Lisa Brown have conserved the finds, while Chris Lewis Lynda Smithson, and Sally Ann Hoddell have produced the immaculate typescripts from which the report and its microfiche supplement have been prepared. Oxford University's contribution to the programme has thus been considerable.

A long-term excavation programme requires people to work together in harmony, and Danebury in all its aspects has been a particularly happy experience; lasting frieddships have beenn made from which at least five marriages have resulted. The effects of working together in a large and varied team have been as exhilarating as they have been memorable.

2 Pre- and post-hillfort occupation

The hilltop shows signs of human activity both pre-dating and post-dating the main phase of occupation which began in the 7th or 6th century BC and lasted until the 1st century AD. For ease of ordering the report this evidence will be dealt with at this stage. Sections 2.1 to 2.3 describe aspects of the pre-hillfort occupation while sections 2.4 and 2.5 are concerned with the post-Iron Age activity. The descriptions given here are brief summaries of more detailed reports which will be found in the fiche section (fiche 1, frames A2-B4).

2.1 Neolithic and Early Bronze Age occupation: structures (PI 3a)

Structural evidence of the early prehistoric period is strictly limited (Fig 2.1). One possible barrow exists outside the defences on the north-east side of the fort, a small Bronze Age pit was located in the forecourt of the east entrance, and a crouched inhumation of a female aged between 20 and 30 and accompanied by a beaker was found in the area excavated in 1971.

Detailed description and an anatomical report by Bari Hooper will be found in fiche 1, frame A5.

2.2 Neolithic and Early Bronze Age occupation: artefacts

The excavation has produced a small collection of flint implements and early prehistoric pottery found, for the most part, as residual material in later Iron Age pits. No structures or undisturbed levels can be shown to belong to the pre-Iron Age period with the exception of the single pit and Beaker burial noted above.

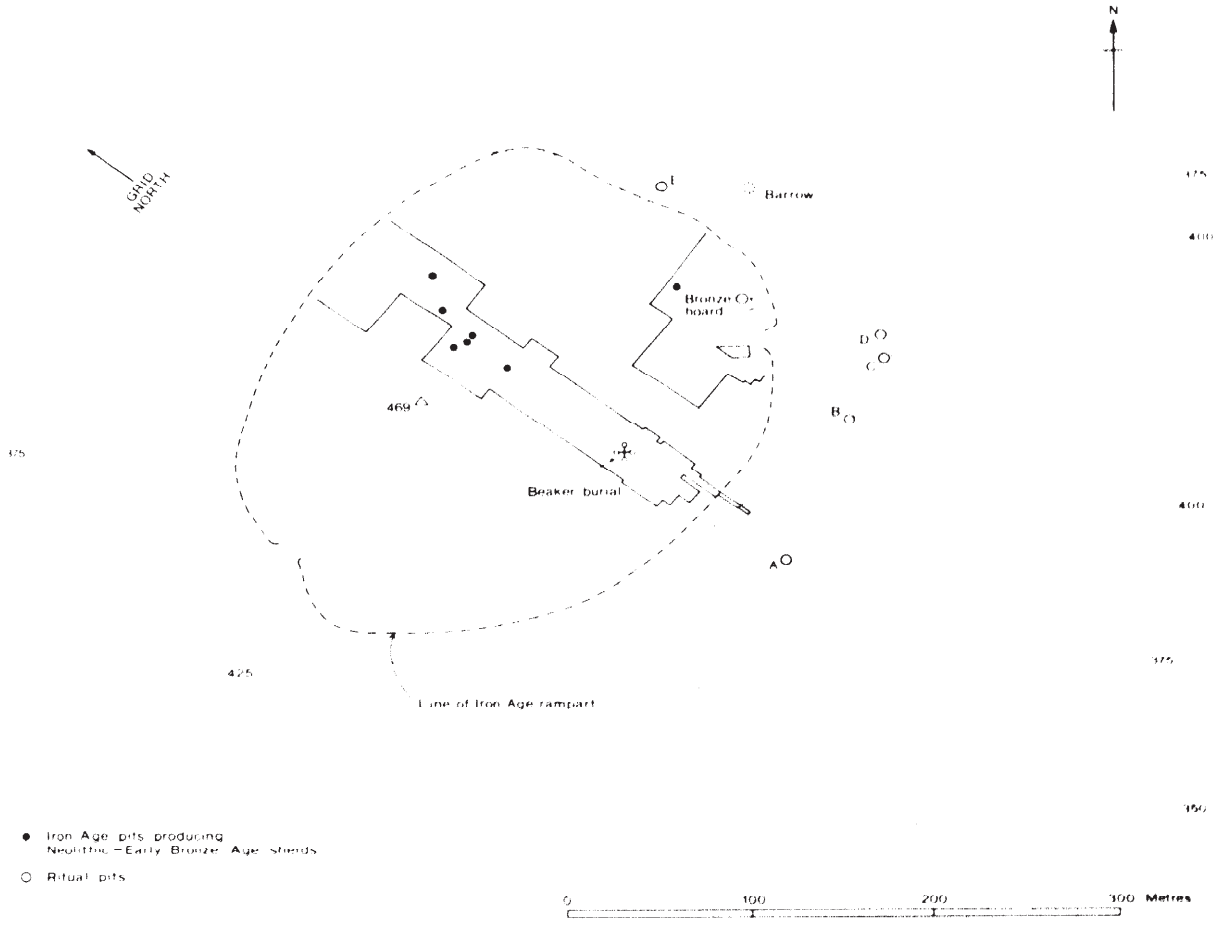


Fig 2.1 Early prehistoric finds on Danebury Hill. Contours in feet

The flint assemblage had been studied by Verna Care (fiche 1, frames A6-10) who reports that analysis of the waste flakes suggests at least two periods of occupation, the first during the Early Neolithic, the second in the Late Neolithic to Middle Bronze Age. Six artefacts including a chipped axe, four scrapers, and a chopper are illustrated.

The site has also produced 29 sherds of Beaker pottery of which 16 are decorated. The material is described and discussed by Rosamund Cleal (fiche 1, frames A11-14). The sherds are best dated to *c* 1700-1500 BC.

Together the flints and pottery suggest sporadic use of the hilltop in the 3rd and 2nd millennia BC.

2.3 Ritual pits

The excavation designed to examine the defences and the entrance incidentally revealed four large pits which in each case could be shown to pre-date the Iron Age earthworks (Figs 2.1,3.28). A surface examination of the north side of the fort indicated the presence of pits of similar size on approximately the same contour as the others. One of these was partially excavated and proved to be of similar size and fill to the other excavated examples.

Pit A (Fig 3.8) was sealed by the counterscarp of the middle earthwork. It measured 4.4 m across the top and 1.9 m deep, and appears once to have supported a vertical timber 0.6 m in diameter beneath which was found a collection of animal bones including the remains of two dogs together with bones of cattle, sheep, pig, red deer, roe deer, vole, and frog or toad.

Pit B (Fig 3.34) was discovered beneath the south-west angle of the south hornwork sealed by the middle earthwork.

Pit C (Fig 3.33) lay beneath the north end of the south hornwork of the east entrance. The filling suggests that a vertical timber may once have been placed in the centre.

Pit D (Fig 3.33) was sealed beneath the south end of the north hornwork of the east entrance.

Detailed descriptions of the pits will be found on fiche 1, frames B1-4, together with a report on the animal bones from pit A by R Harcourt.

The five pits examined all share certain characteristics in common and, for the most part, they occupy the same contour extending around the south and east sides of the ridge end occupied by the hillfort. Whether or not they were intended to enclose the knoll remains unknown, nor is it possible to say how closely they were spaced.

The dating evidence is very imprecise. Pits A and B predate by some considerable time the middle earthwork while pits C and D can be shown to be considerably earlier than the outer hornworks of the east entrance. A turf layer which had formed in the top of pit C produced pot sherds (fiche 1, frame E9) and a brooch (Vo12, pp 340-3) for which a 5th or late 4th century BC date would be appropriate. Together, therefore, the evidence shows that the pits had been dug well before the 4th century though how much before remains undefined. It is possible, but unproven, that the pits may have been contemporary with the early stages of the hillfort construction.

Their function is problematical, but the evidence for massive standing timbers in two of them and the dog burials beneath one of the timbers is suggestive of a ritual or symbolic significance. A ring of standing timbers (perhaps carved) could have been erected to demarcate a social or religious location either enclosing the early fort or defining a territory within which the fort was later built; the timbers could be regarded as a late manifestation of the henge monument tradition. Further speculation, while possible, would be of little value at present.

2.4 The early 1st millennium BC

The discovery of a hoard of bronze implements, the latest of which are of Hallstatt C type (Vol 2, p 337), taken together with a number of early radiocarbon dates in the 7th and 6th centuries (pp 190-2) obtained for pits in various parts of the site, raises the possibility that occupation may have begun as early as the 7th century BC. If this is so then it may be that the earliest settlement was undefended or was enclosed by a palisade all evidence of which has subsequently been destroyed. Alternatively, the earliest rampart may have been put up at this early date to protect the settlement. In favour of this latter interpretation is the fact that, in the one complete section through the rampart, the pre-rampart ground surface showed no sign of having been disturbed nor was there any occupation material on it. Since, however, only a very limited area of ground surface was explored beneath the rampart the absence of occupation at this point need not be regarded as conclusive. The matter of chronology and the development of the fort is considered in more detail below (pp 42-5).

2.5 Post-Iron Age occupation: Roman and Saxon

Evidence for Roman and Saxon use of the fort is very limited. Roman pottery has been found only in superficial layers, in the topsoil or in the latest soil accumulations in the tops of pits generally scattered throughout the excavation, The quantity is small, comprising four sherds of samian, two of terra nigra, three New Forest vessels (two colour-coated beakers and a mortarium) and a few sherds of grey wares; other sherds will undoubtedly have been missed during the mechanical removal of topsoil. The evidence is consistent with the sporadic use of an old enclosure throughout the Roman period, possibly as a convenient place for penning animals; there is nothing to suggest permanent occupation.

A small quantity of chaff-tempered pottery, comparable to Saxon wares found widely in Wessex, has been recovered from topsoil: three sherds in 1973, two sherds in 1971, and one from the entrance area excavated in 1970.

No structures or layers can definitely be attributed to Roman or Saxon activity: the evidence is perfectly consistent with the sherds having been dropped on to the undisturbed ground surface. It should however be stressed that a large number of the postholes found within the fort cannot be proved to be of undisputed Iron Age date (though reason demands that most, if not all, are). We should therefore allow the possibility that a few of the postholes may be Roman or Saxon in origin.

The question of the defences might briefly be considered at this stage. In the detailed discussion below (pp 15-21) the evidence is presented for a heightening of the rampart (period 4) and the redigging of the ditch to create a shallow flat-bottomed structure, possibly as part of the same process. Dating evidence is limited but the rampart heightening included pot sherds and a brooch of the century or so before the Roman conquest, while the recutting of the ditch followed a silting phase which contained pot sherds of the same date. A likely context for the renewed, if limited, defensive activity is the year of the Roman invasion in AD 43 but the evidence would allow a much later date possibly in the late Roman or early Saxon period. The question must remain open.

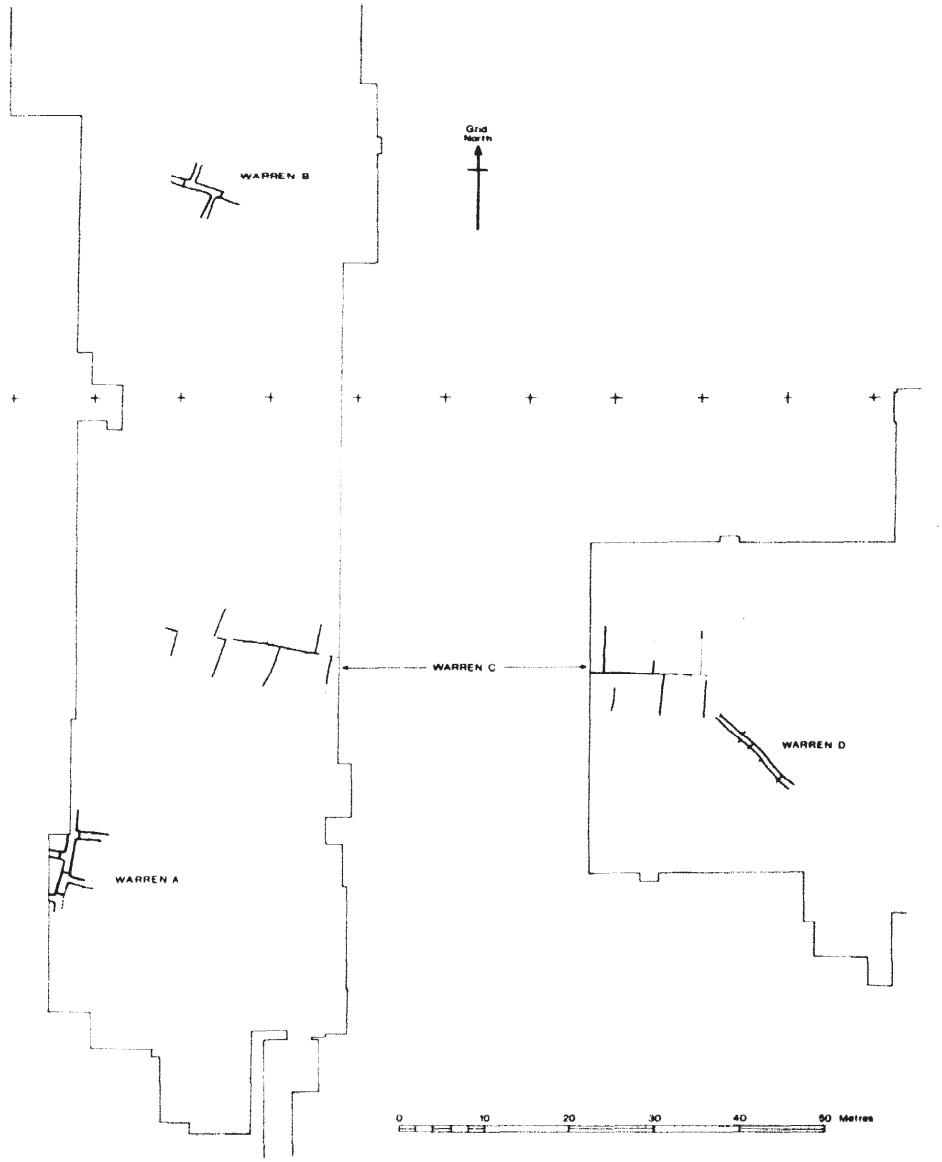


Fig 2.2 Distribution of rabbit warrens within the southern part of the fort

2.6 Post-Iron Age occupation: medieval and later (P14)

Two groups of structures can be assigned to the late use of the site: a series of narrow slots laid out in rectangular patterns (Figs 2.2, 2.3) and the extensive digging of wide parallel trenches all over the internal area.

The narrow slots are the earlier. Three distinct patterns are apparent: the first (Fig 2.3 A, B) consists of a double arrangement of recrangula r plan, the parallel slots being linked at regular intervals by cross slots; the second (C) is a simplified version of the first-along linear slot running across the site with shorter lengths branching off at right angles; the third pattern (D), consisting of two parallel slots with short linking slots at intervals, is also a variation of the first.

In the case of the paralid slots the technique of construction seems to have involved the digging of a trench through the topsoil and 100-200 mm into the chalk. The slots were formed by digging a deeper groove along the bottom angles of the trench undercutting the sides slightly. The fillin g of all slots was of soil, presumably topsoil thrown into the trench. One slot produced a single sherd of a tin-glazed with under-graze blue decoration indicating a date in the 16th century or later.

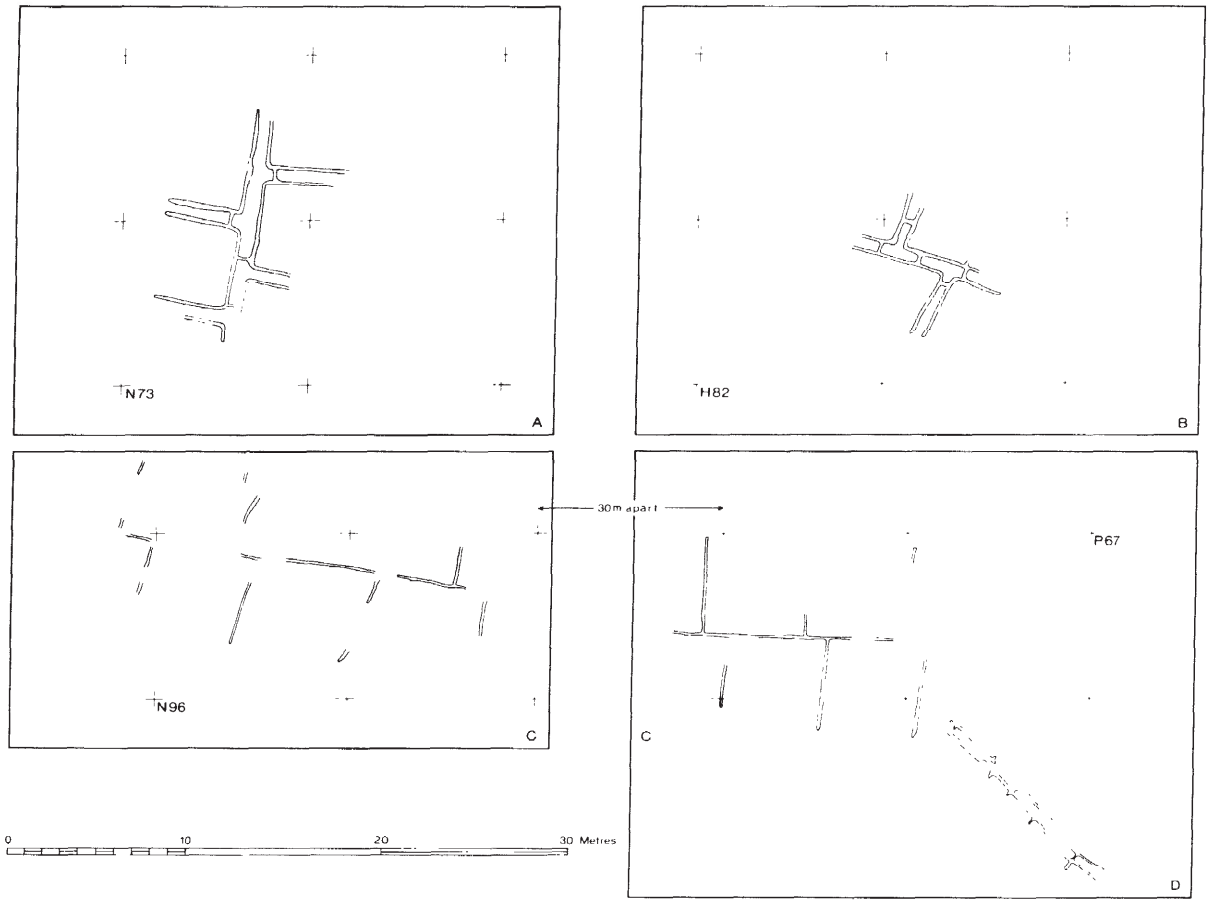


Fig 2.3 Details of rabbit warren structures

A clue to the function of these curious structures is provided by the observation of striations formed by animal claws in the bottom of many of the slots. The simplest suggestion is that the structures were created as artificial burrows to encourage rabbits and may indeed have formed the substructure to pillow mounds. That there is ample documentary evidence for the existence of warrens within the fort in the 17th century (above, p 5) adds support to this interpretation.

The slots were cut through by an extensive pattern of trenches which appears to have covered the interior of the fort. The trenches, averaging 0.6 m wide and up to 5 m long, were arranged in parallel batches only a few centimetres apart (Pl 34). They were dug with shovels with pointed ends, two incisions being needed side by side to loosen the soil across the full width of the trench. For the most part the trenches were dug through the topsoil and into the underlying chalk bedrock to a depth of up to 200 mm in extreme cases. The intention, evidently, was to improve the soil by increasing its depth and by turning fresh chalk up into the surface layers. The process by which this was done involved tipping the filling from one trench into the next in reverse order of stratigraphy so that the topsoil was thrown into the bottom with the broken chalk subsoil on top. Such a labour-intensive process was the only way that ancient, sour, wasteland could be marled and improved in one operation.

The trenching may well have resulted from the 'breaking' of Danebury known to have taken place in the 17th century (p 5).

Two acts of breaking are recorded, the first, involving between six and twelve acres, in 1618, the second, of unknown extent, in 1655. Which it was that left its mark so clearly on the bedrock there is no means of knowing.

In addition to the warren slots and cultivation trenching, medieval and post-medieval use of the hill is reflected in a light scatter of pot sherds, the earliest of which date to the time when the hill was used as a fair in the 16th century. The fair was short-lived for the warrener was in residence by the early years of the 17th century. Sherds of this date presumably represent his domestic rubbish.

The planting of the clump in the 19th century has left little trace in the archaeological record (except for the destructive activities of the tree roots) but the shallow ditch along the outer lip of the counterscarp bank (Fig 3.4, section 3, layer 2) was probably dug to delimit the planting, with the boundary beech hedge set just inside.

Throughout much of this century the clump has remained largely inaccessible, the only phase of activity being a briefly established camp of American soldiers set up towards the end of the Second World War. Archaeologically it is represented by occasional finds of ammunition, including a live mortar bomb, and scraps of domestic refuse. The demise of the clump beginning in the 1960s saw the beginning of a new range of activities of which the excavation has been the most extensive.

3 The hillfort defences and earthworks

3.1 The inner earthwork (Figs 3.1-3.6, Pls 5-9)

3.1.1 Introduction

The inner earthwork comprises a rampart, a ditch, and a counterscarp bank, the rampart enclosing an area of 5.25 ha. Two entrances were originally provided: one at the south-west (subsequently blocked) and the other at the east. Both will be described in detail below (pp 22-41).

The size of the earthworks varies from place to place, depending to some extent on the degree of slope on which it was constructed. On the south-east side, where the main section was cut, the rampart now stands 3.5 m above natural chalk, 7.0 m above the top of the silted ditch. Originally the crest of the rampart at this point would have been about 12 m above the ditch bottom. On the north-west side the rampart is now 3-5 m above the original ground surface but its height is accentuated by the depth of the quarry hollows immediately inside the fort. Because of the steep slope of the hill at this point the height of the rampart above the top of the ditch silt is 8 m. On the east side of the fort, just north of the main entrance, the rampart stands to a height of 4-5 m, 8.5 m above the silted ditch. These bald figures give some indication of the gross proportions of the earthworks, which arc further illustrated in Fig 3.3 and in the cross-sections shown on Fig 3.2.

The inner earthwork has not been extensively examined, partly because it is still tree-covered and partly because it is not threatened with destruction, other than by the roots of the existing trees, but one complete section was cut in 1969 on the south-east side sectioning rampart, ditch, and

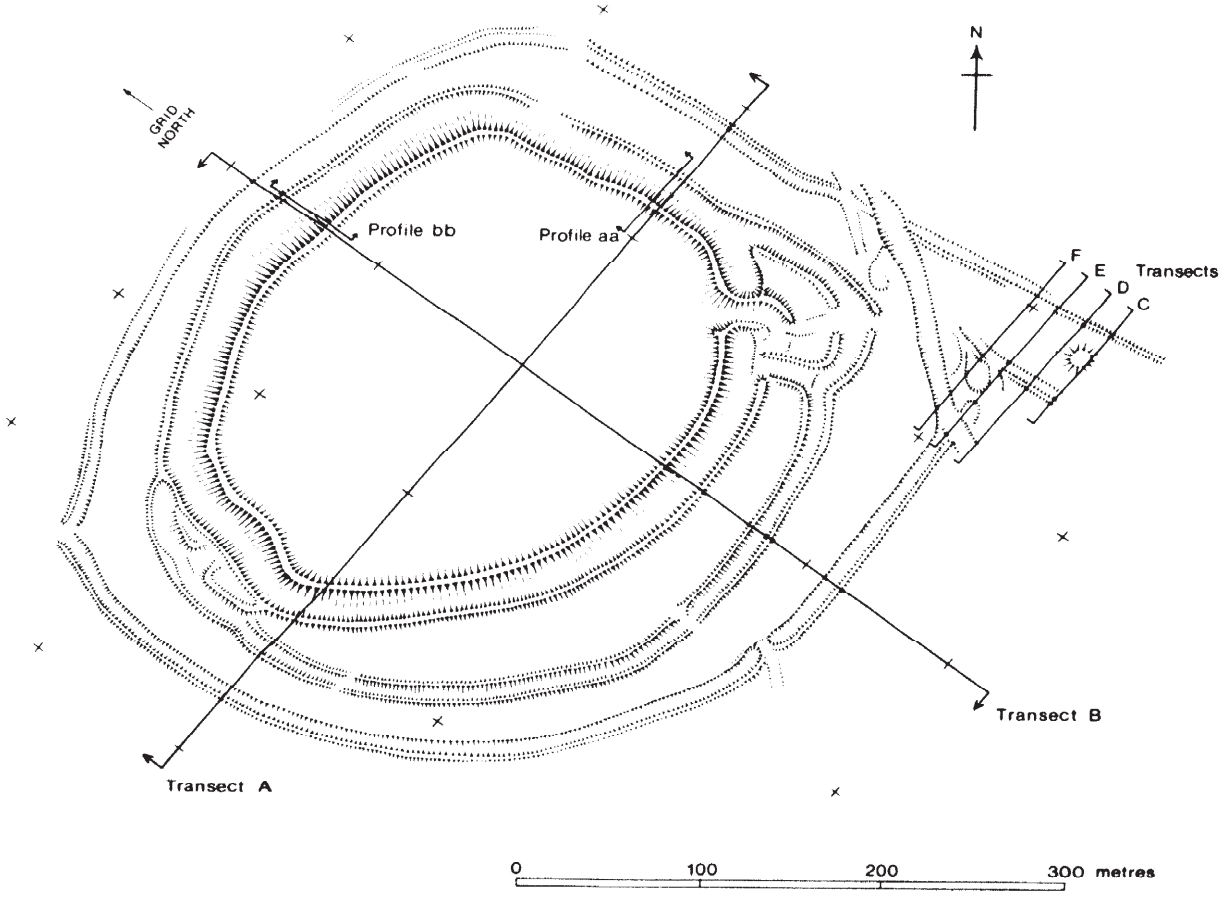


Fig 3.1 Plan showing position of profiles and transects

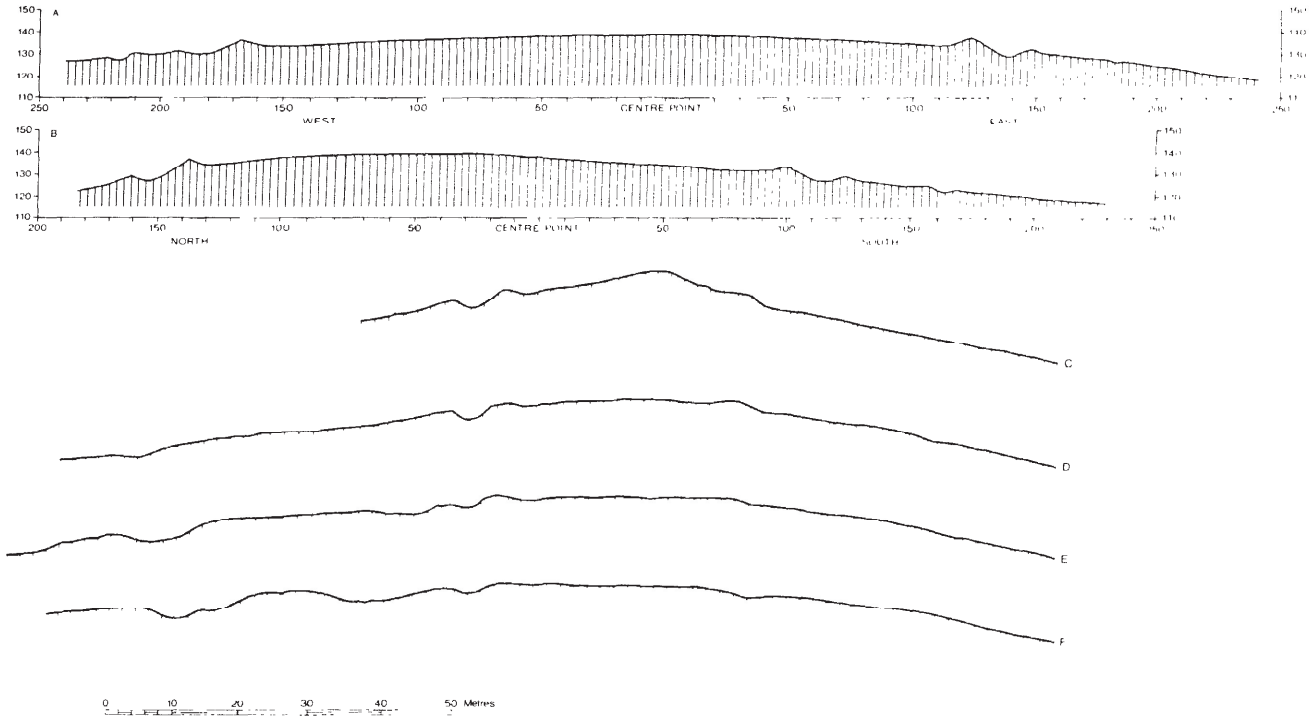


Fig 3.2 General profiles of the fort: upper a and b transects across fort; lower transects across parallel outer earthworks

counterscarp (Trenches l-3). A partial section was cut in 1975 on the north-west side of the fort through the back of the rampart, up to the line of its crest (Section 5) and in 1978 the tail of the rampart was removed over a distance of approximately 50 m in order to expose a sample of occupation material sealed beneath it.

3.1.2 The 1969 section: Trenches l-3 (Figs 3.4-3.6)

At this point the inner earthwork consists of a rampart 3.5 m high, a ditch 4.2 m deep below the present top of its silt, and a counterscarp bank l.5 m high.

The original turf-line survived beneath the rampart and counterscarp (Trench 1, layer 38 and Trench 3, layer 5). It consisted of a fine orange-brown clayey soil, stone-free in the top few centimetres. The turf beneath the main rampart was not removed but that beneath the counterscarp was excavated to chalk bedrock. It was 120 mm thick and only in the lowest 40 mm or so were there significant quantities of broken chalk. The soil therefore shows no sign of having been disturbed by ploughing or by other agricultural activity. At one point beneath the counterscarp the turf-line sealed an irregular hole filled with broken chalk and chalky silt (Trench 3, layer 6). The hole may well have been created in early post-glacial times by natural geological agencies or a little later by tree roots. In any event it had long since disappeared by the time the earthworks were constructed.

The rampart shows four distinct periods of construction of which the first was responsible for creating about half of the baulk of the earthwork which now survives. The first rampart was fronted by two parallel rows of timbers 2.15 m apart, the individual timbers in each row being set at 1.30 m intervals (P1 8). The postholes averaged 200 mm in diameter and were dug to a depth of between 350 and 450 mm below the top of the turf-line. The timbers which they contained would presumably have stood to at least the height of the rampart (4-5 m) the outer row perhaps being taken up higher to form a breastwork. No doubt the two rows would have been tied together with cross-bracing and one must suppose that the front row of timbers formed the supports for some kind of vertical boarding to retain the rampart material. No trace of these details survived but the pipes for two of the inner row of posts were discernible in the body of the rampart up to a height of 600-700 mm. While it is possible that this timber box structure, suitably packed with chalk and rubble, was substantial enough to have supported the weight of the rest of the rampart stacked behind it, there may have been additional timber work high up in the body of the rampart to tie the fronting box back into the mass of the earthwork: careful search during excavation however failed to reveal any such timbering.

The rampart itself was composed of tips of chalk rubble of varying consistency, presumably derived from the digging of the ditch, together with layers of clayey soil and chalk which were probably scraped up from inside the fort. The structure can best be appreciated from the detailed section (Fig 3.4). The first stage would seem to have involved the erection of the fronting timber work. During this stage an isolated and discontinuous pile of turf was dumped on the original ground surface (layer 48) not visible on the illustrated section). Then followed the creation of the

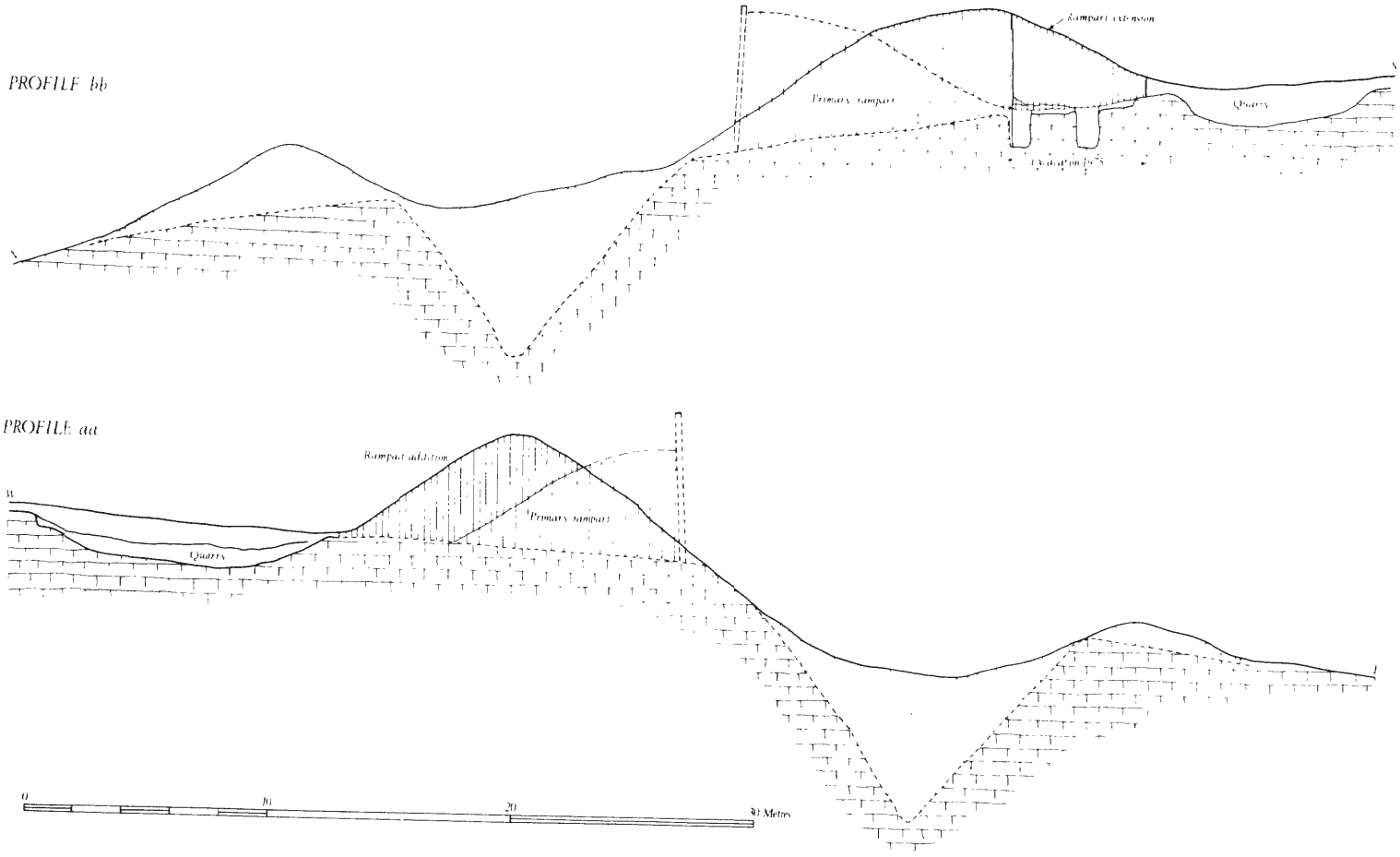


Fig 3.3 Profiles of the inner earthworks

rampart, the first layers of which consisted of large freshly-quarried chalk blocks dumped loose within and to the rear of the timber structure (layer 27). These blocks presumably came from the ditch, the implicaton being that the turf and subsoil had been dumped somewhere else, perhaps in temporary piles within the fort as was observed at the unfinished fort at Ladle Hill (Piggotr 1931). Once the timbers had been embedded in the core of the rampart other layers were piled indiscriminately behind, each tip more or less following the sloping surface of the growing earthwork.

Although the trench was only 3 m wide, considerable lateral variation was observed serving as a reminder that material was presumably being brought from the ditch and from inside the fort by gangs of workmen, the individual flat 'platforms' observable within the stratigraphy of the mound representing temporary paths along which basket loads of spoil were carried for tipping. Since much of the material would have come from the ditch one must suppose that gaps were left at intervals to allow work gangs to carry rubble through the earthwork lines to the tipping area; the alternative, that material was hauled up the face of the rampart would seem unlikely, but not impossible.

The last layer over the back of the rampart (layer 22) was of clayey material, probably redeposited turf and topsoil, capped with a spread of fine chalk. The layer was consistent across the trench and may well have been deliberately chosen to seal the earthwork and to prevent erosion. A careful examination of the surface of the chalky capping layer showed that it has weathered giving rise to a finely compacted surface, though no soil profile, however insipient, could be detected. There can therefore be little doubt that this horizon marks the surface of the first rampart but how long it was exposed remains unknown.

If the slope is continued to the breastwork, the first rampart would originally have stood to a height of 4-5 m above the original ground surface; thus its volume per linear metre would have been in the order of 23 cu m. The profile of the contemporary ditch was destroyed in later recutting, but even so a sufficient volume of material could have been derived from this source without recourse to extensive internal quarrying. The stratigraphical evidence from inside the fort, however (pp 19-21), suggests that the isolated quarries found here were dug at about the time of the construction of the first rampart.

After a short period of weathering the rampart was considerably enlarged with tips of turf and soil interlaced with lenses of fine chalky rubble (layers 21 and 43) increasing the width of the primary rampart by 3 m and its height by l.5 m. As the section (Fig 3.4) demonstrates, a gully had been dug at the tail of the primary rampart. The lack of any silty wash in it and the fact that its filling (layer 43) was wholly composed of material similar to and continuous with the layers of the addition (layer 21) show that it was dug some time after the construction of the primary rampart in the period immediately preceding the rampart extension; its function is obscure but it need not have had a structural relationship to the defences.

The material of which the period 2 addition was composed was probably derived from within the fort by stripping turf and topsoil and by digging shallow quarries. That the fort had experienced some degree of occupation following the construction of the first rampart is shown by the relatively large quantity of pottery incorporated in the addition (p 19). The surface of the period 2 rampart had evidently been exposed for a considerable period of time sufficient to allow a stone-free topsoil to begin to form and for the soil to show signs of compaction and weathering (layer 20).

In period 3 the rampart was heightened again with tips of chalk rubble and chalky silt (layers 18 and 19) varying in thickness from 0.3 to 1.0 m, tipped onto the original back-slope of the period 2 rampart. The material is of a consistency to suggest that it may have been derived from a phase of ditch silt clearing but the matter is incapable of proof.

In period 4 the rampart was once more heightened with tips of chalk rubble, soil, and flints together creating an addition about 1 m thick (layers 6 and 7). From within this material came a La Tène III fibula (Vo1 2, Fig 7.2, no 1.24).

All three additions to the rampart are loosely related to occupation layers, pits, and postholes, the detailed description of which is reserved for later treatment (pp 146-72). The pottery incorporated in the additions is discussed in detail below (fiche 1, frames E1-F10).

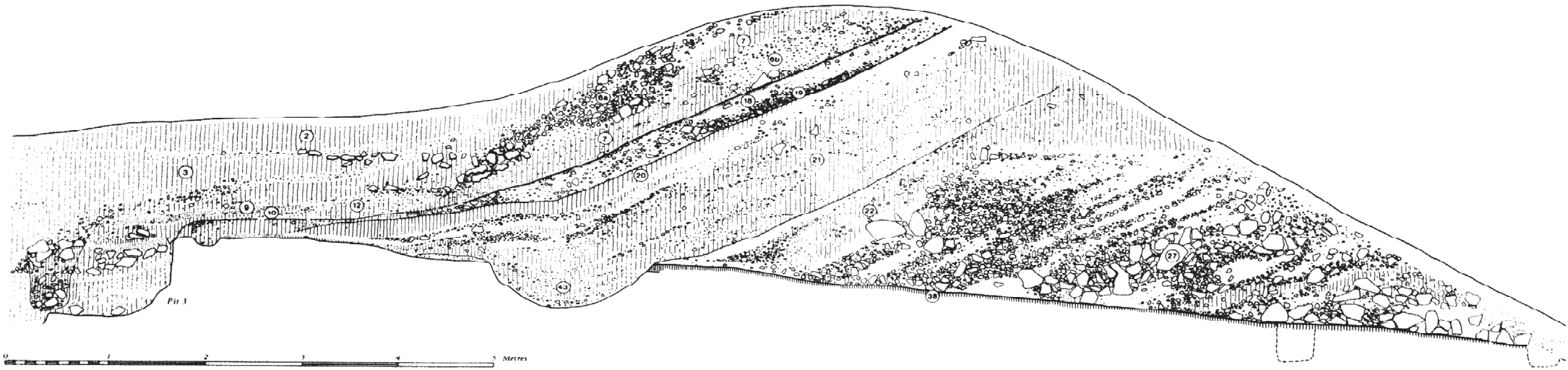
The ditch sequence exposed in Trench 2 (Fig 3.5) showed two distinct phases but direct correlation with the rampart sequence is a matter of speculation. One may reasonably suppose, however, that the earliest ditch profile, contemporary with the period 1 rampart, was obliterated by the redigging of the ditch in rampart periods 2 or 3. The surviving profile is of a ditch of V-shaped section 10.5 m wide. The distance from the crest of the periods 2 or 3 rampart to the bottom of the ditch would have been in the order of 17 m measured up the slope.

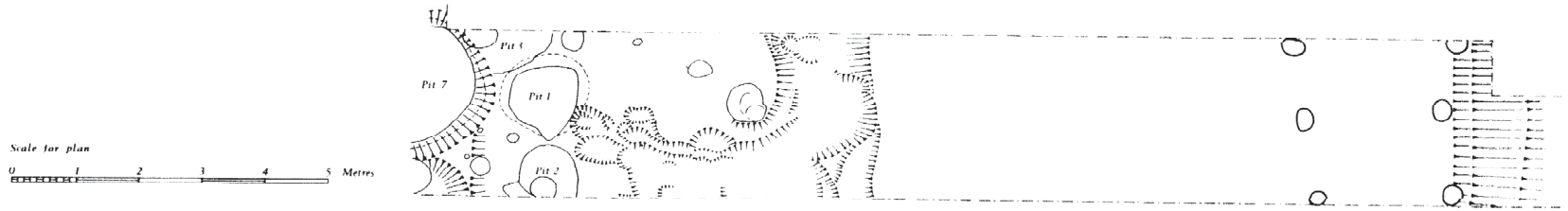
The relationship of the V-profiled ditch to the periods of rampart rebuilding is obscure but it seems probable that the redigging of the ditch to its V-profile would have accompanied the cutting back of the face of the rampart to create a continuous slope from rampart crest to ditch bottom at some time after the original timber box structure had disintegrated. On balance it would seem more likely that this took place at the time of the period 3 addition. The grounds for making this assertion are partly that little time seems to have elapsed between the completion of the primary rampart and the period 2 addition and partly that the material of which the period 3 addition is composed could have derived from the redigging of the ditch whereas that of the second addition could not. The evidence is admittedly tenuous in the extreme.

If these suggestions are accepted it leaves open the question of how the front of the period 2 rampart was treated. It could still have been retained behind the early timberwork but the fact that the timber structure shows no evidence of replacement, and the probability that the second addition considerably increased the height of the rampart at its crest, might suggest that by the second period the front revetment had already been dispensed with. The point is incapable of proof.

It seems that the ditch was kept clear of silt over a considerable period of time and it was probably as a result of this that the so-called counterscarp bank was created (P1 9). The section taken through it in trench 3 (Fig 3.4) showed that it was composed of many tips of chalk rubble and silt, much of it finely broken up by weathering. A certain periodicity was apparent in its structure with the rather coarser chalky material merging up to a much finer silt. This was then followed by another tip of coarser material. Examination of the interface between the top of the silt and the bottom of the coarser chalk showed that the silt surface had been heavily weathered and in one place a turf-line had actually begun to form. The simplest explanation is that each eroded surface represents the interval of time between one phase of ditch clearance and

SECTION 1 *INNER EARTHWORK, RAMPART*
TRENCH 1 (1969)





SECTION 3 *INNER EARTHWORK, COUNTERSCARP*
TRENCH 3 (1969)

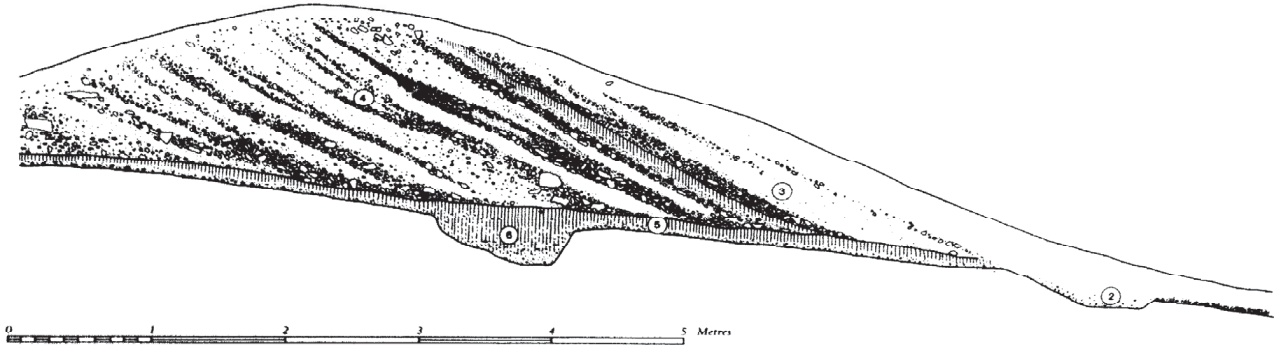


Fig 3.4 Sections of the inner rampart and counterscarp examined in 1969

SECTION 2 INNER EARTHWORK DITCH

TRENCH 2 (1969)

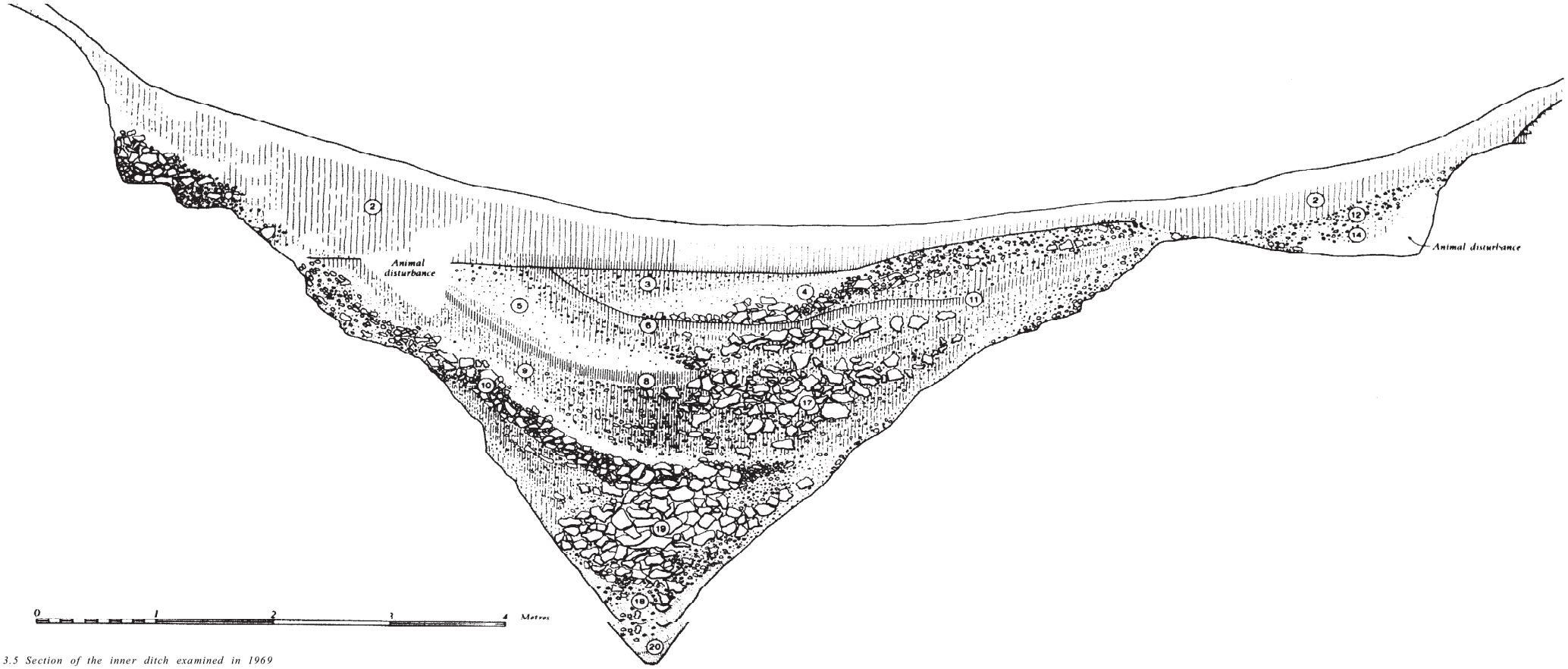


Fig 3.5 Section of the inner ditch examined in 1969

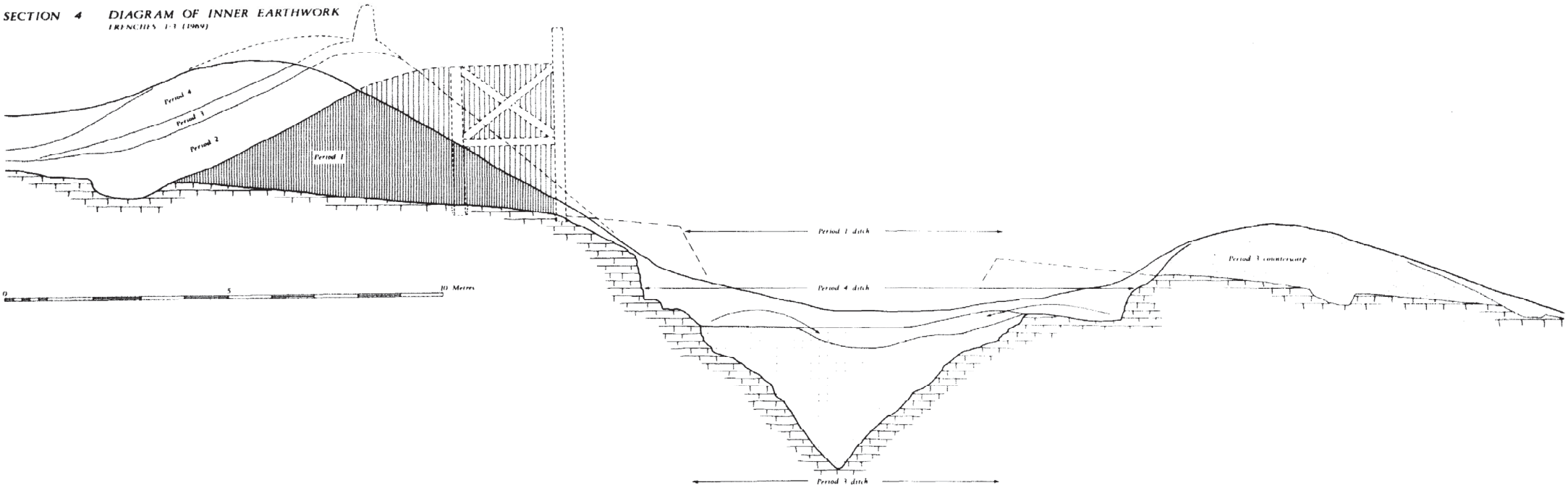


Fig 3.6 Interpretation of the structural sequence exposed in the inner earthwork section of 1969

`Table 1

	Rampart	*Ditch*	*Counterscarp*
Period 1	Primary rampart, box-structured	Uncertain form	?
	Short interlude: weathering of rampart surface		
Period 2	Heightened: sloping front face? Discrete quarry hollows	Uncertain: probably original ditch cleared out	Tipping begins?
	Long interlude: weathering of rampart surface, thick turf-line forms on back		
Period 3	Heightened: sloping front face and flint breastwork at crest	Recut to V-profile; periodic clearing	Periodic tipping
	Interlude: ditch allowed to silt		
Period 4	Heightened	Recut to flat-bottomed profile	
	Abandoned		

the next. If this is so than the counterscarp at the point sectioned bears evidence of approximately fourteen phases of clearing. At what interval this work was carried out cannot be assessed with accuracy but more than one year and possibly several would have been required for the exposed chalk rubble surface to weather to the degree observed. Considerably longer would be required for the turf-line to form. Allowing only three years between each clearing operation would give a minimum period of *c* 50 years for the accumulation of the bank but in all probability the time span was much longer, perhaps as much as 200 years,

When finally the ditch was allowed to silt up it probably did so quite rapidly by a combination of the erosion of the sides and the accumulation of masses of large flints which tumbled in (or were thrown down) from the rampart crest where they may well have formed some kind of breastwork. After 2.5-3 m of material had accumulated (Trench 2, layers 20, 19, 18, 17, 9) soil began to form in the hollow (layer 8). Further activity led to more chalk and flints washing down into the ditch (layers 7 and 5) until once more a soil layer (layers 6 and I1) accumulated marking a further angle of rest. It was at this stage that the ditch was reformed by chopping back its edges and throwing the spoil thus formed into the remaining hollow (Trench 2, layers 3 and 4). The result of this comparatively minor activity was to create a wide flat-bottomed ditch, 11.4 m wide and 2 m deep below the level of the crest of the counterscarp. Subsequent silting (Trench 2, layers 12, 14, 2) under natural conditions brought the ditch silt to its present level. It is possible but by no means proven that the creation of the flat-bottomed ditch was part of the same process as the heightening of the rampart in period 4.

From the evidence outlined above it is possible to offer a tentative summary of the development of the defences at the point sectioned (Fig 3.6); see Table l.

The dating evidence and structual analogies will be discussed in some detail below (pp 42-6). Here it is sufficient to record that period 1 begins in the 6th century BC or a little earlier, period 2 follows soon upon this, period 3 begins early in the 4th century BC, while period 4 may be assigned either to the 1st century AD just before the Roman conquest or to the late or post-Roman period. The development conforms to the general pattern of the evolution of hillfort defences recognizable in southern Britain.

3.1.3 The 1975 section (Fig 3.7)

A trench 3m wide was extended into the back of the rampart from the area excavation completed in 1975 behind the defences on the north-west side of the fort. The trench was taken up to the crest of the rampart but not beyond although the profile of the earthwork at this point was completed. The prime purpose of the trench was to examine early occupation levels which could be seen to run beneath the tail of the extended rampart. Details of these structures and layers will be discussed below (pp 158-66). Here we must consider the defensive sequence.

The tail of the period 1 rampart could be traced running across the trench as a layer of chalky silt (layer 313) lying on the original soil level (layer 315). Between the two were discontinuous patches of charcoal (layer 314), probably representing the burning of the vegetation before the rampart was begun. The rampart tail was truncated by a terrace which had been cut to form the floor of a circular timber building, and was further removed by two pits and several postholes cut through it from the level of the hut floor. After the hut had gone out of use a layer of soil (layer 310) formed across the terrace sealing the earlier occupation features.

Some time later the rampart was greatly increased in size with additional tips of material extending the base of the earthwork by about 7m sealing the early occupation levels. The thickness of material added exceeded 4m. As the section (Fig 3.7) shows, the rampart extension was composed of layers of chalky silt, chalk rubble, and clayey soil laid in almost horizontal tips of widely contrasting textures. The material for the extension was derived from large quarry hollows inside the fort and was dumped against the back of the original rampart. Thus the structure was built up in layers from ground level. That the spoil was so varied, and indeed contained lenses of occupation material, resulted from the fact that the area of the quarry hollows was already heavily peppered with disused storage pits the fillings of which contributed to the mass of the rampart extension.

One point of particular interest concerns layer 316 which lies on the soil filling the hut. Its surface shows evidence of having been weathered. The possibility remains therefore that an early addition of limited magnitude was made to the back of the first rampart before the major phase of extension. There are however alternative explanations.

SECTION 5 INNER EARTHWORK RAMPART
TRENCH EXTENSION OF 1975 AREA

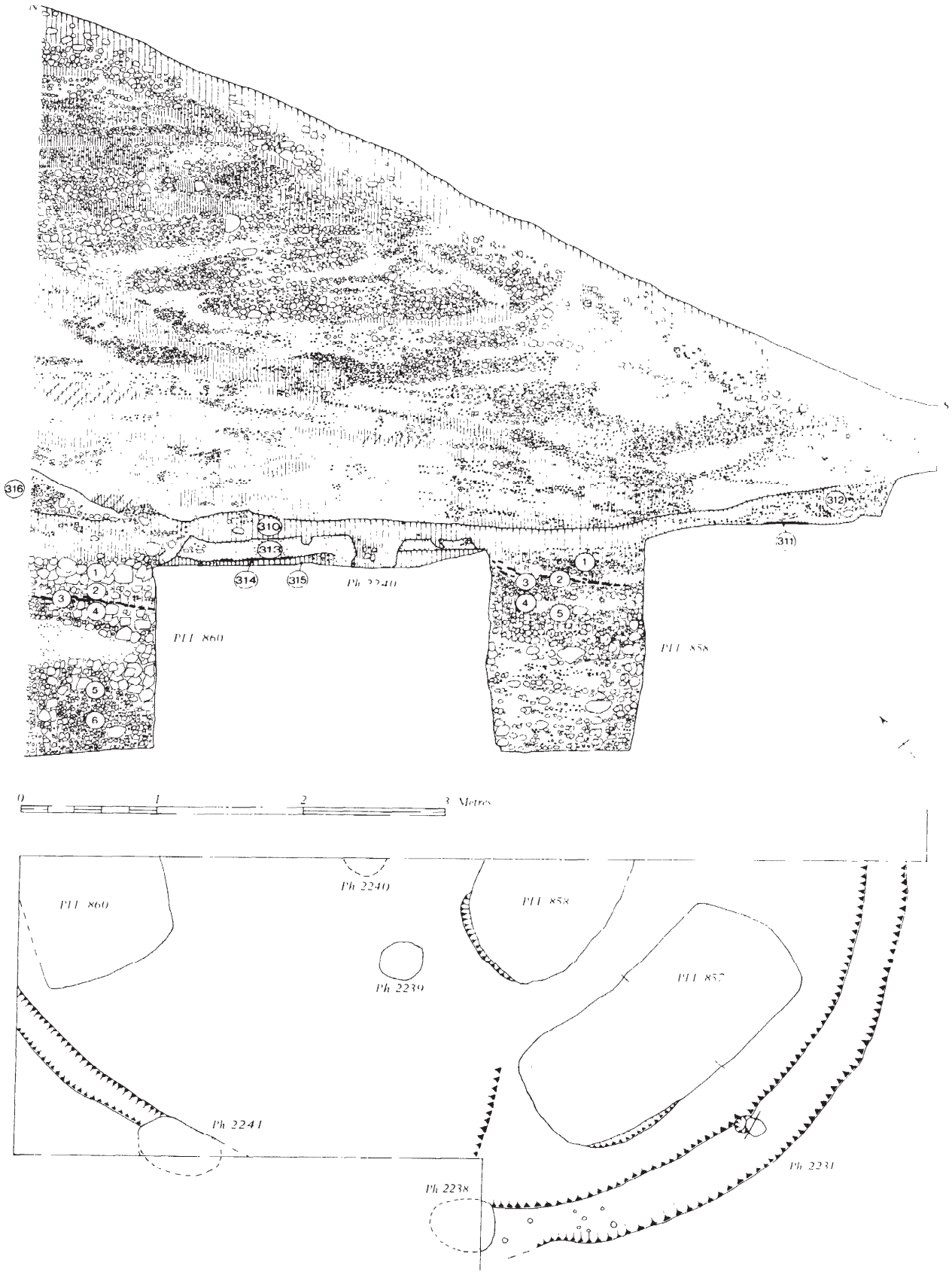


Fig 3.7 Partial section of the inner rampart, 1975

The layer may be quite localized or may have resulted either from a slump from the original rampart or from throw-out from a nearby pit; without considerably more excavation it is impossible to be certain of its interpretation.

The extension to the first rampart was considerable, amounting to about 30 cu m of spoil for every metre length. With this figure in mind the extent and depth of the quarry hollows can more easily be understood (Fig 4.110). The reason why such a massive extension was considered necessary probably lies in the fact that on this side of the hill, where the natural slope was considerable, the early rampart was slight. Thus, when it was decided to increase the strength of the defences, the rampart in this area had to be greatly enlarged while that on the other side of the fort, already of substantial proportions, needed only a comparatively slight increase in volume to bring the entire circuit to a consistent size. Bearing in mind the slope of the hillside hereabouts the labour of lifting material from the recut ditch to the crest of the rampart was clearly unacceptable. For this reason spoil was quarried from inside the fort.

The total surviving volume of the extended rampart in this section is double that on the south-east side sectioned in 1969 (52 cu m in width compared with 24 cu m) and the natural slope on the north-west has added considerably to the formidable nature of the defences. Allowing the ditch to be 4m deep below the top of its silt then the distance from the bottom of the ditch to the crest of the rampart would have been 22m (compared with 17m on the south-east side).

Correlation with the sequence observed in the 1969 section must be tentative but the primary rampart could be equated to 1969 period 1, the addition (layer 316) to 1969 period 2, and the major extension to 1969 period 3. There was no evidence of an extension or modification to the defences equivalent to the period 4 changes observed in the 1969 trench.

3.1.4 The 1978 excavation

In 1978 the tail of the rampart in the area to the north of the main entrance was removed to expose a sample of the earlier occupation levels sealed beneath it. The extent of the excavation can be gauged from Fig 4.99. The rampart material consisted of chalk rubble, chalky silt, and clayey soil heaped in variegated tips on the ground surface. Since the excavation did not penetrate the body of the earthwork for more than 1m, little was seen of the constructional detail of the earthwork.

The structural sequence here seems to have been closely similar to that observed on the north-west side of the fort (1975 section). The early rampart must be embedded in the front of the existing earthwork which was considerably extended in a later period, the magnitude of the extension being indicated by the size of the quarry hollows from which the spoil was obtained. Although calculations can only be approximate the volume involved would appear to be more or less the same as those produced for defences on the north-west side of the fort.

3.2 The middle earthwork

The middle earthwork runs in an arc from the east entrance to the south-west entrance, merging at both points with the outworks of the entrances. Its relationship to the south-west entrance has not been examined by excavation but the relationship to the south hornwork of the east entrance has been defined and will be discussed below (pp 21-2 and pp 37-9). The earthwork consists of a rampart, a ditch, and a counterscarp bank which maintain similar proportions throughout their entire length. At two points (seen on Fig 1.4) the earthwork has been partially destroyed to allow trackways to cross its line. The date of this slighting is unknown but one plausible context is the moment when the hornworks of the east entrance closed the gap by which access had been obtained to the enclosure. If the enclosure had remained in use, possibly as an animal corral, then it would have been necessary to make a new break in the earthwork line. Without excavation the hypothesis must remain unproven.

The earthwork was sectioned in 1969 in Trench 4 (Fig 3.8). The rampart, measuring some 8m wide at the base, stood to a height of 1m above the original ground surface upon which it was built. No trace of internal timbering was seen in the 3m of the trench width. In structure the rampart consisted simply of tips of chalk rubble of different consistencies derived presumably from the ditch. The lowest tips (layers 15 and 6) were of quite finely fractured chalk of the kind which would have been available in the early stages of ditch digging from just below the turf. The upper layers, evidently tipped down the back slope of the incipient bank from the crest, showed an increase in the size of the chalk blocks as might be expected as the ditch was deepened into less fractured chalk. In other words the rampart demonstrated the kind of reverse stratigraphy one would anticipate if it had simply been piled up from material quarried from the ditch with no special provision for selective construction.

The ditch was approximately 6m wide and was dug to a depth of 3m below the original ground surface. It was V-shaped with a narrow flat bottom 0.25m wide. Its silting was natural, uninterrupted, and presumably quite rapid.

The counterscarp bank, measuring 5m wide by 0.6m high, was composed of tips of soil and chalk rubble. It showed no sign of the tine stratigraphy observed in the counterscarp of the inner earthwork, representing the periodic clearing out of the ditch, and indeed has the appearance of having been thrown up in one operation. The amount of topsoil found with it might suggest that the turf and crumbled chalk from the initial clearance of the ditch strip was piled up along the outer lip of the ditch before the construction of the rampart began. The suggestion is further strengthened by the fact that the volume of the rampart (allowing for erosion) added to the volume of the counterscarp approximately equal the volume of the spoil obtained from the ditch.

The relationship of the middle earthwork to the hornworks of the east gate was examined in Trench 8: the sequence observed there is illustrated in Fig 3.34, section 24. The tail of the original middle rampart is represented by tips of chalk rubble (layers 11 and 12) upon which a turf-line (layer 10) formed. The layers above this all belong to the construction of the hornwork.

In Trenches 6 and 7 a hollow trackway was found measuring some 3m across. Wear had eroded it to a depth of 0.3m below the surface of the natural chalk and had puddled the chalk in the bottom into a hard concreted layer. The track appeared to run diagonally from the middle enclosure towards the site of the east entrance. Presumably it répresented the principal access to the middle enclosure before the ditch of the southern hornwork severed it. The northern part of the track was sealed beneath the hornwork rampart while the southern part had gradually filled with an accumulation of soil (Trench 6, layer 9 and Trench 7, layer 10) before the material of the hornwork counterscarp was thrown up

over it (Trench 6, layer 6 and Trench 7, layer 9). This sequence could allow that the trackway was in use until the time when the hornwork was constructed. At any event a considerable time elapsed, allowing the hollow-way to silt before the hornwork ditch was cleared out to give rise to the sealing counterscarp material.

The sequence observed at the east entrance demonstrated beyond reasonable doubt that the enclosure formed by the middle earthwork was in use up to the time when the hornworks were constructed but it gives no indication of when the middle earthwork was itself erected. It would, however, only make sense as an adjunct to the existing fort. The form of its construction, with V-shaped ditch and simple dump rampart, is similar to, though on a smaller scale than, the fourth-third phase of the main rampart and it is to this period, in the early 4th century BC, that it can most reasonably be ascribed. No independent dating evidence was recovered from the excavations.

3.3 The outer earthwork

The outer earthwork encloses the entire hilltop, running for a distance of 1400 m before it emerges to become the linear earthwork which can be traced for a distance of about 1 km. An approximate estimate suggests that the creation of the ditch around the fort entailed the movement of 4600 cu m of material. In other words, although the earthwork now appears slight, the effort involved in its construction was not inconsiderable.

The earthwork consists of a ditch the spoil from which has usually been thrown out on the downhill side to create a low bank. One section was cut through it in 1969 (Fig 3.9, section 7). It showed the ditch to be V-shaped, 4m in width at the top and 1.80m in depth below the original ground surface; it had silted naturally. At the point sectioned the spoil had been dumped both inside and outside in two low banks. Both banks measured approximately 3.5 m in width and survive now to a height of 0.4m. The inner bank was composed largely of topsoil and finely broken chalk, while the outer bank was mainly of medium sized lumps of broken chalk (Fig 3.9 for details). Clearly the intention of the builders was to create a ditched enclosure; a rampart was not considered essential and the spoil was therefore disposed of as conveniently as possible.

Of the two southern entrances, the south-east entrance was simply a gap in the ditch through which a track led to the field system which adjoined the earthwork on the south side. The south-west entrance was a little more elaborate with the ditch ends turned slightly outwards, the outer bank following the same pattern. Although details are at present unclear, because of an obscuring yew wood, the actual causeway would appear to be little more than 3m wide, quite suitable, however, for the passage of animals.

A northern entrance may have existed along the line of the deep natural gully. The earthwork appears to break at this point but then it would have been difficult to continue down the sides of the gully. Had a barrier been required a fence of some kind would have been easier to construct and would have left no surface trace.

The main approach to the outer enclosure was along the neck of land leading to the east entrance of the fort. In the vicinity of the trig point the ditches delimit a wide approach 40m across. The southern ditch cannot be traced much beyond this point but the northern ditch continues in a south-easterly direction for a short distance before swinging east to pass along the north slope of Blackstake Hill towards the modern road about 1 km from the fort. Beyond this it is lost in a mass of ditches, tracks, and lynchets which appear as cropmarks on the air photographs.

The line of this earthwork was sectioned in 1974 about 500m east of the trig point in order to test its structure (Fig 3.9, section 8). In this area the earthwork appeared to consist of a shallow bank defined only by a slight break in slope. When sectioned, however, it proved to consist of two V-shaped ditches, each a little over 1m wide and deep, delimiting an area of worn and eroded chalk 7.5 m wide. It seems likely therefore that at this point the linear earthwork had become a ditch-lined trackway.

Ploughing had removed all traces of banks as well as many centimetres of the surface of the chalk between the ditches; thus there can be no certainty about the location of the banks, although the silting of the northern ditch hints that the bank may have been on its southern side between the ditch and the track.

The trench also produced evidence of a wide shallow feature of linear form, probably a hollow trackway running diagonally across the site. It is undated but is later than the silting of the northern ditch.

The dating of the outer earthwork and its associated linear features is imprecise. The plan suggests that it may have been laid out after the hornworks of the east entrance had been constructed, while the existence of a western entrance might suggest that it was designed with the use of of the south-west gate of the fort in mind. If these observations are relevant, then in terms of the summary scheme presented on p 43 the earthwork would best fit in period 5 or early in period 6 for which a date in the 2nd century BC would be most appropriate. The almost complete saucepan pot (fiche 1, frame E8) found in the primary silt on the bottom of the ditch sectioned in Trench 5 is wholly consistent with such a date.

3.4 The south-west entrance (Figs 3.10-3.12)

The south-west entrance has not been excavated but its earthworks survive in a good state of preservation allowing an interpretation of the entrance development to be offered with some degree of assurance. Two principal phases can be recognized: the developed entrance with its flanking hornworks, and the blocked entrance - essentially the state in which we now see it. Both phases are probably divisible into sub-phases.

3.4.1 The developed entrance

The diagram (Fig 3.12) presents an interpretation of the developed entrance. The main gate would have been set in the gap formed by the rampart ends but its form is totally unknown. In front of it there must have been a causeway, left undug across the ditch line, leading to the outer hornworks. The hornworks were quite simply two hook-shaped ramparts advancing from the main ditch line and curving back to the ditch in order to flank the entrance roadway. In front of each was a separate stretch of ditch 40-50 m in length. This simple plan was complicated by two other elements: the creation of counterscarp banks along the outer lips of the main ditch and hornwork ditches and the convergence of the middle earthwork on the southern hornwork.

The developed entrance must represent the culmination of a period of change and development which can be guessed but about which, without excavation, there can be no degree of assurance. Nevertheless the following distinct stages can be tentatively distinguished:

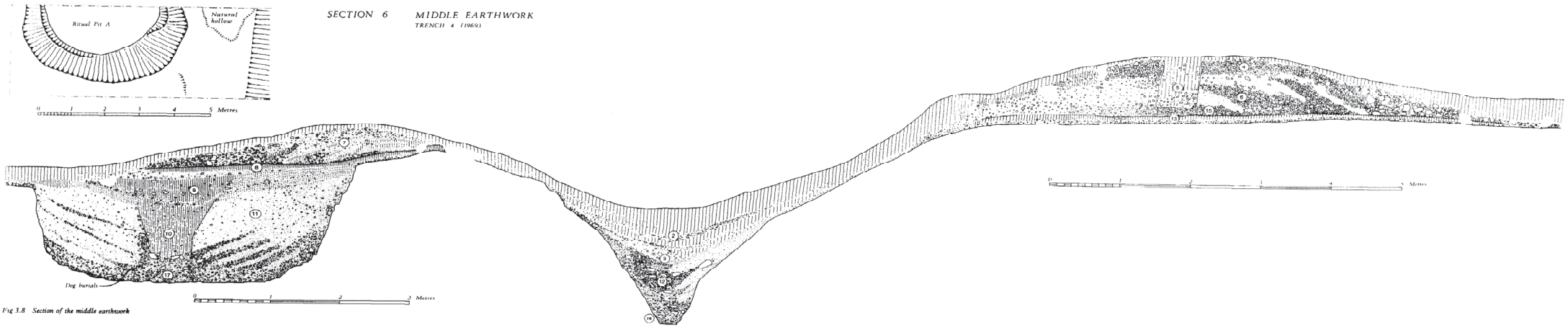
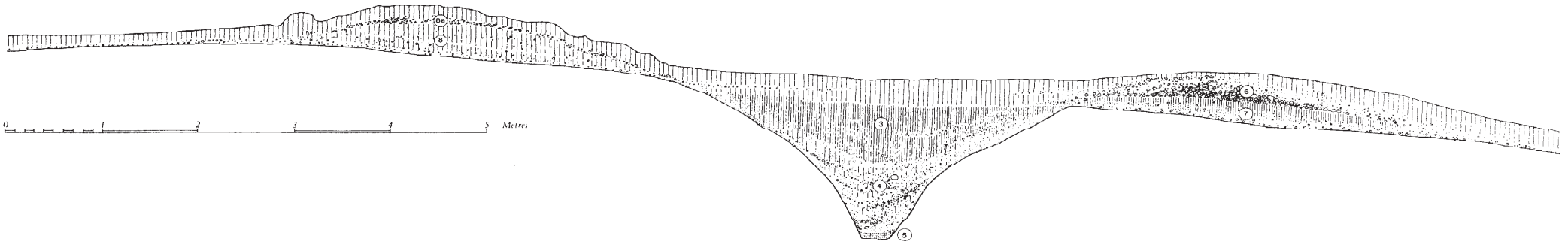


Fig 3.8 Section of the middle earthwork

SECTION 7 OUTER EARTHWORK
TRLNCH 5 (1969)



SECTION 8 LINEAR EARTHWORK 1974

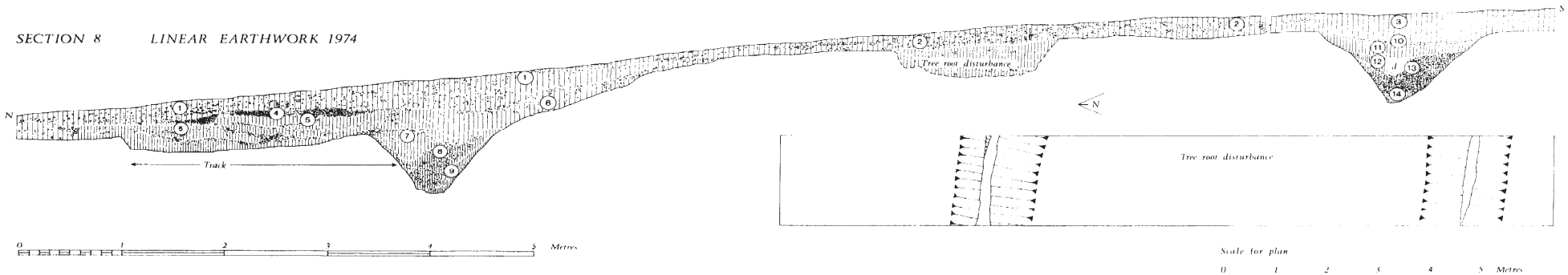


Fig 3.9 Section of the outer earthwork

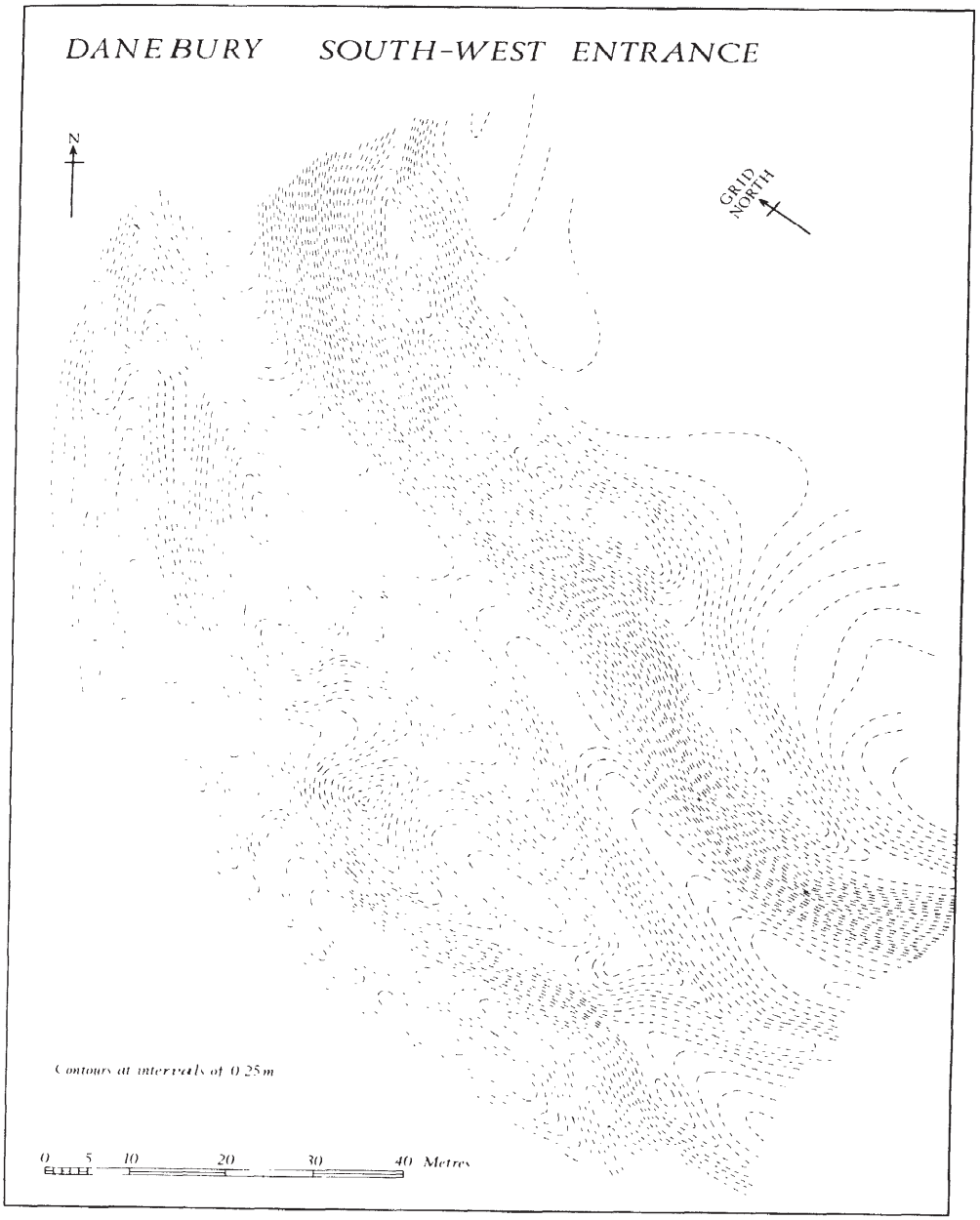


Fig 3.10 South-west entrance: contour plan

a A simple gate between the rampart ends with no outworks (1)
b The construction of the middle earthwork (2A)
c The reconstruction of the main defences with V-shaped ditch and heightened rampart, together presumably with the reconstruction of the gate
d The construction of the hornworks (2B or 3A)
e The regular clearing of the ditches to create counterscarps (4)

Whilst stages a and e are likely to remain first and last, the exact chronological relationship of b, c, and d is totally unknown. It is, for example, quite possible that the hornworks were built before the middle earthwork or that the reconstruction of the main defences followed the creation of the hornworks. These problems can be solved only be excavation.

3.4.2 The phase of blocking

The sealing of the entrance would have been a simple process. The causeway across the main ditch was dug away, the spoil being piled up in the entrance gap to join the ends of the rampart into a continuous earthwork, whilst the causeway between the homwork ditches was also removed, much of the spoil in this case being thrown

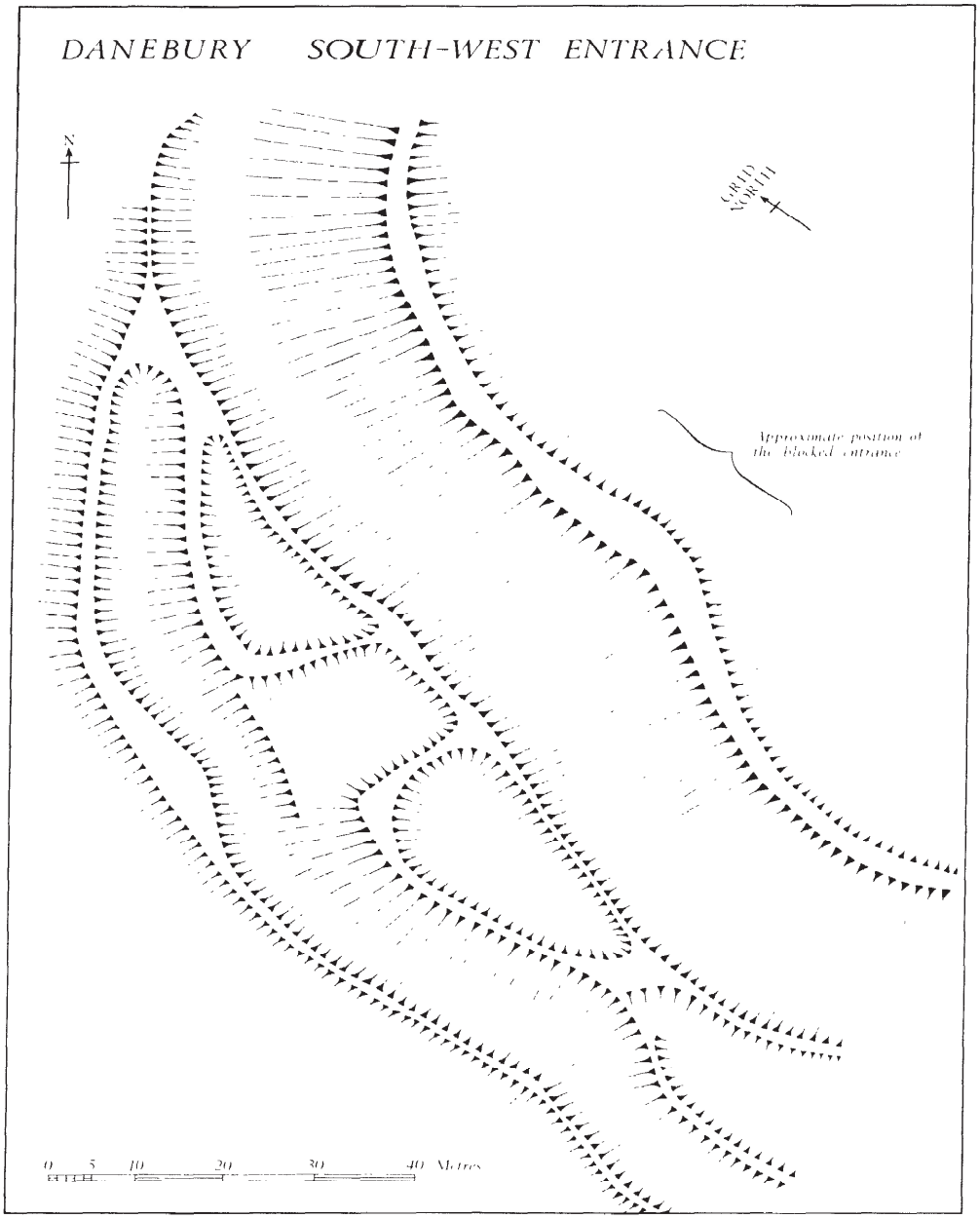


Fig 3.11 South-west entrance: simplified hachured plan

downhill to fill the gap in the counterscarp. By this simple expedient the circuit of the inner earthwork was completed and the hornworks were incorporated in the middle earthwork. It seems likely that the clearance of the main ditch continued after this phase giving rise to a continuous counterscarp on its outer lip across the old entrance causeway. Alternatively this earthwork could have been completed when the causeway was cut through.

The date of the blocking, in relation to the history of the fort, cannot be determined without excavation but it must have happened comparatively late in the development of the site. The possibility should, however, be allowed that the blocking was part of the reconstruction of the defences which gave rise to the heightened rampart and V-shaped ditch. In other words phase c, above, should be removed from the phase of the developed entrance and relegated to the stage of blocking.

The alternatives are summarized in Table 2. The simplest alternatives would be C or D but the implication, that the hornworks were built before the 4th century BC (the preferred date for the reconstruction of the defences), might be thought to be unacceptably early (below, p 44).

Clearly, only a programme of detailed excavation would

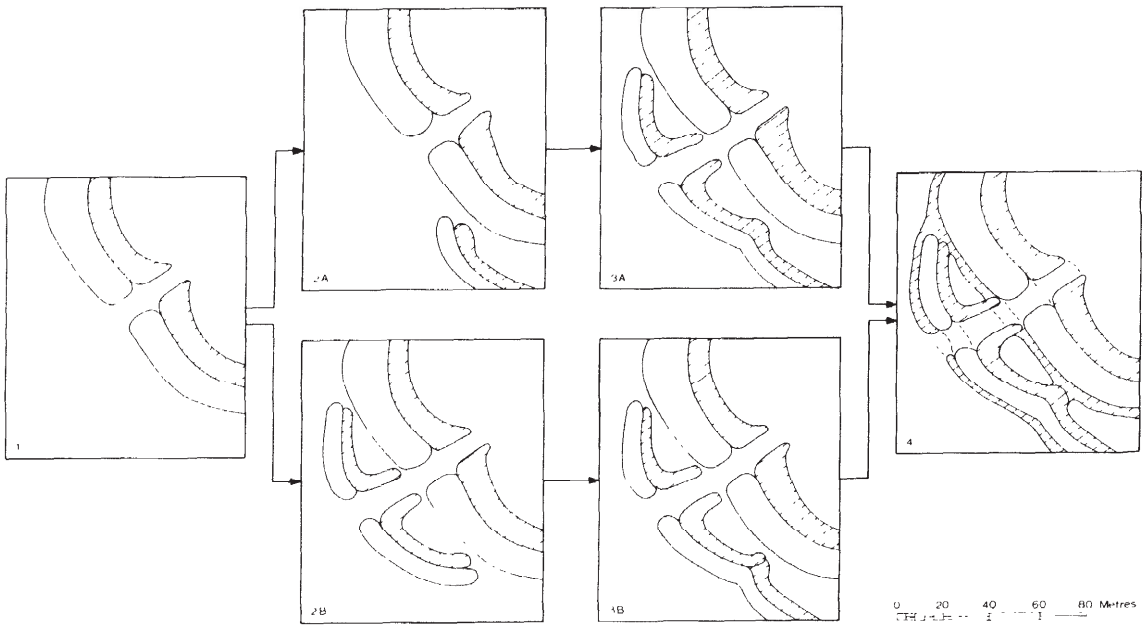


Fig 3.12 South-west entrance: interpretation of development sequence

solve the outstanding problems. It is hoped to undertake this work before the completion of the project.

3.5 The east entrance
(Figs 3.133.15, Pls 10-17)

The main (east) entrance is well preserved and has been extensively excavated. It consists of two parts: an inner entrance flanked by a *north inner hornwork* and a *south inner hornwork;* and an outer entrance which lies between a *north* outer *hornwork* and a *south outer hornwork.* The inner hornworks are simple banks while the outer hornworks are fronted by ditches and counterscarp banks. Between the two sets of hornworks is an entrance courtyard which is crossed by the hollow-way of the main approach road.

The development of the entrance was complex. To facilitate description it is proposed first to discuss the features of the inner entrance in chronological order and then to consider the outer entrance in much the same manner. After this the development of the entrance as a whole will be summarized.

3.5.1 The inner entrance and its hornworks (Fig 3.16)

The inner entrance survives now as a slightly curving

Table 2 South-west entrance-likely development alternatives

Phase	A	B	C	D
1		early gate		
2	hornworks	middle earthwork	middle earthwork	hornworks
3	middle earthwork	reconstruction of defences	hornworks	middle earthwork
4	reconstruction of defences	hornworks		maintenance/clearing
5	maintenance/clearing			blocking/reconstruction of defences
6	blocking			maintenance/clearing
7	maintenance/clearing			

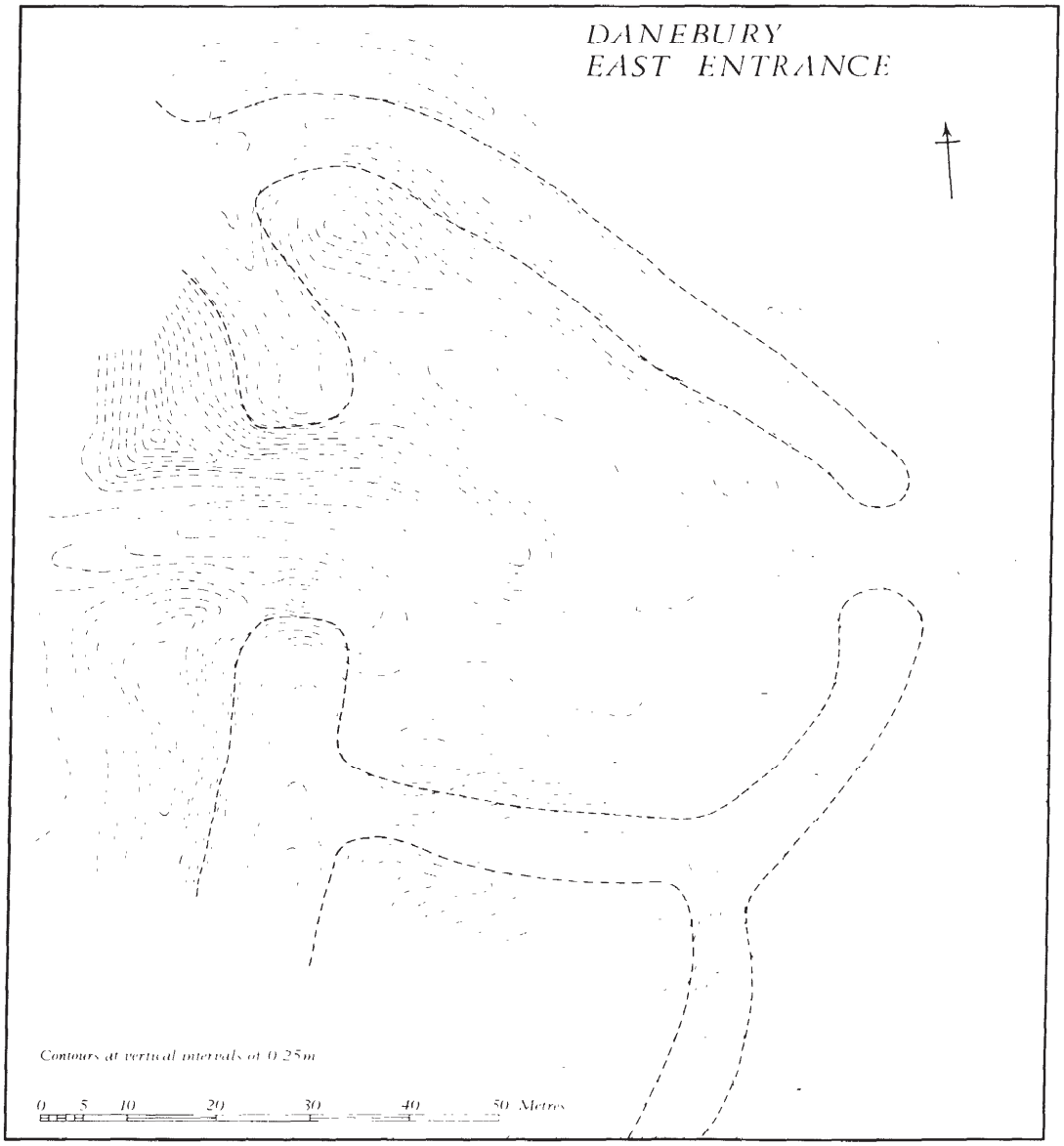


Fig 3.13 East entrance: contour plan. The ditches are indicated in thick broken lines

trackway passing between two banks (the inner hornworks) which project outwards from the rampart ends. The northern inner hornwork is a substantial structure almost 50 m in length and standing to a height of 3.2 m above the road surface, while the southern inner hornwork is slighter, only 20 m long and 2.6 m high. The apparent height of these works is accentuated by the fact that the trackway has worn into the chalk creating a hollow-way the base of which is 1.4 m below the natural surface of the chalk.

The successive gates were set back in the part of the passageway which lies between the main rampart ends. Six major periods of gate development can be recognized, several of which can be subdivided into separate phases. There are, however, difficulties in apportioning all of the postholes of the entrance to specific phases since a number of them are physically isolated and comparatively few are related to significant stratigraphy. Thus, in order fully to appreciate the problem it is necessary first to describe the stratigraphy of the entrance before considering the gate structures in detail.

The removal of approximately 0.40 m of soil and loose flints, which had tumbled from the flanking walls of the latest entrance into the hollow-way, immediately exposed the road surface, worn deeply into the natural chalk. The road effectively divided the entrance stratigraphy into two halves: that part on the north side of the road fell within Trench 11 while the southern side of the road was examined in Trench 10, its extension Trench 19, and the isolated Trench 16.

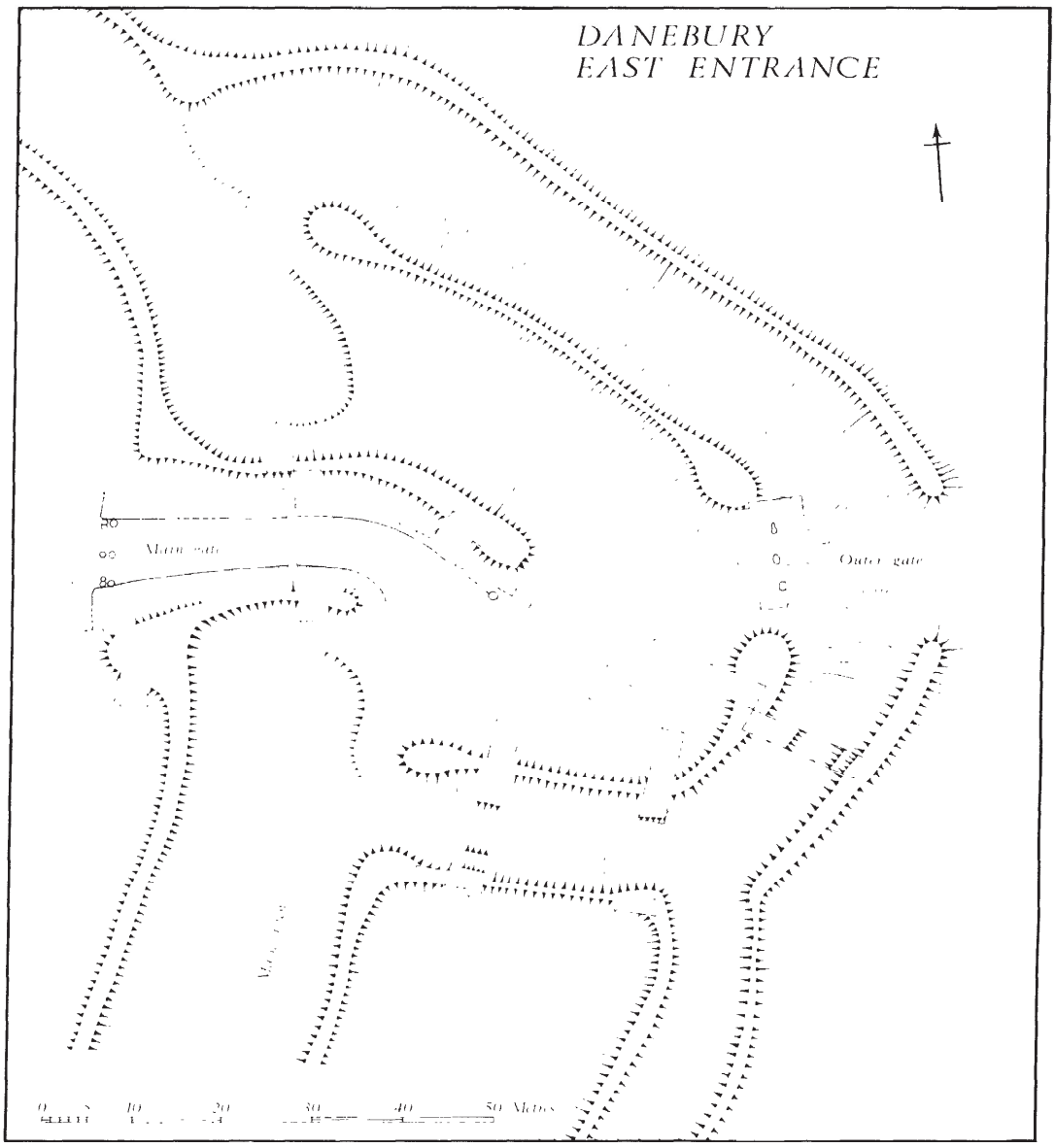


Fig 3.14 East entrance: simplified hachured plan

The northern side of *the entrance (Figs 3.31, 3.32)*

The original turf-line (Trench 11, layer 4) survived in places as a well-defined layer of brown clayey soil 100-150 mm thick lying on the natural chalk bedrock. Its stone-free nature suggested that it had not been disturbed by agricultural activity. Above this was the truncated core of the original rampart composed of freshly quarried chalk rubble surviving, within the excavation, to a height of 1 m. The front and south terminations had been cut away, together with the underlying turf-line to the level of the chalk bedrock (see plan, Fig 3.17 and Fig 3.31, section 9, for detail). At the back of the rampart the tail thinned out to become a layer of chalk 40-50 mm thick (Trench 11, layer 43) which had been heavily trampled. The trampling clearly represents a period of activity possibly associated with the use or reconstruction of one of the early gates. It seals postholes 19 and 20 and slot 1.

At a later stage tips of chalk and soil were added to the back of the rampart extending its base for a width of approximately 4 m. The addition was of mixed material consisting of small lumps of chalk and some flints in a matrix of chalky soil (Trench 11, layer 42). The lowest tips, immediately on the back of the primary rampart, were of more turf-like consistency (layer 41) but merge with layer 42 in such a way as to suggest that both were deposited as part of a single process.

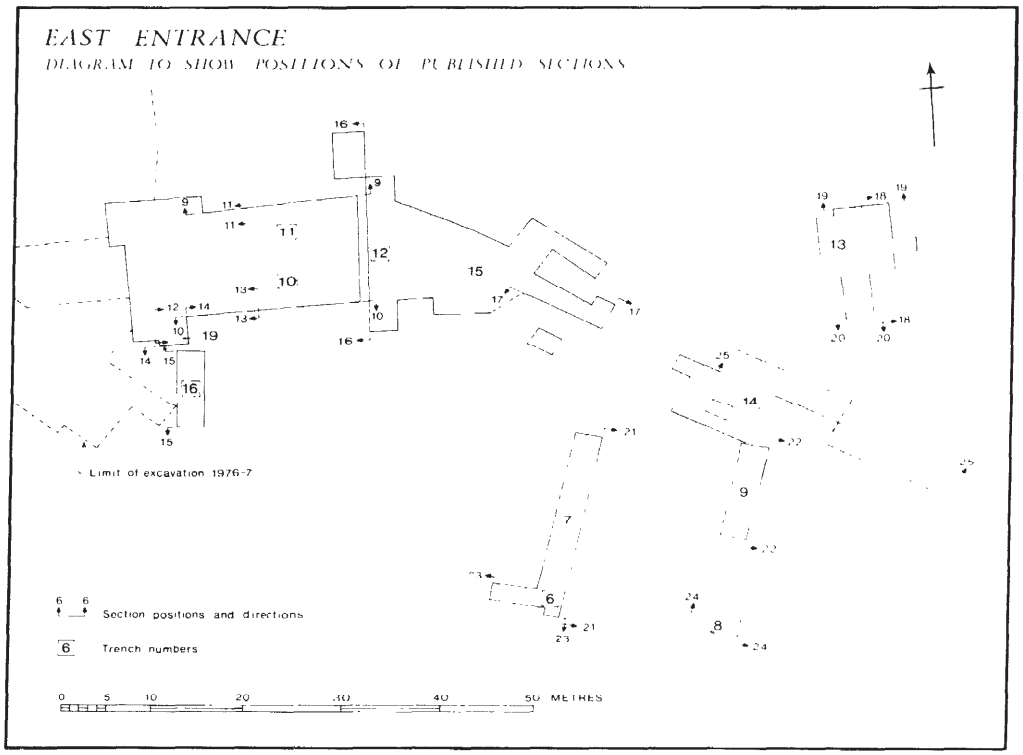


Fig 3.15 East entrance: key to trench and section numbers

Above this addition is a mass of large flint nodules mixed in gritty brown soil possibly representing turves packed together with the flints (Trench 11, layer 59). Although no clear interface can be seen in the longitudinal section (section 9) between layers 42 and 59 they represent two distinct phases of construction, a point which can be clearly seen in section 11 where layer 42 was cut away before layer 59 was deposited. The flints were, in fact, packed behind a dry-built flint facing which ran along the north side of the entrance passage and turned at right angles to delimit the inner (western) face of the rampart. In other words layers 41 and 42 represent the first phase of additions to the rampart while layer 59 represents the second phase of modification associated with the building of the flint-walled entrance passage which is referred to below as period 6.

In front of the primary rampart core lay the south termination of the fort ditch buried beneath the north inner hornwork. The details of the stratigraphy are best appreciated from sections 9 and 16 (Figs 3.31, 3.32). The ditch, 8.2 m wide at this point, was partially sectioned to a depth of 3.4 m below the level of the natural chalk surface but the bottom was not reached. Judging from the slope of the ditch side it is likely to be 2 m deeper and is therefore not of significantly smaller proportions than the fort ditch sectioned in 1969 which measured *c* 10.5 m across and 6.3 m deep. The implication would seem to be that the ditch had probably been recut before the hornwork was constructed.

The ditch had already partially silted before deliberate filling began, the natural fill comprising layers of finely weathered chalk silt containing a mass of loose flints which may have fallen from the rampart breastwork (Trench 11, layers 64, 63). The top of the natural fill in the centre of the ditch was about 2 m below the ditch lip. Thereafter the ditch was filled with tips of chalk lumps, chalky silt, flints, and soil up to the level of the ditch top (Trench 11, layers 61, 62, 60).

Above this the body of the hornwork was constructed. It was built out from the front of the rampart of a variety of material, mainly fine chalk rubble but with tips of flint and heaps of turf piled up at intervals. Something of the complexity of the structure can be appreciated from sections 9 and 16 (Figs 3.31, 3.32). Insufficient of the hornwork was removed to be able to say precisely how the work-force went about constructing the earthwork, but while the horizontal layering was apparent in the lateral sections, the cross-section showed that once the core had been constructed additional spoil was tipped from the crest over the edge, thus thickening the earthwork by adding to its northern flank. The material used in the construction may well have come, in part at least, from inside the fort but the relative lack of much freshly quarried chalk and indeed the predominance of soil and silt shows that it is unlikely to have come from quarry hollows inside the gate which are anyway arguably earlier, but may well have derived from the clearing out of the fort ditch.

Throughout its length the northern inner hornwork was revetted on the south side with a dry built flint wall of which only the lowest courses remain (P1 15). The flints were carefully chosen to be large and, wherever possible, tabular. Many were carefully knapped to produce a flat outer face. One stretch of the facing (just west of the ditch end) survived to a height of 0.7 m. Although the flints were roughly coursed no real attempt had been made to

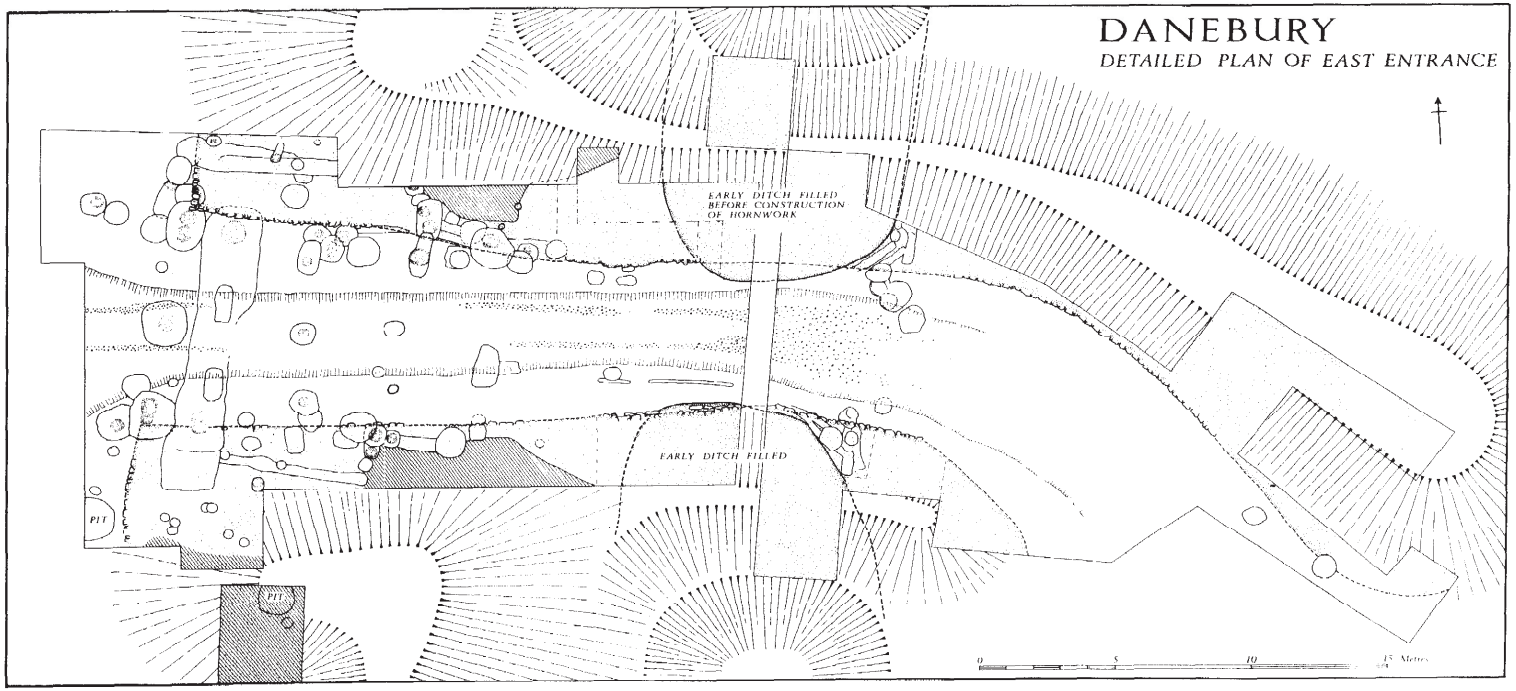


Fig 3.16 East entrance: the features of the inner entrance excavated in 1970

keep the courses regular or level. Wherever the facing was observed in relation to the hornwork the two would seem to have been built as part of the same programme. No evidence of vertical or horizontal timbering was observed in this structure.

The southern side of the entrance (Figs 3.16, 3.31)

The original turf-line (Trench 10, layer 31) survived above the natural chalk surface wherever subsequent construction or wear had not removed it. It averaged 100 mm thick and was relatively stone-free showing that it had not been disturbed. It was sealed by the primary rampart- a mass of freshly quarried chalk blocks- surviving at this point to the height of just over 1 m (Trench 10, layer 34). The front of the rampart seems to have been cut back to a steep slope, presumably at the time when the defences were remodelled (equivalent to the second period observed in the 1969 section, pp 16-19). The tail of the rampart, however, had had time to weather. Behind the rampart and to the north of its truncated end, a thin layer of trampled chalk (Trench. 10, layer 33) accumulated over the old ground surface during a time of reconstruction or of use, sealing postholes 27,28, and 54 and slot 5 (of the period 2 gate).

Subsequently the rampart was heightened with a tip of turf-like material (Trench 10, layer 32) followed by tips of chalk (layers 30, 39) and finally more turf mixed with occasional large blocks of chalk and flint (layer 38). All four layers appear to have been part of a single process of rampart extension. It was after this stage that the rampart was cut back and revetment of flints built along the south side of the entrance passage, the space between the face and the original earthwork being filled with large flints packed in brown turfy soil (Trench 10, layer 23). Some of the lowest course of this revetment face survived in position (Fig 3.16) but much of it had tumbled into the roadway. The flint reverting could be traced along the face of the southern inner hornwork, the details of which will be considered fully below (pp 35-6).

On the south side of the entrance passage the north end of the main rampart turns into the fort. This area was examined in two separate trenches dug in 1970, Trench 19, which was an extension to Trench 10, and Trench 16. The area excavation of 1976 also impinged upon the rampart (Fig 3.15). The observed stratigraphy is summed up in sections 14 and 15 (Figs 3.31, 3.32).

The earliest layer consists of a turf accumulation (Trench 16, layer 23 and Trench 19, layer 9) which lies on the original chalk bedrock and seals an irregular hole filled with grey chalky silt which is of natural origin (Trench 16, layer 26). A shallow hole had been cut through the turf (Trench 16, layer 30). Upon the original turf and above the filled hole was piled a heap of brown clayey soil mixed with lenses of finely broken chalk (Trench 16, layers 29, 17 and Trench 19, layer 8). The upper part of this material would appear to be the tail of a rampart which extended back into the fort along the south side of the entrance. From its position, it may well be the tail of the primary rampart or, more probably, soil layers accumulating by natural processes in its lee.

An incipient turf-line had begun to form on the surface of the rampart and in one area a thin lens of charcoal was spread (Trench 16, layer 22 and Trench 19, layer 7) which, we suggest below, may be associated with the burning of the gate at the end of the period 2. Sometime later, but following fast upon the burning, a phase of occupation can be recognized: pit 13 was cut through the rampart tail, the spoil from it being thrown up in an irregular mound around the pit top (Trench 16, layer 21). Pit 14 and two postholes belong to the same general period or a little later.

The next stage is represented by a heightening of the inturned end of the rampart with tips of chalk and soil (Trench 16, layers 18, 20, 24 and Trench 19, layers 5, 6, 6a). The slope of these layers suggests that the spoil was being piled up as a lateral mound along the south side of the gate (presumably gate 3). Equivalent layers were traced to the western limit of Trench 10 (layer 79 on section 12) and it is very probable that the first extension to the rampart (Trench 10, layers 30, 32, 38, 39) represents the same process of reconstruction. The base of the bank measured about 7 m or so and its maximum height against the gate could have reached about 4 m above the original ground surface (ie just over 3 m above the top of the earlier rampart tail accumulation over which it was built). That some period of time elapsed before the next extension is shown by the formation of a layer of turf (Trench 16, layer 14 and Trench 19, layer 6a) and a lens of charcoal seen in Trench 10 (layer 78).

The next phase saw a major modification to the rampart at this point. The lateral inturn of the earlier period was completely obscured by tips of chalk rubble and soil piled against the back of the rampart (Trench 10, layer 77, Trench 16, layers 4, 5, 6, 7, 8, 9, 15, 16, 27, 33, and Trench 19, layers 3, 4). It is possible that this reconstruction is equivalent to the second phase reconstruction observed in the 1969 trench and was undertaken when the gate was rebuilt in the fourth major gate period. These problems of correlation will be considered later (p 35).

The final structural phase is represented by a further tip of chalk rubble (Trench 16, layer 3) which seals the previous addition. It is possible that the rubble belongs to the period when the gate was rebuilt in gate period 5, but the correlation is incapable of proof. It was at this time that the old rampart was cut back and a revetting wall of flint, backed by flint infill, was erected (Trench 10, layers 23, 76 and Trench 19, layer 2).

The area excavation of 1976 which impinged upon the earthwork exposed an irregular quarry pit immediately behind the rampart which had been dug to a depth of about 1 m below the surface of the natural chalk. The quarry had silted up with fine brown soil containing a few small flecks of chalk (layer 360) above which was a more chalky layer of silty soil containing occupation debris including charcoal (layer 359). It seems probable that this layer accumulated during the phase of occupation to which pits 13, and, possibly, 14 belong. If so then the quarry hollow had already become substantially silted before the phase of occupation. Whether or not it belongs to the period of the construction of the primary rampart or to the first phase of rampart extension noted in Trench 16 is debatable. On balance the earlier context would seem the more probable, not least because the silt seems to have accumulated without interruption as the result of surface water washing soil in from inside the fort. Had the first phase of the rampart extension already occurred one would have expected the silt to contain more chalky material washed down from the back of the rampart. There is, however, an added complication. In considering the 1969 rampart section it was suggested that the discrete quarry hollows belong to the period 2 extension to the rampart. If the same applies here in the region of the gate then we must allow that our 'primary rampart' is itself of two phases.

The upper layer of silt was sealed by a tip of chalky soil (layer 357) which is equivalent to the second rampart extension in Trench 16. This was, in turn, sealed by

another mass of chalk rubble (layer 352) which can be equated to the third rampart extension. Above this was a layer of brown soil containing flints which had rolled down from the rampart crest (layer 351).

In front of the rampart (ie to the east) the end of the fort ditch was traced beneath the south inner hornwork (section 16). It was between 8 and 10 m across. The excavation was extended about 2 m into the ditch fill but no attempt was made to obtain a complete cross section. The entire fill, sectioned in the trench, was deliberate packing thrown in in tips, immediately prior to the construction of the hornwork, to form a level platform for the earthwork. It consisted of soil lenses mixed with layers of chalk rubble of varying consistency. The hornwork itself was composed of similar material piled up first as a primary mound, flanking the road, which was then extended in width by additions to the south side. At the same time the earthwork was heightened. It survives now to just over 2 m above the level of natural chalk.

The eastern extremity of the hornwork was partially removed in excavation (section 17) revealing a worn surface hollowed into the chalk, in all probability the continuation of the trackway leading to the enclosure defined by the middle earthwork which was seen beneath the earthworks of the south outer hornwork (p 37). A turf lens survived in patches on the natural chalk beneath the hornwork (Trench 12, layer 79).

A north face of the south inner hornwork was revetted with a dry stone wall of flints surviving now to only one or two courses in height (Pls 14, 16). Where the facing passed across the end of the ditch subsidence has caused some localized collapse which seems to have been made good by placing large tabular flints upright, bedded in the fill of the ditch end and resting against the wall face, presumably to prevent the lower courses from slipping forward.

The inner gates (Pls 12, 13, 17)

Six distinct periods of gate building can be recognized, some of which can be subdivided into several phases. In the section to follow, each period will be discussed in turn. To obviate the need to include lengthy description in the text at this point, individual structural features such as postholes and slots are described separately (fiche 1, frames C1-D3). Many postholes have been shorn of their stratigraphical relationships by subsequent traffic wear or levelling. Thus it is sometimes difficult to assign isolated postholes to a particular phase or period with certainty. Areas of doubt will be made explicit in the descriptive text. The scheme put forward here is, it is hoped, the best approximation to the truth which can be deduced from the surviving evidence.

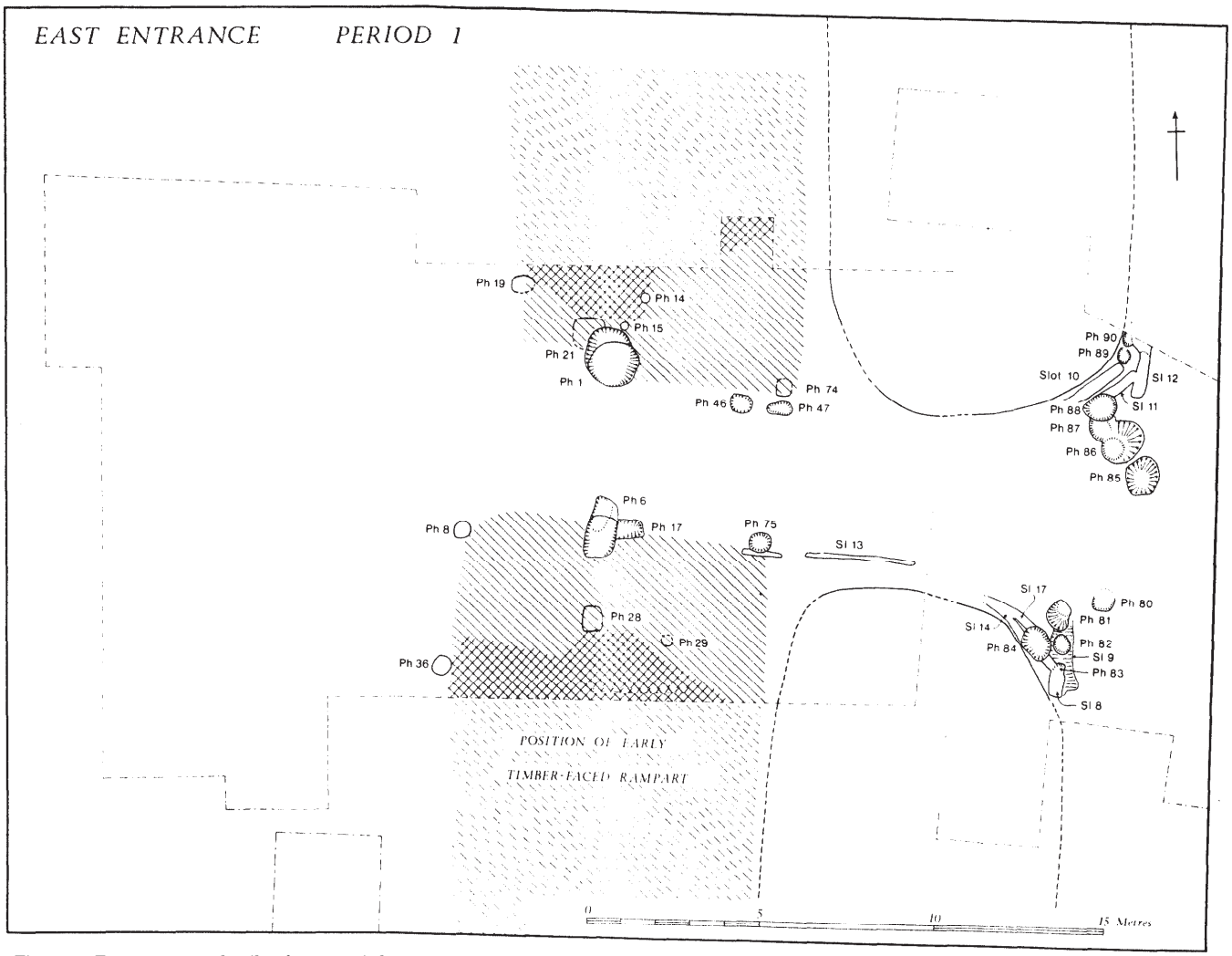


Fig 3.17 East entrance: details of gate period 1

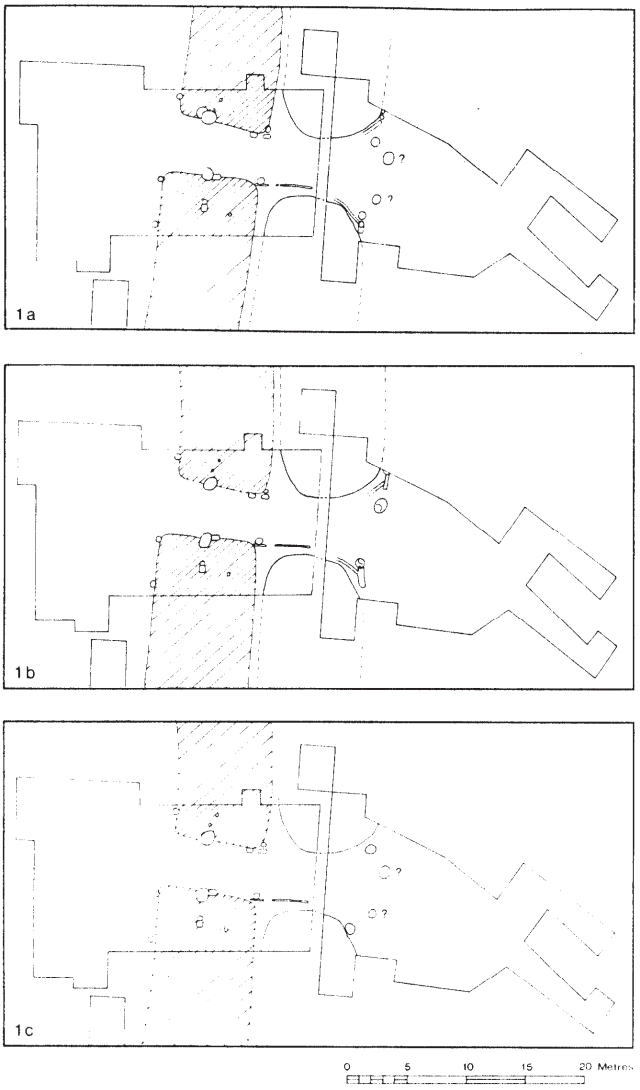


Fig 3.18 East entrance: interpretation of the phases of gate period 1

Gate period 1 (Figs 3.17, 3.18)

The earliest gate was a single carriageway opening set within the entrance gap between the ends of the primary rampart. The gate-posts were set in postholes 1 and 6 making the gate some 4.2 m wide. Posthole 1, however, seems to have been later than posthole 21. The relationship was difficult to demonstrate with certainty but if this were so then it is necessary to regard posthole 1 as a replacement belonging to a slightly later phase within the first period. Both postholes 1 and 6 were once recut. Presumably the ends of the primary rampart originally extended to the gate-posts and were in some way revetted. Postholes 8, 17, and 75 could well have formed part of this revetment on the south side with postholes 46, 47, 19, and 74 revetting the north side. It is possible that posthole 36 also belongs to the first period. Three postholes (14, 15, 29), by virtue of their filling and stratigraphical position, seem to have been contemporary with the construction of the first rampart. In all probability they formed part of the original timber box structure which gave rigidity to the rampart. Posthole 28, which was once recut, may also be of period 1 date since it was sealed by a trampled layer created at the end of period 2. The post does not make much structural sense in period 2 but could be explained as a lateral support against which to anchor gate-post 6.

The reasons for assigning these posts to the first period vary but essentially those on the south side of the entrance passage, including the gate-post (posthole 6), lie within the road leading to the second period and subsequent gates and must therefore belong to the earliest period. The postholes on the northern side, where they are in relation to other posts, can be shown to be among the earliest structures of the entrance. The details are summarized in the posthole descriptions below (fiche 1, frames C1-D3).

An outer gate complex existed outside (ie to the east) of the ditch ends but sufficiently close to the ditch lip to suggest that the posts related to a period before the ditch eroded or was recut to its final shape, otherwise they would have been in danger of eroding into the ditch end. The postholes are best considered to belong to four pairs: postholes 80 and 85; 81 and 86; 82 and 87; 84 and 88. The palisade slots, which form part of the same complex, belong to two phases: slots 14, 8, and 10 and postholes 83, 89, and 90 (which may be the end of a slot); and slots 9, 17, 11, and 12. (It is of course possible that other slots existed but have been removed by the erosion of the ditch.)

One possible interpretation of this group of posts is that each pair of postholes represents a resetting of the outer gate, the adjacent palisades being replaced only once. This explanation would seem preferable to supposing that there were only two phases of outer gate building, the gate in each being composed of two posts on each side. The spacing of the posts is such that this seems unlikely.

The only distinct stratigraphical relationship to survive is on the north side of the gate where posthole 87 can be shown to pre-date postholes 86 and 88. There is also evidence to suggest that palisade slots 14 and 8 were earlier than slots 7 and 9. Thus several possible sequences present themselves (Fig 3.18).

The basic structure of the outer gate is clear enough-a palisade trench, presumably containing a fence of some kind dividing the road from the ditch end, terminated on a short length of slot aligned with the outer lip of the ditch. The gate-posts were set in individually-dug holes just clear of the fence slot. In all probability the fences continued along the road to the main gate but much of the relevant area of natural chalk has been eroded by later road surfaces. Slot 13, however, appears to be a remnant of the southern fence which may once have joined post 6. If this interpretation is correct then the period 1 gate consisted of an outer gate and an inner gate set at opposite ends of a passageway nearly 15 m in length. While such an arrangement would have had defensive qualities, it would also have served a useful function in preventing cattle from jostling each other into the ditch ends or straying on to the berm between ditch and rampart when being driven into or out of the fort.

There is no reason why the outer gate should be restricted only to period 1. That it began in period 1 is suggested by the apparent linking of the two gates by slot 13, but the subsequent stages of the outer gate might well relate to the second and possibly even the third of the main gate periods. As Fig 3.16 shows, however, most of the outer gate features were sealed by the hornworks of period 6.

Gate period 2 (Figs 3.19, 3.20)

The second major gate period is clearly defined and presents sufficient evidence to allow division into two phases. In both the actual gate structures delimit a dual portal entranceway set back approximately 3 m behind (ie to the west of) the earlier gate of period 1. The gate-posts were double, posts 10 and 43 on the north and post 59 and the precursor of 33 on the south, with a single central post

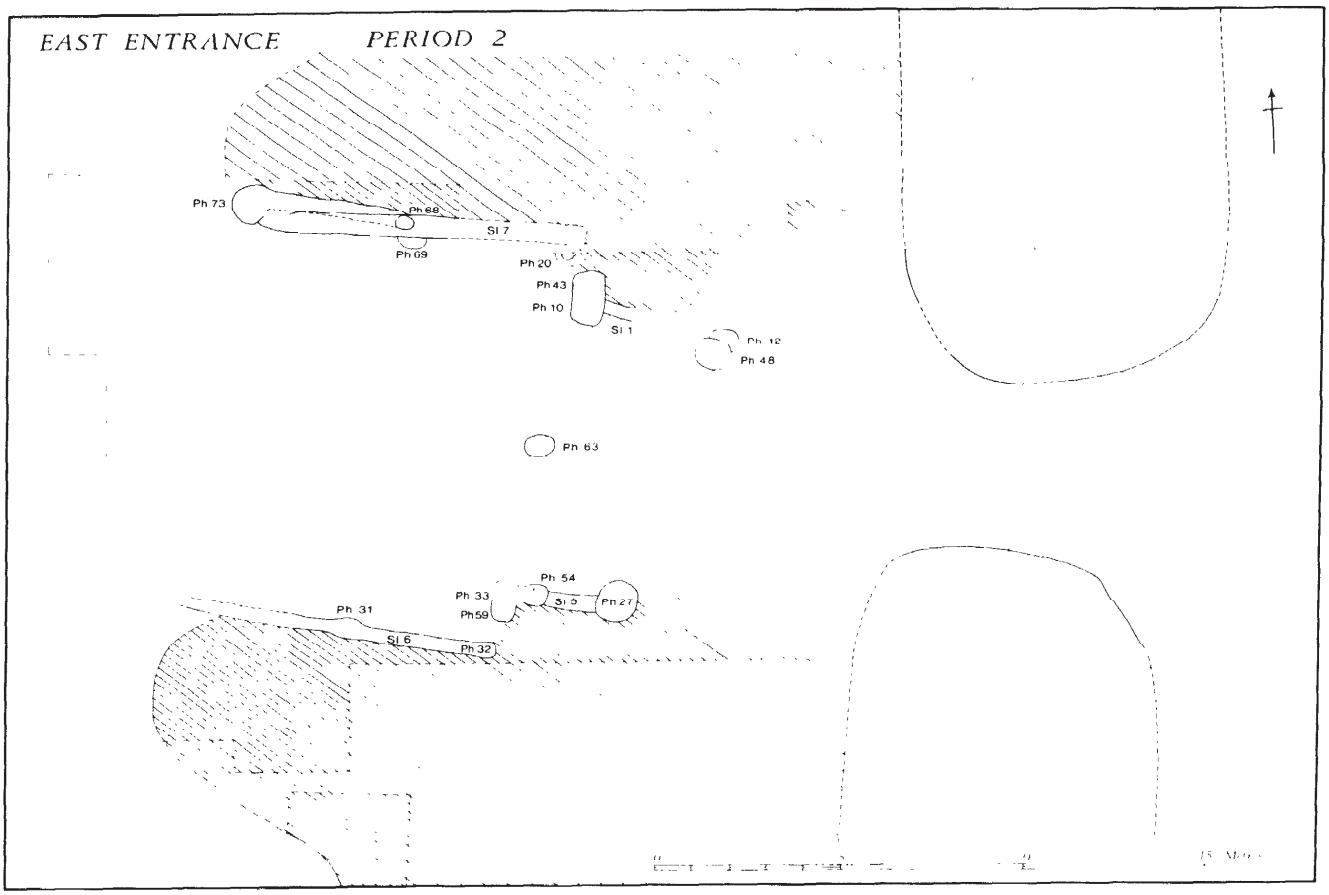


Fig 3.19 East entrance: details of gate period 2

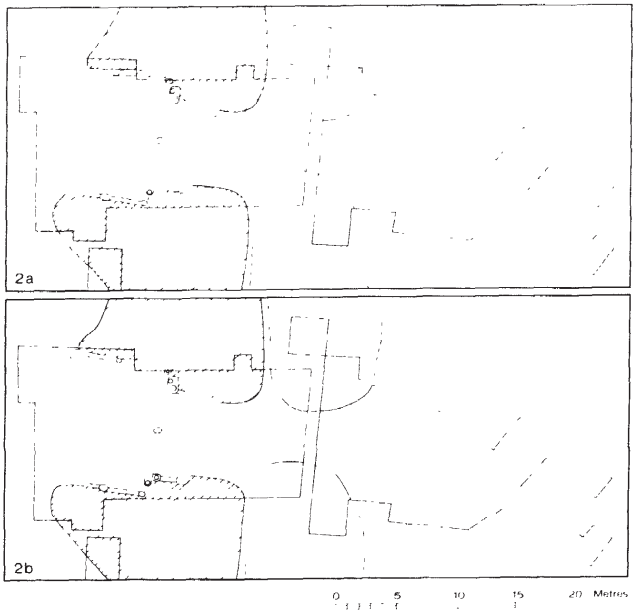


Fig 3.20 East entrance: interpretation of the phases of gate period 2

(no 63) between, dividing the entrance into two separate passageways each 4.2 m wide. At some stage early in the life of the second period gate an additional post (no 54) was added, presumably to give strength to the southern gate support. All of these posts could be shown to be cut through the first period rampart.

During these phases it would appear that the rampart ends in front of the gate were revetted with short palisades set in narrow trenches (slots 1 and 5) defining a passage 8.5 m

while the northern slot (slot 1) probably terminated on

similar fences were provided (slots 6 and 7) sited so as to

12 m wide and 10 m long. The southern slot widened at

similar widening towards the centre may have taken

away. The northern slot seems to have had a central post in

means proven,

termination; posthole 20 lay close to its east end. At a later

central post (posthole 68) erected. Evidently the

than that of its southern counterpart.

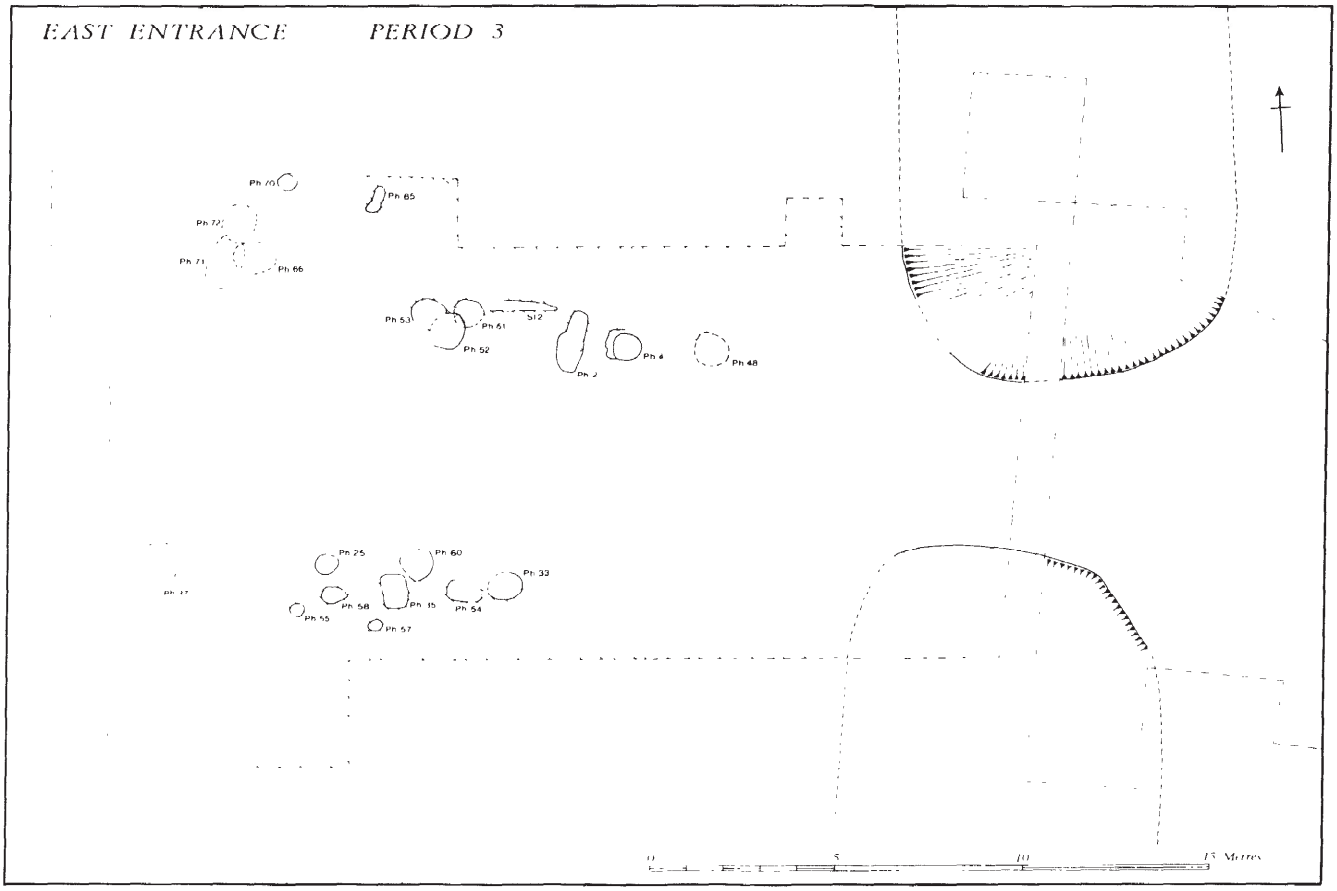


Fig 3.21 East entrance: details of gate period 3

structure the validity of which is further supported by the stratigraphical evidence. Postholes 54, 27, and 20 together with slots 1 and 5 are all sealed by layers of trampled chalk (Trench 10, layer 33 and Trench 11, layer 43) representing a phase of erosion and wear. Moreover, there is clear evidence that the two fences (in slots 1 and 5) as well as posts 59, 43, 10, and 20 were destroyed by fire before the trampled layer was deposited. Thus the simplest explanation is that the period 2b gate and its forecourt were burnt after which the entrance gap remained open for some time, in use but without gates. There is no evidence that the inner fences were burnt *in situ* but an extensive area of charcoal to the south of the gate, which can be shown to be broadly contemporary with this period (p 29), may have resulted from associated destruction; it is always possible that the inner fences were uprooted and made into a bonfire at this spot.

Gate period 3 (Figs 3.21, 3.22)

Following the burning and disuse of the second period gate and pre-dating the construction of gate 4 a new gate, or series of gates, was erected. The clearest evidence of the sequence can be seen where the period 3 gate-posts, nos 2 and 33, superseded the gate-posts of period 2 and where the period 4 gate-posts, 5 and 7, cut into posts 52, 53, and

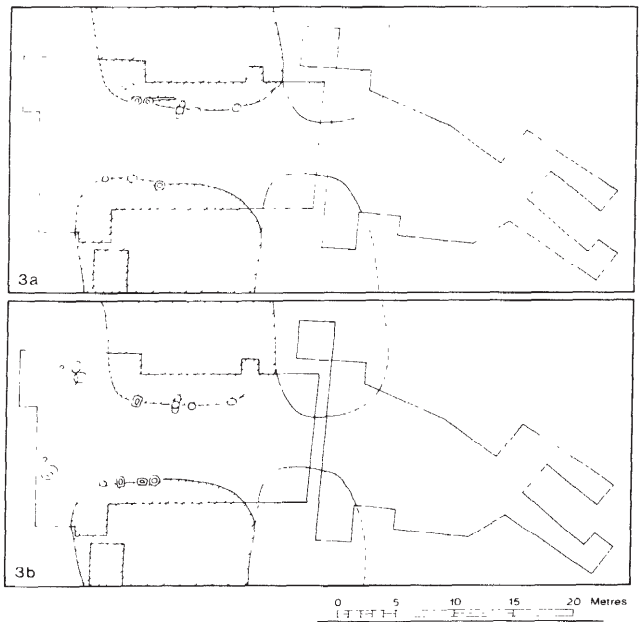


Fig 3.22 East entrance: interpretation of the phases of gate period 3

60. Posts 2, 33, 52, 53, and 60 definitely belong to what is here defined as period 3 and a number of others (shown on Fig 3.2 1) may well be of the same period.

Several phases are distinguishable. In the first (period 3a) the old second period gate was replaced in much the same position, the two new posts (2 and 33) defining an entranceway 7.1 m wide. There appears to have been no central post, unless a shallow bedded post existed and has not survived the later hollowing of the road. The arrangement of posts behind the gate is less clear but the most plausible suggestion is that posts 51 and 60 formed a pair. If contemporary with the gate-posts they could have supported a bridge spanning the entrance gap and linking the rampart ends with a continuous walkway. Post 53, which belongs to period 3, is best accounted for in terms of it being contemporary with or a replacement for post 51. Post 25 could be assigned to this phase supposing it to be part of the flanking works of the inner gate passage. If symmetry is required it could always be argued that its opposite number had been removed by post 16 unless of course post 50 is thought to be relevant. These matters are however speculative and impossible to prove. The short length of slot (slot 2) is most probably a fence slot of this period.

A second phase (period 3b) is proposed to account for posts 35 and 52. Post 35 is not in relationship to other posts but post 52 is later than 51 and 53 but is cut by post 5 of the period 4 gate. A plausible explanation would be to regard them as replacements for the rear bridge supports of period 3a (posts 60 and 51/3). If this interpretation is accepted then posts 54 and 58 could be seen as intermediate revetment timbers belonging to this phase.

The precise treatment of the rampart flanks behind the gate in this period is difficult to determine since all relevant stratigraphy has been removed by later cutting back. It is, however, possible that the period 2 fence lines were replaced with post-supported structures, posts 55 and 57 along the line of the southern fence and posts 68 and 70 along the northern fence line. All four posts are later than the filling of the fence slots but are otherwise undated (though post 68 could fit well into the period 2 sequence). Some kind of revetment either here or attached to the gate and bridge timbers would have been necessary to prevent soil eroding into the road, for in period 3 it seems that the rampart ends were reconstructed with inturned backs flanking the entrance passage (the first lateral extension to the rampart (pp 18-19; Trench 16, layers 14, 18, 20, 24 and Trench 19, layers 5, 6, 6a)). This extension followed a phase of occupation which could well have developed between periods 2 and 3 when the entrance gap appears to have been without a gate.

How the rampart ends were retained in front of the gate if at all is a matter of speculation. No post survives on the south side but posts 4 and 48 could have helped retain the

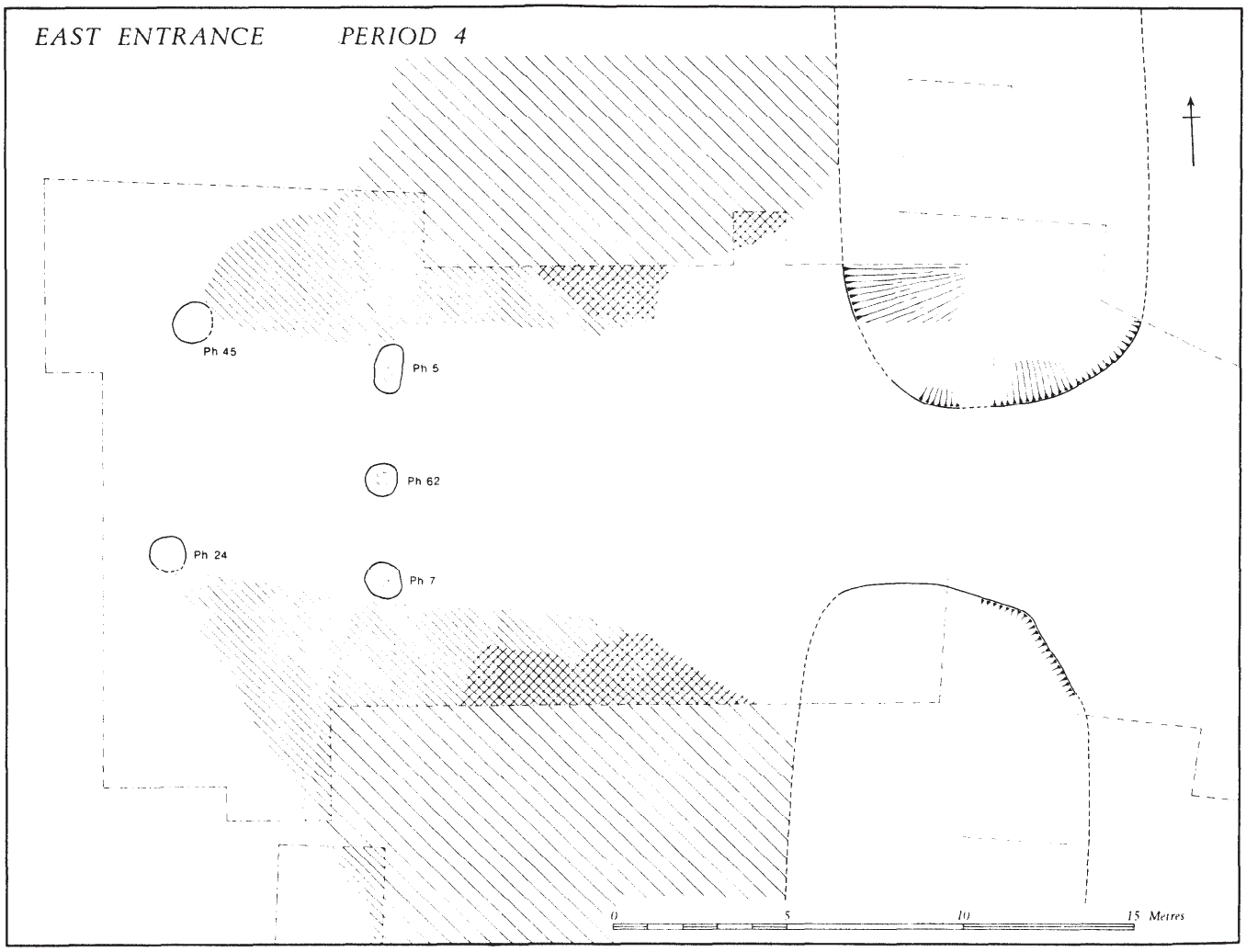


Fig 3.23 East entrance: details of gate period 4

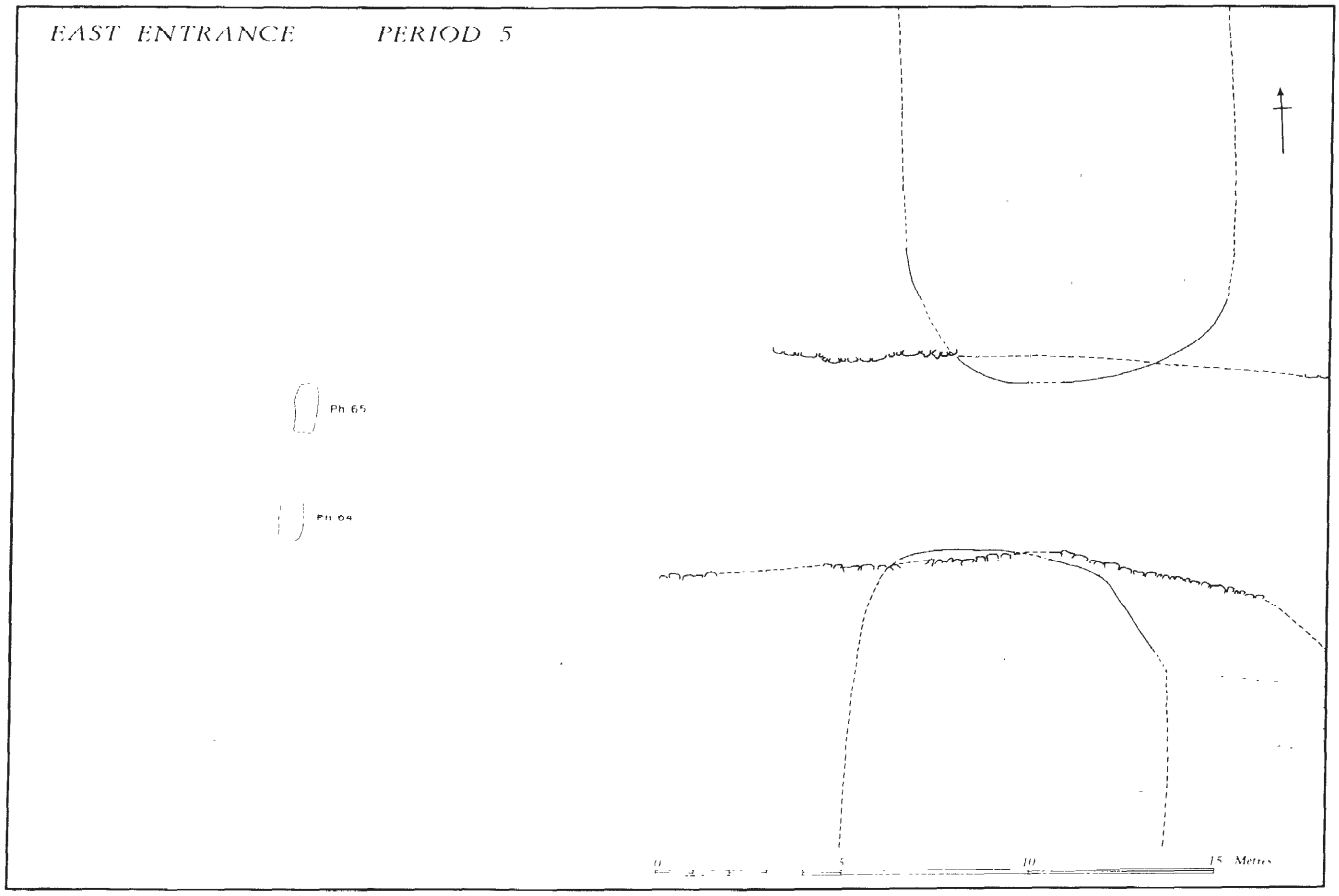


Fig 3.24 East entrance: details of gate period 5

north face; all that can be said of these posts is that they pre-date period 6.

The possibility must also be allowed that posts 37, 66, 71, and 72 belong to gate period 3 since they can be shown to pre-date structures of period 6 and they would not fit easily with the plans of gates 4 and 5. They may, however, be totally unrelated to the gates and instead be part of the interior occupation.

Although many details remain unresolved the main oultine of the gate, with its tower or walkway above the road, is tolerably clear. In form the period 3 gate presents an interesting intermediate stage between the gates of period 2 and those of periods 4-6.

Gate period 4 (Fig 3.23)

The three posts of the main gate (postholes 5,7,62) define a double carriageway entrance, each gateway being 2.6 m across. The spacing of the posts and the similarity of their size and filling leaves little doubt that they belong to the same structure which demonstrably post-dates postholes belonging to gate period 3. The assignment of other posts to period 4 is less certain. It is possible that the entrance passageway between the rampart ends in front of the gate was revetted in some way with posts or palisades but no palisade slots survive; postholes 4 and 13 may, however, belong to period 4 rather than period 3 but there is no direct evidence either way.

A similar problem is presented by the treatment of the entrance passage behind the gate. No trenches for revetting palisades survived but it is likely that some kind of inner structure was erected. The simplest explanation would be to see postholes 24 and 45 as belonging to this period. Posthole 45 post-dates posthole 71 and both 24 and 45 are earlier than posts 30 and 44 which belong to the period 6 gate. If this analysis is accepted the form of the period 4 gate will be seen to be not greatly dissimilar to that of the period 3 gate which it replaced, the essential elements being the gate itself and sufficient supports behind to take a timber platform or tower above the inner entrance passage.

The stratigraphy of the rampart on the south side of the gate (pp 29-30) cannot be directly related to the gate structure because of the removal of the relevant layers in period 6. It may, however, be that the second extension to the rampart (Trench 16, layers 4, 5, 6, 9, 15, 16, 27 and Trench 19, layers 3 and 4) was contemporary with the period 4 gate since it seals the lateral rampart extension of period 3. The stratigraphy on the north side of the gate was not sufficiently examined to locate potential additions of period 4.

Gate period 5 (Fig 3.24)

Gate period 5 is, it must be admitted, tenuous, but the recognition of such a constructional period is required to

make allowance for postholes 64 and 65 both of which pre-date the construction of the period 6 gate represented by postholes 16 and 23. The postholes, which clearly form a pair, are stratigraphically unrelated to the earlier gates but their location in relation to the early gates would render it most unlikely that they formed a part of these structures. For this reason they are best regarded as, a structure in their own right post-dating period 4 but pre-dating period 6. The holes were packed with a rammed filling of flints and chalk suggesting either that no posts were set in them or that posts had been erected and later removed. No other postholes seem to be associated with them.

The simplest explanation would be to suppose that the period 5 gate was planned but never completed. This possibility is worth considering further in relation to the homworks. As the plan will show, the flint-walled entrance passage flanked by the north and south inner hornworks measured on average 6·2 m across but as the period 6 gate was reached the passage widened to 9 m. It is possible (but totally untestable) that the hornworks were erected in period 5 to create a gradually narrowing passage leading to a single gate set in postholes 64 and 65 but were later modified to accommodate the new larger period 6 gate. The suggestion is plausible but remains in the realms of speculation. That the period 5 gate may have been unfinished is of potential interest in relation to the unfinished nature of the first phase of the outer hornworks, a matter which will be further considered below (pp 37-8).

Gate period 6 (Figs 3.25, 3.26)

It was in the sixth period that the gate was reorganized into its final evolved form but two distinct phases can be recognized. In the first phase the two large gate-posts, postholes 16 and 23, were erected in pits set in a single wide trench. In all probability there was a third post between them, making the entrance into a dual portal type, but no trace of the post or its pit has survived the later wear on the road surface. At a later date postholes 30, 44, and probably 61 were dug to take another set of gate-post timbers, their post-pits impinging upon the tops of the post-pits for posts 16 and 23. There is no reason to suppose that the second set of posts actually replaced the first; both sets could well have remained in use together. Indeed the fact that all the posts had been burnt strongly suggests that all were standing together in the final stage.

Two other posts can probably be assigned to the sixth period, postholes 3 and 26. Both can be shown to be late in the structural sequence, both were similar in form and packing, and in both it was just possible to make out the positions of the posts. The packing had, however, collapsed into the void suggesting that the timbers had probably been removed rather than being left to rot, or burnt whilst in position.

It was in period 6 that the flint revetments were completed along both sides of the entrance passage. In their final stages they did not respect postholes 3 and 26 but were apparently laid out so as to touch the sides of posts 16 and 23 and to end on the outer posts set in postholes 30 and 44. This relationship is another factor pointing to the contemporary existence of posts 16, 23, 30, 44, and 61.

On the south side of the entrance it was clear that the earthworks flanking the original gates had been cut back before the revetment was constructed and the earthwork made good behind it. A similar cutting back, though less extensive, occurred on the north side (pp 27-8 and Figs 3.25, 3.31). The extent of the southern cut back might appear to be excessive but as the plan will show the trench in which posts 16 and 23 were erected had been dug nearly 2 m longer than was necessary and was reduced in effectivelength before the gate-posts were put in position. In other words, the cutting back of the original ramparts seems to have been done simply to provide adequate working space for the easy erection of the gate as it was originally conceived.

To explain the various features assigned to period 6 it is necessary to propose two distinct phases. In the first, period 6a, the rampart was cut back and the trench was hug in which were -erected posts 16, 23, and possibly an intermediate post. At the same time posts 3 and 26 were put up. It is Probable that the intention was to take the flint revetment up to the front posts at the very least and possibly to extend it to the main gate posts. The function of the front posts may well have been to support a walkway across the entrance passage giving easy access from one rampart end to the other. Whether or not the scheme was completed it is impossible to say.

In the second stage. period 6b, posts 3 and 26 were removed and it was probably at the same time that posts 30, 44, and 61 were erected. Whatever had been its former state, the flint revetment was now completed back to them and was returned at right angles to relet the back face of the rampart. The two sets of posts, some 2 m apart, would have been sufficient to have taken a bridge joining the two rampart ends.

Two large postholes were recovered on the north side of the road close to the eastern extremity of the north inner hornwork (postholes 91 and 92). It is possible that they may have been contemporary with the period 6 gate but direct proof is lacking. An area was excavated on the south of the road opposite post 92 in order to see if another post existed making a pair with 92; the area was however without features.

Extensive evidence for burning, associated with the main gate posts, leaves little doubt that the final gate of period 6 was destroyed by fire.

Gate period 7

After the destruction of the period 6 gate the entranceway continued to be used, the traffic, which included wheeled vehicles, wearing a hollow-way through the entrance passage 3·5 m wide and up to 400 mm deep below the Previous road surface. The hollow-way was eventually surfaced with flint cobbles which survive in patches and filled the wheel ruts scored into the chalk surface.

After the entrance had ceased to be extensively used, flints from the collapsing revetments, mixed with-brown soil, accumulated over the old road surfaces.

Details of postholes and palisade slots

In the fiche supplement (fiche 1, frames Cl-D3) details are given of all the postholes and nalisade slots belonging to or associated with the inner entrance. Each description includes a correlation with trench and laver number. selected measurements, description of the filling, and stratigraphical relationships to other features or layers. The gate period to which the post is assigned in the preceding discussion is indicated after the feature number. Additional information is provided visually in the sections, profiles, and plans (Fig 3.27).

The purpose of providing such detail is to make explicit the strengths and weaknesses of the phasing offered above. Using the two sections together the reader will appreciate that extensive and precise stratigraphical evidence is often lacking. For this reason phase interpretation must rely heavily upon a consideration of plan.

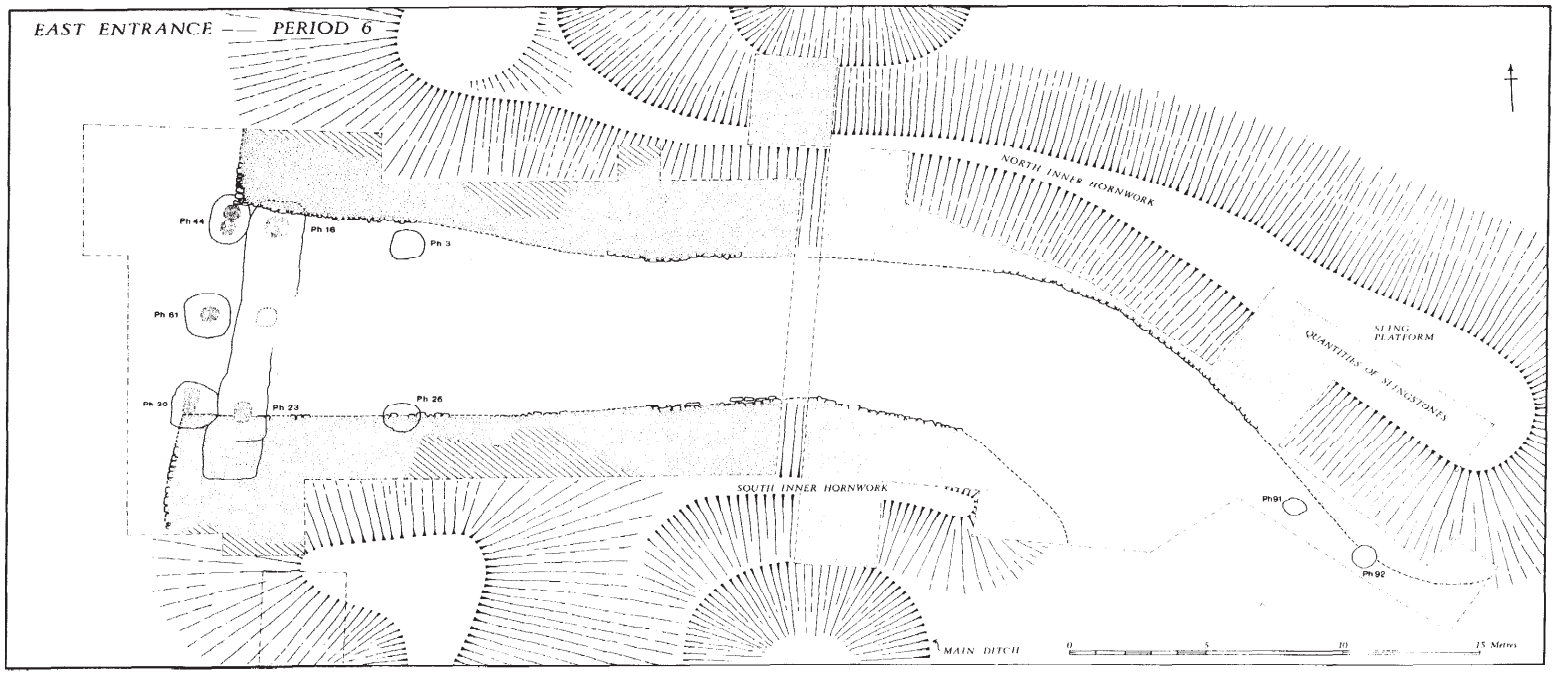


Fig 3.25 East entrance: details of gate period 6

Some of the postholes produced pot sherds. This evidence is described separately (fiche 1, frames F7-10) and its implications are incorporated in the final discussion (PP 45-6).

3.5.2 The outer hornworks and outer gate (Pls 10, 11)

The outer hornwork consists of an earthwork comprising a bank and ditch which runs in an arc from the fort ditch north of the inner entrance to the fort ditch on the south, enclosing all the features of the inner entrance together with an area immediately in front of them, in all approximately 350 sq m. The hornwork is broken by a single entrance gap within which was sited the *outer gate.* That length of earthwork to the north of the outer gate is known as the *north outer hornwork,* the length to the south is called the *south outer hornwork.*

The hornworks

The north outer hornwork has not been examined in detail by excavation but the south outer hornwork was sectioned in four trenches (Figs 3.28, 3.29). Trench 13 at the entrance exposed part of its northern end, Trench 14 provided a continuous section through the eastern arm of the hornwork and into the enclosed area behind, while Trenches 6 and 9 examined the south arm of the hornwork rampart, Trench 6 extending across the fronting ditch. Trenches 7 and 8 examined the hornwork counterscarp bank in relation to the earthworks of the main enclosure and the middle enclosure.

The sequence demonstrated by these excavations may be summarized as follows:

0 Pre-hillfort features: natural hollows; Bronze Age pit and ritual pits
1 Hillfort rampart, ditch, and counterscarp
2 The middle earthwork and its contemporary trackway
3 The hornwork, phase 1
4 The hornwork, phase 2
5 Occupation
6 The hornwork, phase 3

The features of each phase will be discussed in chronological order.

Pre-hillfort features (Fig 3.28)

Natural hollows In Trench 7 several irregular hollows filled with grey chalky rubble were observed in primary positions. No artefacts were found in them and in all probability they represent disturbances resulting from natural causes, possibly the result of geological factors.

Bronze *Age pit* (Trench 14, layer 29) See p 12.

'Ritual pits' (Trenches 8 and 13) See p 12.

The hillfort rampart, ditch, and counterscarp (Fig 3.28)

The only point at which the earthworks of the hornwork were observed to impinge upon those of the main fort was in Trench 7 where the counterscarp of the south hornwork overlapped that of the main fort. The relationship is demonstrated in section 23 (Fig 3.34); layer 7 represents the pre-hillfort turf-line overlaid by chalky rubble (layers 6, 5, 4) which constitutes the counterscarp of the main fort. Layer 3, and layer 13 with which it is continuous, result from continued tipping on the line of the counterscarp after the counterscarp of the hornwork, layer 9, had been constructed. The turf-line, layer 14, accumulated in the hollow between the two counterscarps before layers 3 and 13 were thrown up, its

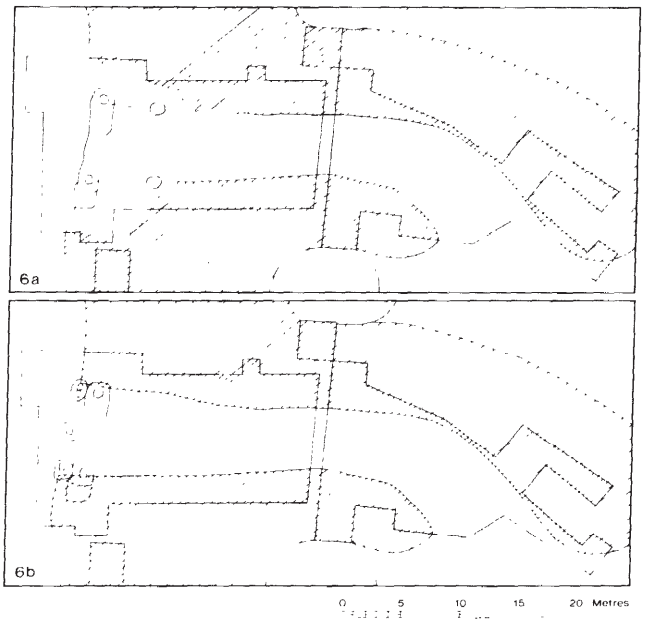


Fig 3.26 East entrance: interpretation of the phases of gate period 6

thickness suggesting a period of stabilization and inactivity following the construction of the hornwork counterscarp before a renewed phase of clearance took place in the fort ditch. Thus the sequence at this point was:

a Hillfort counterscarp (layers 6, 5, 4) probably contemporary with the trackway
b Silting of the trackway (layer 10)
c Hornwork counterscarp (layer 9)
d Period of inactivity (layer 14)
e Hillfort counterscarp heightened (layers 3 and 13)

The middle earthwork and its contemporary trackway (Fig 3.28)

The relationship of the middle earthwork and the hornwork was observed in Trenches 6, 7, and 8 where it could be shown that the middle earthwork preceded the hornwork. The stratigraphy has been discussed in detail above (pp 21-2).

The homwork, phase 1

The rampart of the hornwork, sectioned in Trenches 6, 9, and 14, provides clear evidence of an early, and apparently unfinished, stage. In Trench 14 (Fig 3.34, section 25) the earliest structural phase consists of a mass of chalk rubble and redeposited soil and turf (layers 15, 16, 17) heaped upon the original turf-line (layer 18) to form a low flat-topped bank averaging 1 m in height rising to 1.3 m at the front and extending back from the ditch lip for a distance of 1l-12 m. The surface of this bank had been allowed to weather, giving rise to an erosion surface of commuted chalk shattered by frost and puddled by rain, discoloured to an orange colour on the surface (layer 11). To the west a thin deposit of turf had begun to form. Clearly the erosion surface represents a period of time during which the surface of the early phase earthwork was left exposed. The length of this period is uncertain but it is hardly likely to have been less than a few years.

In Trench 6 (Fig 3.34, section 21) a similar sequence was observed but here the first phase rampart consisted of a

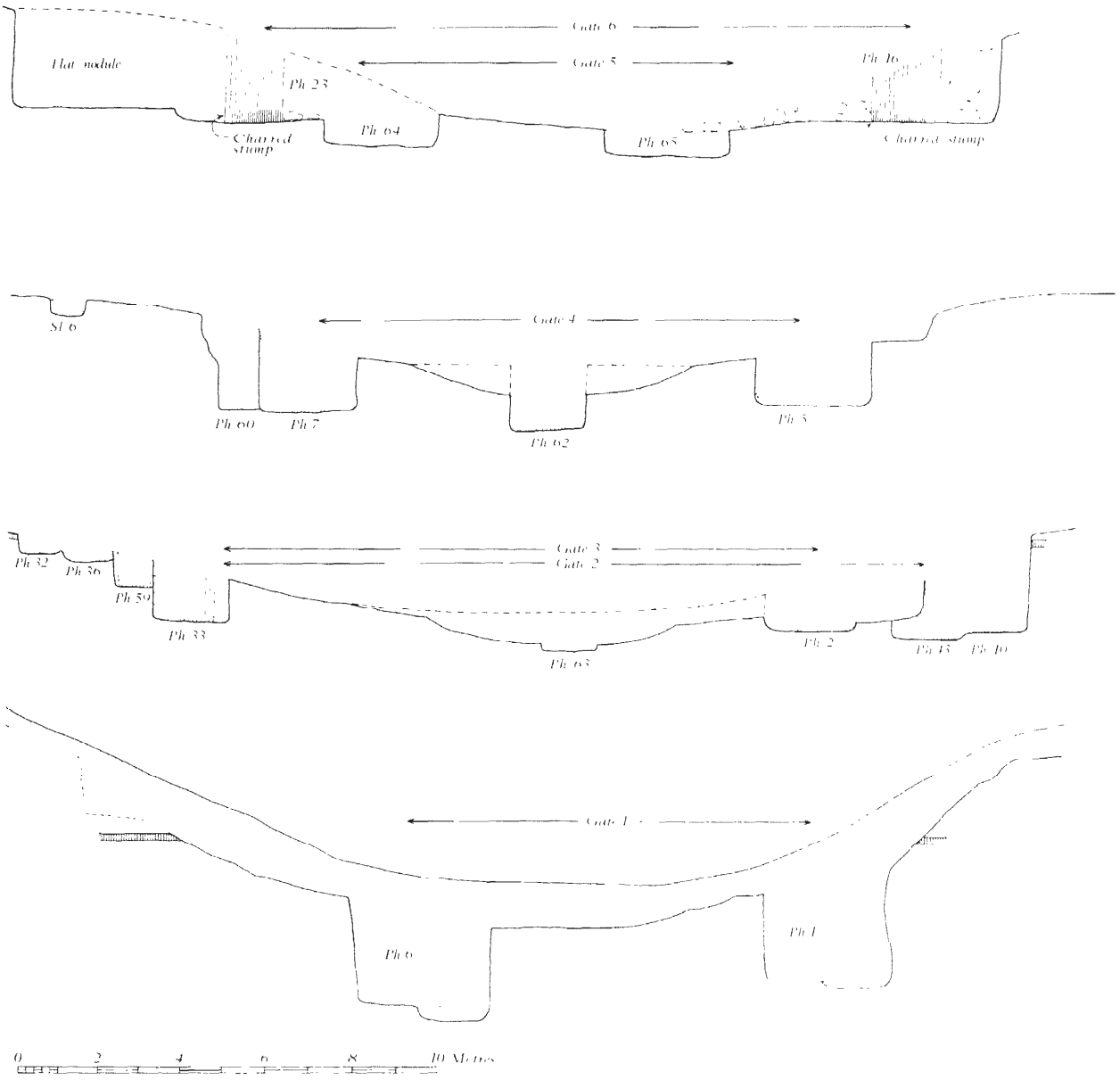


Fig 3.27 East entrance: profiles of the entrance passage

pile of turf (layers 8 and 13) rising to a maximum height of 0.70 m. The surface showed evidence of exposure to weather.

In Trench 9 (Fig 3.34, section 22) the first phase rampart consisted of loose chalk rubble (layer 11) piled to a maximum height of 1.0 m on the original turf-line (layer 12). A considerable turf-line (layer 7) had accumulated on it at this point but since the section was cut in the angle behind the face of the rampart the thickness of the turf can, in part, be explained as an accumulation of soil and humus in a sheltered position. During the formation of the turf-line a fire had been lit on the surface resulting in a localized burnt patch (layer 8). It was at about this time that more chalk rubble was thrown over the turf towards the southern edge of the section (layer 10) after which more turf accumulated to form layer 9.

The evidence from these three sections leaves little doubt that work on the construction of the hornwork rampart ceased when the structure was only 1 m or so high. How much of the ditch had been cut by this stage is uncertain but since much of the material of the first phase rampart is chalk rubble, quarrying along the line of the ditch is likely to have begun.

The hornwork, phase 2

The hornwork was completed in phase 2. In Trench 14

(Fig 3.34, section 25) tips of chalk and soil (layers 5,8,9, 10) were piled up to create a rampart rising to a height of just over 2 m above the original ground surface. Trench 6 (Fig 3.34, section 21) showed a similar sequence, the rampart (layer 5) surviving here to a height of 1.5 m. In Trench 9 (Fig 3.34, section 22) the section, which was cut obliquely across the earthwork, showed that a further 07 m of chalky rubble (layer 6) had been added to the phase 1 structure.

The ditch in front of the hornwork, examined in Trenches 6 and 14, was V-shaped, averaging 3.2-3.7 m deep below the original ground surface, and 7-5 m wide. Apart from a later recutting of the upper part of the ditch in phase 3 (p 41), it had been allowed to silt naturally. The only variation in an otherwise regular profile occurred in the north side of Trench 14, where a pocket of natural clay, exposed in the ditch side, had differentially eroded distorting the profile. The feature was localized and does not represent evidence of a recut.

Before the ditch had been allowed to silt it is probable that it had been cleared out on more than one occasion, the material giving rise to the counterscarp bank which was sectioned in Trench 7 (layer 9). In Trench 8 (Fig 3.34, section 24), the middle rampart shows three stages of heightening. the first two of which are likely to be associated with the hornwork of phase 2. In the first, layers of chalky rubble (layers 6, 8, 9) were spread over the tail of the original middle earthwork. After a turf-line had formed (layer 5) more chalky silt was thrown up (layer 4) and a further turf-line formed (layer 4a). These tips of material could have derived from the clearing out of the hornwork ditch but it is equally possible that they came from the clearing of the middle earthwork ditch.

The extension of Trench 14 back into the area behind the hornwork exposed an irregular scoop cut into the chalk for a depth of 0.2-0.3 m: it probably represented a quarry for rampart material. The lowest part of the hollow was filled with grey chalky silt which had washed down from the rampart.

Occupation (Fig 3.29)

Within the area enclosed by the southern hornwork four pits were found. Pit 8 (Trench 9, see Fig 3.34, section 22) post-dated the construction of the second phase of hornwork construction. Pits 9, 10, 11 (Trench 15) were less definitely related to the hornwork

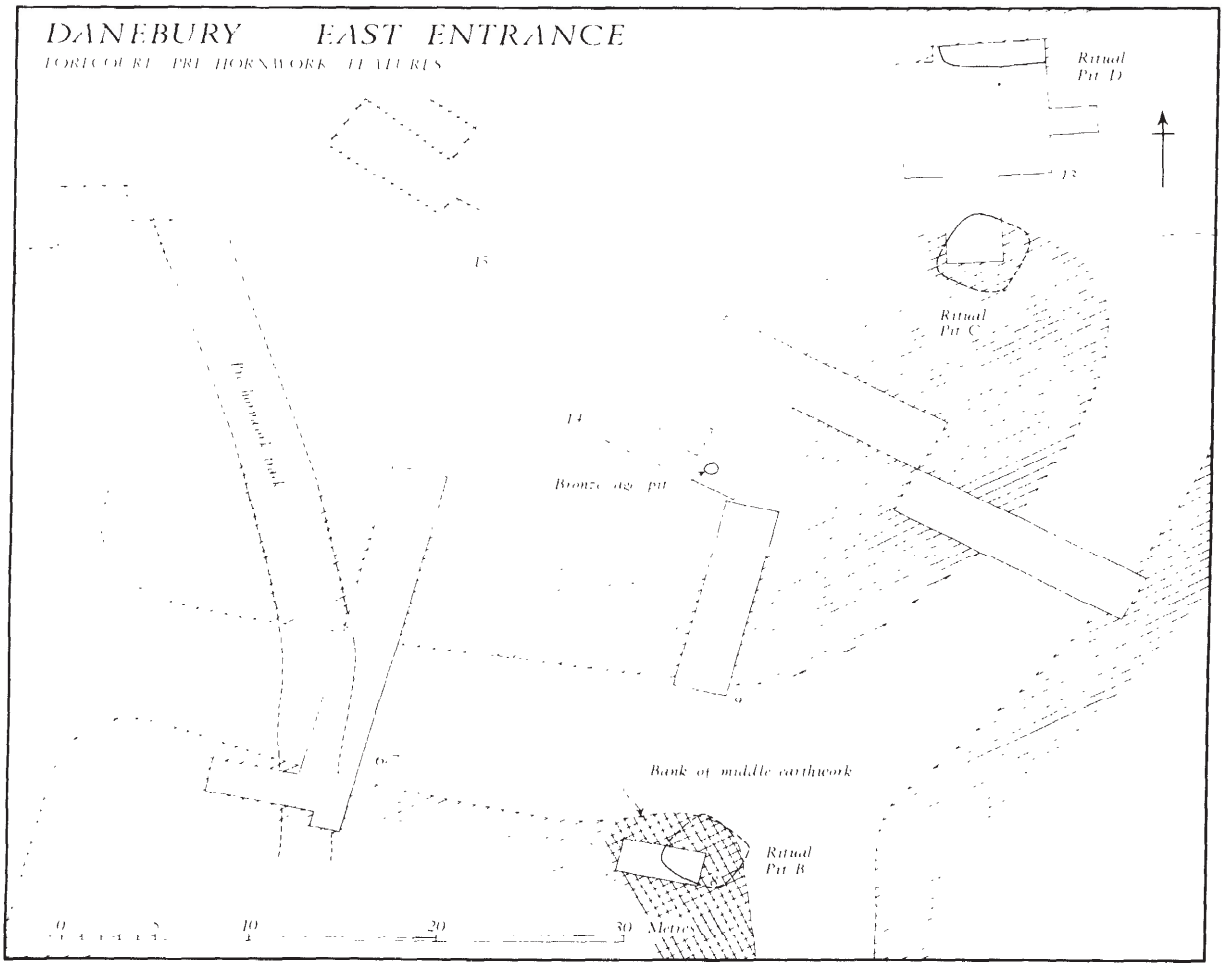


Fig 3.28 East entrance: early features beneath the outer hornworks The hornworks are hachured

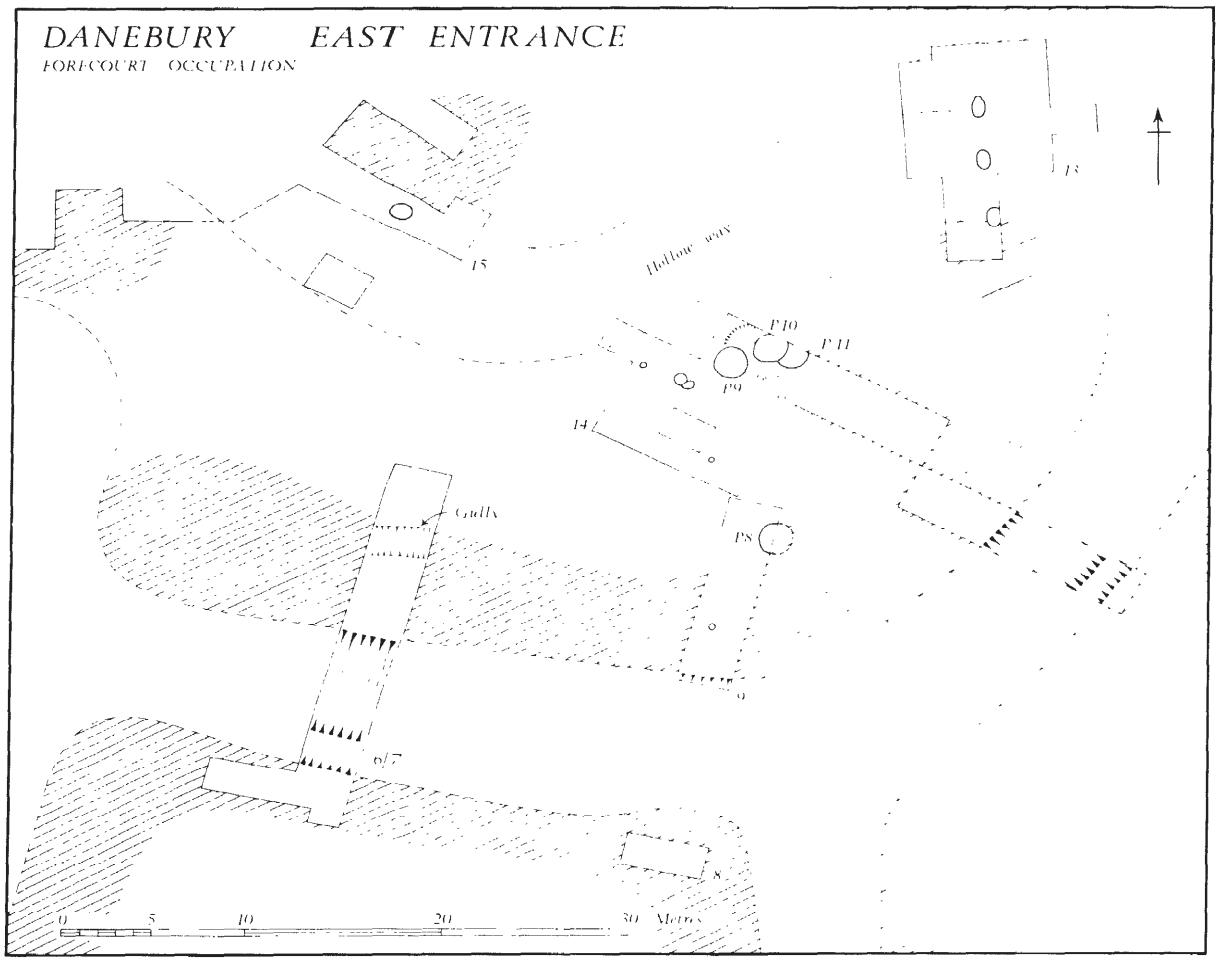


Fig 3.29 East entrance: occupation within the entrance courtyard

but were cut into the quarry hollow and sealed by a soil accumulation (layer 19).

Pit 8 (Trench 9, layers 13, 14, 15)
Pit of beehive shape 2.6 m in diameter and cut to a depth of approximately 1·8 m below the top of the southern outer hornwork. The filling (Fig 3.34) was largely of chalky brown soil with lenses of fine chalky rubble derived from the erosion of the pit sides. Apart from occupation rubbish thrown into the bottom the filling was largely the result of natural weathering processes.

Pit 9 (Trench 14, layers 12, 13, 14)
Pit of beehive shape 1·8 m in diameter and cut to a depth of 1·1 m below the natural chalk surface. The lower filling (layer 14) consisted of a cone of brown soil with some occupation material lying in the centre of the pit. Above this (layer 13) was a thick layer of shattered and eroded chalk derived from the weathering of the pit sides. The uppermost filling (layer 12) was an accumulation of fine brown chalky soil.

Pit 10 (Trench 14, layers 19, 22, 31)
Pit of beehive shape 2·1 m in diameter and cut to a depth of 1·6 m below the surface through the tail of the southern outer hornwork and through the filling of pit 11. The lower filling (layer 31) consisted of fine chalky silt and soil. It was sealed by a layer of chalky soil (layer 22), more chalky at the bottom where rubble from the eroded pit side accumulated. Layer 19 represented a chalky soil wash, which filled the hollow created by pits 10 and 11, and derived from the weathering of the tail of the rampart.

Pit 11 (Trench 14, layers 19, 23, 45)
Pit of beehive shape approximately 1·6 m in diameter and cut to a depth of 1·5 m below the tail of the southern outer hornwork. The pit is cut by pit 10. The lower filling (layer 45) was very similar to layer 31 while the upper fill (layer 23) was difficult to distinguish from layer 22. Layer 19 sealed the pit. Thus, although pit 10 can be shown to cut pit 11, it would seem that both were open at the same time and filled together as part of the same process.

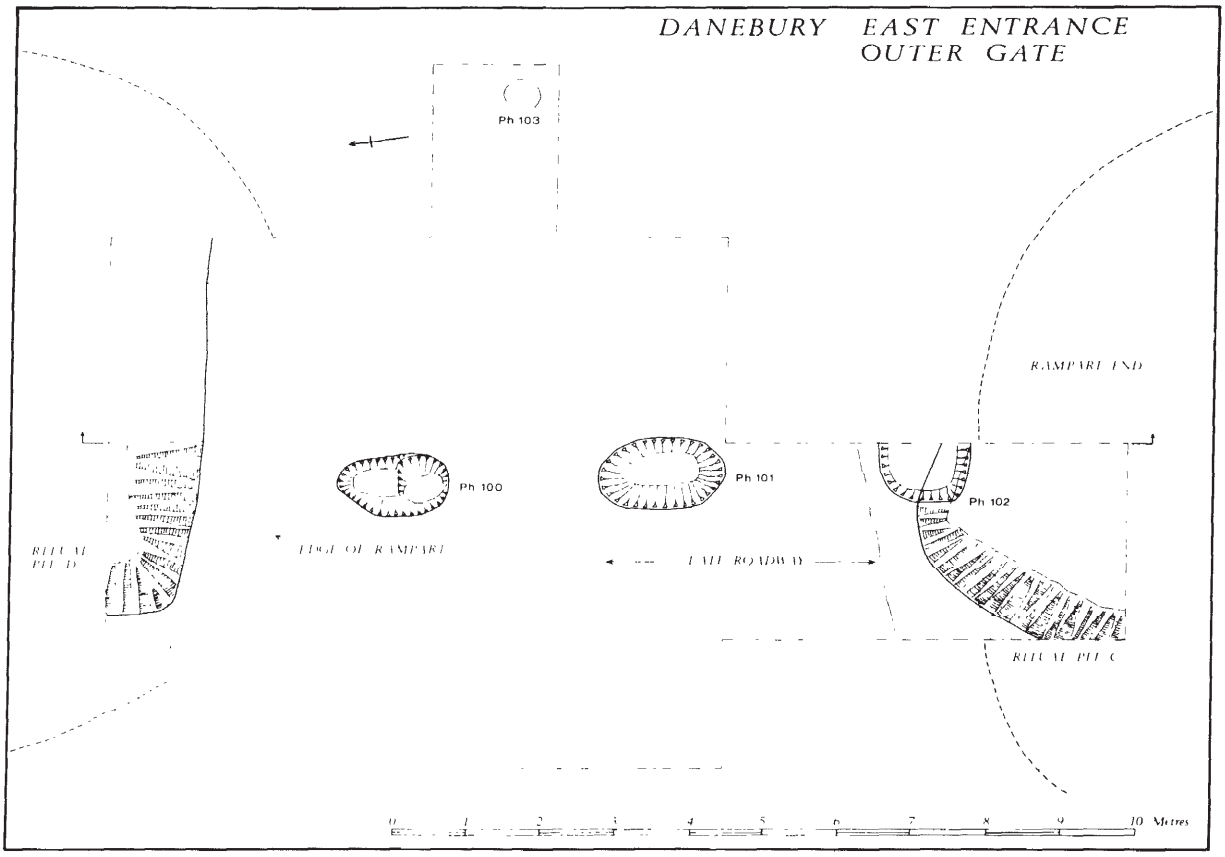


Fig 3.30 East entrance: the outer gate

Four postholes were found in Trench 15 unrelated to the hornwork stratigraphy (Fig 3.29).

Finally the rampart section in Trench 6 (Fig 3.34, section 21) had been cut into by two features: a shallow gully 2 m wide and 0·6 m deep filled with brown soil and chalk blocks (layer 4) with a layer of charcoal (layer 7) on the bottom, and the base of a small oven set in a pit. The oven was built of chalky daub and was filled with small burnt flints.

From the above evidence there can be little doubt that the area between the inner and outer gates was used for storage and other activities at some stage during the life of the entrance. Precise dating is impossible but it is unlikely that occupation here would have coincided with the period when the defences were kept in good order. It is therefore probable that the pits correspond with the phase during which the ditch was allowed to silt.

The hornwork, phase 3

The section of the hornwork in Trench 14 (Fig 3.34, section 25) shows that the earthwork was heightened with soil and fine chalk rubble (layer 3) to a maximum height of 2.7 m above the original ground surface. This phase was not represented in Trenches 9 and 6. In all probability, therefore, it represents a localized heightening on either side of the outer entrance gap at some time towards the end of the history of the defensive sequence.

It is possible, but by no means proven, that the recutting of the hornwork ditch took place at the same time as the heightening. The recutting, observable in Trenches 14 and 6 (Fig 3.34), occurred after the original ditch had silted up to a depth of 2 m or so. At this stage the outer lip of the ditch was cut back to a steeply sloping side with a flat bottom about 2 m below the crest of the counterscarp bank. The flat bottom was maintained across the original silted ditch by shaving off the silting at the edges and backfilling the centre with chalk rubble. The result of this limited redigging was to create a flat-bottomed ditch, in practical terms 2 m deep and up to 7 m wide.

In Trench 6 the new ditch subsequently silted up with eroded chalk and soil (layers 10, 17, 18). The section in Trench 14 showed a similar silting pattern (layers 33 and 32).

3.5.3 The outer gate

The outer gate was examined in Trench 13 (Figs 3.30, 3.33). The features observed may be summarized as follows:

a Pre-gate structures
b The gate postholes
c The rampart ends
d The hollow-way

Pre-gate structures

On either side of the gate sections of two 'ritual pits' were cut. These are described in detail above (p 12). Both pits

had silted to the top and a thick turf-line had formed across the tops before the hornwork and gate were constructed. The upper silting of the southern pit contained a La Tène I fibula (p 45) together with a substantial part of a broadly contemporary pot (p 45), thus providing a *terminus post quem* for the rampart construction.

The gate, rampart ends, and hollow-way (Figs 3.30-3.34)

The gate postholes

The gate structure was represented by three postholes arranged in a row in line with the rampart crests, the centres of the holes being 3.6 m apart. The sections of the postholes are shown in Fig 3.33.

ph 100 (Trench 13, layer 11). Oval-shaped post-pit 1 m by 1.50 m cut to a depth of approximately 2 m below the original ground surface; the bottom was on two levels suggesting the existence of two posts. The filling produced evidence of two post-sockets 0·34-0·40 m in diameter filled with loose orange soil containing flints and some small chalk lumps. The packing around the posts was of orange-grey soil mixed with broken chalk lumps. The precise relationship between the posts is unclear but it could well be that the deeper represents a replacement for the shallower.

ph 101 (Trench 13, layer 22). Oval-shaped post-pit measuring 1·70 m by 1·10 m. The upper part of the pit had been removed by later erosion of the hollow-way but must originally have been at least 2 m deep. The filling had become very tightly packed due to water percolation and heavy traffic. It consisted of crushed and highly compacted chalk and some large flints. No evidence for the position of the post-socket could be distinguished.

ph 102 (Trench 13, layer 14). Oval-shaped post-pit 1·2 m by approximately 1 m cut to a depth of approximately 2 m below the original ground surface. The socket for a single post 0·20 m in diameter was discernible. It was filled with loosely packed orange-grey soil with some chalk and flint. The packing around the post consisted of tightly rammed chalky rubble, flints, and lenses of clayey soil. The upper part of the posthole was filled with loose chalky silt which had presumably accumulated after the post had rotted and the packing had begun to erode. The narrow diameter of the post-pipe might suggest that the observed post was a later replacement in a hole originally dug for a larger post; the problem remains unresolved.

There is no stratigraphical evidence to show that all three post positions were of the same period but their physical similarities and the coherence of the plan would suggest that together they formed a dual portal gateway. If two phases are accepted, the posts of the later phase in postholes 100 and 102 would seem to be smaller than the earlier posts.

A further posthole was found to the east of the gate.

ph 103 (Trench 13, layer 25). Circular, 0·25 m in diameter, 0·20 m deep. Filled with chalk which had become crushed and compacted. The relationship of the post to the gate structure is unknown.

The rampart ends

The end of the south hornwork was partially sectioned exposing a mass of loosely packed chalk rubble (layer 9) above the turf-line which sealed the southern ritual pit (ritual pit C). A turf-line (layer 8) had formed above the rampart before more chalky rubble (layer 7) was thrown up to heighten the rampart. Direct correlation with the south hornwork sequence described above is not possible but in all probability layer 7 represents the third phase heightening.

The end of the north hornwork just projected into the area excavated. Three layers were exposed: a thin deposit of chalk rubble (layer 5) sealed by a turf-line (layer 4) upon which a mass of chalky rubble (layer 13) was tipped, Since the north hornwork has not been sectioned more extensively it cannot be said how this sequence corresponds to the structure of the hornwork, but compared with the south hornwork it is possible that layer 5 corresponds to phase 1 and layer 13 is equivalent to phase 2. The section was not extended sufficiently far north to examine the possibility of a third phase heightening but the external form of the hornwork would suggest that, like the south hornwork, it too had been increased in height in phase 3.

The hollow-way

As the section (Fig 3.33) shows, a considerable hollow-way had formed some time after the gate-posts had been removed. In all some 2 m of the original chalk had been worn away. Two distinct surfaces can be discerned, the higher surviving between phs 100 and 101, the lower truncating ph 101 and extending between it and ph 102. Each must represent a different stage in the late Iron Age or post-Iron Age use of the road.

3.6 Summary of the defences and the dating evidence (Table 3)

3.6.1 The structural sequence

In the foregoing sections evidence has been presented to demonstrate the comparatively complex development of the different elements which constitute the hillfort defences. In essence four separate sequences have been constructed using direct stratigraphical evidence:

a The development of the main defences as demonstrated by the 1969 rampart section and confirmed in the partial sections of 1975 and 1978 (PP 16-21)
b The stratigraphy of the rampart ends exposed in the excavation of the east gate (pp 27-30)
c The sequence of successive gates (pp 30-7)
d The development of the hornworks at the east entrance (pp 37-41)

All four sequences impinge upon each other but direct correlation is often difficult or impossible to make. However, taking the most finely divided sequence, the gate development, as a yardstick, it is possible to compare it with evidence from other parts of the site and to offer a comprehensive picture of defence development. Thus the 'gate periods' augmented with evidence from other parts of the entrance complex represent the most detailed insight into the structural development of the defences it is possible to obtain. In all, eight periods, divided into a total of sixteen phases, can be defined.

Period 0 Pre-defences

Period 0 has been designated to contain all features and layers which can be shown to pre-date the defensive sequence. Most evident are the turf-lines sealed beneath the primary rampart. It is also quite possible that the 'ritual pits' should be assigned to this phase but since they are sealed only by structures of period 5 their exact phasing is best left open.

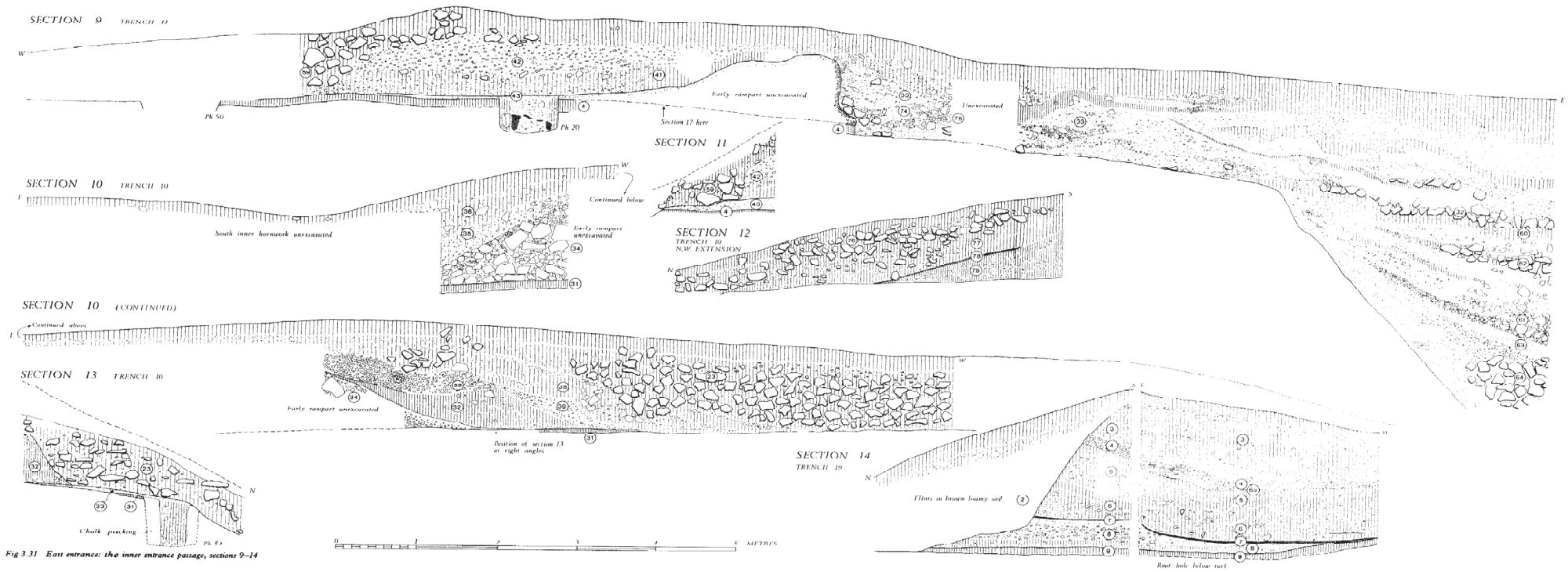


Fig 3.31 East entrance: the inner entrance passage, sections 9–14

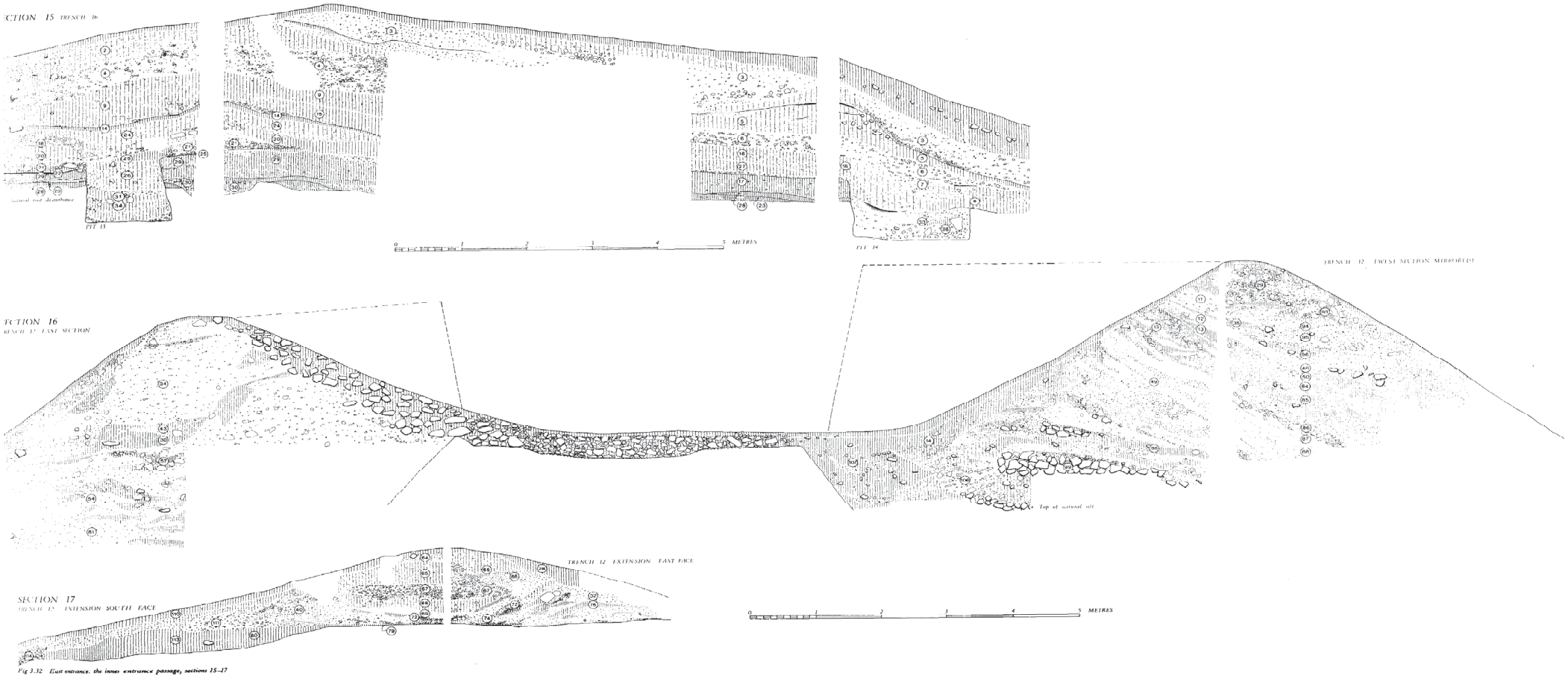


Fig 3.32 East entrance, the inner entrance passage, sections 15–17

Table 3 The defensive sequence

	Period	Gate phase	Gate flanks	Main rampart and ditch
	0	Pre-gate	Turf-lines and possibly the ritual pits	
Early	1a	Gate 1a	Primary rampart	Rampart (period 1) with timber facing and fronting ditch
	b	Gate 1b		
	c	Gate 1c		
	2a	Gate 2a	Primary rampart continues	Rampart extended (period 2), fronting ditch maintained
	b	Gate 2b		
	c		Destruction by fire	
Middle	d	Gateless	Occupation	Turf-line forms
	3a	Gate 3a	First lateral ramp along gate flanks	
	b	Gate 3b		
	4	Gate 4	Second lateral ramp along gate flanks	Rampart extended (period 3), ditch recut to V-profile, quarry hollows
Late	5	Gate 5 (unfinished?)	Inner hornwork s Outer hornworks (unfinished)	
	6a	Gate 6a	Outer hornworks completed, outer gate built	Fort ditches cleared out regularly
	b	Gate 6b	Occupational in outer courtyard	[South-west entrance blocked]
	c		Destruction by fire	
Latest	7	Gateless	Continued use of road	Ditches allowed to silt
	8		Fort and outer hornwork ditches partially recut, ramparts heightened, outer gate rebuilt(?), continued use of road now metalled	
			Abandonment	

Period 1s

The first observable defensive structure was the 'primary rampart' exposed at the east entrance and the rampart of period 1 recognized in the 1969 section. It was composed of material derived largely from a ditch (later consumed in a major recutting operation) augmented with soil scooped up from within the fort.

Gate period 1, in its three phases, clearly belongs with the first rampart. It is also likely that some of the isolated postholes behind the rampart immediately south of the east gate represent occupation belonging to this period.

Period 2

Throughout gate period 2 the 'primary rampart' continued in use apparently unaltered. This assertion is based on the fact that at the end of the second period, after the gate-posts had been burned, much of the entrance area was subjected to wear and/or weathering erosion which created a distinctive layer of puddled chalk (Trench 10, layer 33 and Trench 11, layer 43) sealing some of the period 2 postholes. This layer merged with the trampled tail of the primary rampart which by now had extensively eroded.

The question arises as to how best to correlate the 'primary rampart' of which only a little was seen at the entrance with the rampart sequence exposed in 1969 where two phases of rampart building, one following quickly upon the other, were separated from a third phase extension by a longer time lag during which a turf-line formed. The simplest explanation (but one incapable of proof) is that the first extension to the rampart (rampart period 2) was undertaken as part of the process of refurbishment which led to the construction of gate 2. The apparent absence of additions to the rampart core at the east gate at this time need occasion no surprise since the stubb end seen in excavation had been much mutilated by extensive erosion at the end of period 2 and later. Additions, had there been any, could well have been observed at this time.

The gate of period 2 was modified on at least one occasion, suggesting a comparatively long life. In both phases recessed 'guard chambers' were in use behind the gate. The gate was eventually destroyed at the end of period 2b by an intense fire which burned the main gate-posts and the associated revetment fences (phase 2c). After the fire the entrance passage appears to have been opened up, there being no evident traces of a gate structure (this we designate phase 2d). Erosion of the chalk surface by trampling and weathering was extensive. Although this phase could represent a period of temporary disuse, all it need mean is that the fort gate was now simply an open gap through which the traffic passed unhindered. To the south of the gate, behind the rampart, pits and postholes, representing a distinct occupation horizon, were allowed to encroach upon the gate area. The thick turf-line which formed over the rampart tail in the 1969 trench probably belongs to this period.

Period 3

In the third period a new gate was built with gate-posts set close to the preceding gate sockets, though slightly narrowing the entrance passage which now appears to have been turned into a single wide carriageway. Immediately behind the gate were settings of posts probably representing successive rebuilds of a bridge leading between the rampart ends. Two phases are recognizable (gate periods 3a and 3b).

Immediately to the south of the gate a bank of rubble was piled up extending the rampart back into the fort. The bank was presumably ramped against the timbers of the gate, a feature which would have facilitated movement from one rampart to the other by way of the walkway over the gate passage.

Period 4

The fourth period gate was set further back in the entrance passage well behind its predecessor. The gate itself (of only one phase) was a simple structure of dual carriageway design, with timbers behind to support a wide walkway or tower above the entrance passage. It was at this time that the second extension to the rampart took place immediately to the south of the gate.

Gate 4 may tentatively be correlated with the second phase of rampart refurbishment (rampart period 3), noted in the 1969 section, when, it will be recalled, the defences were drastically remodelled by recutting the ditch to its deep V-profile and grading the front of the rampart to create a continuously sloping glacis, probably capped with a flint-built breastwork. To provide additional material for the rampart, heightening quarries were dug inside the fort. Direct stratigraphical evidence for the correlation of rampart period 3 with gate period 4 is wanting but the similarity in scale between the second lateral extension contemporary with gate 4 and the extension which created the third phase rampart might suggest that both were part of a single process of reconstruction. If so the newly designed gate and the increased strength of the defensive circuit would represent a major phase in the history of the fort.

It is a possibility that the hornworks at the south-west entrance were erected at about this time. No contemporary hornworks can be recognized at the east gate unless the unfinished first phase outer hornworks are assigned to this phase. On balance, however, the alternative interpretation that the hornworks were begun in period 5 is preferred.

Period 5

The fifth period was a time of extensive reorganization at the east gate. The new gate, as planned, was a simple structure set back at the end of a long entrance passage. It was most likely at this time that the inner hornworks were constructed, sealing the partially-silted ditch ends, the material for the earthworks being derived largely from the clearing out and partial recutting of the nearby ditches. The outer hornworks were probably begun at this stage but not completed.

Whether or not the rebuilding of the gate was completed presents a difficult problem. If the gate-posts were erected, they were later removed. Similarly if the flint walling of the entrance passage was ever carried back to the gate, subsequent rebuilding in period 6 has destroyed all evidence of this. It is, however, certain that the outer homworks had not reached their fully developed form.

Period 6

It was in period 6 that the gate received its final form. The rampart ends were cut back to provide working space for the erection of massive posts on the same line as the period 5 gate but providing a passageway twice as wide. Probably at this time a walkway was constructed across the passage in front of the gate (period 6a) and the flint revetments were realigned to suit the new arrangement. At a later stage (period 6b) new gate-posts were inserted behind the old which remained in use, the forward walkway was demolished, and the revetment partially rebuilt once more.

The completion of the outer hornworks may well not have been undertaken until this period; in finished form they were provided with a dual carriageway gate which served as an outer gate for the fort.

Throughout the time when the period 5 and 6 gates were in use the fort ditches were kept clear of silt and debris, a process which gave rise to the gradual building of a counterscarp bank along their outer edges. It can be argued that the blocking of the south-west entrance is most likely to have taken place in period 6 but no conclusive evidence exists.

Period 6 came to an end when the main gate was destroyed by fire (phase 6c).

Period 7

The fort continued to be used but no gates of this period can be recognized and in all probability none existed. Traffic was, however, considerable, as is shown by the deep hollow-way which ran throughout the length of the entrance passage. At some stage the road was metalled with small flint cobbles.

Throughout this period the fort ditches were allowed to silt up.

Period 8

In the final stage an attempt was made at redefence. This entailed the redigging of at least part of the ditch to create a new flat-bottomed obstacle and the heightening of the main rampart and outer hornworks. No gate structures of this date can be recognized at the inner gate but there is some evidence to suggest that the outer gate may have been rebuilt.

The outline given above must, of course, be regarded as a reasonable working hypothesis rather than a statement of what actually happened. It takes cognizance of all the observed data and is internally consistent but it should be firmly borne in mind that since much of the crucial evidence was destroyed during the life of the fort we will never know the full story. Even so, the main periods can be regarded as reliably established; the individual phases, however, remain open to a variety of interpretations.

Standing back from the detail, the defensive sequence can be seen to reflect four major stages in the development of the fort which we can designate early, middle, late, and latest (see Table 3).

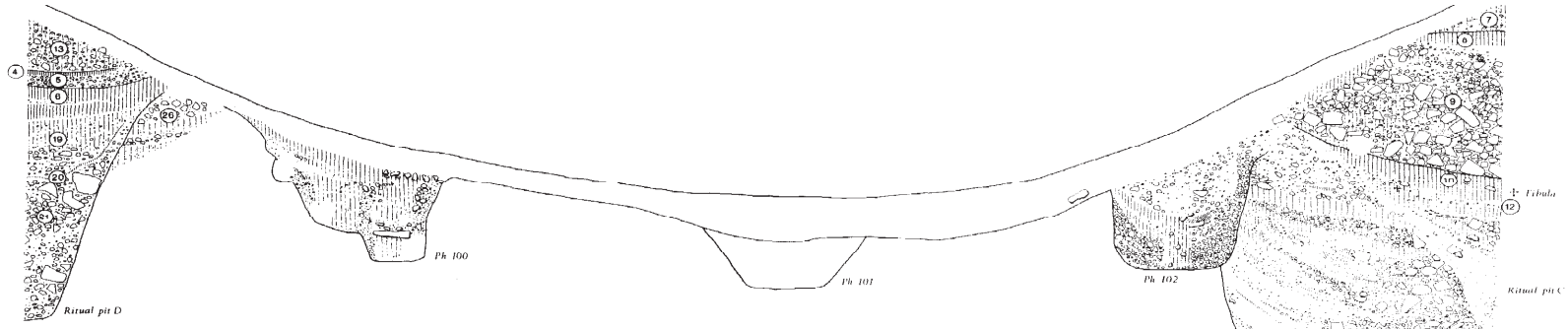
In the *early* phase (periods 1-2b) the gate was rebuilt on at least five occasions while the rampart was once modified. The early phase ended with a fire at the east gate after which there was an interlude without a gate structure. Whether or not the fort was abandoned for a while at this time is a problem to be considered elsewhere (Vol2, p 549).

The *middle* phase (periods 2d-3b) is represented by several attempts at gate building but the results do not appear to be as well designed as the earlier or later gate structures.

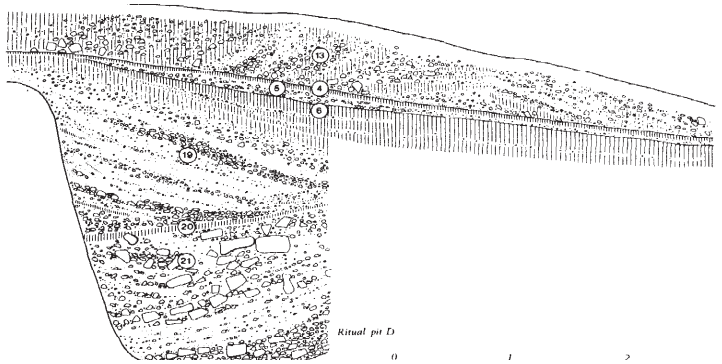
The *late* phase (periods 4-6c) is initiated by a major programme of redefence including the building of a new gate and the massive reconstruction of the main rampart and ditch. Early in this phase the middle earthwork was probably constructed as a cattle enclosure. Later, both gates were defended by additional hornworks, after the construction of which the outer earthwork was dug to increase space for cattle around the fort, Towards the end of the phase the south-west gate was blocked. The phase ended when the east gate was destroyed by fire.

The *latest* phase (periods 7-8) sees the continuous use of the old hillfort enclosure, though without functioning gates. Finally, limited defensive preparations were made by redigging the fort ditch and outer hornwork ditch and resetting the outer gate. This last stage could post-date the Iron Age.

SECTION 18 TRENCH 13



SECTION 19 TRENCH 13



SECTION 20
TRENCH 13

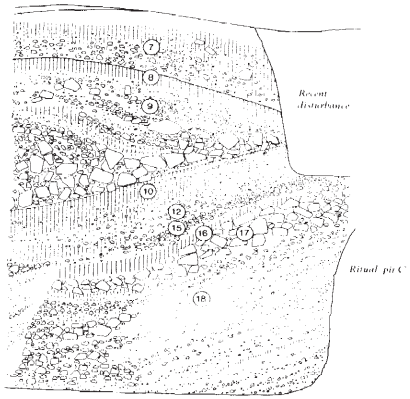


Fig 3.33 East entrance: the outer gate, sections 18-20

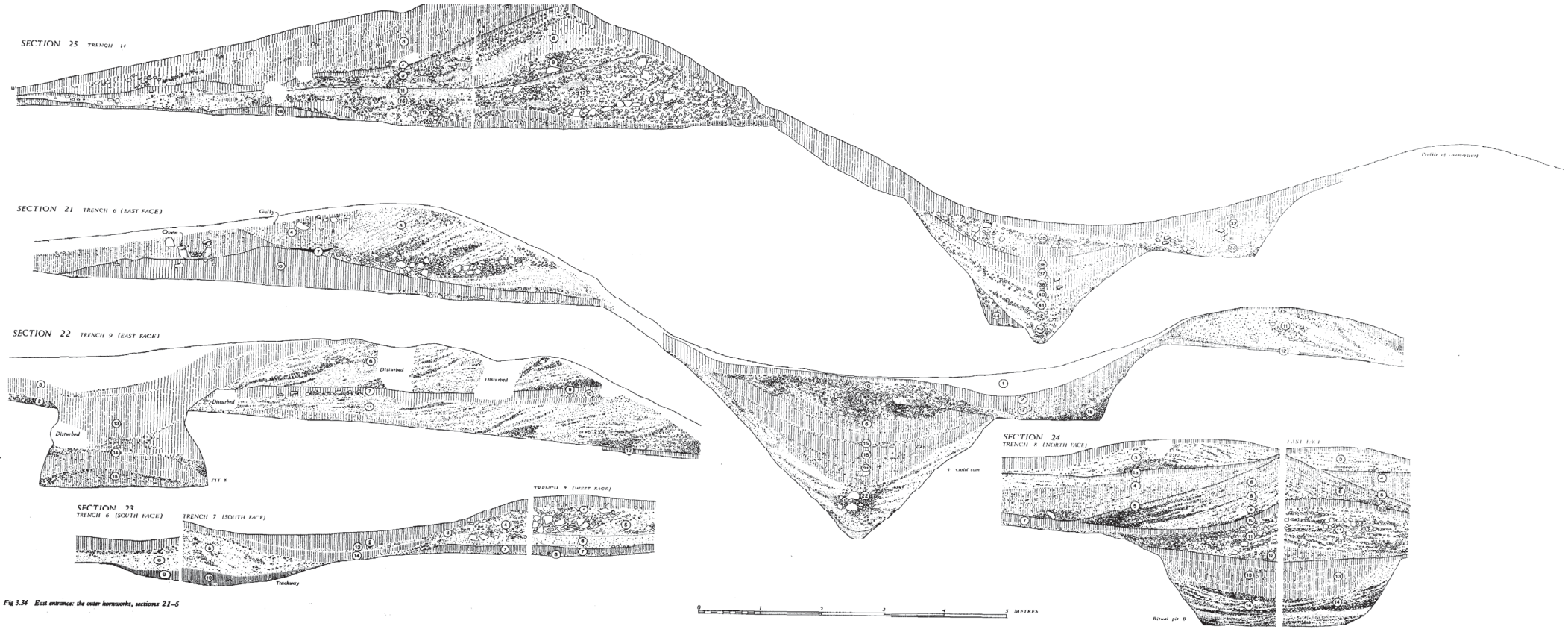


Fig 3.34 East entrance: the outer hornworks, sections 21–5

3.6.2 Dating evidence

Pottery stratified in relation to the defences and entrance

A quantity of pottery was recovered from stratified contexts related to the defensive sequence. It is fully listed and illustrated in the microfiche supplement (fiche 1, frames E1-F10). As might be expected the majority of the sherds consisted of residual material gathered from various locations within the fort when spoil was acquired for earthwork construction. A little contemporary material was, however, found in ditch silts and associated with a phase of occupation within the courtyard of the east entrance. In general the pottery was of little dating value, merely confirming the sequence of defensive development.

Elsewhere in this report (Vol2, pp 231-331) the ceramic sequence from the fort has been discussed in detail. It is argued that the asemblage can be divided into a series of ceramic phases to which broad date brackets can be assigned based on radiocarbon estimates (p 194):

ceramic phase (cp) 1-3 6th-5th century BC
4, 5 5th century BC
6-7 4th century BC to end of 2nd
8 1st century BC
9 mid 1st century AD

The pottery phasing of the various defensive contexts may be summarized thus:

The main defensive sequence

Inner earthwork: rampart period 2	cp 3
soil above rampart period 3	cp 3/4
ditch: lowest silt	cp 7
upper silts	cp 8
Middle earthwork: nothing relevant	
Outer earthwork: ditch: lowest silt	cp 6/7

East entrance sequence

Entrance passage: period 2c (burning)	cp 3
period 2d (occupation)	cp 3/4
period 3	cp 5
period 6a	cp 7
period 6c	cp 7
Outer hornworks: period 5	cp 6/7
period 6a	cp 617
Occupation in courtyard	cp 7
Outer hornwork ditch: lower silts	cp 7
upper silts	cp 9 - Roman

Allowing for the general retardation of date occasioned by residuality, it would appear that periods 1 and 2 broadly conform to ceramic phases 3 and 4, period 3 is associated with pottery of ceramic phase 5, period 5 relates to ceramic phase 6/7, and period 6 belongs wholly to ceramic phase 7. The destruction of the east gate took place in ceramic phase 7 after which, in ceramic phase 8, there was limited activity. The renewed defensive preparations of period 8 were underway after pottery of ceramic phase 9-early Roman date-had been discarded.

Other finds

Four significant finds were recovered from the excavations of the defences and the entrance area:

1 A La Tène Ia fibula (no 1.24) from the top of ritual pit B. Section 18; Trench 13, layer 12.
2 A La Tène III fibula (no 1.25) from the final addition to the rampart (rampart 4) in the main rampart cutting. Section 1; Trench 1, layer 6.
3 A gold-plated bronze core of a Gallo-Belgic C Stater (no 1.1) from the upper silting of the south hornwork ditch. Section 21; Trench 6, layer 21.
4 A bronze core of a contemporary forgery of a stater of Verica (no 1.2) from topsoil in the entrance forecourt. Trench 14, layer 20.

All four items are discussed in detail in the small finds report (Vol 2, pp 332-43). Their relevance here is to the dating of the defensive sequence.

The La Tène Ia fibula is unlikely to have reached its position much before 400 BC while the La Tène III fibula must date to after 50 BC and is more likely to belong in the first half of the 1st century AD. The Verican coin was minted in the immediate pre-conquest period. Less certainty attaches to the date of the Gallo-Belgic C copy but present opinion would suggest the decade in the middle of the 1st century BC as the most likely for its minting.

Radiocarbon dates

Four radiocarbon dates directly related to the defence sequence have been obtained.

Layer 357 (1976 area): equivalent to second rampart extension of gate phase 4. Wood charcoal, large oak, elm, and ash-340 ± 60 bc (HAR-2030)
Posthole 61: Period 6 gate. Wood charcoal from posthole - 230 ± 70 bc (HAR-963)
Posthole 16: Period 6 gate. Wood charcoal from posthole+30 ± 70 bc (HAR-4208)
Posthole 23: Period 6 gate. Wood charcoal from posthole+450 ± 70 bc (HAR-4206)

The radiocarbon dates are of little value in dating the entrance sequence. Charcoal from the period 6 postholes (phs 16, 23, 61) comes from massive oak timbers, up to 500 mm in diameter, which may have been reused from earlier gate structures. A construction date about 200 BC would seem reasonable on other grounds. The charcoal from gate phase 4 (layer 357) which derived from large timbers is dated to within the date bracket expected for the phase.

3.6.3. The sequence of defences dated

In the foregoing text the main stratigraphical sequence has been divided into eight 'defence periods', several of which are subdivided (Table 3) and the pottery, small finds, and radiocarbon dates relevant to dating have now been discussed. It remains therefore to consider what can be said of absolute chronology.

Period I

No direct dating evidence is available but the period must pre-date the 6th/5th century bracket ascribed, on pottery evidence, to the period 2 rampart. A 6th century date is likely.

Period 2

Pottery of ceramic phase 3 was found in rampart period 2, in the main defence section, and in the soil accumulating over its tail (periods 2c, d-3a, b). A 5th century date for period 2 is not unreasonable. The fire at the gate will have taken place during this time.

Period 3

No direct dating evidence is available but the period may be assigned broadly to the late 5th century.

Period 4

If correlation of gate 4 and rampart 3 is correct the dating of period 4 will depend largely upon the radiocarbon sequence obtained from the stratified layers within the quarry hollows (p 143). The earliest dates obtained for a layer deposited some considerable time after the quarry had been dug are 260 ± 90 bc (HAR-3022) and 260 ± 90 bc (HAR-3021). A single date was obtained for wood charcoal from the rampart extension of period 4 near to the entrance (layer 357) of 340 ± 60 bc (HAR-2030). The fact that we have only one directly relevant date and that the sample probably contained heart wood from a large tree renders detailed argument irrelevent, but on the available evidence, including the best fit absolute dates for the ceramic phases (p 196), the most reasonable assessment would be to suppose that period 4 began at the beginning of the 4th century.

Period 5

No direct evidence is available for period 5 but a 4th-3rd century date is likely. The south outer hornwork was built some considerable time after a La Tène Ia fibula had been lost.

Period 6

Period 6 features are usually associated with decorated saucepan pots and other wares of ceramic phase 7 which radiocarbon dating evidence suggests was typical of the 3rd-2nd century BC (pp 195-6). Pottery of this kind had fallen into the bottom of the freshly cleared out fort ditch and was being buried as rubbish in pits dug in the entrance forecourt at about the time when the gate was destroyed by fire (period 6c). Radiocarbon dates from the latest occupation layers within the fort suggest that occupation ceased about 100 BC (pp 190-l). radiocarbon dates from the gate timbers are significantly earlier as might be expected of old reused timbers of this size.

Period 7

Sporadic use during period 7 is reflected by the Gallo-Belgic C stater high up the silt of the hornwork ditch. Later a coin of Verica was dropped in the entrance area. Period 7 is likely therefore to have lasted throughout the 1st century BC and into the middle of the 1st century AD.

Period 8

Period 8 is difficult to date but the recutting of the ditch took place only after late Iron Age-early Roman sherds had been dropped into the ditch silt. The final rampart heightening with its La Tène III fibula could well have been part of the same process. If so, period 8 post-dates the middle decades of the 1st century AD and might therefore be late Roman or Dark Age. A Dark Age date is preferred on the grounds that had it been late Roman more pottery of that date is likely to have been found.

4 The interior occupation

4.1 The nature of the evidence (Pls 30-35)

4.1.1 Introduction

The main rampart of the hillfort encloses 5·3 ha of which 1·211 ha was excavated between 1969 and 1978, that is some 23% of the total occupied area (Fig 4.1). Within the excavated sample there was ample evidence of intense occupation covering virtually the whole area with the exception only of the lines of the roads. In all 1,122 pits were recorded together with 3,760 postholes, innumerable stakeholes, and several stretches of shallow gullies (Fig 4.2).

The most striking contrast in the internal pattern was between the central area of the hill and the strip behind the rampart. The former was characterized by a shallow topsoil, barely more than 200 mm thick, which sealed the surface of the natural chalk into which the features had been cut, the latter by deeply stratified layers preserved in the quarry hollows, dug to provide material for the heightening of the ramparts, and sealed by silts which accumulated after the cessation of occupation. The two zones posed different problems of excavation and they also provided data of widely differing potential. To understand something of the problems raised it is necessary to consider the processes of erosion and deposition affecting the enclosed area.

The construction of the first rampart girded the hilltop in such a way as to contain all products of subsequent erosion and disturbance (with the theoretical exception of chalk or rubbish deliberately moved from the interior for spreading on the fields or for some other purpose). Given that the enclosed hilltop sloped from the centre down to

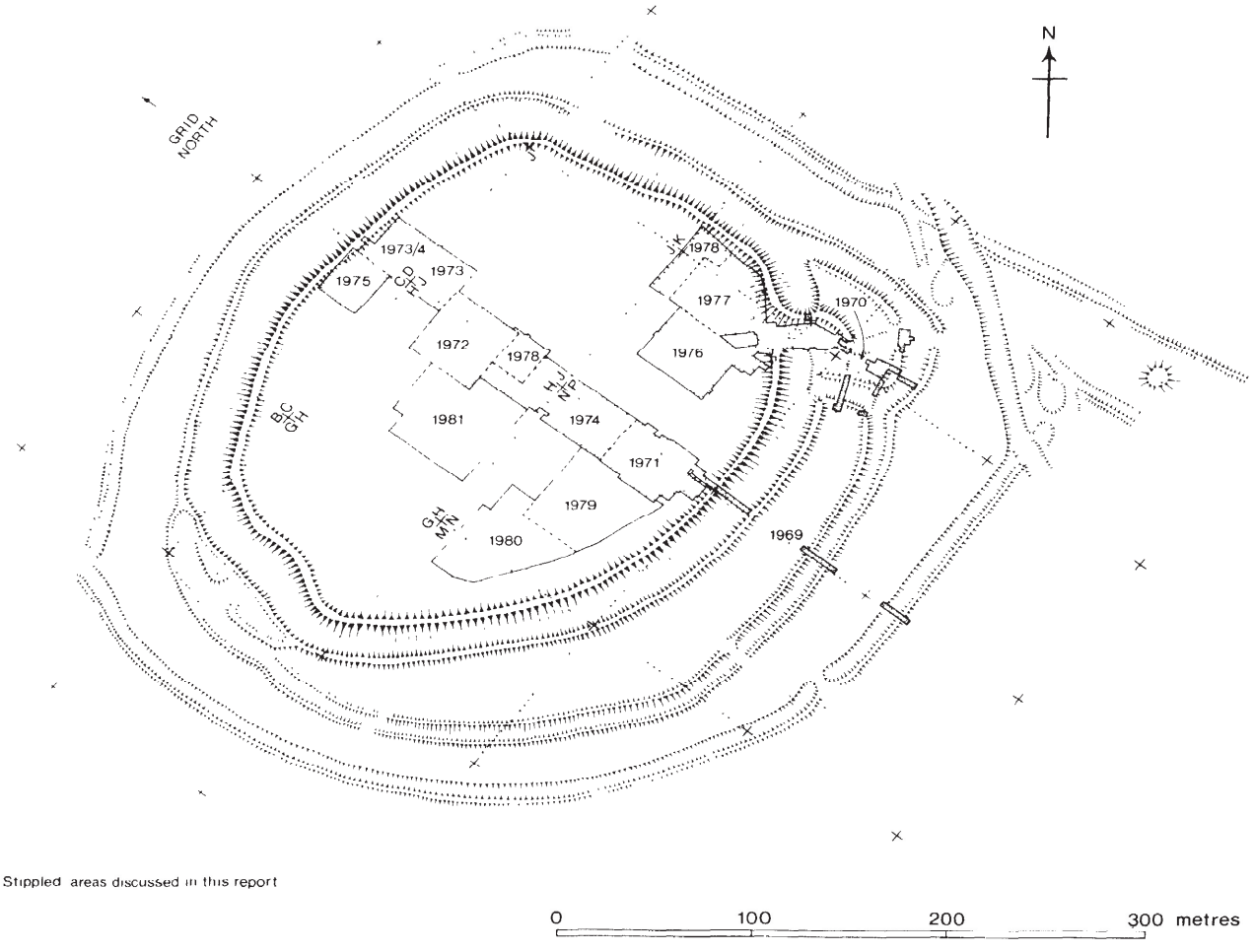


Fig 4.1 Interior of the fort showing grid system and years of excavation up to 1981



Fig 4.2 Interior of the fort showing all occupation features excavated up to 1982

the rampart, it is evident that soil will have moved gradually downhill to accumulate in the lee of the rampart, a process which would have been accentuated when the natural turf cover of the hilltop was broken by the wear of feet, human and animal, and by other disturbances such as pit digging. The protected hollow behind the rampart will also have encouraged the accumulation of leaves and other vegetable matter which, together, will have contributed to soil formation. These simple processee-the gradual denudation of the hilltop and upper slopes and the accumulation of silt and soil behind the rampart-began immediately the rampart was built and have continued ever since; only the rate of movement has varied.

One factor which increased the rate of erosion was the digging of quarry pits behind the rampart to provide material for increasing the volume of the defences (Fig 4.3). The first quarries, discrete elongated pits, were dug against the rampart on the south-east side of the fort in the second rampart period (Danebury period 2). Far more extensive quarrying took place in Danebury period 4 behind the rampart on the north side of the fort between the two gates (Fig 4.2). Immediately the quarry was created new erosive processes were brought into force; soil will have been washed down from the rampart slope and there may, in places, have been major slumping, while the upper edge of the quarry, now unstable, will have been gradually eroded back to an angle of rest. If the interior of the fort had been subjected to soil-breaking activities at the time, conditions would have been created in which silts, freed from the stabilizing effects of roots, would have been washed down into the hollows.

In practice erosion from the interior proves to have been comparatively slight. A carefully levelled transect through the 1977/8 area excavation enabled the surface of the chalk, before the period 4 rampart extension, to be reconstructed. As Fig 4.3 shows, subsequent erosion above the upper edge of the quarry hollow amounted to barely 200 mm. If one allows that all the material in the hollow, up to the end of the last occupation, derived from the interior, then the average soil loss uphill of the hollow would have been about 50 mm, this being composed both of natural silts and deliberate tips of chalk from pit digging. Since, however, a high percentage of the accumulation will have derived from the weathering of the rampart the figure for internal erosion must be drastically reduced. The implication of all this is that throughout the main phase of Iron Age occupation the surface of the interior must have been comparatively stable and erosion therefore slight. At the cessation of intensive occupation, however, conditions changed (pp 157, 189) and a considerable thickness of chalky silt washed down into the quarry hollows (a maximum of 1·5 m in the 1977/8 area and 1·0 m in the 1973/5 area). The texture of the material strongly suggests that it accumulated as the result of active erosion within the fort. The snail evidence (Vol 2, pp 476-81 shows that the top silting of the latest pits and the earliest silting above them was dominated by woodland species, but open country conditions soon developed. The implication would seem to be that immediately following abandonment there was a period when dense vegetation developed but that the undergrowth was gradually cleared by grazing (there being no evidence of sudden clearance). This observation, combined with the virtual absence of occupation debris (except that derived from earlier layers), would suggest that the interior of the fort may, at this time, have been used for the corralling of large numbers of animals whose feet churned the surface creating a slurry which flowed down the slope. Some additional support comes from a consideration of the entrance passage which, in period 7, following the destruction of the gate, wore rapidly into a deep hollow-way. Whatever the causes, the effect of the erosion meant that an average 15 mm of soil and chalk were removed from the centre of the fort and deposited in the quarry hollows.

The period of erosion appears to have been comparatively rapid, perhaps 150 years at the most, for by the time that Roman pot sherds were dropped in the quarry hollows the surface had once more stabilized. Following that, for the last 1,900 years or so, humus formed behind the rampart mixed with material derived from the gradual erosion of the rampart itself. Throughout this period the interior of the fort appears to have been largely stable. Thus, since the first rampart was constructed, less than 50 mm of material has eroded from the central area as the result of natural causes.

Continuous use of the site throughout the second half of the 1st millennium created continuous disturbance. Within the excavated area some 1664 sq m (ie 13.7% of the total exposed surface) was destroyed in period 4 when the quarries for rampart extensions were dug. Similar, but less extensive, destruction of early levels was wrought by pit digging throughout the period of occupation; no less than 20% of the original ground surface was removed in this way. Thus it is evident that each phase of activity will have diminished the record of the earlier phases.

The effects of man in the more recent period have caused some loss of evidence. At some stage in the post-medieval period the entire surface of the fort was trenched, the purpose being to create a greater depth of soil by breaking up the surface of the underlying chalk and turning up the rubble so created into the humus (p 14). At best these trenches have barely touched bedrock but at worst they have removed up to 200 mm of the original chalk. While activity of this kind will not have obliterated all trace of shallow features such as postholes and gullies, it is unlikely that stakeholes will have survived in areas of deep trenching. Finally, the effects of tree roots and of burrowing animals should be mentioned. Both are destructive of shallow features and layers but damage is strictly localized and can usually be recognized archaeologically.

Against these destructive activities must be balanced the preservative effects of other agencies. The extension of the rampart in period 4 sealed large areas of ground surface within which were stratified occupation and structural layers of the earlier periods (little of this has yet been examined) while in the quarry hollows the preservation of detailed stratification provides data of a very high order.

These then are, in broad outline, the principal factors which have caused the twofold division of the site into a central area largely lacking in superficial stratification, where individual features can be phased only by virtue of their physical relationship with one another and their contents, and a fringe zone of deeply stratified layers extending beneath and behind the ramparts.

4.1.2 The range of the surviving data

The individual elements which comprise the structural record will be described and discussed in some detail below. Here it is necessary only to provide a brief introduction to their variety and reliability as data.

Postholes

The most prolific of the surviving features are holes, usually straight-sided, varying in diameter from 100 mm to 1 m and in depth by a similar range. The majority of

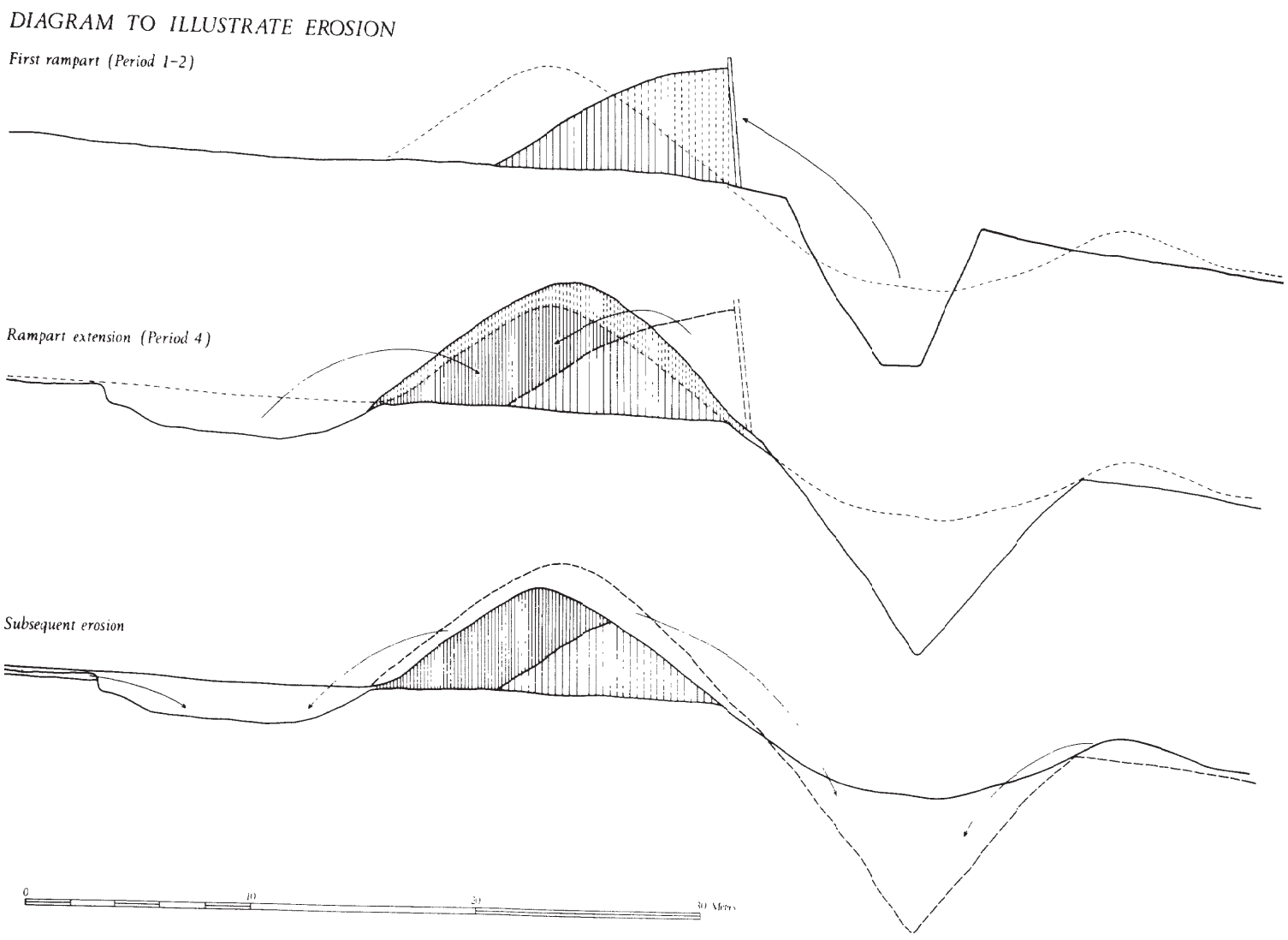


Fig 4.3 Diagram to illustrate erosion

these holes were probably dug to support posts. No timber survives in position but it is sometimes possible to distinguish a distinct packing, often of flints and chalk blocks, around a central pipe, usually of a more soily material, which represents the position of the actual post. In some cases, where the post stumps have been allowed to rot in position, this distinction is particularly clear and the precise shapes of the timbers can be recovered. More often posts seem to have been uprooted and the packing has fallen in leaving little trace of the original post position.

In all some 3,760 postholes were found in the excavations of 1969-78 (7,300 if the excavations of 1979 and 1980 are included) suggesting that there may once have been more than 16,300 timbers erected within the fort (Fig 4.4). Superficial erosion and even the post-medieval trenching is unlikely to have removed any but an insignificant number of very shallow holes, but pit digging during the main period of occupation will have destroyed a number. Bearing in mind that the total area disturbed by pits and quarries is 33.7% of the excavated area, and allowing for there being fewer posts in the earlier period, one might estimate that 25% of the total number of postholes will have been removed, that is approximately 5,400. Any assessment of the plans of structures must necessarily take this factor into account.

Many of the posts cannot be related to structures and indeed it is highly probable that many of them were put up for temporary use, quite possibly as individual timbers. Some, however, belong to recognizable structures of which four- and six-post settings are the most common (pp 87-109); others were used in pairs as the framing for the doorways of houses. Of the total recorded 20% can, with some degree of certainty, be assigned to structures.

Stakeholes

Holes created in the chalk to take the ends of small wooden stakes are comparatively common. They average 20-40 mm in diameter and may be up to 200 mm deep. Their size implies that the holes were made either by hammering the stake itself into the ground or, more likely, by ramming down a crow bar of hard wood, perhaps tipped with iron, until a hole of suitable size had been created.

It is likely that many shallow stakeholes will have been destroyed by post-medieval trenching but since large numbers survive in the central area we can be tolerably sure that as a class they have not wholly disappeared from those areas where superficial stratigraphy is absent. This observation has considerable relevance when the distribution of stake-built houses is considered.

Most of the houses (or, more correctly, structures of circular plan) found in the quarry hollows were built of stakes, close spaced to provide the vertical timber element of a wattle and daub wall. Elsewhere within the fort stakeholes seem to represent fences, temporary shelters, posts for tethering animals, and a variety of other structures, the full range of which can only be guessed.

Pits

In all some 1,150 pits were recognized (Fig 4.5). The vast majority of them conformed to the 'storage pit' range (pp 132-46) but a small number seem to have been dug for other purposes., sometimes ritual if the presence of human remains is indicative. They are fairly evenly distributed within the enclosure and, except for the early pits removed by the quarry hollow, the number is unlikely to have been diminished by later destructive agencies.

Gullies

A variety of gullies and slots has been found, sometimes associated with houses in such a way as to suggest that they performed a localized drainage function. Others of more linear form may have served as boundary lines. Although lengths of gully have been removed by later pits and postholes it is unlikely that any significant feature will have been totally destroyed by erosion and post-medieval disturbance.

Open areas

A glance at the overall plan (Fig 4.2) will show that no large open areas were maintained throughout the life of the fort with the exception of the various roadways which cross the site, and of these only the main road between the gates seems to have been kept wholly free of impediments throughout the occupation. It is, however, likely that open areas existed in every period.

Stratified layers

Within the quarry hollows and beneath the period 4 rampart extension conditions were optimum for the survival of occupation layers, construction levels, and the accumulation of silt and soil which interleaved with them. The reasons for the high survival rate are given above (p 49). While a detailed assessment of the structural and chronological implications will be found below (pp 146 -72).

The quarry hollows created unusual conditions in which soil accumulated naturally. Elsewhere in the fort it is likely that erosion was continuous during occupation; layers of occupation rubbish and chalk spreads would have been worn away by traffic or cut through by pit digging. In other words the very nature of the intensive use of the site would have mitigated against the accumulation of a stratigraphy. This point is well made by the slight nature of the superficial layers sealed beneath the rampart extension (pp 146-9). Layers such as these would quickly have disintegrated when penetrated by roots and worms. One exceptional area was discovered during the excavation of 1979 (and is therefore not included in the present series of reports). The area lay to the west of the 1971 area excavations alongside road 2 which continued across the excavation, curving towards the position of the blocked entrance. Along its line several layers of cobble metalling survived together with adjacent spreads of chalk and silt. The area of stratigraphy was not extensive and the reasons for its survival are not yet apparent.

4.1.3 Chronological and locational variation

Detailed phasing will be argued in section 4.3 below and, after the presentation of the structural evidence, the overall arrangement and development of the settlement will be assessed. Here it is sufficient to make a few generalizations to enable the more extended treatments which follow to be seen in their correct context. The use of the hilltop as an occupied site following the construction of the rampart spanned the period from the 7th/6th to the 1st centuries BC. During this time two major events occurred providing horizons against which the occupation remains can be sorted. Some time towards the beginning of the 4th century the rampart was greatly increased in size (period 4), while about 100 BC the gate was burnt (period 6c) and intensive occupation involving pit digging came to an end. Using these events the interior occupation can be divided into three broad phases.



Fig 4.4 Interior showing all Iron Age features except pits

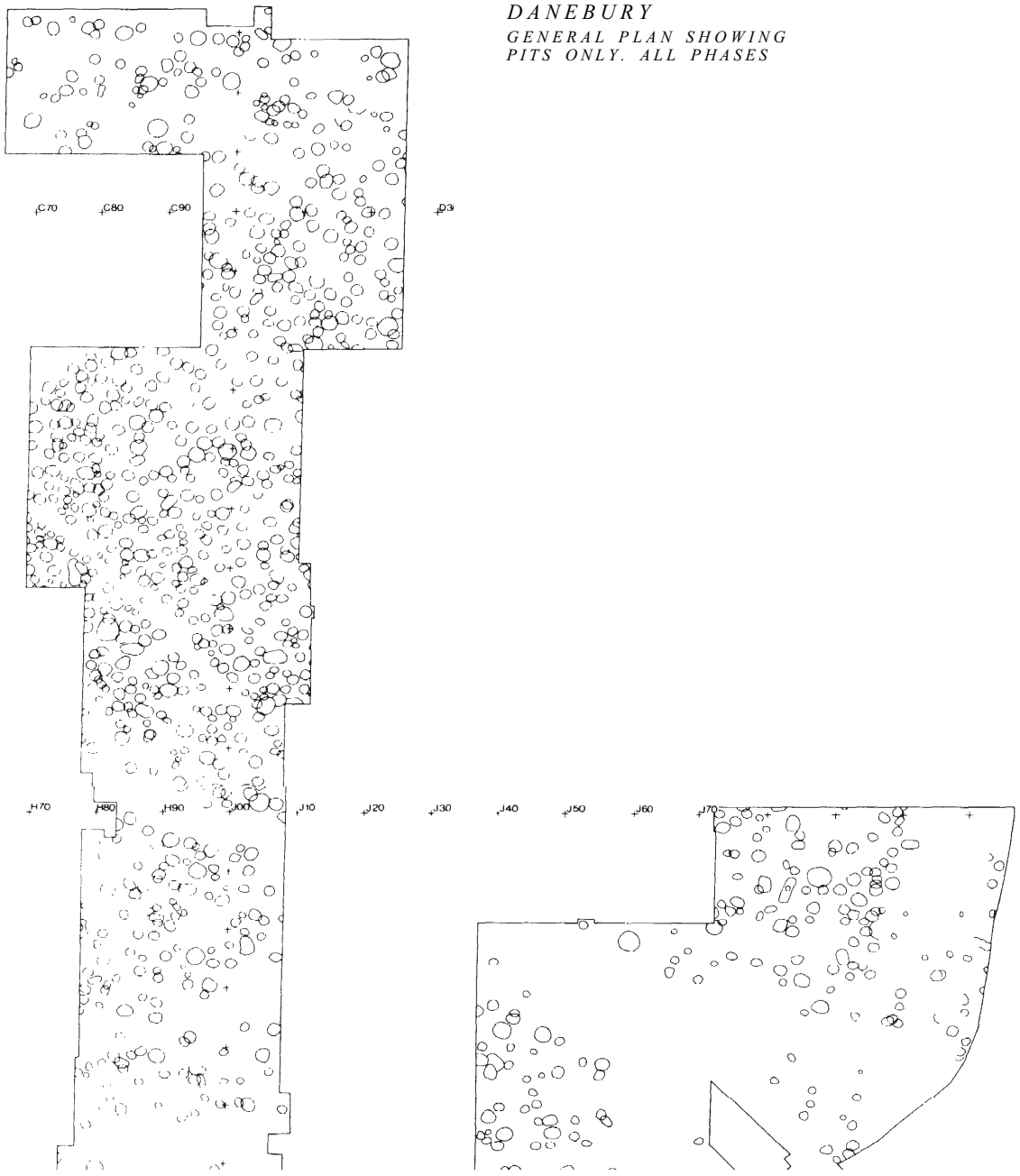


Fig 4.5 Interior showing Iron Age pits of all phases

The *first phase* settlement *(c* 7th/6th to 4th centuries) can be isolated with absolute certainty only where its traces are sealed by the rampart extension or truncated by the contemporary quarry pits. Sufficient distinctive pottery has, however, been recovered from these locations to allow the broadly contemporary pits and associated features of the central area to be identified.

The *second phase* (4th to 1st centuries) is characterized by the occupation in the quarry hollows. This can be divided, stratigraphically, into a number of subphrases (pp 172-3), thus providing a valuable sequence of material which again provides a basis for the phasing of unrelated features in the central area.

The *third phase* is not one of intensive occupation and can be recognized only by virtue of a distinctive assemblage of pottery (sometimes associated with imported Dressel 1 amphorae), found in the upper hollows of silted-up pits.

This broad three phase division can of course be further refined by stratigraphical and typological studies of the kind indulged in below. A more detailed consideration of these matters will be found on pp 146-72.

The definition of activity areas within the fort and their change with time depends upon chronological and spatial considerations of the kind which will be offered below, but even from the crude multiphase plans certain general characteristics appear. Most noticeable is the main road running from gate to gate, which divides the site in two, and the minor roads which branch from it. These have a validity throughout much of the period and will be used to divide the interior into regions. Two further generalizations are permissible at this stage: first, habitation in the form of circular buildings was concentrated around the periphery of the site in the lee of the rampart in both the first and second phases; second, in the first phase the main road seems to have divided the site into a northern sector, where there were many storage pits, and a southern sector where post structures predominated. The divide was maintained in the second phase, the southern sector being reserved for four- and six-post structures while the northern sector was divided into several different activity areas, pits being no longer concentrated here. It would, therefore, appear that while there was a remarkable degree of continuity in planning throughout the period of occupation, there were also significant changes with time. These general observations will be further refined.

4.1.4 The arrangement of the report

The detailed report which follows is arranged according to a certain logic which may not be immediately apparent. The first section (4.2) offers a discussion of all the structural elements which have been isolated, arranged according to a simple typological classification, and followed by a description of a selection of the individual structures. The second section (4.3) deals with the methods used to establish a chronological sequence for the interior occupation. It relies heavily upon a consideration of the stratigraphical data preserved in the quarry hollows and makes use of the ceramic sequence built up partly from these associations and partly from broader typological considerations. Reference is also made to the radiocarbon calibrations which are presented in more detail later (pp 195-7).

Finally the third section (4.4) integrates these two presentations to show how the settlement developed with time.

Complex cross-referencing will be kept to a minimum. An account has already been given of the recording system (p 7). Here we need to note that the sites will usually be identified by reference to the year of excavation, but sometimes the grid square (occasionally with numerical coordinates) will be used as a more precise method of location. The block diagram offered here (Fig 4.1) summarizes the salient points. This system is, of course, observer-imposed and for the final discussion we have divided the fort into zones based on the contemporary roads (Fig 4.84).

4.2 The structural elements

Before considering the overall plan and development of the settlement an account must be given of the various structural elements which survive. These may be divided into six broad categories:

a circular structures represented by settings for upright planks, stakes, or posts
b rectangular structures built of timbers set in continuous foundation trenches
c rectangular structures composed of upright timbers usually set in individual postholes
d gullies, either linear or penannular, dug for boundary or drainage purposes
e roads
f pits

Each of these categories will be considered in turn in general terms and detailed descriptions will be given of selected individual structures.

4.2.1 Circular structures (Fig 4.6, Pls 36-50)

In all, the remains of some 24 circular timber-built structures have survived within the excavated area, for the most part in the deeply stratified layers behind the ramparts. For ease of general discussion they will be divided into two types: those with walls built of planks and those constructed of wattle. Cognizance must, however, be taken of the third possible type represented by upright timbers set in individual postholes.

Plank-built structures (Fig 4.7)

Three structures, CS1, CS3, and CS9, were probably plank-built. Of these CS1 is by far the best preserved with a well-defined circular wall slot, the filling of which still retained the impression of the original planks. The plan is sufficiently clear to show that the planks were set upright and butted side to side with no overlapping. It is possible that additional planks or battens may have been placed to cover the vertical joins but if so the problem of their attachment remains since it is clear that their bases were not earth-set. They could, however, have been pegged to the main uprights. Other means of effecting a weatherproof join could have been adopted (always supposing that weatherproofing was desired), ranging from above-ground tongue-and-groove carpentry to caulking with lichen and pitch. All we can be sure of is that daub was not used since none was found, even though conditions for preservation were good.

The door frame and porch was of composite type, the frame itself being composed of substantial vertical timbers set in line with the planks of the wall, while the porch structure was of separate thick planks placed in front of, and at right angles to, the door frame in a manner common at Danebury.

Of the superstructure there is little to be said but one must suppose that a ring-beam was constructed at the wall-head, continuous with the door lintel. A rigid ring at this point would have been sufficient to take the thrust of a simple conical roof.

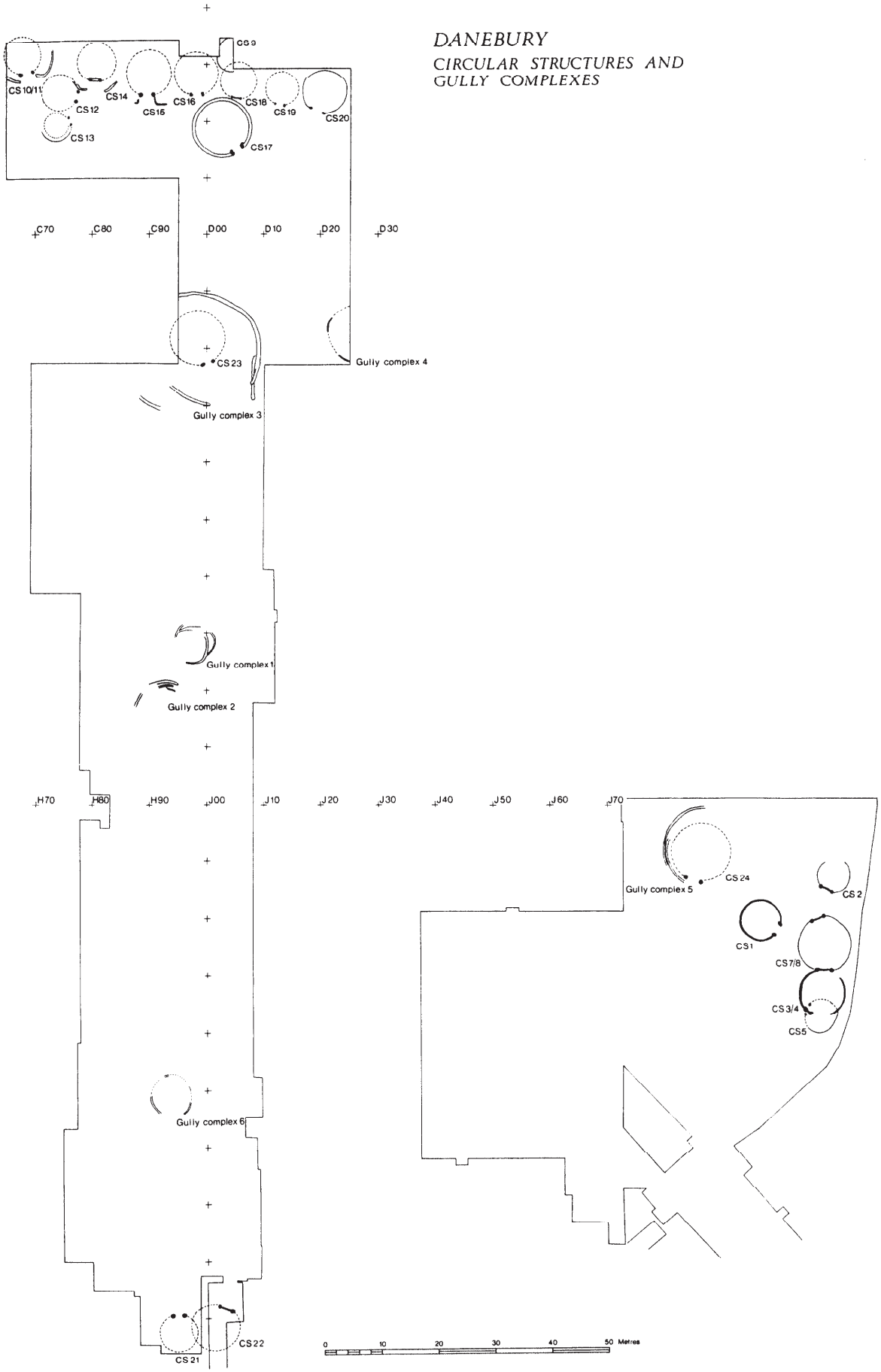


Fig 4.6 Interior showing the positions of the circular structures

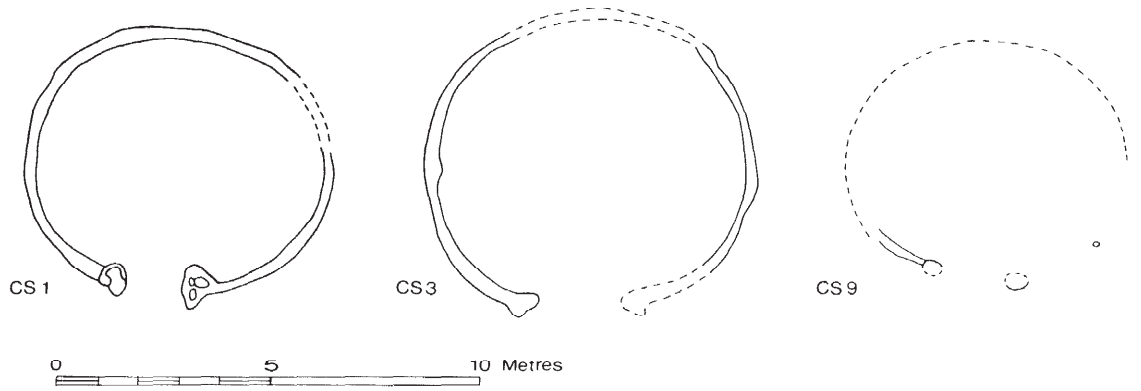


Fig 4.7 Comparative plans of plank-walled houses

The remains of the structural timbers were sufficiently

The planks seemed to be slightly wedge-shaped in section suggesting that they may have been split radially from a

porch frame was a well-squared piece, no doubt finely adzed.

reconstruction but the wall slot is of similar proportions to

also comparable to that of CS1 (7·4 m). No trace of the

removed for reuse and the slot repacked before building

The form of building CS9 is even more obscure. If, however, its walls were plank-built then it is only on one side that the timbers were set in a slot. On the uphill side they must have been based on a ledge cut in the chalk. It is difficult to see how such a structure could have stood securely unless some kind of sill-beam was used.

Houses defined by ring grooves (or ring trenches), though not common, are widely distributed in Britain. This is not the place for a detailed discussion of the type but a few general remarks might help put the Danebury structures in their context. The best-preserved examples come from the north of Britain, from Scotland, eg Burnswark (Jobey 1978a), Harehope (Feachem 1962), West Plean (Steer 1958), and Scotstarvit (Bersu 1949), and from north-eastern England, eg Kennel Hall Knowe (Jobey 1978b), Belling Law (Jobey 1977), Tower Knowe (Jobey 1973b), Hartburn (Jobey 1973a), High Knowes A (Jobey & Tait 1966), and West Brandon (Jobey 1962). Further south examples have been recorded at fewer sites but Garton Slack (Brewster 1976), Little Waltham (Drury 1978), and South Cadbury (Alcock 1972) provide structures conforming to the general type. The list is not exhaustive but includes the best published examples.

Some of the houses mentioned may have had an internal ring of timber posts to support the weight of the roof but in a significant number of cases it is evident that the wall alone was made to serve. All excavators are agreed that the archaeological evidence indicates walling of timbers placed vertically in the bedding trench and wedged with stones or packed with soil. A possible exception occurs at Little Waltham where the excavator has argued for the use of horizontal ground sills in a few examples. The style of carpentry of the wall is frequently uncertain. At Harehope and South Cadbury sufficient evidence existed to show that split timbers were placed side by side, but at West Plean the excavator thought he could detect individual posts set at about 1 m intervals. Close-spaced whole or split timbers seem, however, to be the norm.

The very considerable concentration of recorded examples in the north of Britain is not culturally significant; it merely reflects better chances of survival in marginal land, and the intensity of archaeological activity. Erosion of soft bedrock and subsequent ploughing frequently reduce the ring grooves of houses in the south to featureless gullies and may, in the case of shallow grooves, totally remove them from the archaeological record. Even so, present evidence would seem to suggest that the type was less common in the south of Britain.

Stake-built structures (Fig 4.8)

Nineteen stake-built structures have been recognized of which all but one have produced evidence suggestive of their walls being upright. The exception (S17) appears to have been of 'wigwam' construction and will be considered separately later. The eighteen structures range in diameter from 5·6 m to 10 m but the majority measure between 6 and 8 m. All are represented now by two structural elements, the stakeholes of the walls and the postholes of the door frame and porch.

Wherever evidence of the wall survives (and it is particularly clear in buildings CS4, CS7/8, and CS20), the vertical stakes can be shown to have been 30-40 mm in diameter and spaced at intervals averaging 150 mm. In some cases where the stakeholes were sharply defined there is evidence that the verticals were roughly rectangular in section suggesting that cleft timbers were used in preference to complete branches.

In most cases the stakes were bedded into the underlying soil or bedrock to depths varying from 50 mm to 250 mm. In all probability the holes were made with a pointed bar of some kind and the stakes hammered into them. Once the stakes were in position horizontal wattles would have been woven between the verticals to form a rigid wall which, in some cases at least, was then daubed with clay.

The walls were not defined in all examples by regularly spaced stakeholes. Sometimes (eg nos CS10/11, CS12, CS15) short rows of stakes were found, or even only isolated holes, at points around the diameter of the structure. This situation may best be explained by assuming either that some of the original ground surface

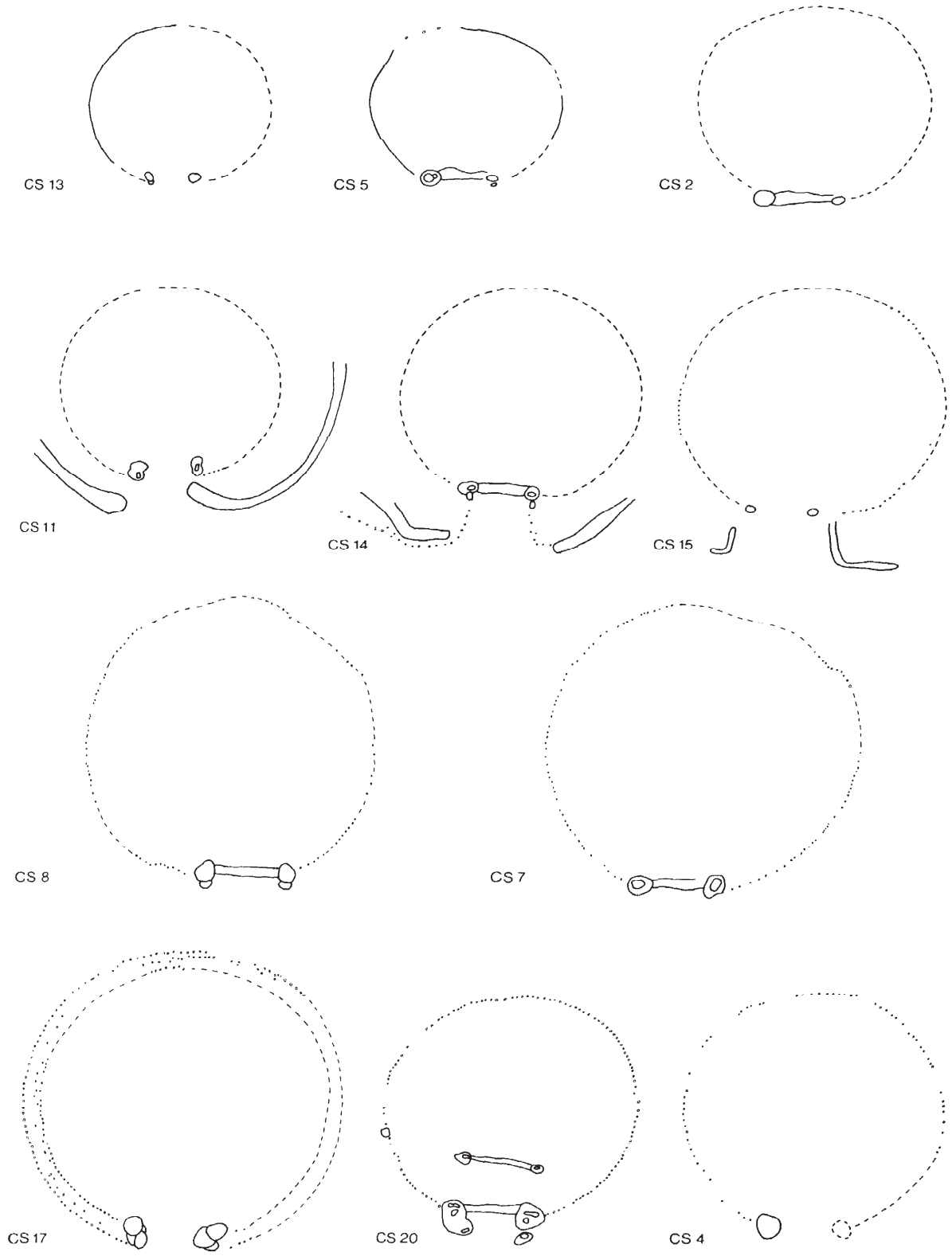


Fig 4.8 Comparative plans of stake-walled houses

into which the stakes had been set was subsequently removed or that the wall had actually been uprooted allowing the small holes to close up. This would not have happened where the stakes were driven into bedrock or into a similarly solid substratum but it could easily have occurred in those cases where the underlying soil was loose or silty. This may well be the explanation for the only partial recovery of the plans of CS16, CS18, and CS19.

Two further examples, CS2 and CS5, require consideration. In both cases door structure and floor surface were well preserved but wall traces were virtually absent. In building CS5 it was perfectly clear where the wall should have been but all that survived were a few smears of charcoal, while in CS2 there was nor even charcoal to mark the wall position. In both cases the conclusion must be that the wall rested on the ground surface and was not set into it. To have built a wattle-walled structure in this manner would have been exceedingly difficult, but the surviving evidence would be consistent with a building erected elsewhere and subsequently moved to a new position. If this were done with a wattle structure it would have been necessary only to dig holes for the stumps of the door frame posts; the wattle wall would have needed no special bedding other than that provided by newly-laid floors and exterior make-up layers. Indeed, short of digging a slot for the wall (surely an unnecessary procedure), there would have been no other way to bed the wattle.

While such a contention is impossible to prove, the evidence of buildings CS2 and CS5 would certainly encourage us to think in terms of buildings being moved bodily to new positions. The very possibility raises questions of some significance to the study of the overall settlement pattern.

A further complexity is raised by buildings CS7/8 where there is clear evidence of a smaller building, CS8, replacing a larger, CS7, on the same prepared platform. In both cases substantial lengths of the stake-built walls are indicated by surviving stakeholes, and two totally separate door structures survive. Once having prepared a suitable house platform it was evidently easier to go on using it even when the building needed replacement. An explanation in these terms might, superficially, seem appropriate to building CS17 of which two separate but concentric circles of stakeholes survive. However, it is argued below that the strictly concentric circles 500 mm apart taken together with the stratigraphical evidence strongly suggest that both formed part of the same building, presumably serving as an inner and an outer wall face. The structure is unusual but perfectly possible. A double wattle wall, further strengthened with less regularly spaced intermediates and perhaps packed with an insulating material such as bracken, would have made a stable and comfortable building.

All of the stake-built structures were provided with a single doorway, usually between 1·6 and 2 m in width framed by two upright timbers, presumably joined at the top by a lintel, and quite often with a horizontal ground sill or step against which the rammed chalk of the floor and threshold abutted. In at least four examples the posts of a separate porch structure were set in front of those of the door (eg CS7/8, CS10/11, CS14, CS20). The clearest structural evidence for the door and porch complex came from building CS20 where it could be shown that the two door-posts were each composed of two timbers, an outer vertical of such a shape that it could well have been a quartered trunk, and an inner plank standing immediately next to it. The planks flanked the actual doorway and were arranged with their long axes in the same plane as the wattle wall. In front of the planks and separated by a gap of 150 mm from them were the two separately-placed timbers of the porch the sections of both suggesting that they, too, might have come from the quartering of a trunk. The door of CS14 is a slightly simpler version but here too the porch timbers were clearly separated from the door frame. A similar setting was noted above in the case of building CS1 and has survived less clearly in other examples. What this arrangement means structurally is not immediately apparent but presumably the fore-timbers represent some kind of roofed porch. Another alternative, not necessarily exclusive of the first, is that they were connected with the fastening of a door. We have no evidence that the doors were hinged or pivoted, and the simplest arrangement would have been for a door to be made of wickerwork (possibly skin-covered to exclude draughts) and simply to be slotted into place in the gap between the door frame and porch posts. A grip, inside and out, is all that would have been needed to facilitate the lifting of the door into position.

A recurring feature of the stake-built structures is the door sill, found in at least nine examples. It would appear to have been a timber 200-300 mm in width placed on the original ground surface between the uprights of the door frame and possibly attached to the posts by some type of simple joinery. It is difficult to see why a sill was needed. It would not have been necessary to keep the door frame rigid once the posts were in position; but if the building was constructed so that it could be moved bodily then a bracing timber between the lowest parts of the door frame would have been a decided advantage. This, of course, is pure speculation.

The problem of the superstructure of the circular buildings must now be considered. While it is possible that some were never roofed, the existence of internal domestic fittings would suggest that the majority at least served as accommodation and as such were likely to have had roofs. There would have been no problem in roofing even the largest of the structures so long as the wall top was bound in such a way as to form a continuous ring-beam. The wall, essentially a tightly-meshed drum of wattle, would have been quite adequate to take the weight and lateral thrust of rafters without additional supports.

An alternative form of roofing might be worth considering. In theory it would have been quite possible for long poles to be used instead of short stakes. Once the vertical wall of wattle was woven the projecting ends of the poles could then have been bent inwards and joined at the top to create a beehive-shaped structure. The wattling could have been continued upwards to the apex or the poles could have been bound at intervals and covered with thatch. Such a system would be structurally sound, economic to build, and light to move. A number of other variants are possible but sufficient will have been said to indicate that the archaeological evidence is open to more than one structural interpretation.

Several of the buildings in the north quarry hollow have external gullies flanking the entrance approach, while one building (CS14) has a fence of stakes running from the porch posts along the approach path and splaying out to curve around the building. The function of these features is obscure. Various suggestions present themselves ranging from obstacles to keep animals away from the thatch to boundaries for herb or garden plots.

One of the stake-built structures, CS13, differs from the others in that its stakes were set at an angle to the vertical in a manner reminiscent of a wigwam. The structure was, however, more complex than this simple description suggests in that it was set on a terrace of larger diameter

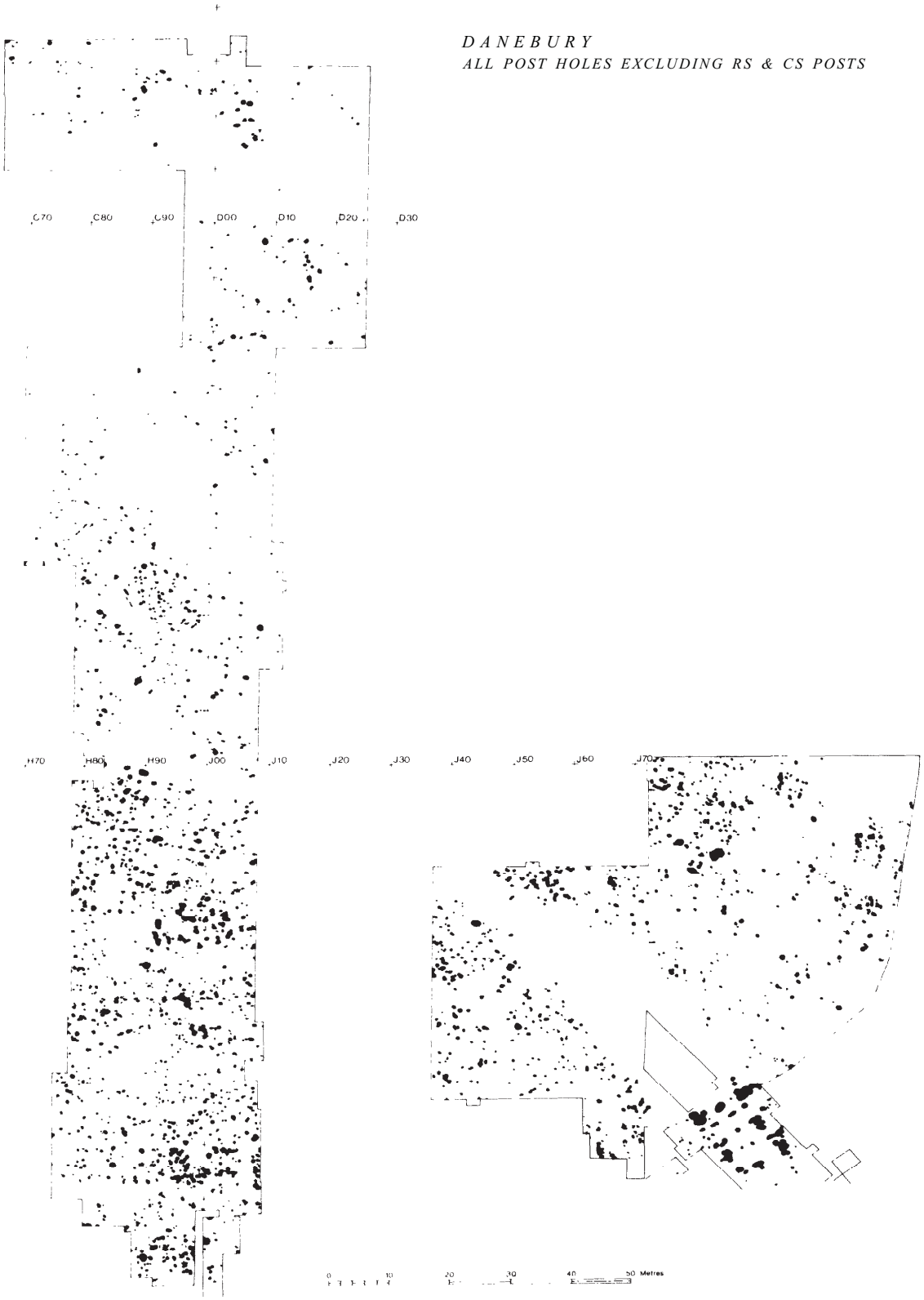


Fig 4.9 Interior of the fort showing postholes remaining of the those belonging to circular plank-and stake-walled houses and rectangular post-built structures have been removed

than the stake circle, and two postholes, on the larger circumference, appear to be door-posts, suggesting that an outer wall may have existed beyond the stake circle. The arrangement is curious and defies rational explanation unless it is assumed that the structure was simply a wigwam with some kind of projecting porch (always supposing that the door-posts were contemporary with the stake-built structure).

Stake-built houses are uncommon in the archaeological record, largely, one suspects, because stakeholes are difficult to recognize in most subsoils, and thus are likely to have been missed in older excavations. Convincing stake-walled buildings have been recorded at Green Knowe in Scotland (Feachem 1963), Moel y Gaer in Wales (Guilbert 1976) and South Cadbury and Hardwick in England (Alcock 1972; Robinson & Allen 1978).

At Green Knowe two concentric rings of stakes were thought by the excavator to constitute the structural members of the outer and inner wattle wall faces of a hut, the roof timbers of which were supported on an internal ring of posts. The other houses listed, though not yet published in detail, seem to conform to the general Danebury type with a single thickness wattle wall. One of the stake-built structures at Cadbury shows evidence of having been rebuilt on four or more occasions on the same terraced platform.

The very simplicity of the type and the ease with which it could be moved bodily from one site to another is likely to have commended it to prehistoric people. The comparatively large number of these buildings found in Danebury strongly suggests that they were widespread and may even have been the normal domestic structural type in the south of Britain, at least in the later centuries of the Iron Age.

Internal features

Having summarized the principal structural elements constituting the circular timber- built structures it remains to consider briefly their internal arrangements.

Most of the buildings showed some evidence of having been floored with compacted tips of chalk rubble, but the extent and degree of survival of the individual floors differed: in CS5 much of the surface survived as a single layer in contrast to CS7/8 in which the chalk floor was discontinuous and showed evidence of having been several times patched. One consistent feature was, however, the presence of thresholds composed of tips of chalk spread immediately outside the door. It is easy to understand how, in muddy conditions, such a hardened approach would have been an advantage.

Hearths and ovens occurred but not in every structure. Indeed, of the 24 structures described, only five (CS2, CS3/4, CS13, CS15, CS16) had internal hearths and two had ovens (CS7/8, CS14). The figures are likely to be reliable, for in almost every case of those without ovens and hearths some traces would have survived had they once existed.

Some of the circular buildings appear to have had pits inside them contemporary with their occupation. This applies to six of the late buildings in the north quarry hollow as well as the early structure (CS9) buried beneath the extension to the rampart. None of the buildings in the south-eastern quarry, however, contained pits whilst they were in use. The difference may reflect differences in function but the sample is too small to be decisive. Moreover, it should be stressed that it is not possible to be absolutely sure that a pit was open and functioning for storage at precisely the same time as a building was in use. Pit digging immediately following demolition would have much the same archaeological appearance.

Finally, attention should be drawn to the occurrence of small stake-built structures found inside several of the huts just to the left of the door and built against the wall. This feature can be seen clearly in CS5, CS7, CS10/11, CS14, and CS20. It is tempting to interpret it as some kind of enclosed storage space reminding one of the 'cupboards' identified in similar positions in some of the Hod Hill huts (Richmond 1968). Other isolated stakeholes are occasionally found within the buildings but little consistent pattern emerges except in the case of CS7/8 where groupings of stakeholes were found in front of the ovens.

Post-built structures

Houses built of circular settings of individually bedded circular timbers are well known on Iron Age sites and might be expected to occur at Danebury. None was found in the quarry hollows where preservation was good but the question might be asked if any circular post-built structures are represented among the 3700 or so postholes found in the interior of the fort?

All that can be said at this stage is that a careful visual scanning of all the unascribed postholes (Fig 4.9) has failed to produce any convincing plan (assuming that such a plan would have a degree of regularity) with the possible exception of a roughly circular setting immediately to the north of CS23. It is, however, the intention to develop a computer-assisted scanning programme to explore the possibility of further regularities. On balance it seems reasonable to suppose that some circular post-built structures remain to be defined.

Descriptions of the individual circular structures

In the following pages illustrations and descriptions of the individual circular structures are given. Their spatial location within the fort can be found by reference to Fig 4.6. Layer and feature numbers are given to relate the structures to the discussion of the stratigraphy in section 4.3 and to the matrix diagrams on fiche 6.

CS1 plank-built circular house: 1977/8 (Fig 4.10, Pls 44-6)

To create a level surface for the house floor an approximately circular platform was terraced into the natural chalk to a maximum depth of 0.9 m at the west side. The eastern part was cut into the top of the silt layers filling the quarry hollow, F61, of which the uppermost was a spread of chalk rubble (layer 449). The terracing is designated F37.

The surviving structural elements of the house consist of a wall gully, enclosing an area 7.4 m in diameter, and the postholes of the door-frame. The wall gully (G88), up to 0.4 m wide and between 0.10 and 0.33 m deep, defined the house floor. Its filling was divisible into two distinct elements: the voids, representing the position of the timber planks which had been placed upright in the slot, and the packing between the planks and the gully sides. The timbers comprising the wall were thick planks placed vertically side by side. Detailed evidence was best preserved on the south-west side where the stumps of the planks had apparently rotted in position leaving actual voids to mark their former positions. Hence the individual timbers could be identified and averaged 205 mm long by about 35 mm wide. Around the north-east sector the plank positions could also be identified but the voids had

CS 1

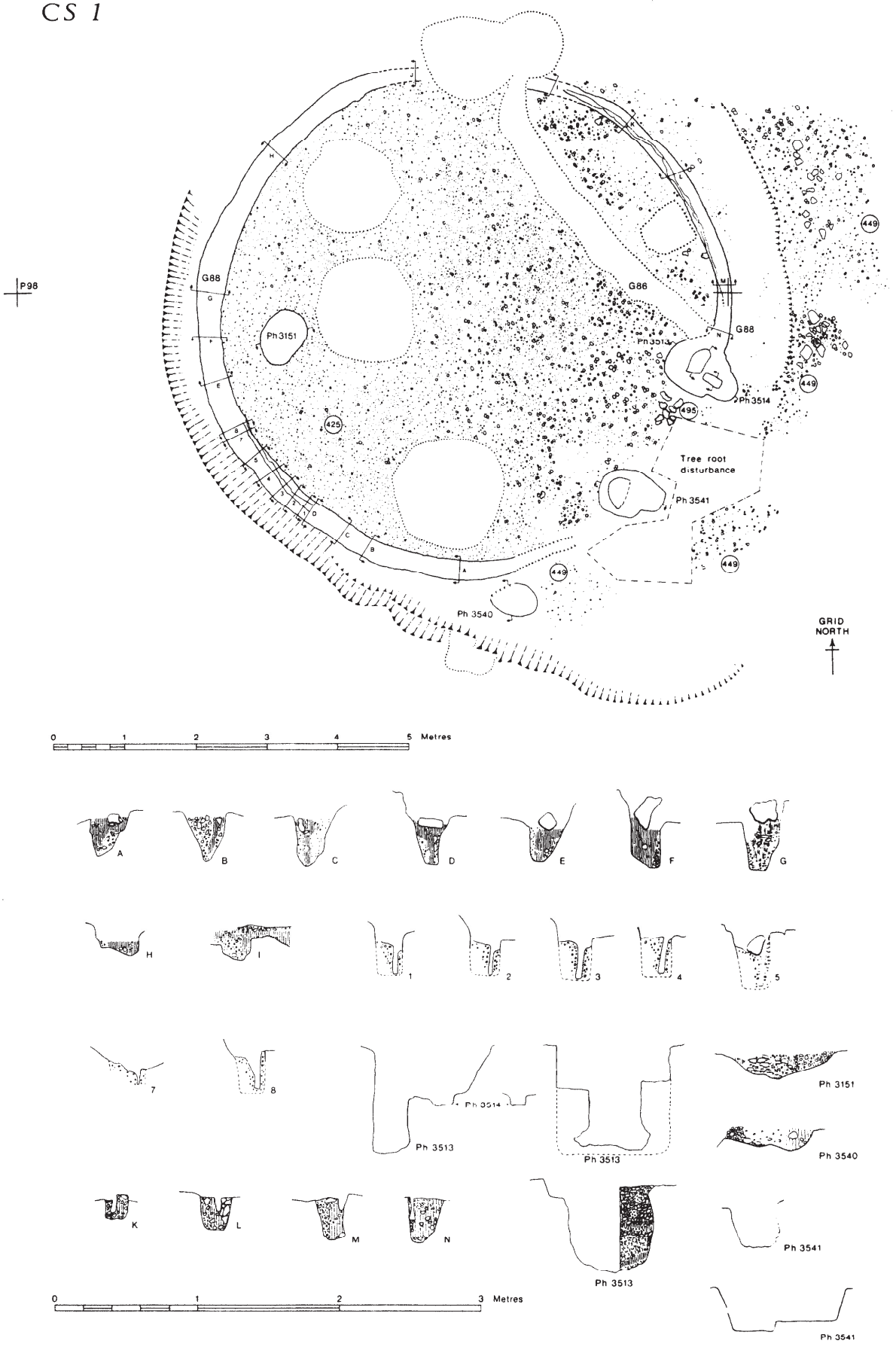

P98
G88
G86
G88
Ph3151
Ph 3513
Ph 3514
425
449
495
Tree root disturbance
Ph 3541
Ph 3540
GRID NORTH
0 1 2 3 4 5 Metres
A
B
C
D
E
F
G
H
I
1
2
3
4
5
7
8
Ph 3514
Ph 3513
Ph 3513
Ph 3151
Ph 3540
K
L
M
N
Ph 3513
Ph 3541
0 1 2 3 Metres
Ph 3541

Fig 4.10

filled with soil and their individual shapes, though perfectly distinct, were less precisely defined.

The space between the base of the planks and the side of the gully in which they were placed was packed with rammed chalk rubble, while the gap between the standing plank wall and the terrace edge was variously filled, along the west and south-west sides with flint nodules and along the north-east side with redeposited clayey silt mixed with small chalk lumps (layer 491).

Of the two door frame posts the northern complex was the better preserved. A single elongated hole had been dug (ph 3513/4) in which were placed two timbers, a large oval-sectioned post with a smaller squared plank at right angles to it. Both were evident by virtue of the fact that their filling, of fine chalky silt, could be distinguished from the chalk packing around. The large post, however, was less distinct because of the distorting effects of tree roots and burrowing animals. The southern post complex (ph 3541) was extensively disturbed by tree root action but towards the base of the filling the position of the main timber could be discerned. The void for the projecting plank was however lost.

The door frame timbers were 1·8 m apart. Between them flint nodules (layer 485) had been set into the chalk floor surface, perhaps to form a foundation for a raised timber sill of which no trace survives.

The floor level within the house consisted on the west simply of the trampled and puddled surface of the natural chalk. But over the eastern part of the house a laid floor of chalk rubble, itself heavily puddled (layer 425), had been constructed to an average thickness of 100 mm; over the filling of pit 1004 the layer thickened to 250 mm. The need for this special treatment was occasioned by the disturbed nature of the natural chalk hereabouts which had been partially cut away by earlier pits and postholes.

Outside the house on the east side a layer of large chalk blocks, up to 180 mm across, mixed in a matrix of brown silty soil, had been spread to a thickness of 150-200 mm (layer 449). It is probable that the layer was deposited when the terrace was cut and was composed of material dug out at this time. It surface was worn and trampled during the period when the house was in use. No special treatment of the threshold was recognizable but the area was so disturbed by tree roots that evidence of deliberate consolidation is unlikely to have survived.

No occupation layer was allowed to accumulate within the house. When it was finally abandoned a layer of fine chalky silt (layer 448) washed in.

One associated feature should be mentioned, ph 3151 which cut through the floor (layer 425). It was either contemporary with the use of the building or was dug immediately after its abandonment. The other features shown on Fig 4.10 are later.

CS2 circular house: 1977/8 (Fig 4.11)

The remains of building CS2 are somewhat tenuous but sufficient survives to indicate a circular structure about 7·5 m in diameter. In the absence of any trace of wall, the plan offered here imposes a circle of this diameter on the recorded remains; the closeness of its fit can be judged from Fig 4.11. The surviving structural elements include the door frame, postholes, and a door sill slot together with layers of chalk representing the floor and threshold and a hearth.

The house was built directly on a layer of natural brown chalky silt (layer 551) with little recourse to terracing except at the extreme eastern edge where some scarping of the natural chalk was necessary. The prepared platform, such as it is, is designated F67.

The two door-posts (phs 3631, 3658) were well preserved but no packing was observed. Both were filled with very loose brown silt with flecks of chalk, material which presumably weathered from the sides and washed in after the posts had been removed or the stumps had rotted in position. Between the posts was a slot (G108), 1·8 m long, 70 mm deep, and up to 0·3 m wide. The slot would have taken a horizontal ground sill laid on the original surface against which the chalk floor and threshold were built up. The complete lack of any evidence for the wall is surprising given the good state of preservation of the general stratigraphy; the problem has been considered above (p 58).

The floor inside the house was composed of layers of chalk rubble of varying thickness (from 10-150 mm), all of which show heavy trampling on the surface (layers 549, 553, 555). Immediately outside the house the threshold was consolidated with two overlapping tips of chalk (layers 459, 554), up to 100 mm thick, both of which were heavily trampled. Layer 552, outside the house to the west, was contemporary with the use of the building. Like the other chalk spreads it consisted of a mass of compacted chalk rubble up to 300 mm thick showing signs of heavy wear on the surface.

Towards the centre of the house was a substantial hearth (layer 550) composed of an upper layer of tightly packed and heavily burnt chalk marl laid over a base of large flint nodules set in a matrix of chalk marl. The hearth was laid directly on the silt layer (layer 551) on which the house was built.

Three contemporary postholes survived within the house (phs 3655, 3656, 3659). Another (ph 3657) was found outside the house close to the wall. Their relationship to the structure is uncertain.

Pit 1148, which lay within the house, appeared to have been cut through the chalk floor (layer 549) and to have been filled at the top with large flints. The pit was, however, not excavated. It is therefore possible that it pre-dated the house and that the subsidence of its filling caused the chalk floor to slump into it, the hollow thus formed being deliberately filled with flints.

Occupation within the house created a thin discontinuous layer of dark soil (layer 548) never more than 20 mm thick, consisting of small pieces of chalk and flint mixed with a mass of crushed charcoal. In places the layer merged into a compacted mass of finely-crushed yellow daub. A patch of black occupation material, 10-40 mm thick, very similar to layer 548, was found on the surface of the silt (layer 551) beneath the chalk spreads 553 and 555. The most likely explanation is that it was deposited during an early stage in the use of the building, the chalk spreads representing a slightly later consolidation of a worn area near the door.

The building was sealed by a thickness of silt (layers 547, 458).

CS3/4 circular plank- and stake-built houses: 1977/8 (Fig 4.12, P1 48)

The house structure overlies a layer of natural silt (layer 546). An artificial platform was created for it by terracing slightly into the natural chalk at the eastern edge of the quarry hollow (F50).

The house floor, some 7·9 m in diameter, is largely defined by two gullies (G113, G114) averaging 250 mm deep and up to 400 mm wide cut down into the natural chalk. Within the gully were set small stakes of oval section (50-80 mm across), tapering slightly at the base.

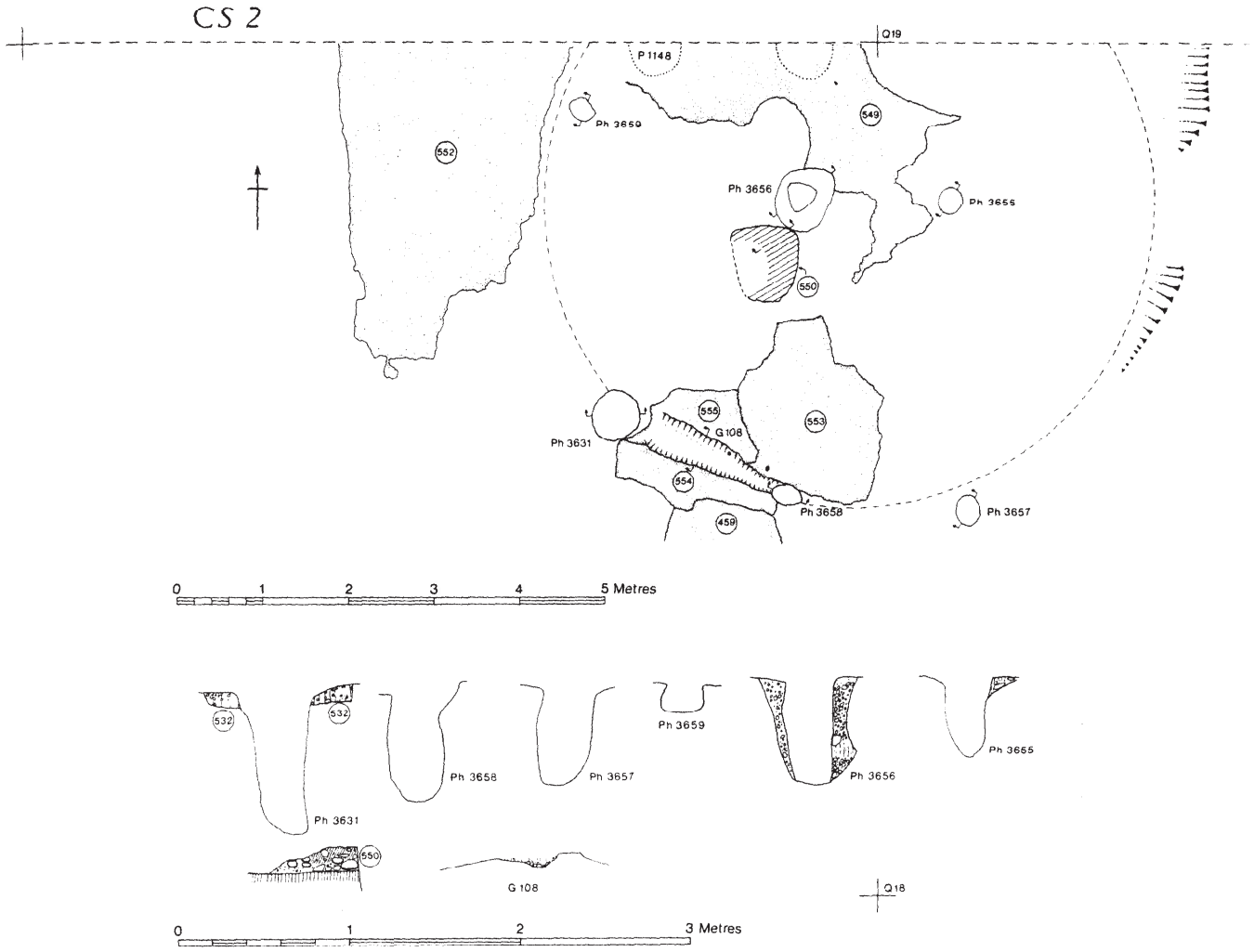


Fig 4.11

The positions of the stakes were visible within the chalk packing of the gully and many of them penetrated 50-100 mm into the solid chalk of the gully bottom. On the north side where the gully was absent the stakeholes were traced in the natural chalk. The structural arrangement is curious; the digging of the gully would have surely been unnecessary if it was the intention to drive the stakes into the natural chalk. One possible explanation is that two phases are represented: the first (CS3) in which a wall of stakes or planks was set in the gully and the second (CS4) in which, after the removal of the early structure, a new wall of driven stakes was erected. Such an explanation would require the voids left after the removal of the first wall to have been very carefully packed but this is not impossible. That there may have been two phases of wall construction is given some support by the two phases of flooring evident within and the two phases exhibited at the door.

The doorway, which occupied the south side, is far from clear, largely because the area had been very considerably disturbed by burrowing animals and tree roots, but the western door-post was well preserved. The posthole itself (ph 3714) was packed with chalk rubble, partly sealed by the house floor (layer 541). The void left by the decaying post was filled with chalky silt (it was given a separate number during excavation— ph 3605). Its opposite number was removed by disturbances. It seems possible that this structure represented the latest door because ph 3714 cut through the filling of the wall slot. The slot continues beyond it to the east to end on another large posthole (ph 3751) which has a smaller hole in front of it (ph 3750). In all probability this group formed the western side of the earlier door, the equivalent eastern post having been removed by pit 1070. It will be observed that the slot did not continue across the supposed early door but the chalk floor (layer 520) was disturbed for part of the length, quite possibly by the later wall line. The consideration of the doors adds support to the suggestion that the house may have been rebuilt.

Within the building two distinct phases of flooring were noted. The earliest (layer 520) consisted of a layer of fine chalk rubble up to 150 mm thick with a heavily trampled surface. It was partially sealed by a discontinuous occupation layer (layer 542) comprised of dark grey soil containing patches of burnt chalk, daub, and flints (layers 544, 545). Stratigraphically the early door-post (ph 375 1) can be shown to be of this phase. The second phase floor (layer 541) was also of trampled chalk but was only 50 mm thick and was discontinuous, occurring mainly near the doorways. It partially sealed the earlier levels. The occupation layer above it (layers 5 19, 507) was a spread of dark grey soil containing burnt flint and daub. In one

CS 3 and 4



Fig 4.12

CS 5



Fig 4.13

place a small patch of red/brown daub (layer 515) appeared to have been burnt in situ. It may have been a hearth or the base of an oven. The packing of the late door-post, ph 3714, was sealed by the second phase floor (layer 541).

Several postholes were dug within the hut during its phase of occupation (phs 3603, 3604, 3607, 3608, 3609, 3612, 3652) together with two shallow pits (F53, F54).

The layers and structures of the house were sealed by a layer of naturally derived silt (layer 499).

CS5 circular house: 1977/8 (Fig 4.13, P1 47)

House CS5 was built directly upon the surface of a layer of silt (layer 499) after some slight terracing of the eastern edge of the quarry hollow had created an approximately level platform (F47).

The house was roughly circular in plan, 5·6 m in diameter, its wall line being defined by a slight groove 50-100 mm deep cut into the underlying silt (layer 482). In spite of very careful search no trace of structural timbers was found over most of the length with the exception of smudges of charcoal along part of the south-eastern side. These marks averaged 20 mm thick and may well represent the ends of timber walling which had simply been placed in the groove with no attempt to bed it in the soil.

The door frame was well preserved. The individual posts (phs 3507, 3508) were placed in larger postholes and packed with chalk rubble. Between them ran a timber ground sill laid on the original ground surface the position of which is now preserved by the chalk spreads which butted up against it. Thin isolated patches of daub (layer 500), 20-30 mm thick, were found to the west of the house below 481. They may well represent waste material dropped on the original ground surface when the walls were being daubed.

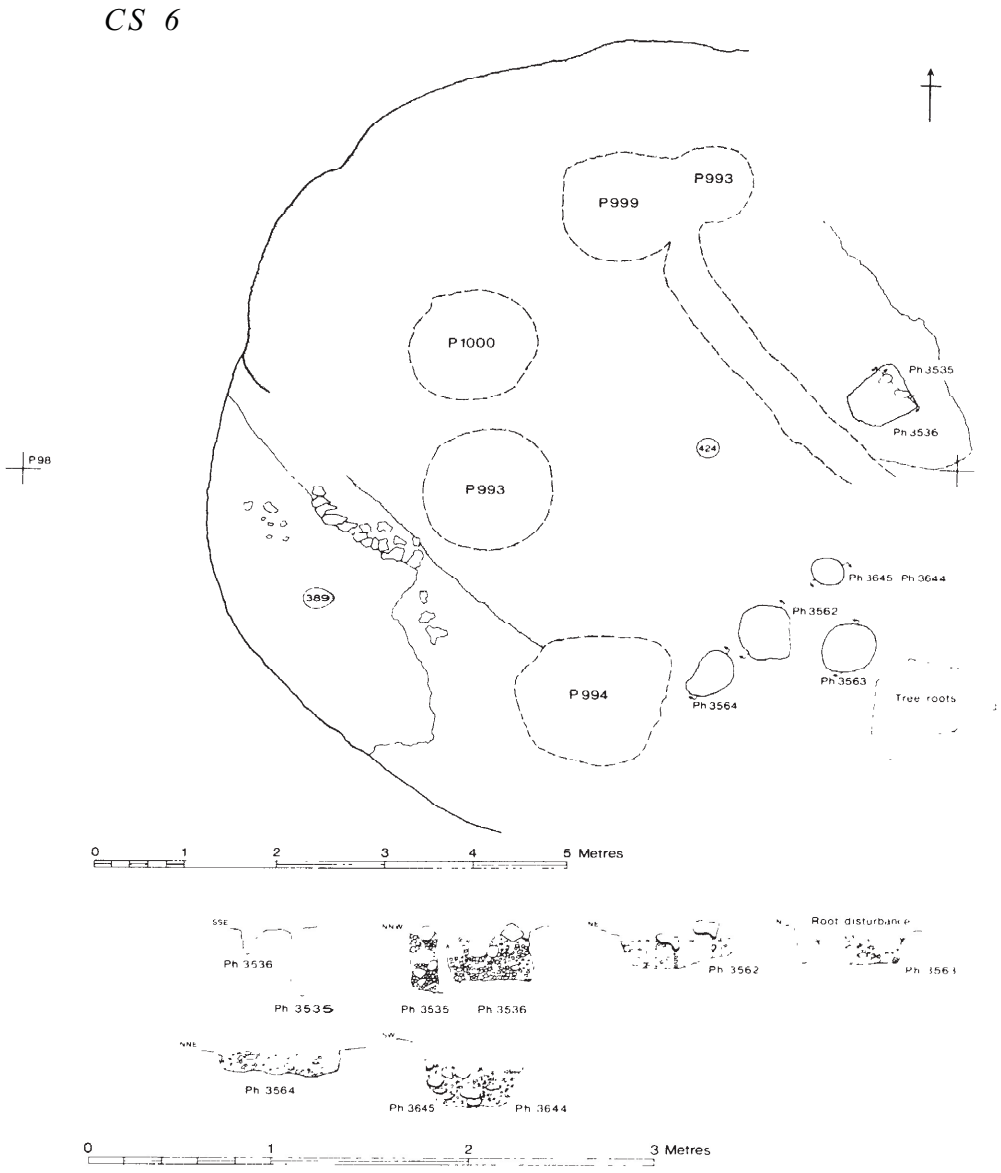


Fig 4.14

Inside the hut was a floor (layer 479) composed of a layer of tightly packed chalk rubble 30-100 mm thick. In one place it had subsided over an earlier pit (P1070). Outside the hut the surface of the underlying silt was partly consolidated by a chalk spread 30-80 mm thick (layer 481). It appears to have worn through just outside the door and was patched with another layer of chalk (layer 480). An isolated patch of chalk (layer 501) beneath 481 in front of the door probably belongs to a construction phase.

Over the floor of the house was a layer of grey soil 20-50 mm thick containing much finely crushed charcoal (layer 474): it represnted rubbish which accumulated during the use of the building. After abandonment the building was sealed by a layer of chalk rubble thrown down to consolidate the ground.

CS6 sub-rectangular structure: 1977/8 (Fig 4.14)

The structure CS6 was built largely within the terrace created for building CS1 but the available space was extended on the north side by the quarrying away of up to 0·5 m of natural chalk to create a new terrace designated F46. On the south-west side the edge of the structure was delineated by a line of large flints which had been stacked up to revet a deliberate filling of chalk rubble (layer 389) packed between them and the edge of the earlier terraced scarp. No timber structure was evident within or between the flints. The north-west side was formed by the edge of the scarp (F46); the north-east side was not defined by structural features.

Within the sub-rectangular area of the structure a distinct floor surface had been laid consisting of a spread of chalk

blocks (up to 70 mm across) tightly packed in a matrix of grey silt. Two layers were distinguishable (layers 426,424) together making up a thickness of 50-140 mm.

The only structural timbers which could, with certainty be shown to be contemporary with the structure were two 120 mm diameter posts placed in a single posthole (phs 3535,3536). Posts 3564, 3645, 3563, and 3562 could be contemporary but the area is so disturbed by root action that it is impossible to be certain.

What kind of superstructure (if any) CS6 represents is difficult to say unless it was in some way erected on ground sills.

The area of CS6 was later cut through by several pits and a gully belonging to phase 1.

CS7/8 two successive circular stake-built houses: 1977/8 (Fig 4.15, Pl 50)

The area occupied by these two houses was deliberately levelled to create a terrace designated F40. The preparation entailed cutting into the silt layers behind the

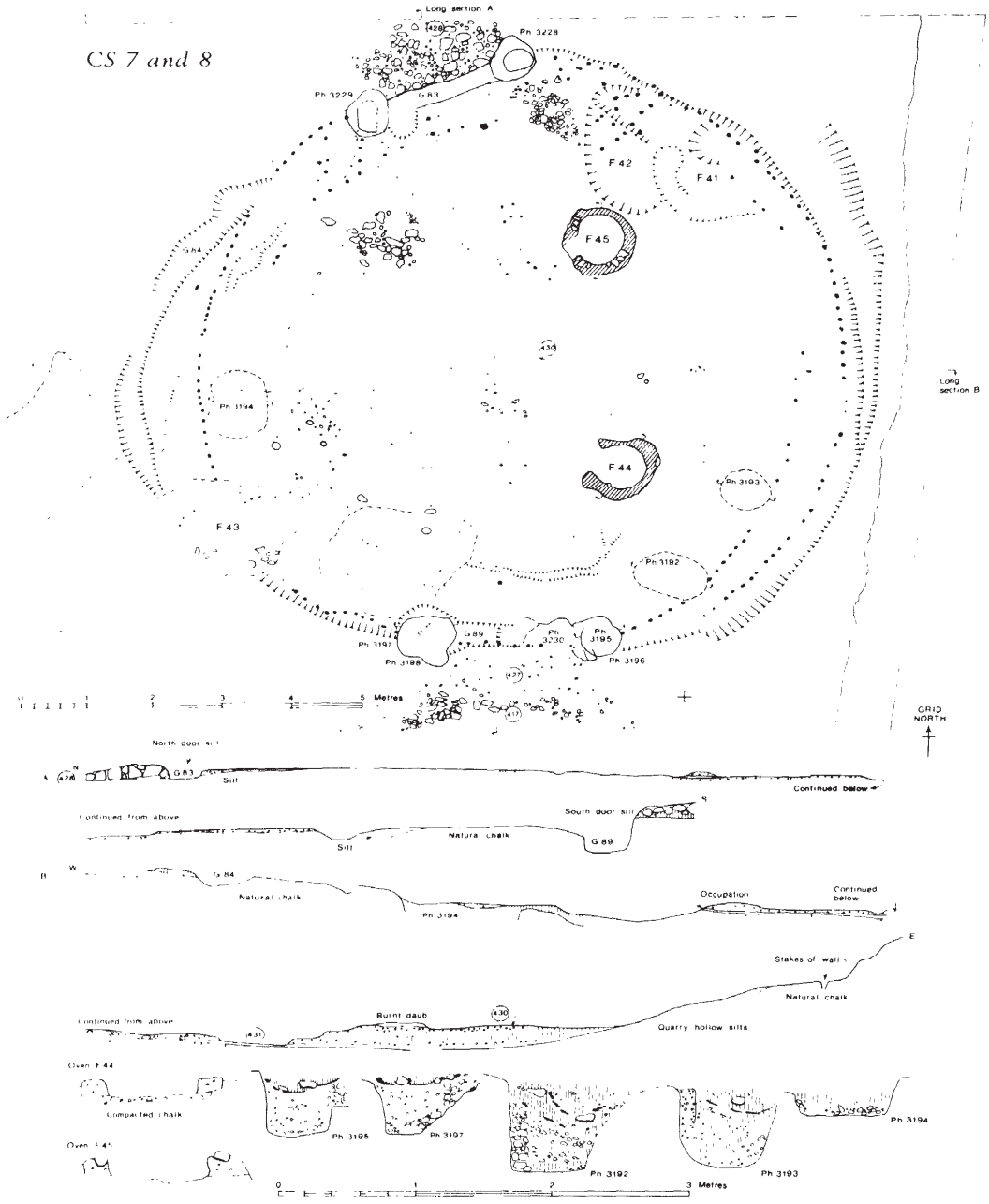


Fig 4.15

CS 9

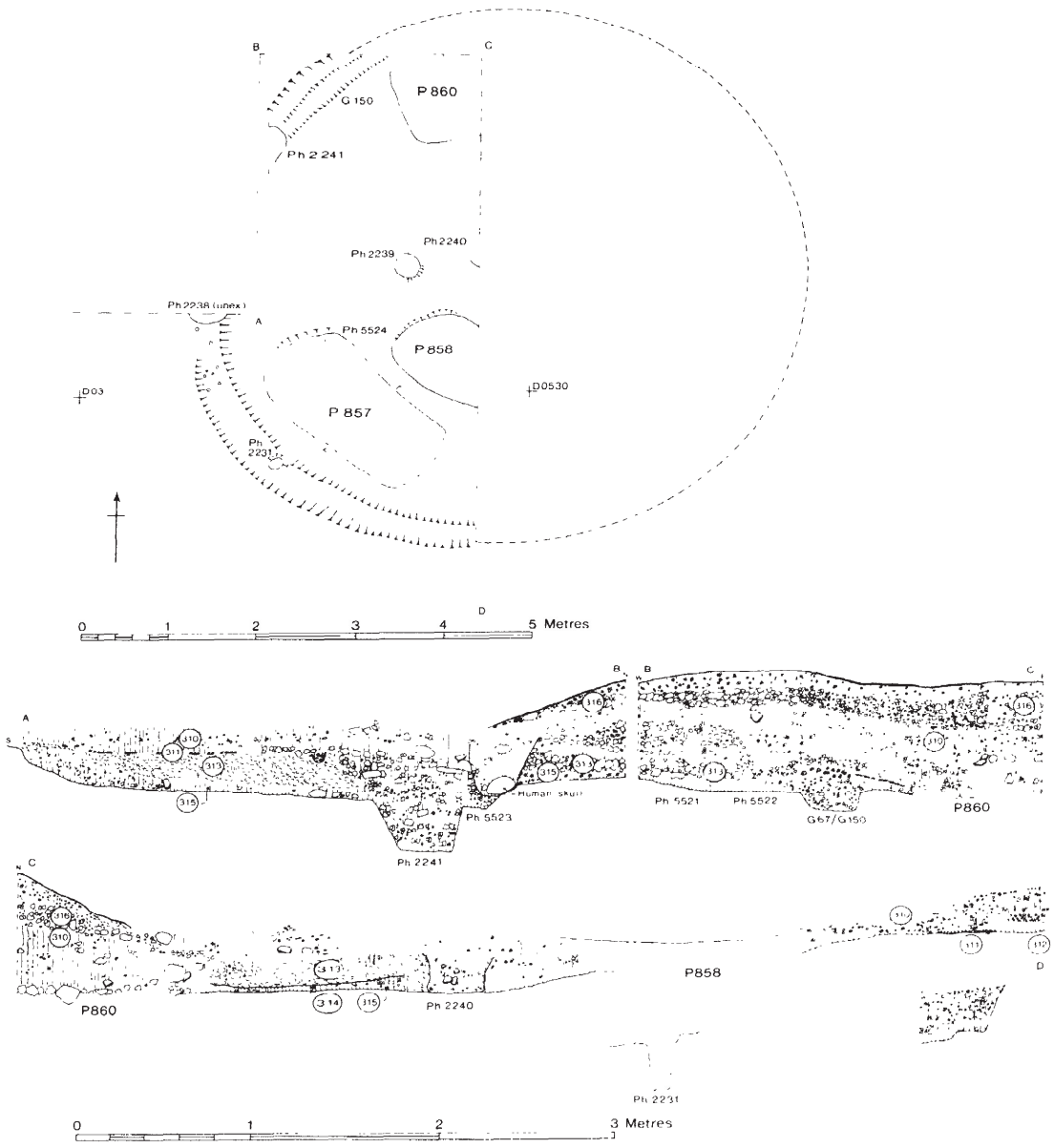


Fig 4.16

rampart and levelling the southern and western part of the site to bedrock, the material derived from the process being thrown into the deeper parts of the qaurry hollow (sealing 431) to make up the level. This redeposited chalk and silt (layer 430) served as the floor surface.

The first house, CS7 was 9.5 m in diameter. Its walls were built entirely of stakes up to 50 mm in diameter which were rammed into the ground at intervals of about 200 mm around the circumference of the building. The door lay on the northern side. The two door-posts (phs 3228, 3229) were set in individual chalk-packed holes 2 m apart and between them lay a horizontal door sill (G83) defined now as a slot 300 mm wide set slightly into the underlying silt against which a tip of compacted chalk rubble was laid (layer 428) to consolidate the threshold.

A number of features were found within the house but not all could be shown with certainty to belong to the earlier phase. On either side of the door, however, were a number of stakeholes which presumably defined structures of some kind built against the wall of the earlier building. To the east of the door, also against the wall, irregular hollows had been created in the floor surface (F41, F42), perhaps by wear, and these had become filled with soil containing occupation debris (layers 408, 409). From their physical

position they must relate to the earlier (outer) house wall. Since both contained charcoal and burnt flints it is possible that they were being filled when the nearby oven (F45) was in use. Other features which may, by virtue of their location, belong to the early phase are the three large postholes, phs 3192, 3193, and 3194. However it must remain a distinct possibility that some or all are earlier than the house. Phs 3192 and 3193 are unrelated to floor levels while the edge of 3194 is overlapped by the chalk floor. For this reason they are indicated on Fig 4.15 as only tentatively associated with the house.

The second house, CS8, was built wholly within the wall line of the first. It was 8 m in diameter and like its predecessor was built of individual stakes rammed into the ground. Not all of the wall line could be traced but where the stakes were clear they could be seen to be set at intervals of between 150 and 250 mm. The door lay at the southern side. The main door-posts (phs 3195,3197) were approximately 2 m apart and between them ran a slot (G89), 350 mm wide, representing the position of the ground sill. Secondary postholes, taking projecting planks, were attached to the front (ie the outside) of the main uprights (phs 3196, 3198). The packing of the posts was overlaid by a layer of compacted chalk rubble (layer 427) which constituted the consolidated threshold.

The reason for suggesting that house CS8 replaced CS7 lies in the relationship of the wall stakes of CS8 to the chalk floor (layer 430), particularly on the north side close to the door of CS7. Here the floor level which respects the sill of CS7 is cut through by the stakeholes of CS8 which completely block the earlier door position. Moreover the two gullies on the east side, both of which can be shown to

CS 10/11

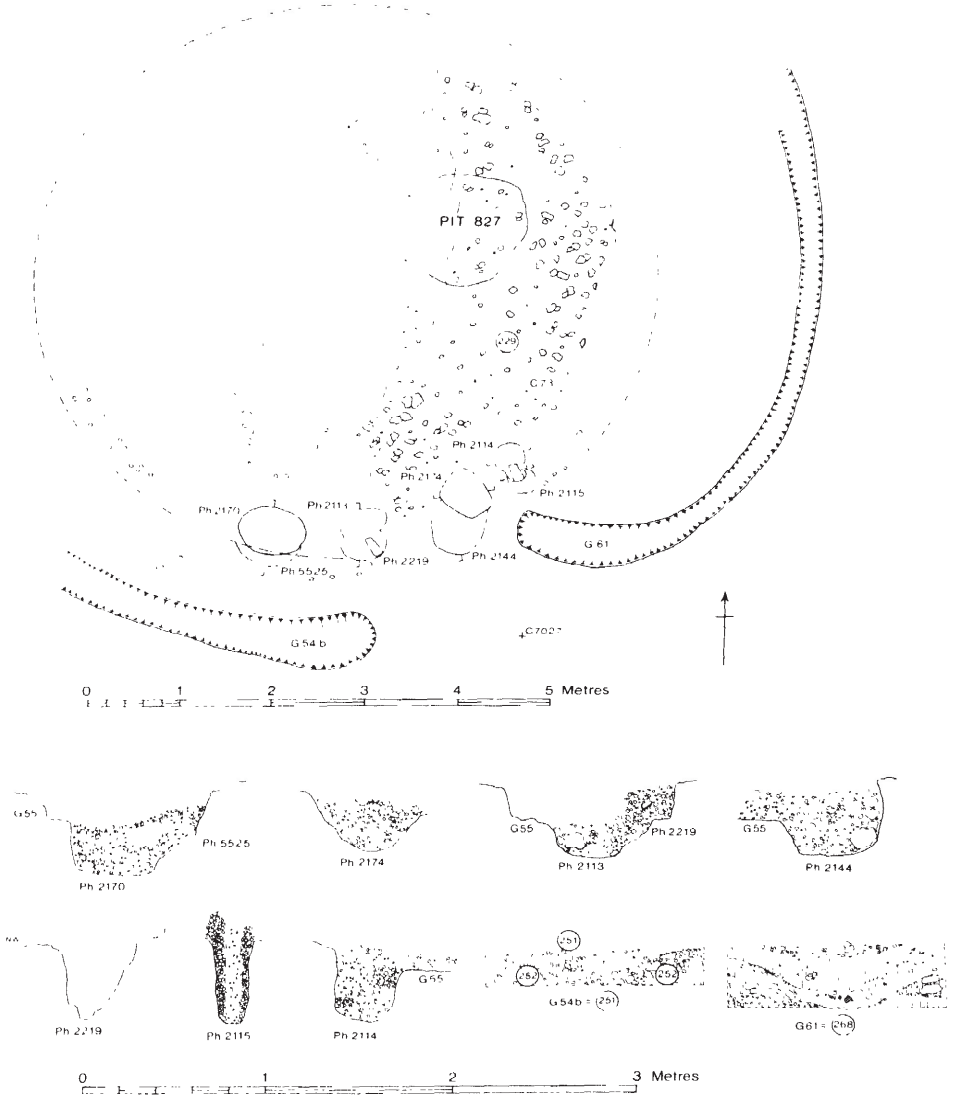


Fig 4.17

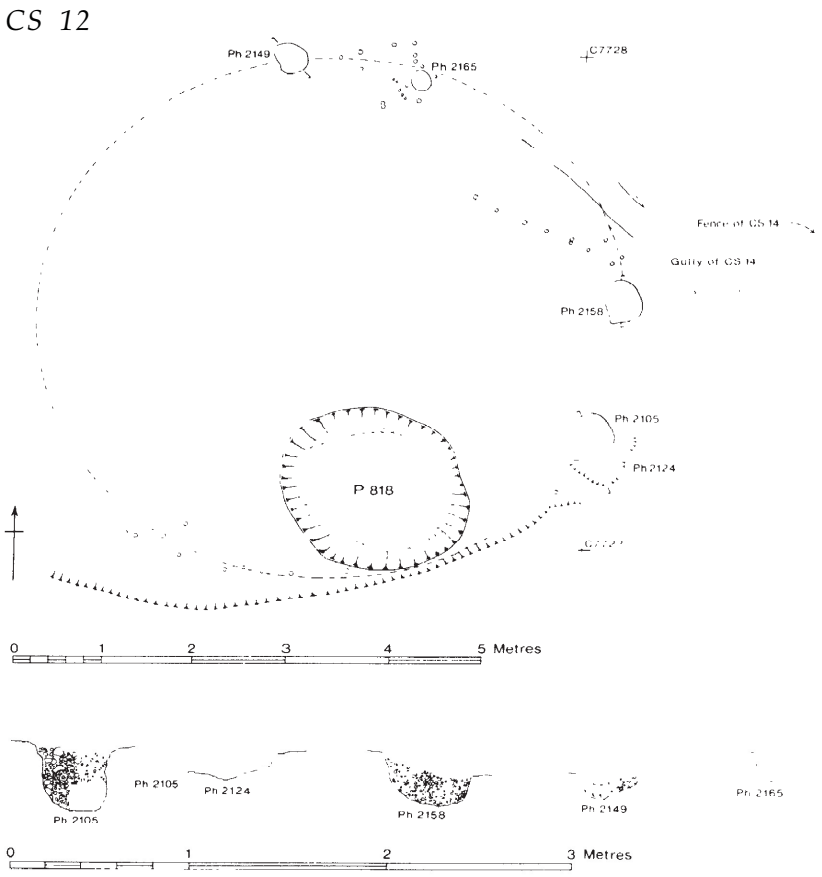


Fig 4.18

be stratigraphically late in the sequence, appear to cut the line of the earlier house wall and are best interpreted as drainage gullies for the later building.

Within CS8 the original floor level continued in use over much of the area with occasional additional tips of chalk being laid to consolidate soft patches or holes. Among the internal structures which may be of this phase are a number of stakeholes and the irregular gully just inside the door which cuts part of the chalk floor but is sealed by one of the patches.

Two ovens, F44 and F45, were built and both remained standing to the end of the building's use (although either or both could have been constructed in the earlier phase). They were composed of hard-baked clay consolidated with small flints. The remains are presumably of the lower or stoking chambers of bread ovens, the upper floors of which have been destroyed.

The floor of the house was covered with a thin occupation layer composed of fine grey silty soil containing burnt flints, fragments of charcoal, and occupation debris including a number of objects (individually plotted on Fig 4.134 and discussed below, p 157), but much of the layer and of the underlying chalk floor had been disturbed by burrowing animals. (This disturbance is indicated by the unstippled areas in the floor of the hut shown on Fig 4.15.) In one place, over the top of the earlier pit (P1038) close to the southern door, the floor and the occupation layer above it had subsided. The occupation layer (called here 410) contained many burnt flints and, on the surface, the remains of several burnt stakes lying together horizontally on the ground surface. The stakes presumably represent the burnt wall of the house. Layer 410 merges upwards and laterally with 393. It is, therefore, best to assume that 393 is disturbed soil created largely from occupation debris after the house had been burnt and abandoned.

CS9 circular house: 1973/5 (Fig 4.16)

A roughly circular platform about 6.5 m in diameter was created by cutting a terrace into the back of the earliest rampart (313) and, on the uphill side, into the natural chalk. On the south side a narrow ledge was formed at the base of the scarp while on the north a shallow gully bounded the ledge on the inside. Two postholes (phs 2241, 2238) which lay on the perimeter may represent door-posts. Elsewhere along the ledge a small posthole and a few stakeholes are all that remain of the wall.

Inside the structure the truncated surface of the early rampart (313) and the natural chalk served as a floor and suffered considerable wear. It was from this level that three pits (P857, P858, P860) and three postholes (phs 2239, 2240, 5524) were cut, post 5524 being largely cut away by pit 857. A thin discontinuous layer of charcoal (311) accumulated on the floor before the structure was abandoned and soil formed over the terrace (3l0), soon to

be partially sealed by the second phase rampart (3 16) and finally the major extension of the third phase (282) (for rampart, see pp 19-21).

CS10/11 successive circular buildings: 1973/5 (Fig 4.17)

The two successive buildings called here CS10 and CS11 are distinctive in general form but obscure in detail. A degree of terracing was recognized cut into the silts and chalk spreads which had accumulated behind the rampart (eg layers 253,252,267,269). Thus, the first building was later than gullies 53, 54a, 55, and 56. The shape of the terrace, the position of the few surviving wall-stakes, and the extent of floor levels together suggest an overall diameter of approximately 6.8 m.

The door-posts are well preserved and provide the best evidence for two periods. The earlier pair of posts (phs 2170/5525, 2174/2144) represent original timbers and their replacements in more or less the same position whereas the later set (phs 2113/2219,2214/2115) give the appearance of being of only one phase, each member being composed of a main (inner) timber with a thick rectangular plank placed upright in front of it. It is possible that the plank in ph 2115 may have been once replaced. The two doorways are not structurally related but the latest floor level (229) seals phs 2174 and 2144 while the two gullies (G54b, G61), which are stratigraphically late, belong to the second phase door partly obstructing the earlier door position.

The walls of the buildings are not well preserved but were clearly of stake-built construction; two lines can be made out to the west of the door perhaps representing the two phases of building. Other stakeholes are scattered about the interior. The only distinct floor level is a layer of chalk rubble (229, 250) which was laid over the eastern part of the building to consolidate the ground above the soft filling of a number of earlier features. The layer seals pit 827 which is otherwise stratigraphically late and may have been in use in an earlier stage in the building's life.

Outside the buildings are two shallow gullies (G54b, G61) both in part cutting into the tops of earlier gullies. It seems likely that they performed a drainage function and related to the latest phase of the building. Gully 54b was filled with an occupation layer (251) while occupation material (268) lay within the building.

Section 36 (Fig 4.114) which cut obliquely across the western edge of the building gave some hint of two phases of occupation within the structure separated by a lens of silt. This detail was not adequately observed during excavation. The latest structural and occupational layers are sealed by natural silt (200).

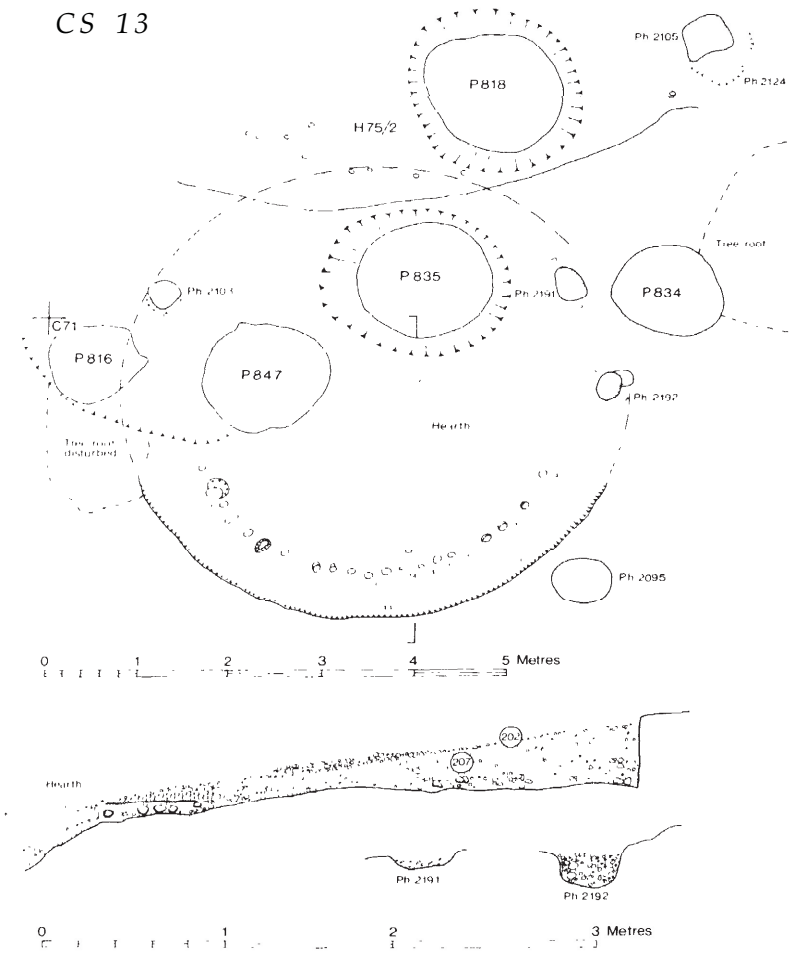


Fig 4.19

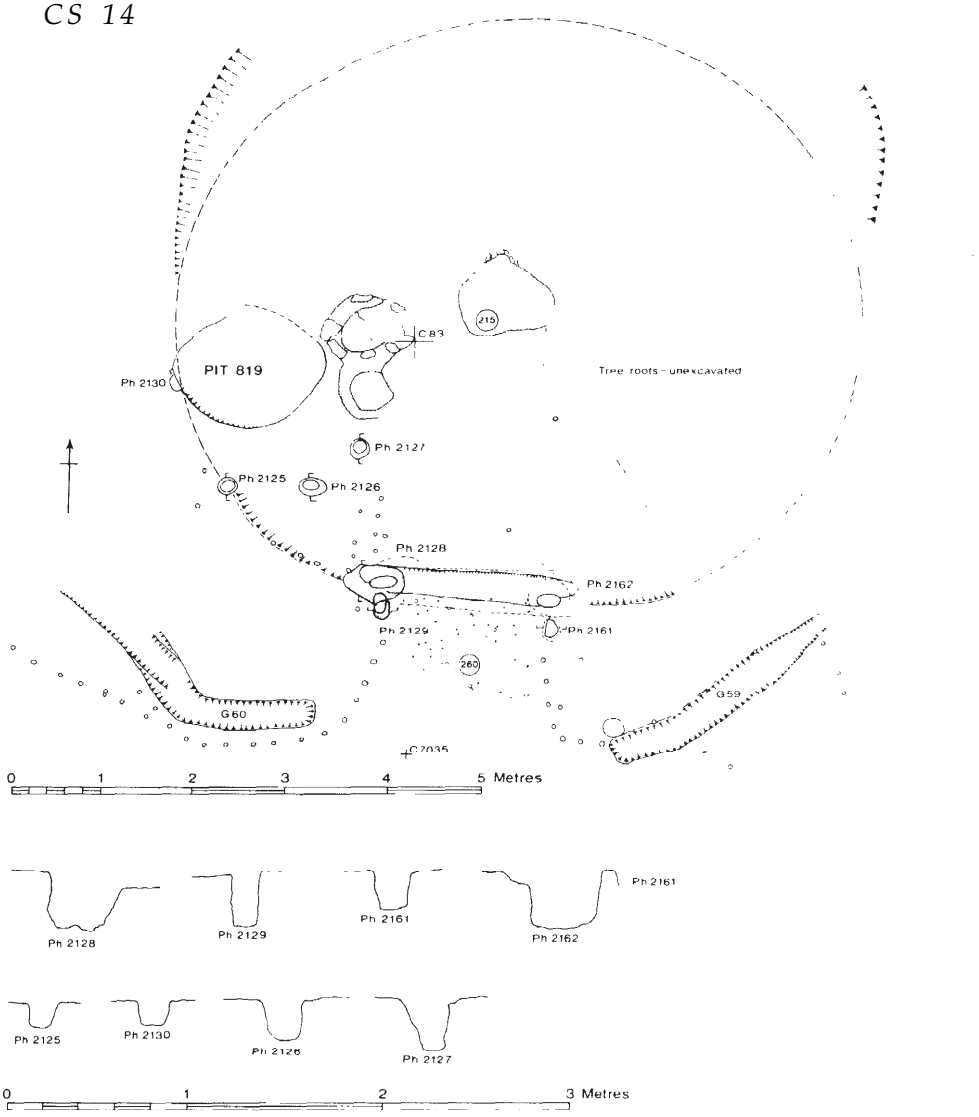


Fig 4.20

CS12 circular building(?): 1973/5 (Fig 4.18)

This is a probable building set on a terrace cut through silt layers (217,235) and into the natural chalk. The building is represented by two distinct door-posts (phs 2105, 2158) and a few stakeholes together, perhaps, with two small postholes which seem to be on the wall line (phs 2149, 2165), suggesting an overall diameter in the order of 6.4 m. The floor level of the building is represented by a trampled layer of chalk and silt mixed with occupation material (234). A spread of occupation material inside the building (216) is contemporary with a similar layer (231) outside. The relationship of pit 818 to the use of the building is obscure but it could have been contemporary with an early stage in the building's life. It was, however, sealed by layer 216.

The site of building CS12 is impinged upon by building CS13 and by the outer fence and gully of CS14. There is, however, no direct stratigraphical evidence of relative chronology. In the discussion below (p 166) it is suggested that CS12 pre-dates CS13 and CS14.

The building and its occupation levels are sealed by the silt (200).

CS13 circular building: 1973/5 (Fig 4.19, P1 43)

Building CS13 is represented by a terrace cut into the silt (217) and the underlying natural chalk. If the arc of the terrace is projected the overall diameter of the platform would be 5.l m. Two postholes, possibly representing door-posts (phs 2191, 2192) lie on the circumference of the circle. Within the terrace scarp, and concentric with it, is a setting of stakeholes which would, if continued, define a circular area 4 m in diameter. The stakeholes vary in size and depth but were set consistently at an angle sloping

inwards between 45° and 65° to the horizontal. In spite of careful search no stakeholes could be traced around the northern side of the projected circumference but this is not surprising since the underlying silts and soils into which they would have been set are not conducive to the survival of such transient features. The reconstruction of the superstructure of this unusual building is fraught with uncertainties (and is discussed above, pp 58-60); suffice it to say here that the stake-built element is most likely to have resembled a wigwam type of construction.

Within the building there was no laid floor surface, but a hearth of heavily burnt chalky marl occupied a central position laid directly on the natural chalk. There were no distinct occupation layers but the terraces was sealed by chalky silt containing much charcoal (207) which was sealed by the natural silt (200). Layer 207 sealed the filling of pit 847 which could have been contemporary with the use of the building. The building impinges upon the terrace of CS12 but the chronological relationship of the two structures is undefined.

CS14 circular building: 1973/5 (fig 4.20)

Building CS14 was constructed on a terraced platform cut partly into the natural chalk and partly into the tail of the extended rampart. The wall line is without distinctly surviving structural remains but this fact alone and a few surviving stakeholes close to the door suggest that it was stake-built. In diameter the building would have approximated to 7.3 m.

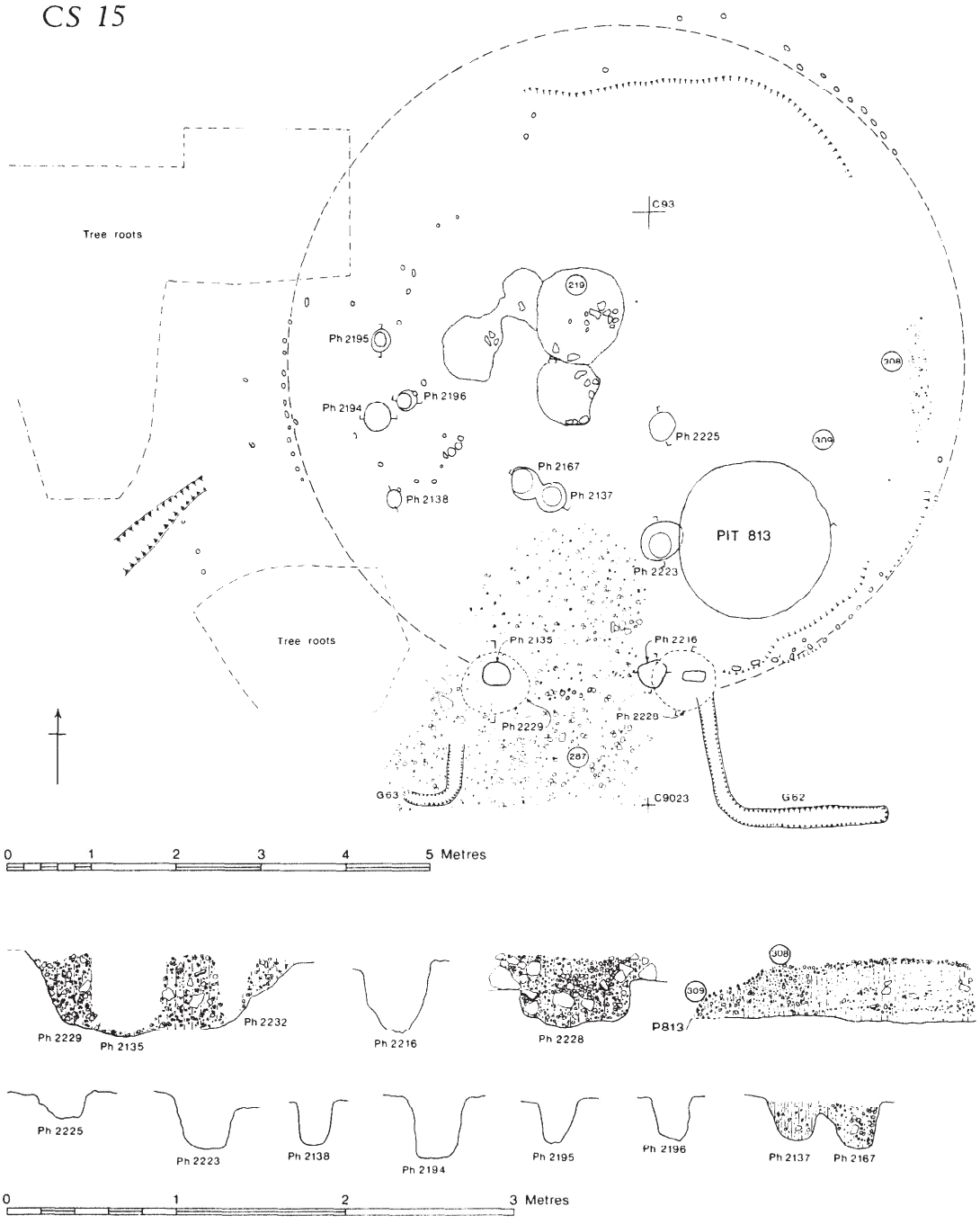


Fig 4.21

CS 16

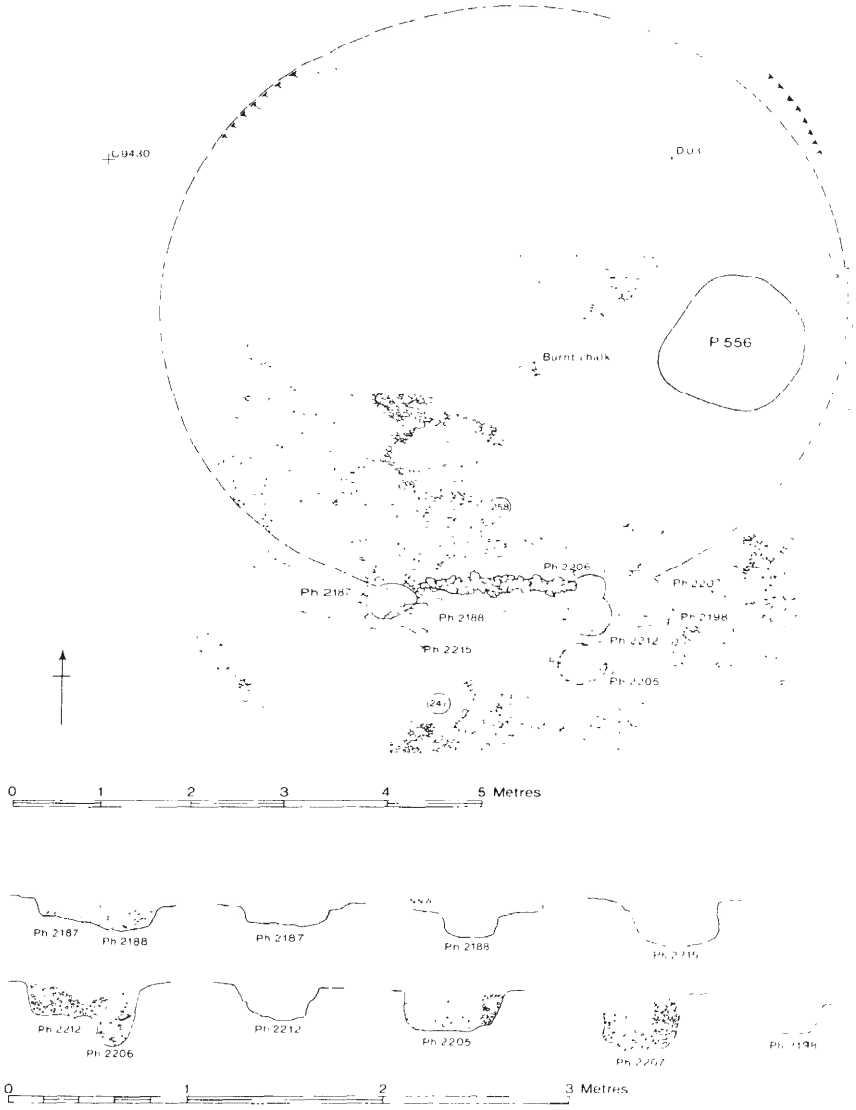


Fig 4.22

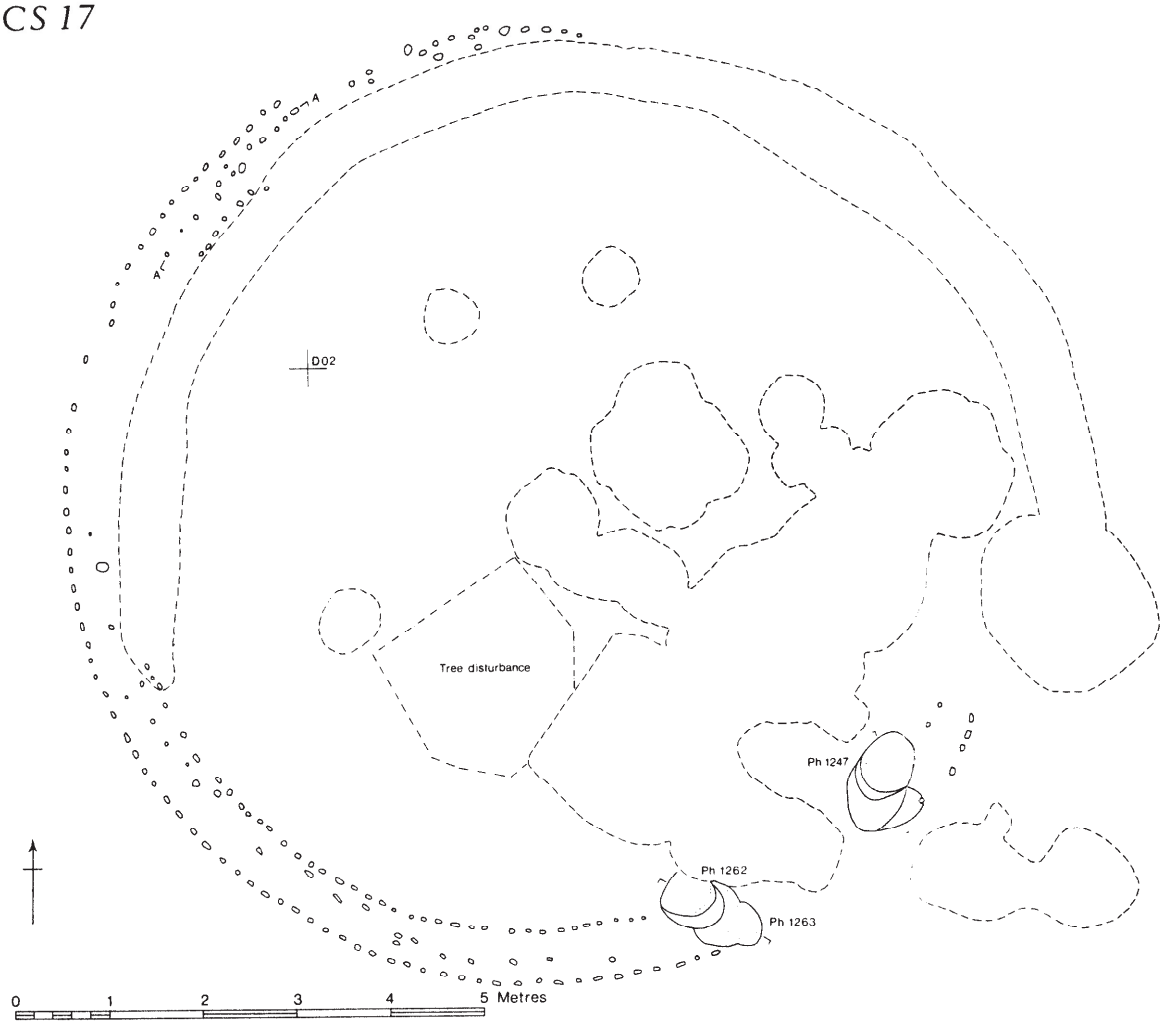
The door frame structures were well preserved consisting of a horizontal slot for a sill laid between two main door-posts (phs 2128, 2162) in front of which were two vertical planks set in separate holes (phs 2129, 2161). The area in front of the door was surfaced on two occasions with chalk, the lower layer (266) being separated from the upper (260) by a thin silt lens (265).

Within the building there appears to have been a stake-built structure just to the left of the door and it may be that all or some of the three small postholes in the vicinity were part of some contemporary erection; however, they could be earlier in date. Nearby were the bases of two contemporary ovens built of daub and flints (both mutilated by tree roots and burrowing animals) set directly on the surface of natural chalk. A heap of burnt clay and flints in front of the ovens (215) represented a dump of broken up wall daub. It was presumably deliberately piled here since it could not have fallen in this position from the walls.

The floor of the building was covered by a layer of soil up to 100 mm thick containing some occupation debris (layer 213). It was sealed by chalky soil washed down from the rampart (214) and by the natural silt (200).

Outside the hut the approach was defined by stake-built fences the lines of which were, in a later stage, reflected by shallow gullies (G59, G60). These features are stratigraphically contemporary with the building, the two phases being directly related to the two layers of the

CS 17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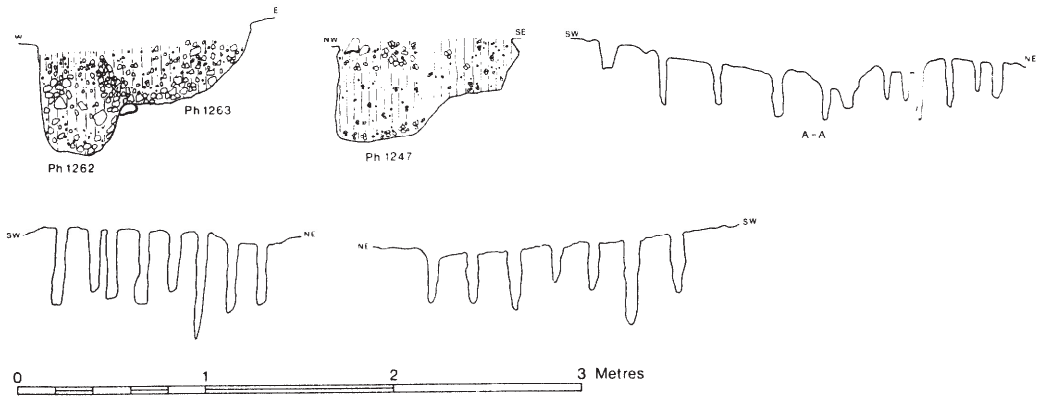
D02
Tree disturbance
Ph 1247
Ph 1262
Ph 1263
0 1 2 3 4 5 Metres


Ph 1263
Ph 1262
Ph 1247
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0 1 2 3 Metres

Fig 4.23

CS 18

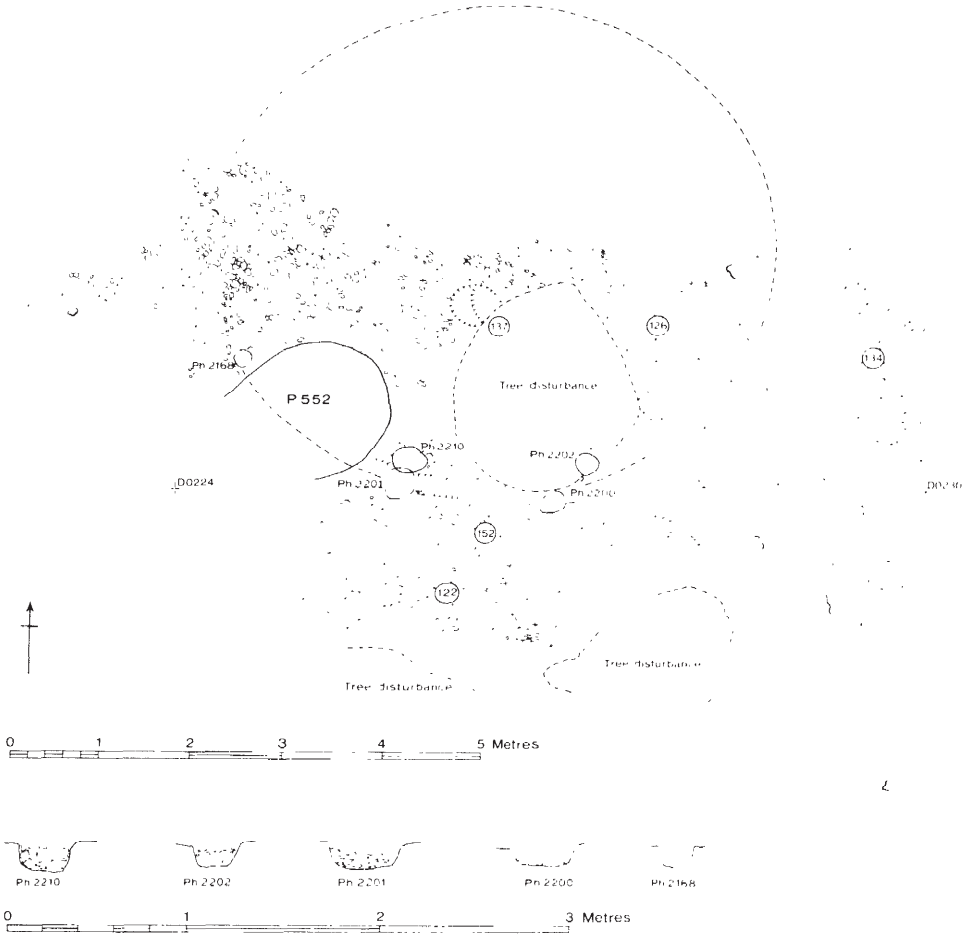


Fig 4.24

threshold. Pit 819 had been dug within the line of the wall but as the result of later erosion its upper edge had extended beyond the wall line. Thus, although it is likely that the pit was contemporary with the use of the building, direct proof is lacking.

CS15 circular building: 1973/5 (Fig 4.21, P1 42)

The terrace for building CS15 was cut into the silt layers and the tail of the rampart (209, 263). The walls of the building, enclosing an area 7.5-8 m in diameter, were built on a framework of stakes rammed into the underlying silt; but along the eastern side of the building a narrow slot, 200 mm wide, had been dug and filled with chalk (308), possibly to provide a firm basis for the wall timbers across an area of very soft fill (no stakeholes were, however, observable in the filling).

The area of the door was to some extent confused by a complex of earlier structures but two distinct phases were observable. In the first the door frame was set in phs 2229 and 2228. These were replaced by phs 2135 and 2216. The threshold both inside and outside the building was consolidated with a tip of chalk (287, 300) which sealed one of the earlier door-posts but was contemporary with the later pair. In front of the door, and cutting through the chalk (287), were two shallow gullies, G62 and G63, defining the entrance approach.

Inside the house were a number of postholes and stakeholes, some of which may well have been contemporary with the occupation (but some are likely to have been earlier). In the centre of the hut were three separate but overlapping patches of daub inset with small flints (219). They were deliberately laid on the house floor and probably represent hearth structures successively refurbished. Pit 813 was broadly contemporary with the building's occuaption. This is demonstrated by the fact that a layer of soil and charcoal (309) which accumulated during the life of the building slumped violently into the pit. Clearly the pit can have been filled only a very short time before the charcoal layer formed.

The building was sealed by the silt layer (200).

CS16 circular building: 1973/5 (Fig 4.22)

The terrace for CS16 was cut into the tail of the rampart and was later than the accumulation of the silt and chalk layers 248 and 259. The diameter of the building, indicated by its terrace, a few stakeholes marking the wall

line on the east side, and the door and threshold features, is in the order of 7.4 m.

As the plan shows little survives of its stake-built wall, but the northern side of the terrace and the door features are well preserved. The latest door frame was supported in postholes 2187 and 2206 between which ran a sill of tightly packed chalk blocks. There are, however, several other pairs of posts in the vicinity which may well have belonged to earlier door frames. All but the last pair are sealed or partly sealed by the chalk spread (247) which lies just outside the building. It is broadly contemporary with a discontinuous chalk floor inside the building (258). It is possible, indeed probable, that phs 2188 and 2212 are holes for front-projecting planks contemporary with the main door-posts, but no trace of plank voids was observed. The pair of posts, phs 2207 and 2198, may well represent an earlier setting of post and plank replaced by phs 2206 and 2212 in order to narrow the doorway. Phs 2205 and 2215 are not necessarily related to the building at all.

Internal features include the remains of a hearth of burnt chalk and pit 557 which may have been contemporary with the use of the structure. An occupation layer (281) consisting of soil and charcoal was evident over most of the floor area but was particularly distinctive in the northern part of the building. It was sealed by chalky silt washed down from the rampart (2 18).

CS17 circular building: 1973/5 (Fig 4.23)

The interpretation of this structure presents difficulties because of the incomplete nature of the evidence. A later gully (G39/37) has cut away a substantial part of the wall while pit digging and tree roots have obscured much of the area. Sufficient, however, survives to allow the main structural elements to be disentangled.

A terrace was created for the building by cutting into the south edge of the quarry: above the silt in the quarry bottom (121, 155) a consolidating layer of chalk rubble was deposited (119). At a later date, another layer of chalk rubble (113, 152) was laid, the two being separated by a thin smear of black soil. The doorways of the structure are defined by two groups of postholes evidently representing more than one phase. The simplest explanation would be to suppose that double-post door frames were once rebuilt. This raises the problem of the wall line. As the plan shows it is composed of two concentric rings of stakeholes 0.5 m apart with less regularly placed stakes between; the diameter of the inner circle is 9 m, that of the outer 10.2 m. While it would be superficially attractive to suggest that the two walls were of different date, one structure replacing another, there is no positive stratigraphical evidence to support this. Moreover the exact spacing of 500 mm between the rows all round could hardly be achieved if one had been pulled down for the rebuild. The upper floor (113,152) appears to respect the

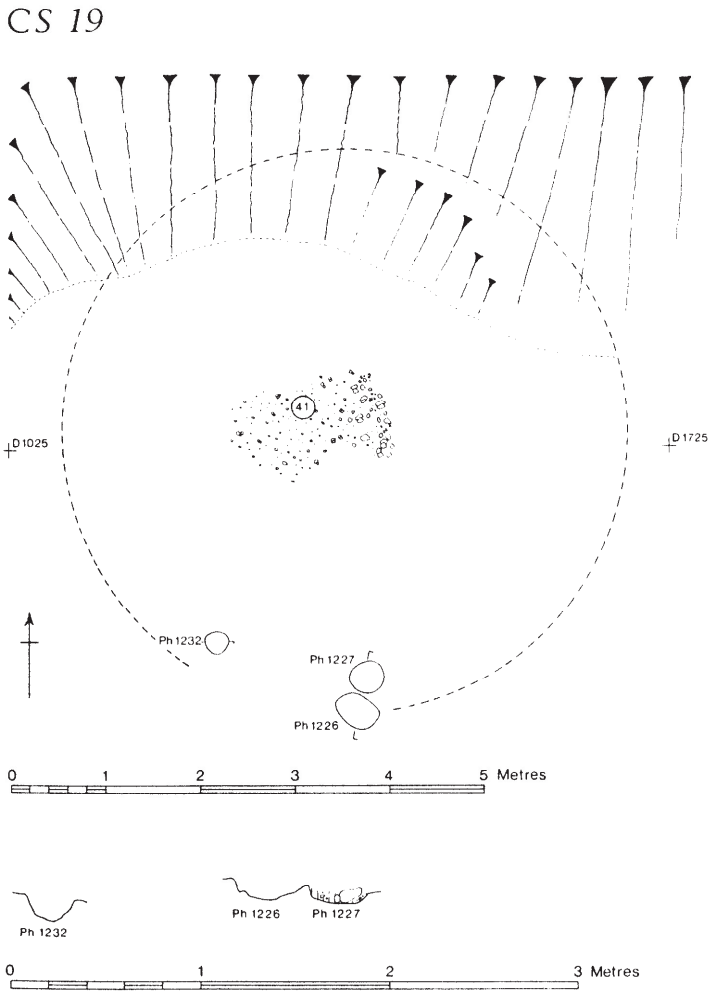


Fig 4.25

CS 20

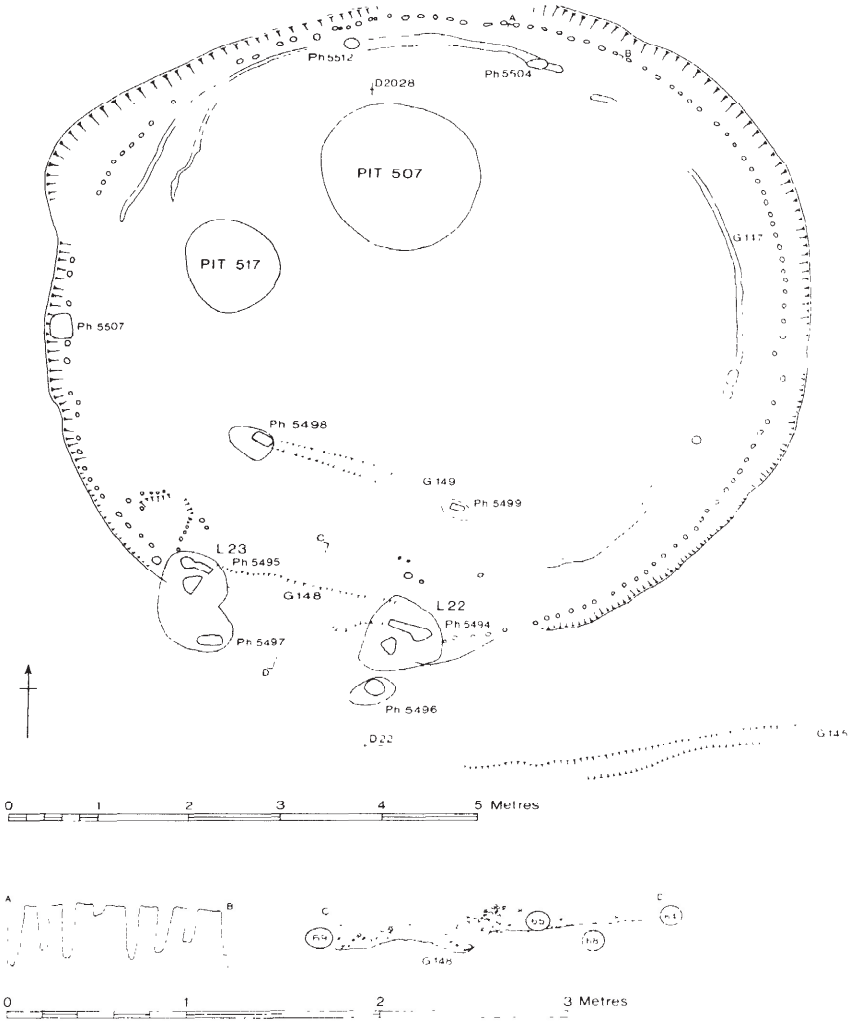


Fig 4.26

inner circle while the lower chalk (119) runs beneath both the inner and the outer, but this suggests only that the inner circle of stakes may have been standing when the floor was laid, the lower chalk being the pre-structure levelling. Between the chalk scarp and the outer circle a layer of shattered chalk accumulated (149) as the result of the weathering of the scarp edge. This layer could be shown to have developed against the outer wall and only later when both walls had been removed or had rotted to have spilled over the top of the silty soil (150) which developed on the upper floor.

The sequence, then, would seem to suggest that after the terrace had been prepared and layer 119 spread, the two concentric wall lines were built, the space between perhaps being filled with insulating material (p 58). Whilst the building was in use rubble accumulated against the south wall, the floor was relaid (113, 152), and the door frame reset. After abandonment silt formed on the floor. Finally the walls gave way and the chalky erosion rubble (149) spilled in.

CS18 possible circular building: 1973/5 (Fig 4.24)

This building is not represented by any distinct terracing but appears to have been constructed on a surface composed of overlapping tips of chalk rubble of which the uppermost (122, 126) are shown on Fig 4.24. No traces of the wall were found but slight differences in the texture of the chalk surface might indicate its position. The door frame is, however, well preserved. The two posts (phs 2201, 2200) are joined by a gully which presumably took a ground level door sill. It is possible that phs 2210 and 2202 may represent on earlier door.

The floor surface was sealed by an occupation layer (5) which in turn was covered with silt washed down from the rampart.

CS19 possible circular building: 1973/5 (Fig 4.25)

This number is ascribed to a location between CS18 and CS20 which might possibly have been occupied by a building. If so the only possible surviving traces were two

CS 20

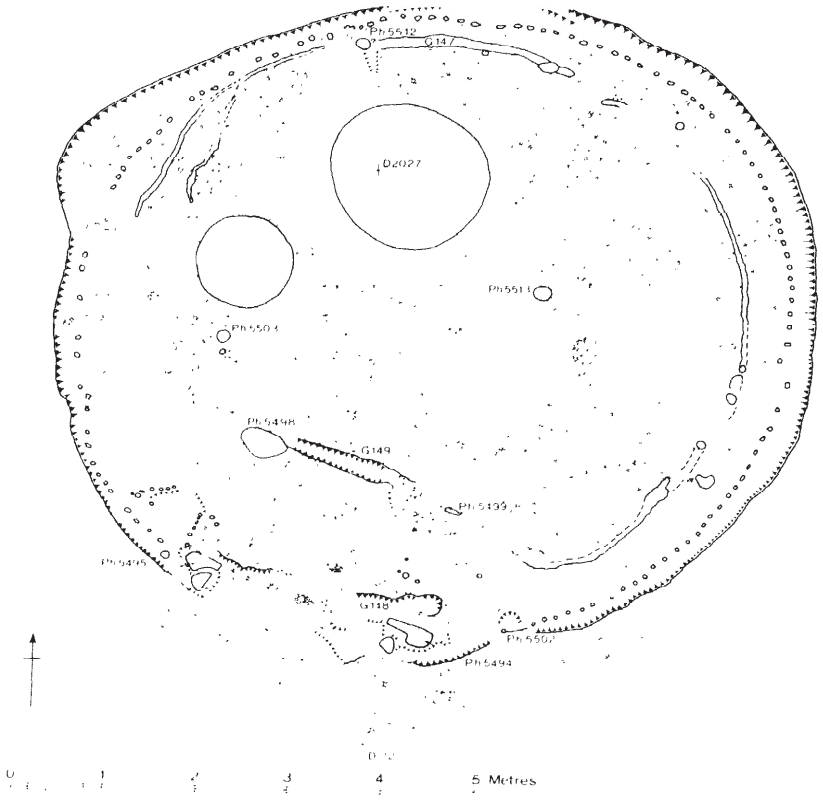


Fig 4.27

postholes, phs 1232 and 1227. The existence of the building must be allowed for but is totally unproven.

CS20 circular building: 1973/5 (Figs 4.26, 4.27, Pls 36-41)

Building CS20 occupied a circular terrace cut into the slope of the rampart (46) and lying on the silt in the quarry bottom (73). The building measured 8 m in diameter. Its wall was composed of stakes set closely together in a circle, the stakes being 100-150 mm apart. The door structure was well preserved and complex. The form of the original door frame is best appreciated in Fig 4.26. It consisted of six posts, three on each side of the entrance, set in two groups of post-pits, those on the left coalescing into one while those on the right were in two distinct holes. The posts were packed around with rammed chalk which ensured the accurate preservation of the shape of the timber after the organic material had rotted away (for further discussion, see p 58).

The outermost pair of posts was soon abandoned and removed before the lowest chalk rubble threshold (layers 68, 72) was laid. One possibility is that they functioned only in the actual process of building and were pulled out immediately the structure was complete and before the first threshold was laid. In support of this it might be remarked that no wear was noted on the surface of the silt below the lower threshold, implying that the chalk had been laid very soon after construction. The lower threshold was sealed by a thin layer of silt containing some occupation debris, 110 mm thick (layer 65), before an upper threshold (layer 64), also of rammed chalk, was laid.

Within the building, and aligned on the door, were two additional posts, phs 5498 and 5499, with a slot, G149, between them set in the chalk floor. It is possible that the feature represented a screen creating an inner porch for the house. The upper threshold (64) runs up to the edge of the slot showing that the structure had been erected by the time of the resurfacing of the threshold. Other inner features include a setting of stakeholes forming a 'cupboard' just inside the door to the left, and a discontinuous gully, G147, 50-100 mm wide and of equivalent depth cut into the hut floor and running discontinuously around the circumference of the building at a distance of between 50 and 600 mm from the wall. Several stakeholes and small postholes (phs 5504, 5512) along the line hint that it may have taken a screen of light material, though how such an inner skin functioned in relation to the wall is open to debate. It is highly unlikely that the slot represented an earlier or later wall replacing or replaced by the stake wall.

Two pits, PS07 and PS17, were open during the life of the structure and were not completely filled until the building had been removed or destroyed.

The hut was floored with a discontinuous layer of chalk rubble laid on the surface of the underlying silt or rampart. Where it lay above these large early pits (in the eastern part of the hut) it had subsided violently into the

CS 21

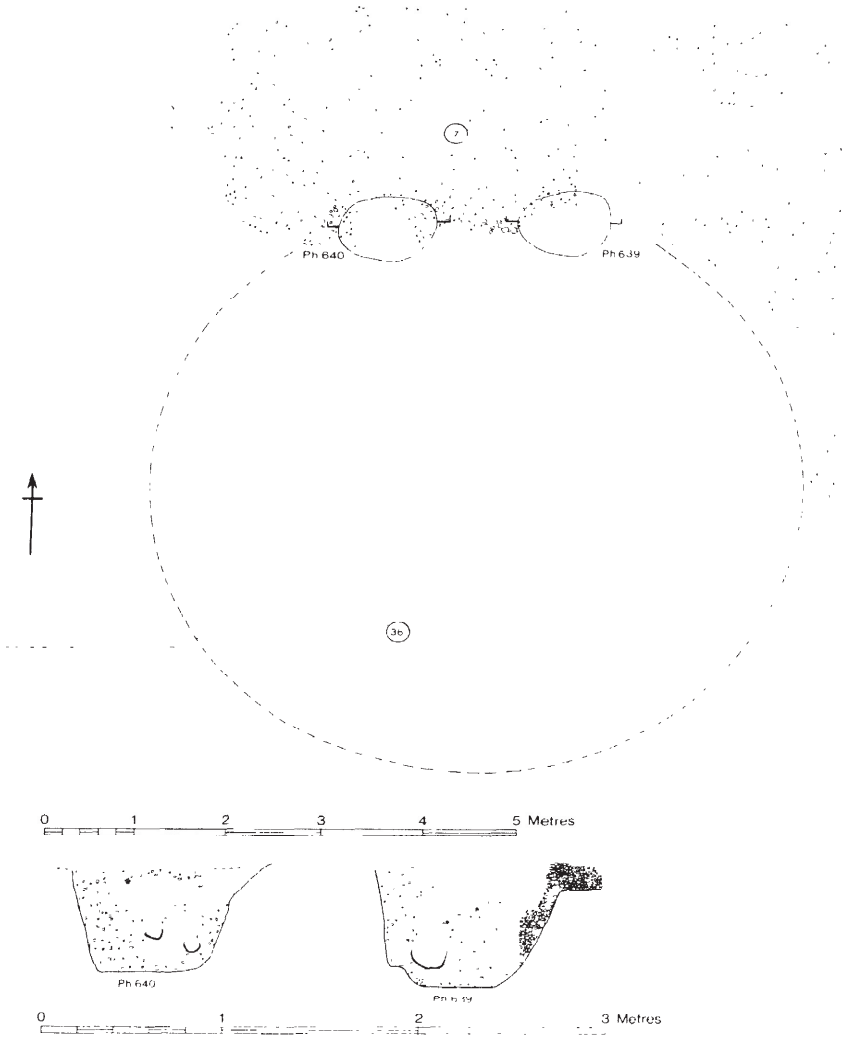


Fig 4.28

pit tops following the consolidation of their fills. In these areas tips of chalk and trampled occupation material (21, 45,48,49,79) occurred to some depth, filling the hollows.

The final occupation layer within the structure covered much of the floor to a depth varying from 10-100 mm (layers 7, 10, 13, 18). Postholes 5513 and 5503 would appear to be contemporary with the use of the building but their exact relationship to the occupation layer is in doubt.

The building was buried beneath silts washed in from the rampart and from the inside of the fort.

CS21 circular building: 1971 (Fig 4.28)

The existence of this house is tentatively proposed on the basis of two postholes, phs 640 and 639, of similar size and shape some 2 m apart which are similar to door-posts found elsewhere in the fort. The 'lower chalk' spread (layer 7) lies in front (ie uphill) of the posts and seals their packing but not the positions of the voids left by the vertical timbers. Thus the chalk could represent the consolidation of the ground surface in front of the door. Within the supposed hut is a discontinuous layer of trampled chalk (layer 36) which may represent a floor surface.

The relationship of the structure to pits P104 and P91 and to the postholes within is undefined.

Contemporary occupation layers outside the supposed structure included 1971 layers 20 and 41 and 1969 layer 11.

The occupation was sealed by silt layers (layer 47) of phase h (p 166).

CS22 circular building: 1969/71 (Fig 4.29)

The building was constructed on a terrace cut into the silt and chalk layers (layer 47) behind the rampart of phase h date (p 171). Its two door-posts, 2 m apart, were of similar proportion (phs 5536, 5543) and were joined by a

gully (G153) 250 mm wide and of equivalent depth dug to take a horizontal door sill. Outside the door was a threshold of rammed chalk rubble 150 mm thick laid up to the sill (layer 113). No trace of wall timbers survived but a curved slot (G152) representing the wall line was traced cut to a depth of 50 mm into the underlying chalk layers.

Within the building the floor was represented by a thin layer of chalk (1971 layer 18; layer 10) 20-50 mm thick which discontinuously sealed the surface of the underlying layers,

Soil containing occupation material accumulated in places on the floor surface (1971 layers 17, 9; 1969 layer 9).

The building was sealed by silt of phase j.

CS23 possible circular structure: 1972/3 (Fig 4.30)

The existence of CS23 as a circular house is debatable. It is indicated only by a pair of postholes, phs 1115 and 1155, of equivalent size set just over 1 m apart in such a position that, had they represented the door timbers of a house, it would have been centrally placed in a gully complex of roughly circular plan (gully complex 3). No stakeholes or more substantial timbers survive along any possible wall line but the suggested floor area would include a number of randomly placed posts.

4.2.2 Rectangular trench-built structures

Four rectangular trench-built structures were found close together in the centre of the fort (Fig 4.31). They differ significantly in structure. The largest, RS1, was composed of upright timbers set at intervals in a continuous foundation slot. How the superstructure should be reconstructed is uncertain but it would seem probable that the verticals, which were set in individual postholes cut deeper than the slot, provided a framework between which were fitted lighter partitions of wattle or plank work. Whether or not the building was roofed must remain undecided.

The other three structures (RS2, RS3, RS4) were built in a similar style to each other but to varying plans. Sufficient

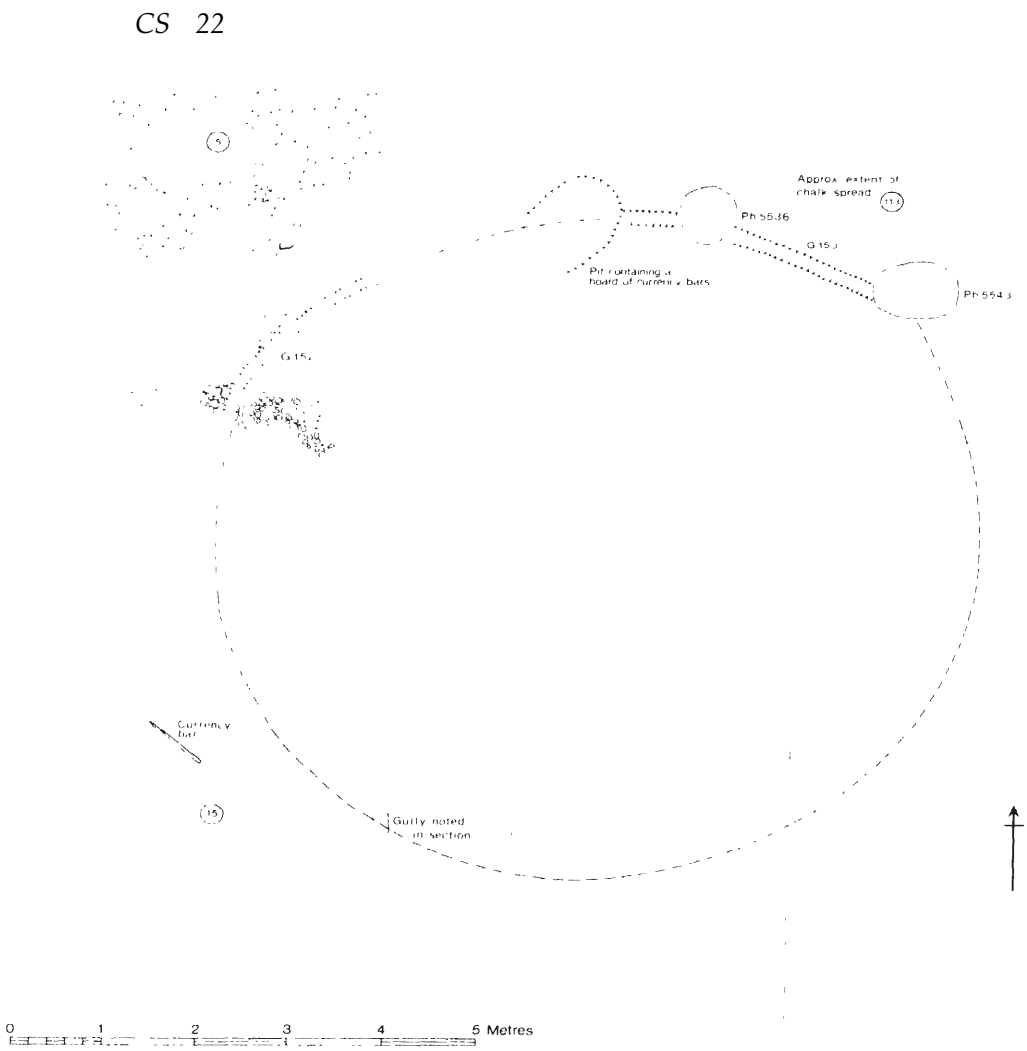


Fig 4.29

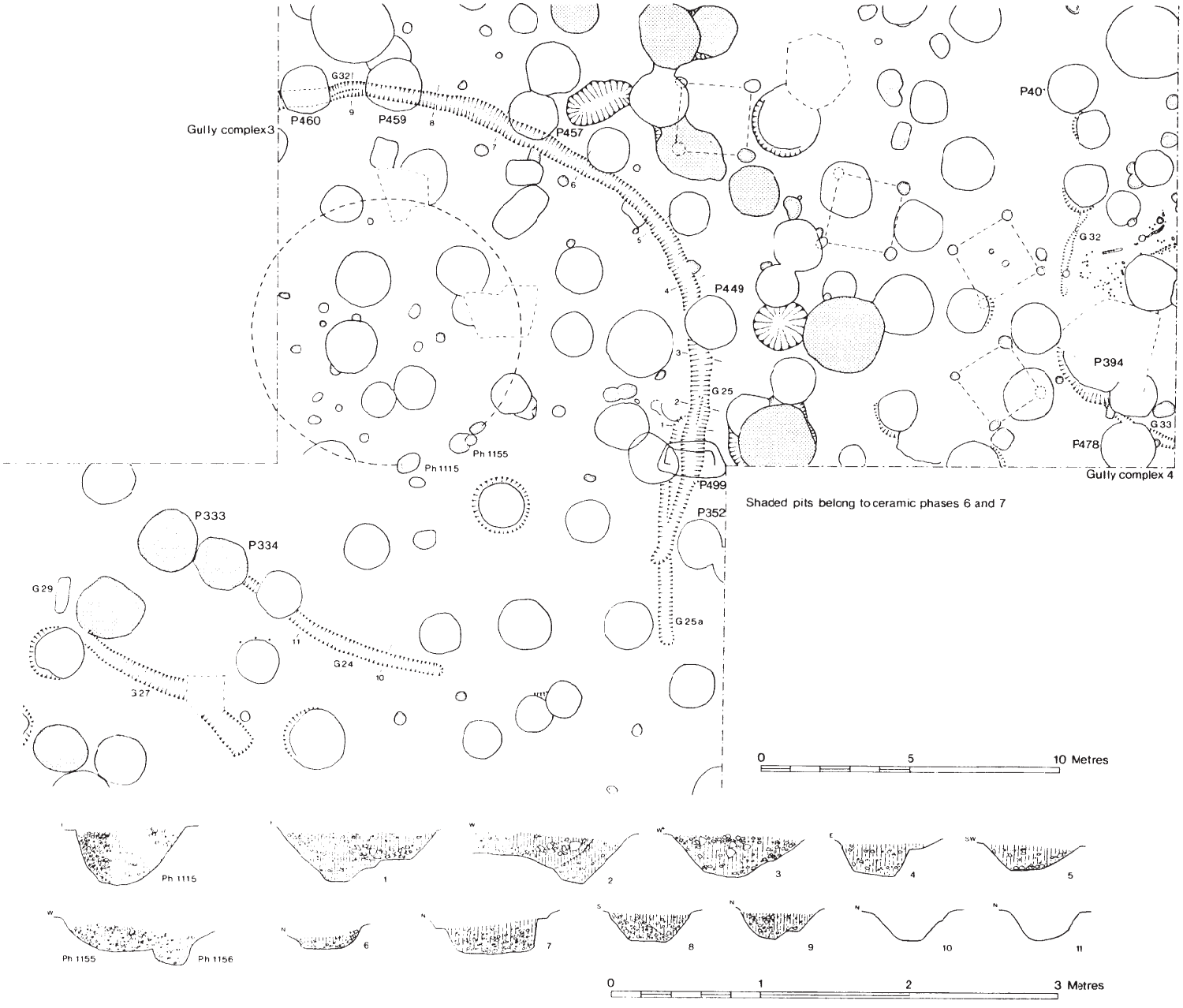

G32
P460
P459
P457
Gully complex3
P40
G32
P449
P394
G25
G33
P478
Ph 1155
Ph 1115
Gully complex 4
P499
P352
Shaded pits belong to ceramic phases 6 and 7
P333
P334
G29
G25a
G24
G27
0
5
10 Metres
Ph 1115
1
2
3
4
5
Ph 1155
Ph 1156
6
7
8
9
10
11
0
1
2
3 Metres

Fig 4.30

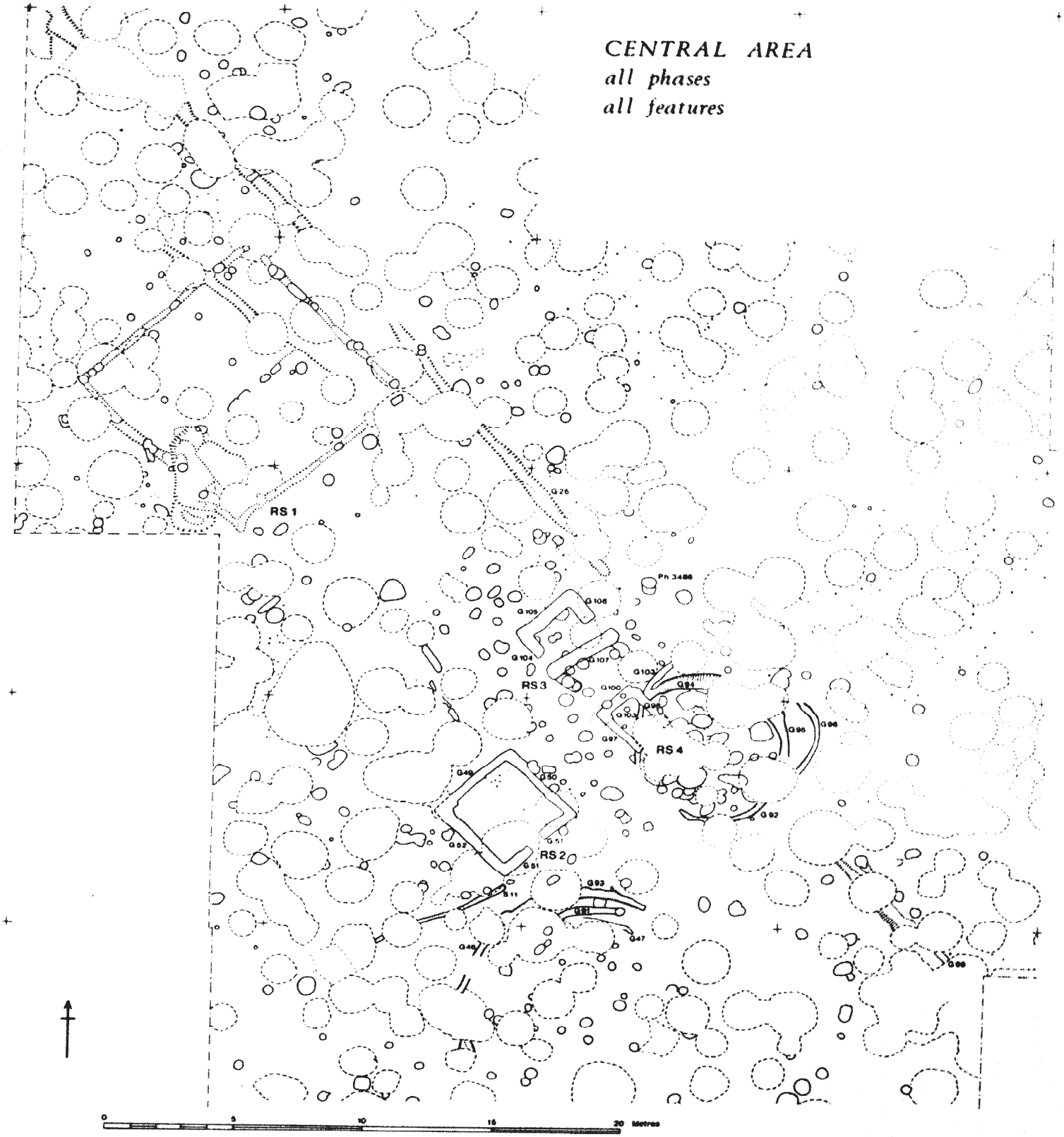
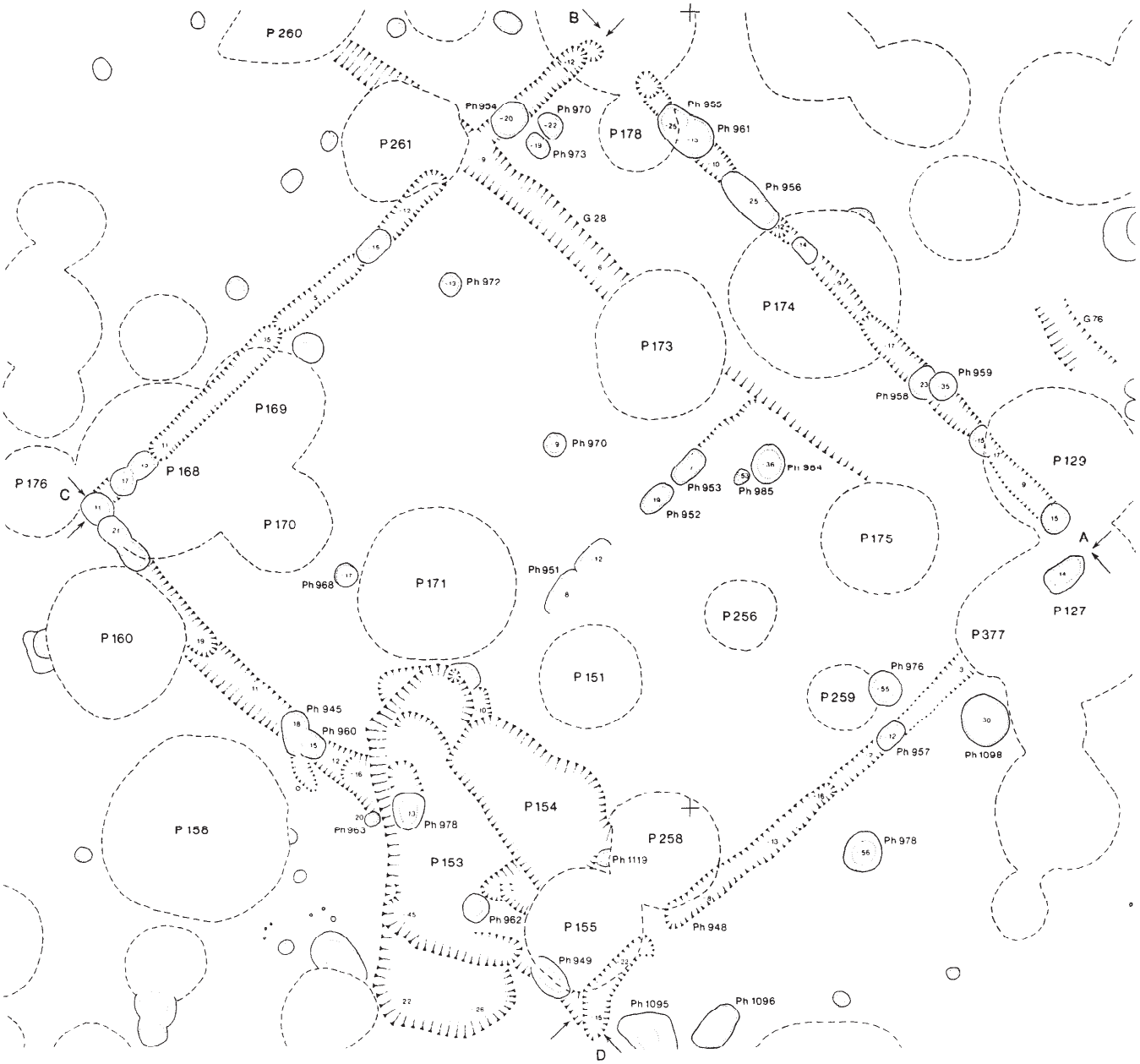
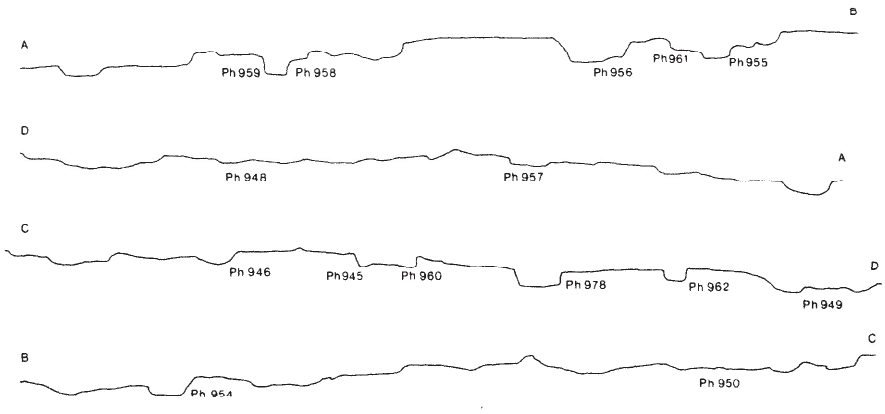


Fig 4.31 *The central part of the fort showing all Iron Age features. Dashed lines represent outlines of pits; dot and dashed lines indicate extent of unexcavated tree roots*

RS 1



Longitudinal profile of the trenches



0 1 2 3 4 5 Metres

Fig 4.32 Rectangular building 1

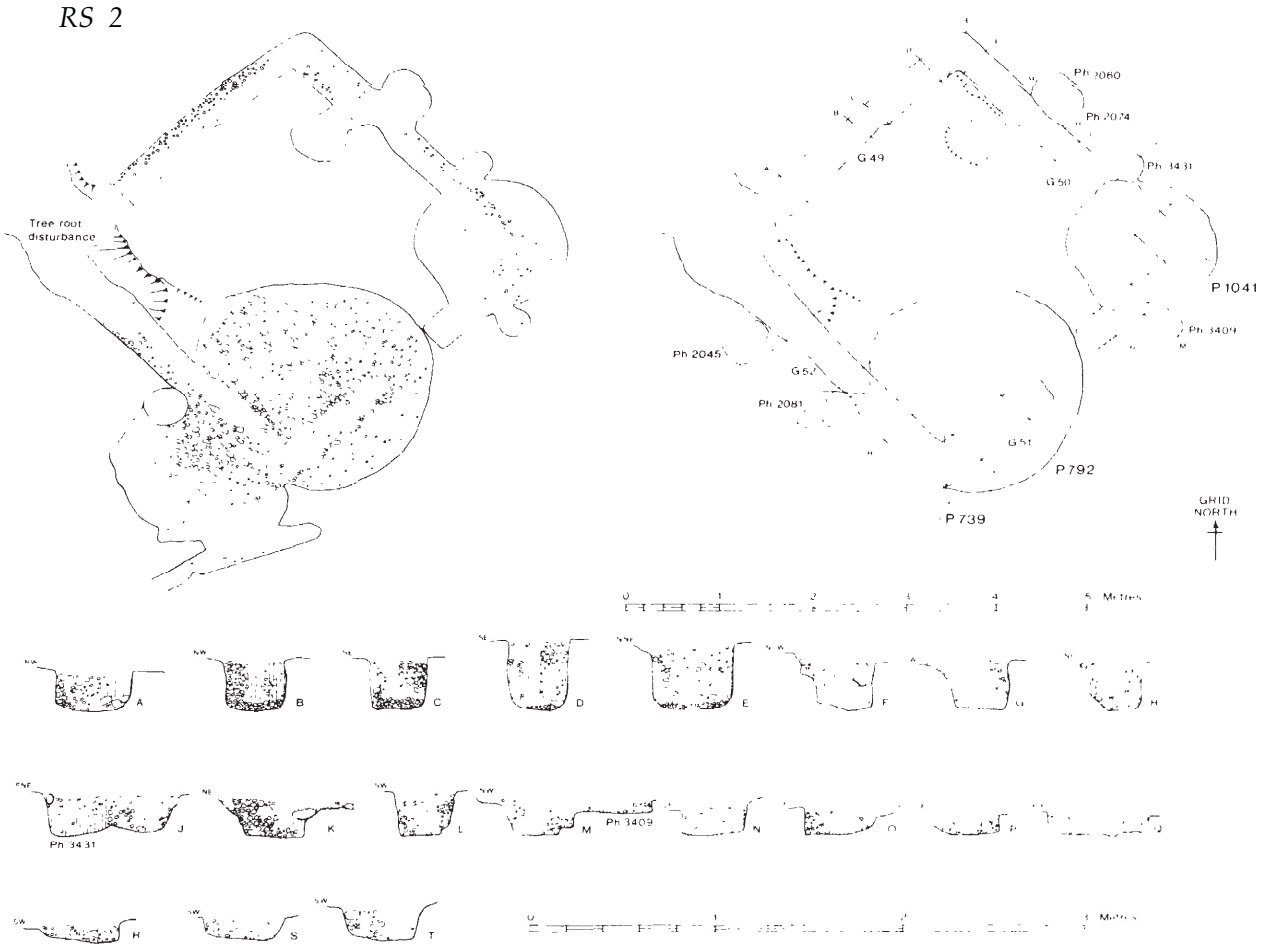


Fig 4.33 Rectangular building 2 before and after excavation

evidence survives to show that their continuous foundation trenches supported close-set upright timbers which, in the case of RS2, could be shown to average 150 mm thick. The walls of the others, though more disturbed, were of comparable thickness. The simple plans and limited structural detail inhibit informative attempts at reconstruction but it is not unlikely that the structures were roofed with shingles or thatch.

Building RS1: 1972 (Fig 4.32)

RS1 is a rectangular structure, measuring approximately 9 m by 8.8 m, its four sides being represented by shallow slots along the lines of which were set a number of postholes. The slots averaged in depth 100-120 mm below the surviving surface of the chalk. The postholes were usually deeper, between 150 and 250 mm. The form of the slots and their variation in depth are best appreciated by reference to Fig 4.32 from which it will be evident that the distinction between posthole and slot is not always clear cut. The distinction made on the drawing is to some extent arbitrary.

The simplest explanation of the surviving evidence is that the slot served as a bedding trench for a fence of upright timbers some of which were more deeply bedded than others. There is a degree of regularity about the spacing of the postholes which suggests that the deeper posts may have been deliberately set at intervals to give support to the structure. The tilling of the slots and postholes was indistinguishable, consisting of brown soil mixed with small chalk lumps and occasional small flints. No trace of timber uprights was found in spite of a careful search. Any distinctions between packing and post could have been disturbed by the uprooting of the timbers, subsequent root action, or a combination of processes of this kind.

There is little more that can be said of the structure; it may have been merely a fenced enclosure but it could have been roofed in some way. It remains a possibility that the row of posts (951, 952, 953), which appears to divide the structure, may in some way have served as internal roof supports but there can be no proof of this or indeed of their contemporaneity with the rest of the building. No other features, inside or out, appear to be relevant to the structure.

The only direct dating evidence for the building is a few scraps of intermediate Iron Age pottery from the slots but in several places the slots are in a definable relationship to pits. With the exception of two pits, P153 and P160, the slots and postholes can be shown to cut through the fillings of the pits. In the case of the two exceptions, while precise evidence of the relationship could not be traced, there was

nothing to suggest that the pits need necessarily be later. All of the pits (including P153 and P160) produced pottery assignable to the early and middle phases of occupation (ie *c* 600-300). Thus, all that can be safely said is that the structure post-dates *c* 300 BC. Its siting does, however, appear to relate to aspects of the Iron Age plan: it is aligned with buildings RS2,3, and 4 and with the major boundary gully G76 which bisects the fort. It is also set astride the pathway left between the pits (p 187). Both factors may be fortuitous but together they suggest a date in the latter part of the Iron Age. The relationship of the structure to gully 28 could not be directly observed but was demonstrated by the fact that G28 was cut by P261 which was in turn cut by one of the building slots.

Building RS2: 1974/8 (Fig 4.33, Pls 54-56)

RS2 is a rectangular building measuring externally 4 m by 4 m. The building is defined by a regularly-cut foundation trench (G49, G50, G51, G52) continuous around all four sides except for a gap of 0.65 m, presumably representing the position of a doorway set in the centre of the side facing south-east. The foundation trench averages 0.35 m wide and 0.30 m deep. Apart from the disturbance of the west corner by tree roots and burrowing animals, the trench and its filling were well preserved even where it cut through earlier features.

The plan, drawn before the slots were excavated, showed quite clearly a difference in the filling between a zone of brown soil which lay against the inside of the slot and a zone of tightly-packed broken chalk (Fig 4.33). Careful dissection of the filling showed that a vertical junction existed between the two, the most likely implication being that the chalk was the packing between the trench edge and the bases of timbers and the original positions of these are represented now by the brown soil. Since no significant variation could be observed along the length of the slot it can be assumed that the timberwork was of even thickness averaging 150 mm. The simplest reconstruction, based on these observations, would be to suppose that the walls of the building were of thick planks placed vertically side by side. How the corners were treated and the nature of the door-posts remains

RS 3 and RS 4

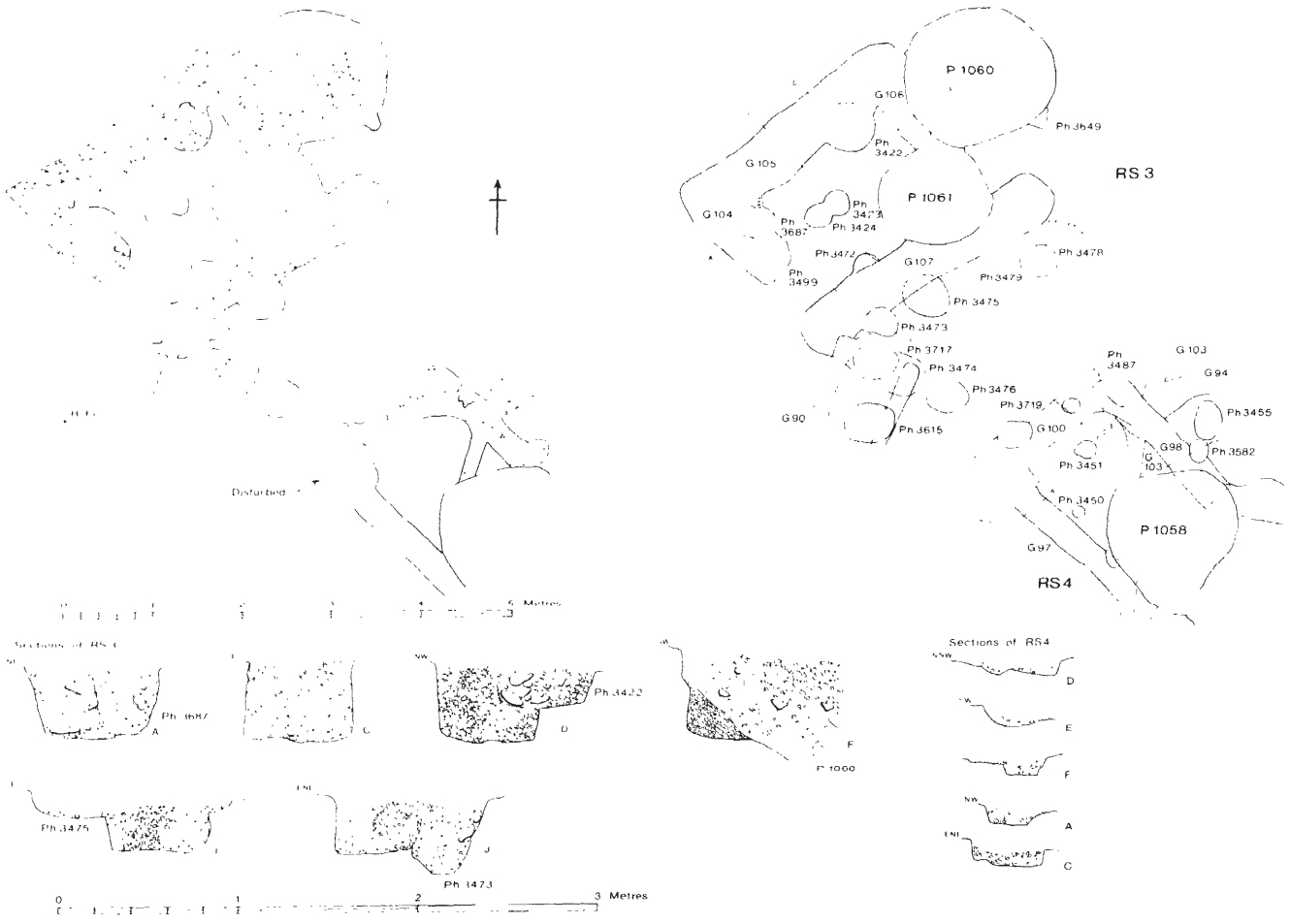


Fig 4.34 Rectangular buildings 3 and 4 before and after excavation

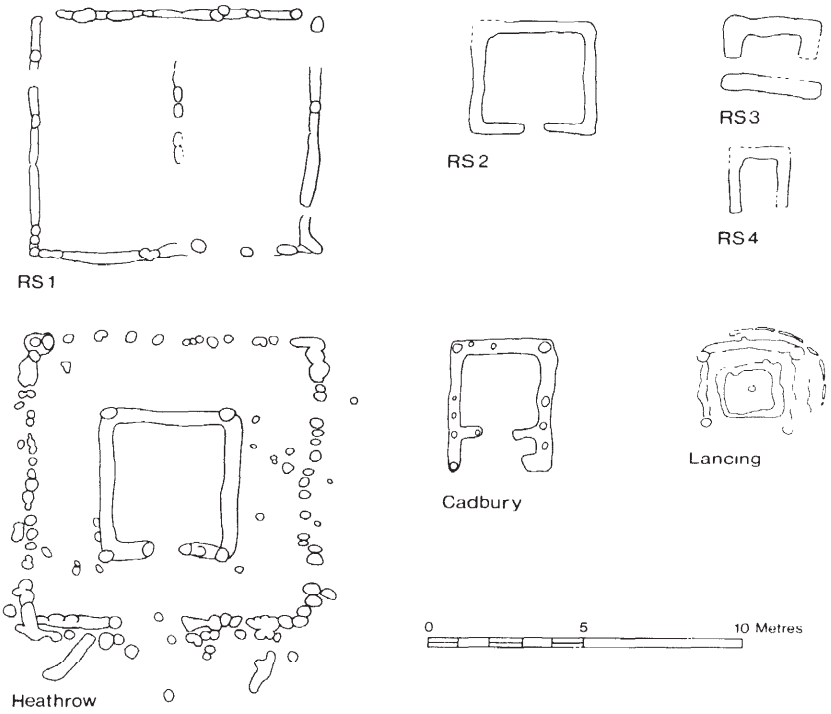


Fig 4.35 Comparative plans of rectangular buildings which possibly have a religious function

uncertain, as does the form of roofing, always assuming that the building was roofed. The structure defined by the foundation trenches lies in an area in which postholes are numerous. No regular pattern can, however, be detected which might suggest contemporaneity with the building.

Building RS2 can be shown to be later than all the other features with which it is physically associated with the exception of the recent tree root hole over its western corner. The three pits which precede it (P792, P793, P1041) contain comparatively little pottery but all of it would be in place in an early to middle phase context. The typologically latest pottery, from P1041, includes sherds of which the latest is typical of ceramic phase 6. A few sherds have been recovered from the slot itself, the latest of which are typical of the late saucepan pot assemblage of ceramic phases 6-7. Thus, while the building must post-date about 400 BC, and could be of 2nd or early 1st century date, there is no direct archaeological evidence to prove that it is not later. Consideration of its location in relation to other structures, discussed in detail below (p 187), would, however, argue for a pre-Roman date.

Building RS3: 1974/8 (Fig 4.34, Pl 53)

Building RS3 consists of two separate trenches, a trench (G105) with two projecting ends (G104, G106) and a simple trench (G107) parallel to it. While it is possible that G107 also had a projection at its southern end this feature is composed of two postholes chronologically and structurally unrelated to the building. The overall size of the building is 3.2 m by 2.8 m. The slots average 0-6 m wide and 0.5 m deep. Later pits and postholes have removed substantial parts of the trenches and roots have caused some disturbance, but sufficient survives to show that some distinction can be made between dense chalk rubble packing and a more soily fill which may represent the position of vertical timber boarding. The details of how, if at all, timbers were arranged in the two short trenches (G104, G106), have been totally obscured by later pits and postholes.

A few sherds of early sandy wares were found in the trenches. Similar pottery came from the two pits, P1060 and P1061, both of which cut through the structure. This observation, together with the fact that the trenches were also cut by postholes (phs 3422, 3687, 3475), shows that the building came early in the Iron Age sequence. The possible significance of its siting in relation to other structures is considered in detail below (p 187).

Building RS4: 1974/8 (Fig 4.34)

RS4 is a rectangular building consisting of three trenches (G97, G98, G100) arranged in an open-ended square measuring externally 2.25 m by 2 m. The trenches average 0.3-0.4 m wide and 0.1 m deep. Some differentiation can be seen in the plan of the filling between a more chalky packing and a filling comprised largely of soil which could represent the position of voids once occupied by vertical timbers. The distinction is difficult to trace vertically because of root disturbance in the shallow filling. Much of the western corner has been destroyed by animal burrows.

No pottery was found in the trenches or in the two gullies, G103 and G94, through which they were cut. The trenches were, in turn, cut into by several postholes and by one pit, P1058, which contained pottery equivalent to ceramic phase 5. The structure is therefore of Iron Age date.

The Danebury buildings can be compared in plan to the 'temple' found at Heathrow (Grimes 1948; 1961, fig 7), the 'porched shrine' at South Cadbury (Alcock 1972,

pl 49), and the 'shrine' discovered on Lancing Down (Bedwin 1981, fig 3). The comparative plans (Fig 4.35) are sufficient to emphasize general points of similarity but in the absence of definitive reports on the first two sites mentioned, detailed comparisons are not possible. There does however appear to be some structural variation, since at both South Cadbury and Heathrow substantial vertical timbers, spaced at intervals, formed the main frame of the building while at Lancing corner posts are possible. This contrasts with the Danebury structures (RS2, RS3) in which there is clear evidence for the walls being composed of narrower timbers, probably thick planks, set side by side in the foundation trench.

The building at Heathrow was composed of two concentric structures, the outer being built of small posts set in individual postholes not unlike building RS1 at Danebury. Although the Heathrow structure has been regarded as being of one period, the possibility exists that it is in fact two superimposed structures. Strict interpretation of the excavator's plan (Grimes 1948, fig 3) would in fact require the inner 'cella' to be later than the outer 'ambulatory'. The suggestion must however remain conjectural until the site is published in full. Nor can we resolve the problem surrounding the dating of the Heathrow structures until the evidence is available. The Lancing 'shrine' appears to be a square within a square but there is no direct proof of the absolute contemporaneity of the two elements. A late pre-Roman Iron Age date is suggested. The South Cadbury building is also assigned to the last decades of the pre-Roman Iron Age or the earliest years after the conquest.

The similarities of the buildings on all four sites is indicative of a common function. The religious connotations noted at Lancing and South Cadbury together with the likeness of the Heathrow structure to later Romano-Celtic temples supports the idea that they were all shrines.

4.2.3 Rectangular post-built structures (Pls 18, 28, 29, 49)

by Cynthia Poole

Rectangular post-built structures are common at Danebury and have been recognized on many other Iron Age sites in the south of England. The literature dealing with these structures (Bersu 1940; Stead 1968 ; Wainwright 1968; 1970; Ellison & Drewett 1971; Stanford 1974; 1981) suggests a variety of functions including shrines, towers for excarnation, watch towers, houses, and granaries.

Before considering function and construction it is necessary to examine the structures as they appear on the ground. The first problem is recognition, Occasionally they may be clearly seen during excavation, either well-preserved in stratigraphy, eg 8 S1 (P1 49, Fig 4.42) or where features are sparse and the structures can be easily observed, eg PS15 (Fig 4.53). In general, however, it has been necessary to study the plans for each year at 1: 100 scale and subjectively to pick out those groupings of postholes which appear to make a likely structure. These have then been examined on the original site plans (1:20 scale) in conjunction with the drawn posthole sections or profiles. If these plans show the postholes as being similar in shape and size, and the structure as having reasonably right-angled corners, and the sections show the postholes to be alike in fill, then the structure has been accepted as probably genuine. Fourteen structures have an internal angle that is not a right-angle but which varies from 75°-96°; these have been accepted as the other criteria were fulfilled. A small number of the total shown on the plan (Fig 4.36) are uncertain and are noted as such on the microfiche descriptions (fiches 2 and 3).

The process of identification is not too difficult where the density of postholes is low, as in the 1972/1973 areas, or where alignments of structures can be seen along the roadways, as in the southern half of the site. However, where there is a great density of features, for example in the 1974 area, it is very difficult to pick out the post structures and it is probable that a number have been missed. In this respect computers may be of use in searching plans and identifying potential groupings of postholes, which can then be examined in more detail manually (such a programme will be presented in a later volume).

A total of 143 post structures has been recognized. Of these, 32 are illustrated here in detail, whilst the remainder appear on microfiche (fiches 2 and 3). Those chosen for illustration in this volume include all post structures found in the deep stratigraphy together with such additional examples as are necessary to illustrate the full variety of types found on the site.

The post structures can be divided into types using the following criteria: (i) number of postholes; (ii) size of structure; (iii) diameter of postholes; (iv) profile of postholes.

The numbers of posts used in the structures are 2,4,5,6, and 9. In an attempt to make further subdivision less subjective, all except the two-post structures were subjected to two simple statistical tests to establish whether there was a significant relationship between structure size, posthole diameter, and posthole profile. Both tests were done using contingency tables and the chi-square test (Figs 4.39-4.41; fiche 2, frames A3-4). The result for structure size compared to posthole diameter proved to be very significant at 99% confidence. This indicates that there is a definite relationship between structure size and posthole size, and that in general the posthole diameter increases with the larger structures.

The second test was to assess any relationship between structure size and posthole profile. The profiles were measured as a ratio by dividing posthole depth by diameter resulting in a range of figures from O-15-1.36 PPF (Posthole Profile Factor). (0.25 means the diameter is four times the depth, 1.0 means depth = diameter). The result at 99% confidence could not be shown to be significant, but this does not prove that there is no relationship between the two factors.

It was decided to divide the post structures into different types according to structure size and posthole diameter. Profile has also been used for some subdivisions, but may not necessarily be valid and has been discussed in more detail where necessary. Eleven structure types have been differentiated, designated A-L, and are described below. Fig 4.37 schematically illustrates the different types; their location is given in Fig 4.38.

Small four-post structures (Fig 4.39)

Type E

Type E varies in size from l.5 m square to 3.6 m square, with the majority falling between 2 m and 3 m. Most are square, but a few are rectangular with variation in the length of the sides between 0.1 m and 0.4 m. The posthole diameters differ between 300 and 500 mm with a small number outside this range from 170-720 mm. The PPF varies from 0.3 to 0.9. Most of the profiles have flat bases and vertical or straight steeply-angled sides, eg PS23. The majority of type E are of one phase only, though a small number have been recut, eg PS127/8 which



Fig 4.36 Plan showing the Location of all rectangular post-built structures

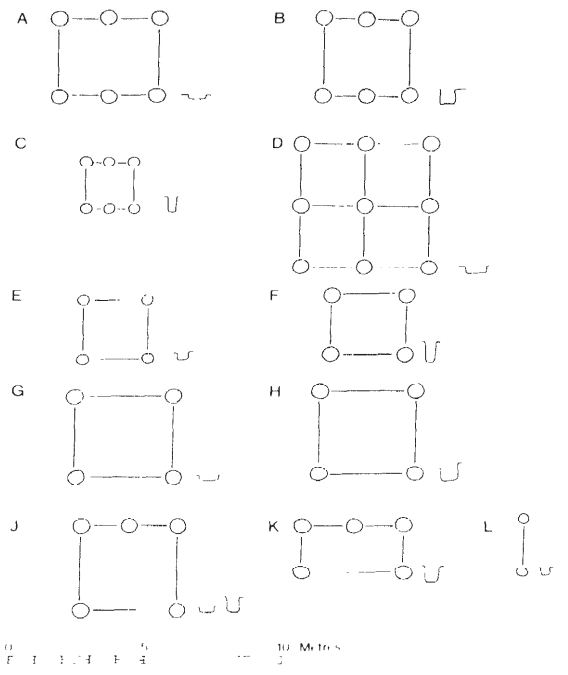


Fig 4.37 Diagrammatic plans of the various types of post-built structures

has two phases. PS46 is the only example recut twice, with three phases. PS58 is the only example of type E which has postholes additional to its corner posts, in this case one each along two sides. There is a total of 37 examples of type E of which five are illustrated here: PS19, PS46, PS52, PS53, and PS58.

Type F

This type ranges from 1.6-3·1 m square and all are square or virtually so. The posthole diameters are mostly 300-500 mm with a few examples outside ranging from 240-630 mm. Thus these structures cannot be differentiated from type E on their size or posthole diameter. The distinguishing factor is the posthole profile, which in type F is deeper than it is wide, having a PPF from 0.74 to 1.42, and posthole depths up to 750 mm. The profiles are flat-bottomed, with vertical or near-vertical sides.

It seems unlikely that this difference in posthole depth between types E and F is due to erosion since the two types occur in close proximity. Thus, they may be considered different types. There are eleven examples of type F of which PS15 and PS67 are illustrated.

Small six-post structures (Fig 4.39)

Type C

There is only one example of this type, PS114. It measures 2·0 m square and has postholes measuring 420-500 mm in diameter and 450-700 mm deep (PPF 1.25). The structure size, posthole diameter, and profile are comparable to type F, the only difference being the number of postholes.

Large four-post structures

Type G

These structures are square or only slightly rectangular, ranging in size from 2.6-4-0 m. The postholes vary in diameter from 420-920 mm but the majority fall between 550 and 770 mm. They are characterized by their shallowness, from 30-350 mm, which results in a low PPF from 0·15-0.46. A total of twenty has been recorded, of which PS34, PS45 and PS54 are illustrated.

Type H

This type ranges in size from 2·2 m to 4 m, but the largest number are 3·0-3·2 m. They are generally square but include several rectangular structures with the sides varying between 0.1 and 0·5 m in length. The postholes measure 500-920 mm in diameter, with most clustering between 600 and 800 mm. The depths vary between 50 and 720 mm but the majority are greater than 250 mm resulting in a PPF of 0·5-1·0. In general the posthole sections appear massive.

A few are partially surrounded by gullies. These gullies mostly occur in association with structures in the deep stratigraphy on the northern side of the site, eg PS3 and PS8. One of the most likely explanations is that they consititute drainage gullies, since these structures are sited in low-lying positions at the base of a slope (steeper on this side than elsewhere in the fort), where rainwater could easily build up behind the rampart. There are, however, other examples, such as PS13, close to the highest point of the site, where a drainage gully would seem unnecessary; this example is discussed further below. PS85 may be associated with G12 on the southern edge of the site. The gully is too small to be for drainage and, as it is associated with small posts, it may have held some sort of fence.

A total of 24 examples is recorded, of which the following are illustrated: PS3, PS8, PSl0, PSll, PS12, PS13/72.

Types G and H (Fig 4.40) can be differentiated only by reference to profile, as structure size and posthole diameter cover the same range in both types. There is a strong possibility that the difference in posthole depth is due to erosion. All the large four-post structures in the stratified deposits, or adjacent areas close to the ramparts, are of type H. That is, all type Hoccur in areas that would have been protected by an accumulation of soil. All the type G structures occur in the interior away from the ramparts, interspersed with a few of the shallowest examples of type A. Thus there would appear to be a good case for difference in depth being due to erosion.

Type J

This type is classified as a four-poster as the structures are basically similar to types G and H, and have little in common with type K. They range in size from 2·8-3·8 m, with posthole diameters between 500 mm and 900 mm and depths from 260 mm to 990 mm. (Two compare to type G and five to type H.) The difference between these and the other large four-post structures is that type J has an additional post along one of the sides. Usually, but not always precisely, the extra post is placed halfway along one side. The similarity, in plan, profile, and fill to the main postholes suggests that it was part of the initial construction and not a later attempt to prop up a collapsing wall. One structure, PS4, has two extra postholes, both of which seem to be part of the original structure. There are seven examples, of which PS4, PS5, and PS6 are illustrated.

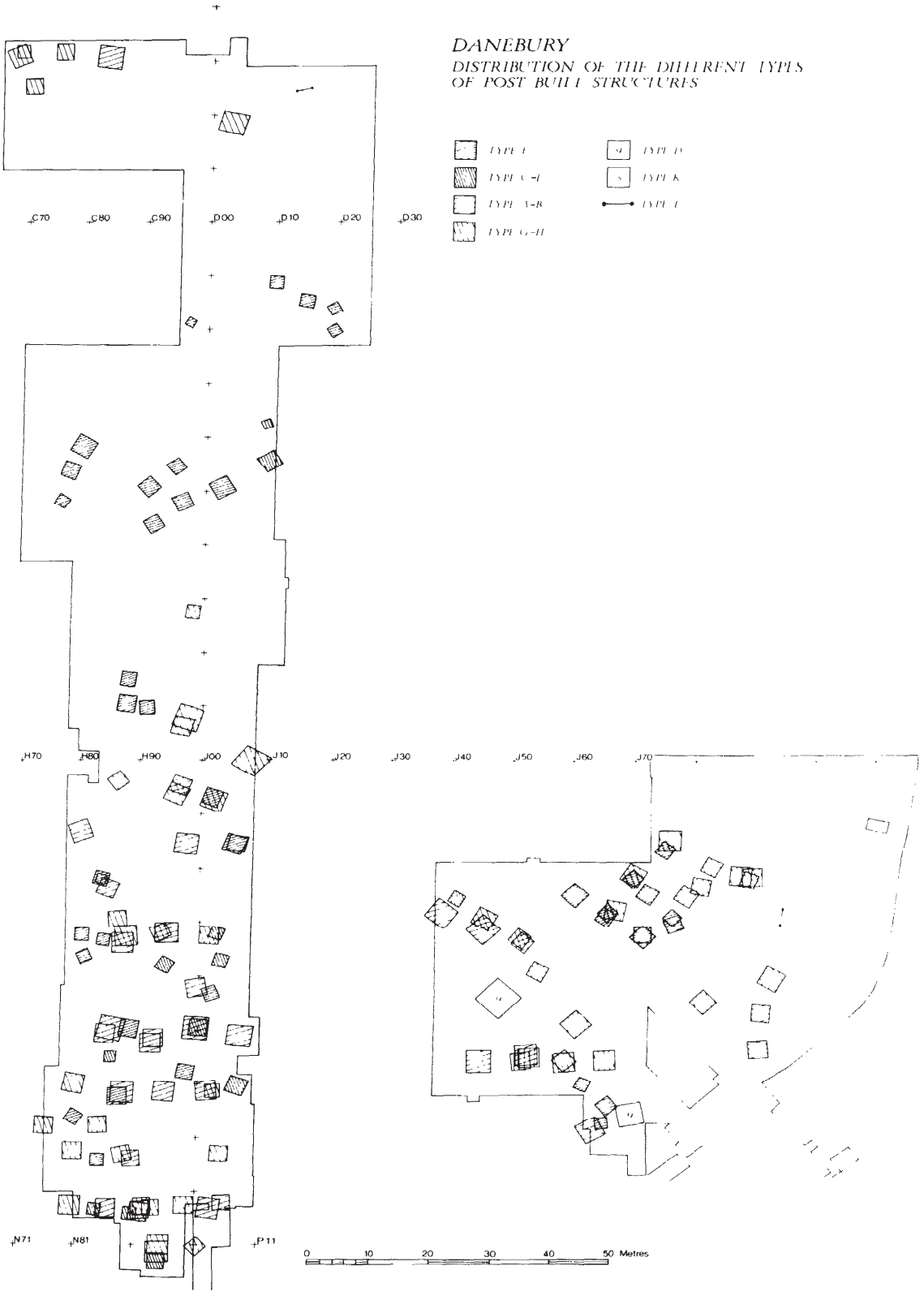


Fig 4.38 Plan showing the location of the different types of post-built structures

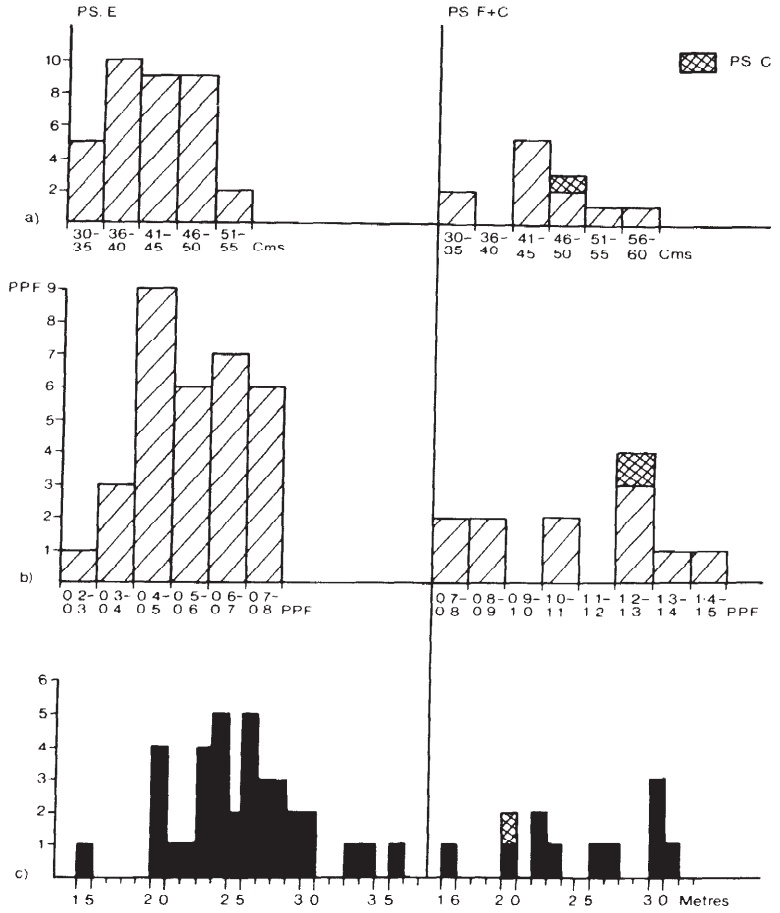


Fig 4.39 Histogram: details of post structures C, E, and F: (a) range of posthole diameters; (b) range of PPF ratios; (c) size range in metres

Large six-post structures

Types A and B (Fig 4.41)

These structures are between 3·0 and 4·0 m in size and include those both square and rectangular in plan. The postholes are all quite broad, between 500 and 900 mm, and in general the wider postholes coincide with the larger structures. The depths vary from 50-770 mm. The six-posters were divided into two types on the basis of posthole profile, A and B being equivalent to G and H respectively. The posthole diameter and profile factor come within the same range in types A and G, and in B and H.

There are a few variants in which, instead of digging six individual postholes, two gullies were dug and three posts placed along each, eg PS103.

If the structures were not square the middle posts were always placed on the longer sides. Where six-post structures are aligned along roads, a side with three posts always faces on to the road. There are fifteen examples of type A and eighteen of type B, of which PS7, PS33, PS35, PS39/40, PS59, PS61, PS65, PSl00, and PS103 are illustrated.

As with types G and H the differentiation of the two types of six-post structure is probably the result of erosion, as all type B occur close to or in the stratified deposits near the ramparts, while type A occurs further into the interior, coinciding with the distribution of type G.

Large five-post structure

Type K

Only one example of this type, PS1, has been found in the stratified layers excavated in 1978. It is rectangular, measuring 4 m by 2 m, with the fifth posthole on its north long side. All the postholes are similar in plan, size, profile, and fill. They measure 600-800 mm in diameter and 400-500 mm deep. The voids showed very clearly for all the four corner posts, measuring 320-360 mm wide, while the fifth posthole measured 240 by 120 mm and appeared in plan to contain two small posts 120 mm in diameter.

Large nine-post structures

Type D

There are two examples of this type measuring 4 m and 5 m. They are both square and all intermediate postholes are equidistant from the outer ones. The smaller structure, PS49, is very similar to type B structures, having postholes 600-900 mm wide and up to 660 mm deep. The larger structure. PS37, has smaller postholes, 480-730 mm wide but only 190-320 mm deep. PS49, however, occurs close to the rampart, whereas PS37 is situated further into the interior. PS37 is illustrated.

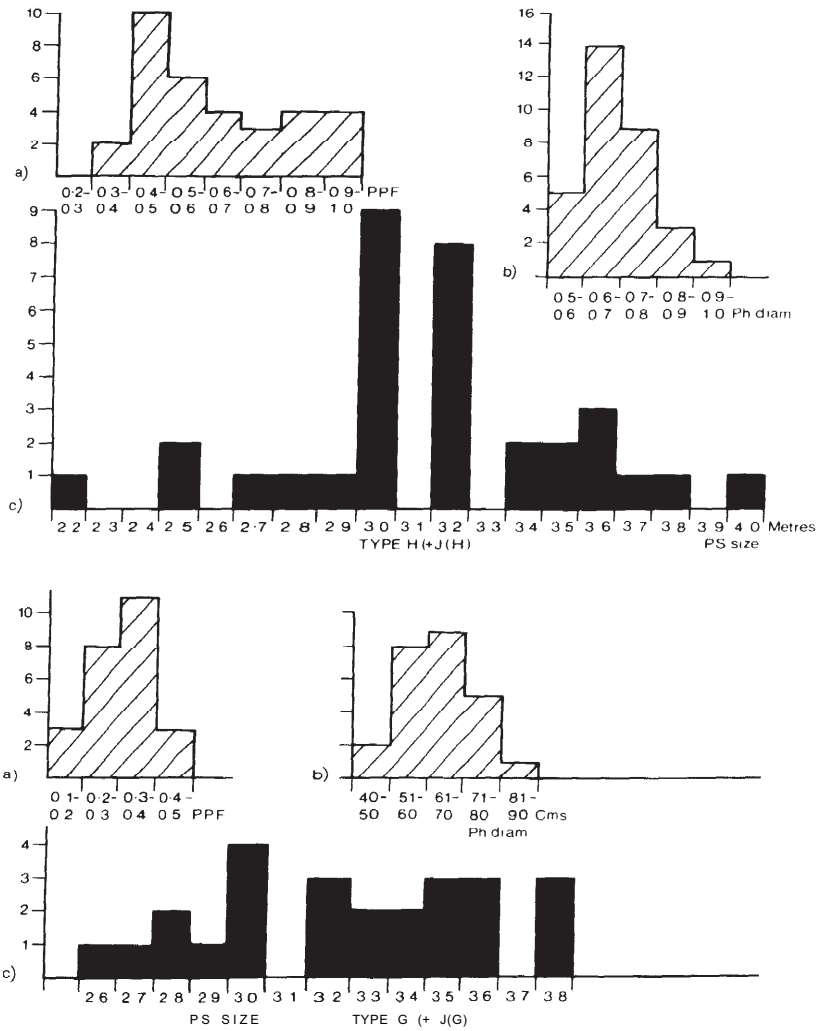


Fig 4.40 Histogram: details of post structures G and H: (a) range of PPF ratios; (b) range of posthole diameters; (c) size range in metres

Two-post structures

Type L

Two-post structures have been recognized only where other features are sparse; they may be numerous, but are difficult to recognize where there is a great density of features. Moreover, where numbers of pits have destroyed large areas of the ground surface, half of a four-post structure may be mistaken for a two-poster. The four recognized are 2·2 m-3·0 m apart and have postholes 300-500 mm wide, which are all very shallow, 70-220 mm deep. PS9, in the deep stratified deposits at the north of the site, has been recut twice and is associated with two gullies, which may be for drainage, comparable with those of PS6 and PS8. PS9 is illustrated.

Discussion (Fig 4.38)

The post structures have been divided into small and large on the basis of structure size and posthole size, resulting in some overlap of types and sizes. The small structures are scattered across the site in a seemingly random fashion, though, in the northern part of the site, they appear to have been built in rows aligned in an approximate north-east-south-west direction. However, further south, some of the structures give the impression of being aligned along the roads, eg PS114, PS83, and PS30, whilst others are in the middle of later road lines, eg PS46, PS108, and PS115. These small structures appear to date from the early phase of occupation, ceramic phase l-3 (p 193). Most of the small structures are on a different alignment to the large structures, but the few aligned on the roads may suggest that some small structures were still being built when the road system was first coming into use. The main road between the east and west entrances probably functioned throughout the life of the fort and it is reasonable to expect both early and late structures to be built along it.

The large post structures are mostly confined to the southern half of the site and are generally aligned in rows along the main road and side streets. There were also a

small number in the stratified deposits in the lee of the rampart on the north side of the site. Many of the large structures were replaced on the same spot-two or three times, producing a-complexity of postholes that is hard to separate into individual structures, eg PS39/40. Sometimes the structures were replaced to one side and enlarged, eg PS41 to PS42 (which changed from a four-post to a six-post structure). Though one may feel there should be a natural progression, from the four-post to the six-post structures this is not always the case: PS98, a fairly small type G, can be shown, from the intercutting of the postholes, to be later than PS97 of type B.

Where possible the actual post voids have been measured, As it has not always been possible to plan the voids, most measurements are from sections which h are not necessarily across the centre of the void. The results indicate that the small structures have oosts measuring between 120 and 370 mm, but mostly 120-250 mm: while the large structures have voids between 120 and 600 mm, most falling between 200 and 450 mm. Thus the general increase in posthole diameter that has been observed from small to large structures corresponds with an increase in void size.

Comparable post-built structures have been reported from a number of Iron Age sites. In general they can be divided into small four-&t structures. comparable to Danebury types E and F, and large four-post structures, comparable to types G, H, and J. The examples of large post structures are confined to the Herefordshire hillforts of Credenhill, Croft Ambrey, and Midsummer Hill (Stanford 1971; 1974; 1981). The majority from these forts fall within the size range 2.5-4.0 m and there is a strong tendency for them to be rectangular, though square ones also occur. Their Dostholes average 600-900 mm in diameter and 600 mm in depth and so are directly comnarable to Daneburv type H. There are also a small number of structures from Midsummer Hill, which have a fifth posthole along one of their shorter sides, similar to type J at Danebury. Stanford has interpreted these structures as houses, rather than storage buildings, on the basis of their large size. There are a number of smaller structures comparable to Danebury type E, which Stanford considers may be granaries. The post structures at these sites are aligned along streets in much the same way as the large post structures at Danebury.

The majority of the other sites have produced small four-post structures. Those in the south of England, such as Little Woodbury, Tollard Royal, Balksbury, and Gussage All Saints have produced structures directly equivalent to type E and F and also two-post structures equivalent to type L. A number of the larger structures at Gussage All Saints are more akin to types G and H, though the two largest, measuring 4.0 m and 5.0 m, have postholes surprisingly small for their size. However, I'S37 and PS138 also have fairly insubstantial postholes for their size, though the 5.0 m structure at Danebury has nine posts as opposed to only four at Gussage. These are the two largest structures so far reported, and Danebury is the only published site so far to have produced a nine-post structure.

A five-post structure from Tollard Royal has postholes very similar to type F in profile, but it is unlike PS1, being much smaller and forming a trapezium in plan.

Very few six-post structures have been reported from other sites. From Croft Ambrey, there is a structure which appears to have had its posts placed in two parallel gullies. In this respect they are somewhat similar to PS100 and PS103, except that the three posts run along the shorter sides as opposed to the longer sides at Danebury, and the structure is much smaller. One other six-post structure is reported from Tollard Royal. It is 3.2 m square, falling in the same size range as Danebury types A and B, but the postholes themselves are more typical of the small structures and it is more comparable to type C, PS114.

Most of the sites with small post structures have been dated to the early stage of the Iron Age, which accords with the evidence from Danebury where the small structures are also early (p 92). The large structures from the Herefordshire hillforts in general date to the middle Iron Age and so are probably contemporary with the Danebury large post structures.

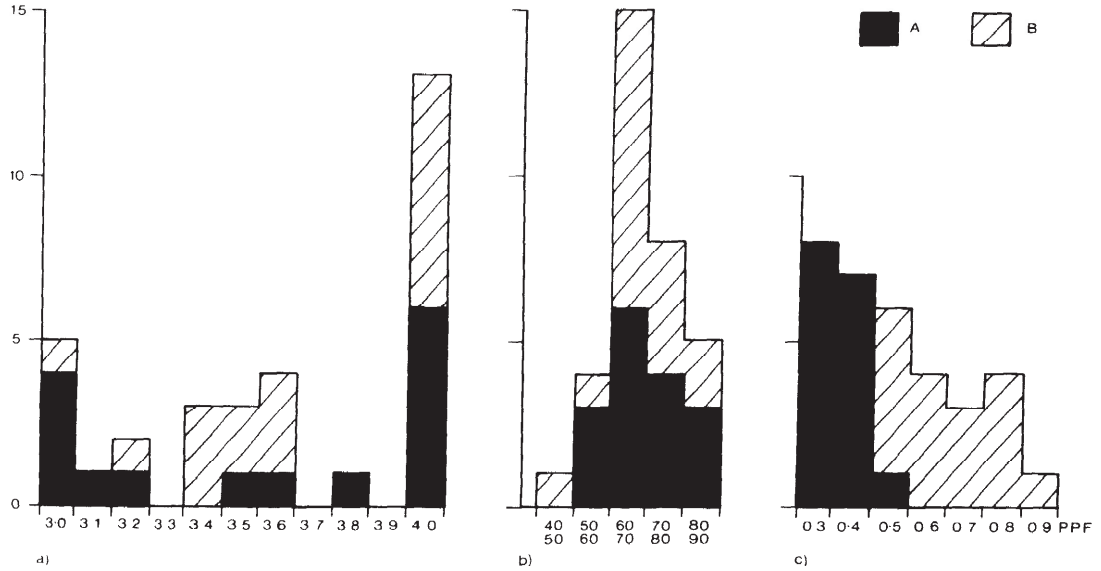


Fig 4.41 Histogram: details of post structures A and B: (a) size range in metres; (b) range of posthole diameters; (c) range of PPF ratios

As to the function of these post structures, a variety of opinions have been put forward. To a large extent these largely hypothetical discussions have been based on the evidence of ethnographic parallels from Europe and further afield. The earliest and most frequently repeated suggestion is that the buildings were used as granaries with raised floors. The view is based on the discovery of wheat grains from the postholes of one of the structures at Rotherley (Pitt-Rivers 1888). Since then, barley has been found in the postholes of 'granary B' at Tollard Royal, and carbonized grain is reported from some of the postholes at Midsummer Hill. At Danebury no grain was noted in post structure postholes during hand excavation, but then no posthole had been deliberately sampled by flotation for grain until 1981, when soil from a random sample of postholes was taken. It is hoped that the results will appear in a future report on the excavations of 1979-1983.

Other suggestions of function include towers for excarnation, watch towers, houses, and store buildings. It seems unlikely that the dead were exposed in the middle of a settlement, but the other alternatives are all possibilities that should be entertained. Watch towers have been noted in the centre of Maori villages (Ellison & Drewett 1971) and Brewster (1963) has described a four-post structure in such a position at Staple Howe. This structure is of a similar size (2.4 x 2.4 m) and may be compared to PS13/72 at Danebury. PS 13 is situated in the middle of the fort, isolated from other post structures, and with a good view of the entrance(s) and probably most of the fortifications. It is a type H structure, but is one of the smallest in area, measuring 2.5 x 2.6 m, and has very large, deep postholes, which suggest a very substantial superstructure, probably of more than one storey. It may be associated with the discontinuous gullies which partially surround it, though there is no stratigraphical evidence to link them. The gullies would appear rather insubstantial for drainage, which would be unnecessary on the top of the hill, but they may have held some sort of palisade. The structure stands out as being atypical compared to the other large four-post structures. Thus it is reasonable to suppose that it may have performed a different function. Another similar structure is PS3, the smallest of type H (measuring 2.2 x 2.2 m) which also has massive postholes. It is associated with discontinuous gullies, but these could be for drainage since it is in a low-lying situation in the quarry hollow. It was built close to the rampart during phase g of the quarry hollow sequence (p 162).

It is possible that a watch tower was felt to be advisable here as the slope falls away more steeply on this side of the hillfort. It could also have been used as a fighting platform in this position. However its use was short-lived, for in the next phase, 1, it was superseded by a more typical four-post structure, PS6.

PS1 is also sufficiently different from the rest of the structures to suggest a variation in its function. There is no evidence of a raised floor and there is unlikely to have been one, for the wear on the chalk ground surface was the same inside as out. Therefore, it seems unlikely that it was used as a granary. No stakeholes for wattle walls existed but individual hurdles may have been attached to the posts to form walls, perhaps leaving the south side completely open. In this form it could have been used to provide shelter for animals, useful should any have needed to be hand-reared.

As for the rest of the post structures they are sufficiently similar to suggest no obvious variation in function. There is, however, the increase in size from the early to late phase and also an actual increase in numbers: 47 small four-posters, 58 large four-post structures, and 32 six-post structures. However, not all the large structures were contemporary and in many cases one replaced another, so we cannot anticipate a doubling in numbers. The distinctive feature of these large structures is their alignment along the main road and side streets. This in itself suggests the need for easy access, very possibly by wheeled vehicles, an observation which supports the suggestion that they were storage structures possibly for farm produce, such as grain, which would have been brought in on carts. Even some of the early small structures are aligned to leave open areas between for access.

Both small and large post structures would have been substantial enough from their post sizes to support a raised floor and the weight of stored grain. Indeed many, especially those with deeper postholes, would have been strong enough to form a two-storeyed structure. If so it is possible that grain was stored on the upper storey with the lower floor used for a totally different purpose, such as the storage of tools or weapons. The fact that all the structures have a similar ground plan does not mean their functions were identical. They could have had any number of uses: houses, store buildings for tools, farm produce, timber, firewood, manufactured goods, or even pens for animals.

The reconstruction of the superstructure must be partly dependent on the function of the building. The archaeological remains indicate only that the post-built structures were timber-framed buildings and beyond that any discussion of construction must be purely speculative. The buildings would probably have been of box-frame construction, in which roof loads are transmitted onto framed walls. The four or six posts, which provided the main load-bearing timbers, would have been placed in position and joined at the top by wall plates and tie-beams. There may have been diagonal braces from the main posts to provide greater rigidity, and intermediate wall studs may have been used in some of the larger structures. If stud and rail construction had been employed for the walls, it would have allowed the wattle and daub infill to take the form of small panels rather than one large continuous area. However, if good quality timber were scarce, panels might have infilled the wall from post to post. Stud and rail panelling would probably have been unnecessary on the small post structures and on the six-post structures with the middle post halving the span on two sides. If ventilation were important the walls may not have been daubed.

The roof would probably have been a simple single rafter roof with each pair of rafters separately triangulated by a collar rafter. A more complex roof structure with a collar purlin resting on crown posts supported by the tie-beams would have been possible but unnecessary for the size of structure in evidence at Danebury. The roof shape was probably gabled and the covering was almost certainly thatch. Reed or wheat straw has been the traditional thatching material in England and both would have been available at Danebury, the reeds growing locally in the Test valley. Thatch is a relatively light material; it does not need a particularly massive roof construction and can be used with insubstantial walling materials.

Such a simple basic construction could have been adapted to different uses. The small four-post structures (types E and F) were probably only single-storey structures as their posts were relatively insubstantial, between 120 and 250 mm in diameter. However, the difference in the depth of postholes in types E and F suggests that the superstructure may also have varied in some way. The deep postholes of type F would be capable of resisting the

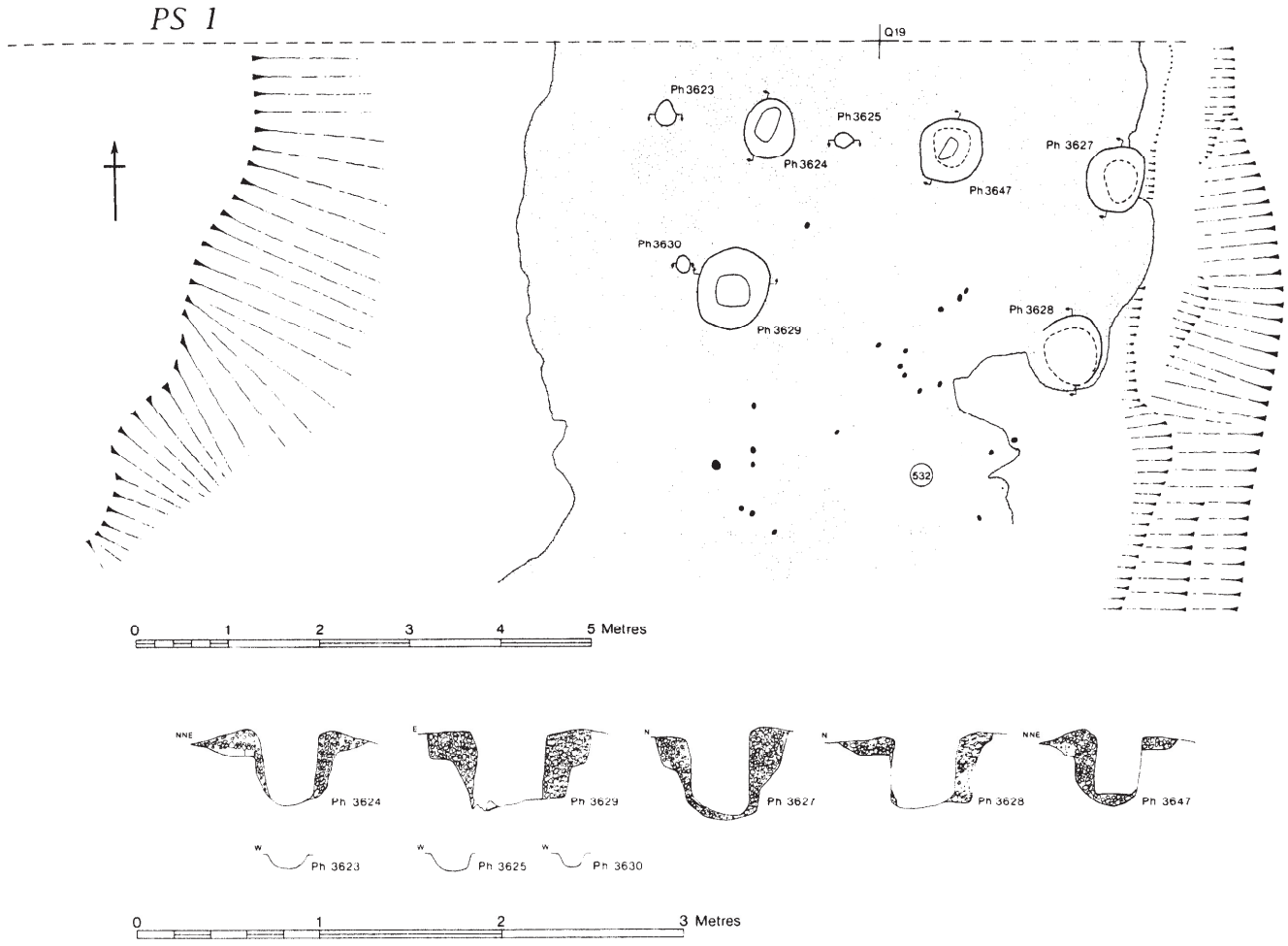


Fig 4.42

great lateral thrust which would result if, though still a single storey, the structure had a raised floor to store grain. Thus it may be that only types F and C of the small structures represent granaries (ie only 25% of the small post structures). A raised floor would necessitate additional timbers between the corner posts about 600-700 mm above ground level, on which a plank floor could be laid. The type E structures could have been simple storage buildings with the ground surface serving as a floor or perhaps having a laid chalk floor.

The large four-, six-, and nine-post structures nearly all had more substantial timbers, the posts usually measuring between 200 and 450 mm in diameter. The more substantial posts suggest that the large structures were more often than not two-storeyed buildings, or at least had substantial loft space that could be utilized. Since a raised floor would be necessary for the storage of grain, it is possible the upper floor was used for this, while other goods, such as wheeled vehicles, wooden tools, and other equipment which needed protection from the weather could be stored below. It would not have been necessary to enclose the ground floor on all four sides, nor would it have been desirable if one wished to keep carts or other large equipment under cover. Alternatively some structures may have provided storage space for hay in the upper floor to feed draught animals kept on the settlement and these could have been sheltered below. Access to the upper storey could be by internal or external staircase, but there is no evidence to suggest which was used.

The single type D structure was possibly some form of shelter shed, being enclosed at the back and sides but open at the front and having a single pitch gabled roof.

The structure PS13/72, if it was a watch tower as has been suggested, may have consisted of nothing more than the basic timber frame with a flat platform at the top. Additional diagonal bracing would probably have been necessary for a tall structure, as well as some sort of simple ladder to gain access.

Description of the illustrated structures

In the following pages are published a sample of a typical range of rectangular post-built structures. Thirty-two have been selected. All buildings within the stratified sequences, where preservation is good, have been included, together with additional examples necessary to display the full range of variation. The rest of the structures are illustrated and described in the microfiche section (fiches 2 and 3).

The illustrations and accompanying descriptions are arranged in order of their PS number. PPF is Posthole Profile Factor; AD is average diameter.

PS1 (1978) (Fig 4.42, P1 49)

		Diam	Depth	*Void*
Type K; 4 x 2 m,5 posts	ph 3624	450		400 x 200
	ph 3629	650	420	380 x 350
	ph 3627	450	510	330
	ph 3628	480	420	350
	ph 3647	360	420	240-120
	ph 3623	200	80	–
	ph 3625	200	100	–
	ph 3630	170	100	–

PPF 0.95
AD 480 mm
CP 7

PS1 occurs in the stratified deposits excavated in 1978. Its contemporary surface is layer 532, a homogeneous layer of chalk and small flints in a matrix of light grey chalky silt. This had been laid over much of the quarry hollow, presumably to consolidate the surface of the underlying silt (layers 547, 458), before the construction of PS1. To the south a thick layer of chalk rubble (layer 457) up to 280 mm thick slightly overlapped the southern edge of 532. The surface of the chalk was heavily trampled.

The structure itself consisted of five posts set in individual postholes and packed with rammed chalk rubble, The shape of three of the posts could be seen from the remaining voids. Phs 3624 and 3629 had a sub-rectangular shape, suggesting that the timbers had been shaped in some way, whereas ph 3647 had a void in a figure of eight shape suggesting that two smaller unshaped timbers had been used, The fillings of the void varied, but were usually a loose brown silt with small lumps of chalk, occasional flints, and, in four of the postholes, much charcoal. Charcoal samples for radiocarbon dating were taken from:

ph 3627 2250 ± 80 bp (300 bc) (HAR-4243)
ph 3628 2550 ± 90 bp (600 bc) (HAR-4278)
ph 3629 2120 ± 80 bp (170 bc) (HAR-4244)
ph 3624 2280 ± 90 bp (330 bc) (HAR-4279)

The majority of the charcoal was identified as being of mature oak and it is very likely to represent the charred remains of the actual structure. Additionally, from ph 3624 there was a small amount of hazel/alder charcoal which may be the remains of charred wattles, but could equally be unrelated to the structure.

The contemporary ground surface was also cut by three very much smaller posts, phs 3623, 3625, and 3630, and by a number of stakeholes. Although the surface of 532 was worn, no occupation debris accumulated on it during the use of the structure. Moreover there was no difference in wear inside or outside the structure. Everything was sealed by a layer of fine brown silt (layer 523).

The structure comes in phase k of the stratified sequence (ceramic phase 7). All except one of the dates are considerably earlier than this, suggesting that old timber of much earlier date may have been reused from older structures.

PS3 (1973-75) (Fig 4.43)

		Diam	*Depth*	*Void*
Type H; 2.2 x 2.2 m, 4 posts	ph 2118	800	450	–
	ph 2142	800	700	–
	ph 2140	860	400	*c* 200
	ph 2175	800	310	–

PPF 0.57
AD 820 mm
cp 6-7

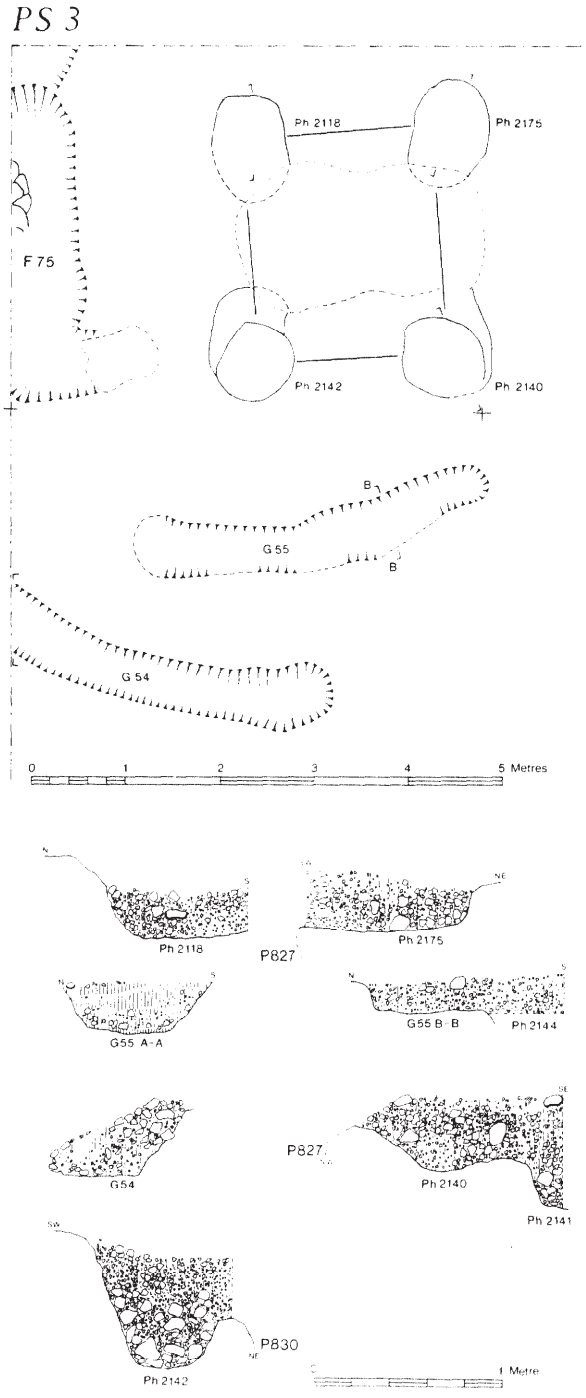


Fig 4.43

The features indicated on the plan are all broadly contemporary in that they post-date the earliest silt which formed on the quarry bottom (layer 225), but are cut into by features which belong to the PS6 complex. The exact form of feature F75, partly exposed in the western extremity of the trench, is uncertain, but it could be a wide ditch running parallel with the trench edge. The discontinuous lengths of gully, apparently associated, could have been for drainage; there is no evidence from their fills of their having held any kind of structure.

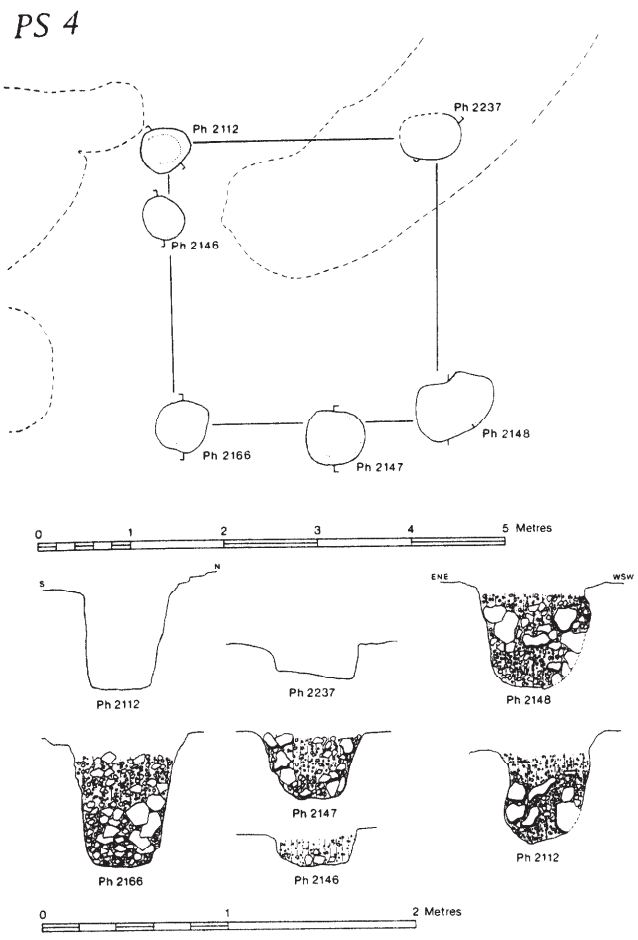


Fig 4.44

PS4 (1973-75) (Fig 4.44)

		Diam	*Depth*	*Void*
Type J (H); 3.0 x 3.0 m, 6 posts	ph 2112	530	550	-
	ph 2237	620	160	-
	ph 2166	*560*	*670*	-
	ph 2148	*600*	*550*	-
	ph 2146	*460*	*200*	-
	ph 2147	*600*	*370*	-

PPF 0.83
AD 560 mm

Of the four posts which constitute PS4 at least three are cut through the silt 255, but sealed by silt 230. The fourth, ph 2237, has been partly cut away by G56, which accounts for its apparent shallowness; it would otherwise have been about 500 mm deep. Two other posts which may be related to the structure are ph 2146 and ph 2147. All the postholes are of similar shape, size, and filling, including ph 2147. Ph 2146 is of similar shape but shallower. The two additional postholes appear to be an integral part of the structure and not later repairs. It is possible that they were necessary for the construction of a doorway or perhaps stairs to an upper floor.

This structure could be contemporary with PS3 and PS5 on the stratigraphical evidence.

PS5 1973/5) (Fig 4.45)

		Diam	Depth	*Void*
Type J (H); 3.0 x 3.0 m, 5 posts	ph 2156	*660*	340	*c 230*
	ph 2123	*600*	*600*	*c 230*
	ph 2155	*700*	*600*	–
	ph 2151	*780*	*530*	270
	ph 2154	*750*	*720*	–

PPF 0.8
AD 700 mm

The posts are cut into the tail of the rampart, layer 256. Ph 2154 was cut by P832 and ph 2156 was cut by P826. Ph 2155 is cut by gully 56 and ph 2150. PS5 could therefore be broadly contemporary with PS3 and PS4. The fifth posthole occurs in the middle of the southern side of the structure, similar to PS4.

PS6 (1973/75) (Fig 4.46)

		Diam	*Depth*	*Void*
Type J (H); 3.7 x 3.4 m, 5 posts	ph 2234	*700*	400	–
	ph 2120	*620*	*430*	–
	ph 2119	*670*	*330*	–
	ph 2145	*670*	*730*	*c 250*
	ph 2141	*670*	630	–

PPF 0.75
AD 670 mm

These five postholes are believed to comprise a structure contemporary with gullies 53 and 56. Phs 2234, 2120, 2145, and 2141 cut features belonging to PS3, while G53 cuts G54 (also part of the PS3 complex). G56 cuts some of the postholes of PS4 and PS5. The terrace for the circular building CS10/11 is later than the abandonment of PS6.

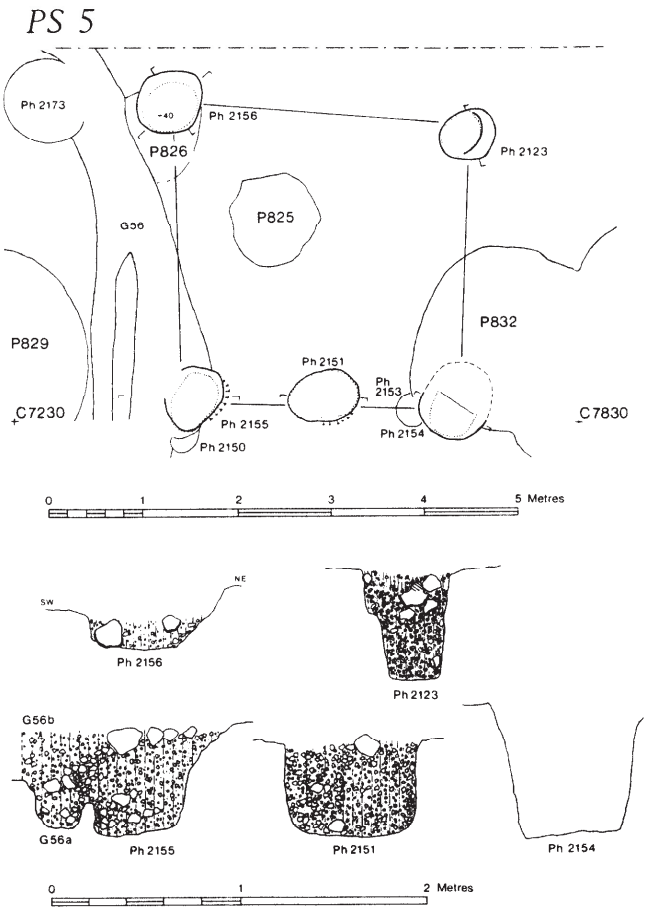


Fig 4.45

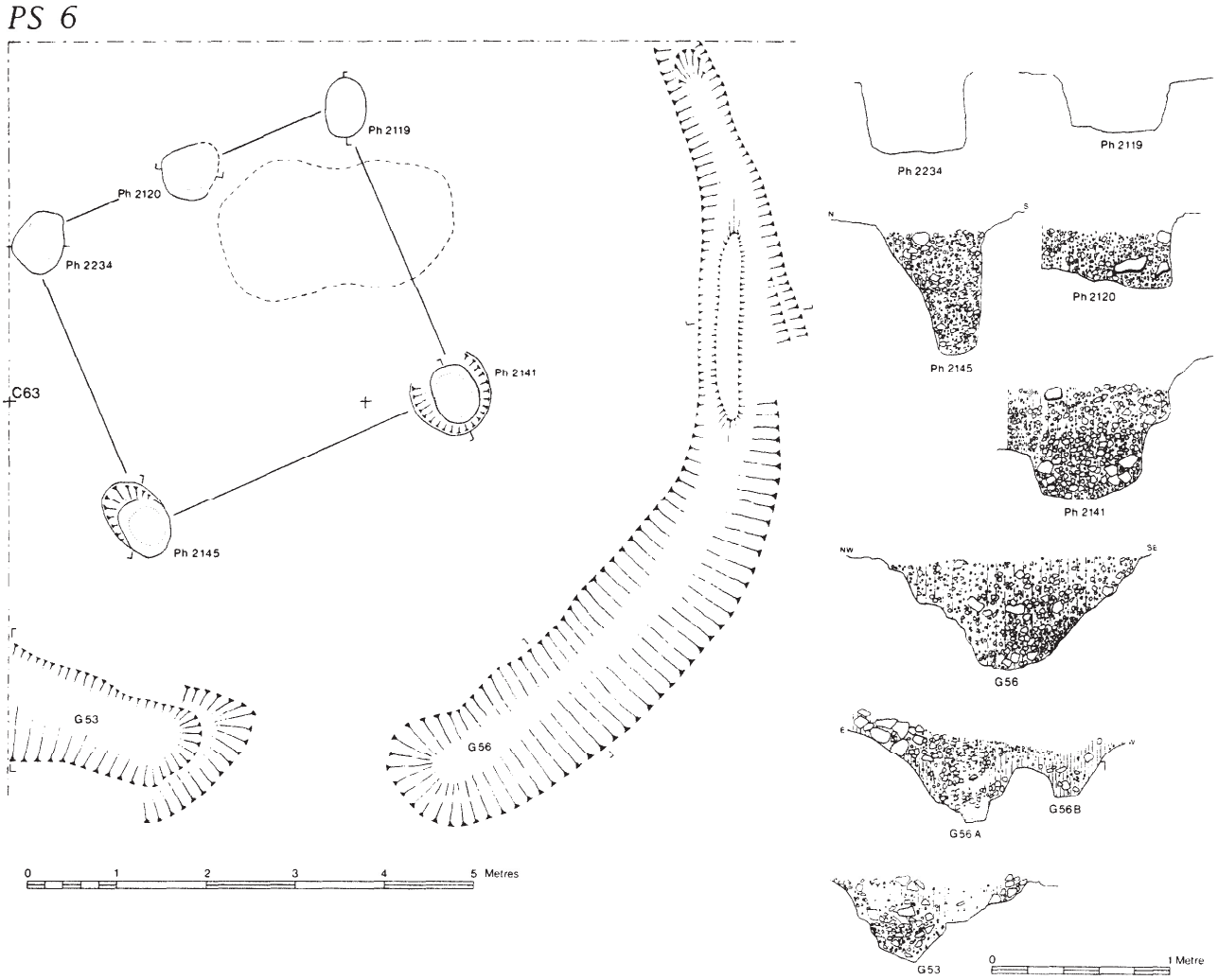


Fig 4.44

The structure is surrounded by a penannular gully which has a break on the south side to give access to the building. It seems likely that the gullies were necessary for drainage since the building is sited in the hollow between the rampart and natural slope of the hill, accentuated by the quarry hollow. The fifth posthole, in this case, is in the middle of the north side. It seems unlikely to have been associated with a door in this position since it would have opened straight onto the rampart. It may have been used for securing an internal partition.

PS7 (1973/75) (Fig 4.47)

		Diam	*Depth*	*Void*
Type A; 4.0 **x** 4·0 m, 5 posts	ph 2131	600	300	400
	ph 2133	650	350	340
	ph 2132	640	180	–
	ph 2222	580	480	–
	ph 2139	620	350	*c* 350

PPF 0.54
AD 620 mm

This structure, from its size, must be a six-post building, of which the sixth posthole, in the middle of the southern side, is obscured by a tree root. Phs 2131, 2132, and 2133 cut into the tail of the rampart. Ph 2139 appears to cut G57, while ph 2222 is earlier than the circular structure CS14. PS7 is probably contemporary with PS6.

PS8 (1973-75) (Fig 4.48)

		Diam	*Depth*	*Void*
Type H; 3.7 x 3.5 m, 3 posts	ph 1270	700	580	300
	ph 1269	680	630	–
	ph 1208	580	450	200

PPF 0.85
AD 650 mm

The fourth posthole has been destroyed by the later pit 547. The surviving postholes and the gully 37/39 can be shown to cut through layers contemporary with the circular building CS17 and to be sealed by layers predating buildings CS15 and CS18. The contemporary ground surface around the four-post setting (layers 151, 113) is scored by shallow irregular gullies, G38, which may have been formed by the action of rain dripping off the roof of the structure. Gully 37/39 encloses the building on the northern side but is open to the south. It is likely to be a drainage gully. The profile of ph 1208 is of the void only and not the entire posthole.

PS9 (1973-75) (Fig 4.49)

		Diam	*Depth*	*Void*
Type L; 2.2 m, 2.3 m, 5 posts	ph 1242	540	220	170
	ph 1243	420	200	200
	ph 1229	400	100	–
	ph 1230			
	ph 1241	440	80	–
		440	120	–

PPF 0.3
AD 450 mm

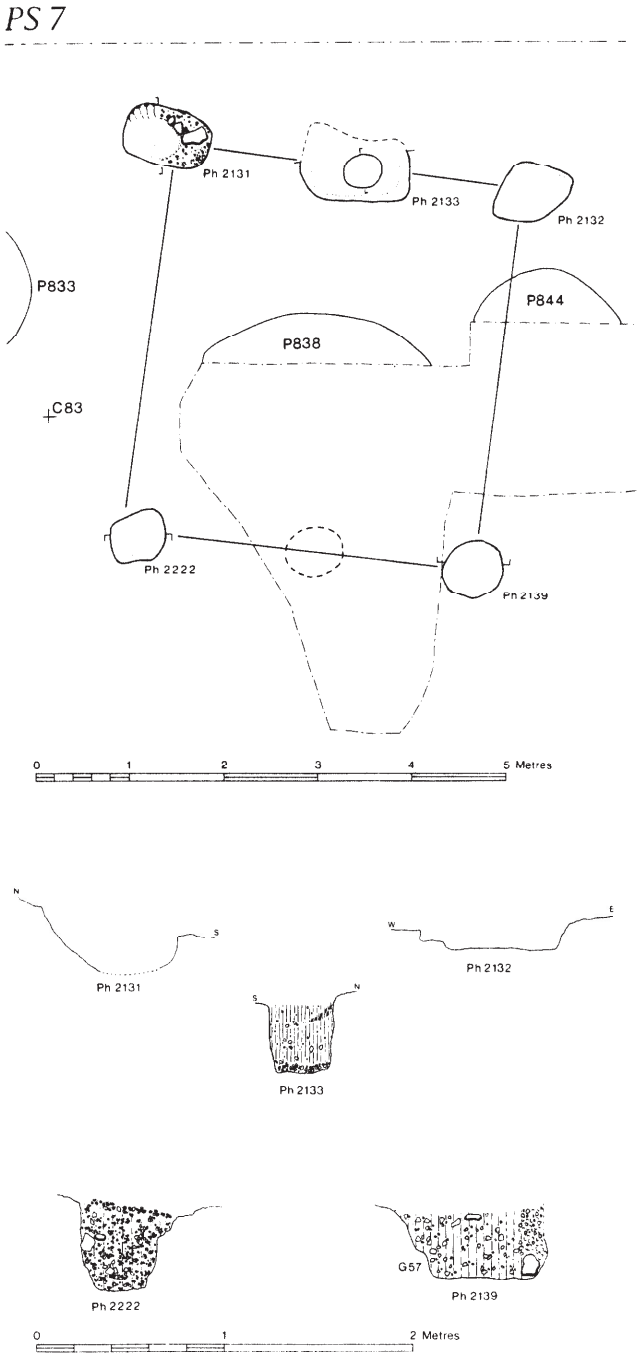


Fig 4.47

This two-post structure has been recut twice, so that a total of three separate structures has occupied the same site. The three postholes are clear on the east side, but on the west side this is not so obvious in plan. However, from the section a third posthole seems likely between ph 1242 and ph1243. This structure is enclosed to the west by G34 and G35, which may be drainage gullies.

PS10 (1971) (Fig 4.50)

		Diam	*Depth*	*Void*
Type H; 3.6 x 3.6 m, 3 posts	ph 862	800	400	380
	ph 650	700	450	420
	ph 644	720	500	*c* 300

PPF 0.6
AD 74

PS10 is a four-post structure of which three posts survive, whilst the fourth would have been cut away by P90. P90 was dug during phase h of the stratified sequence, suggesting that the structure dates to phase g or earlier. PH 644 was sealed by layer 27; ph 862 cuts G19, which dates to phase e. This suggests that PS10 was in use during phase f.

PS11 (1971) (Fig 4.51)

		Diam	*Depth*	*Void*
Type H; 3.6 x 3.6 m, 3 posts	ph 639b + c	700	800	380
	ph 726/875	900	600	-
	ph 731/669	780 (500)	570 (650)	-

PPF 0.84
AD 790 mm

This structure has three postholes preserved while the fourth has been destroyed by P98. This suggests that the structure must be earlier than phase f, unless ph 645 is the fourth post, which cuts P90. If this is the case, it would make the north-west corner oddly angled. Ph 669 cuts 731 and layer 36, and ph 726 cuts ph 875 and layer 37 and probably 36. Ph639 cuts layer 7, but it is also thought to be one of the door-posts of CS21. However, this can be resolved as ph639 has at least three phases and probably two of them belong to PS11. PS11 post-dates CS21, as its posts cut layers contemporary with CS21. PS11 was probably in use late in phase g or during phase h.

PS12 (1971) (Fig 4.52)

		Diam	*Depth*	*Void*
(a) Type H; 3.2 x 3.2 m, 3 posts	ph 241	660	700	–
	ph 227	580	650	–
	ph 619	650	500	–
PPF 0.98				
AD 630 mm				
(b) Type H; 3.2 x 3.2 m, 4 posts	ph 281	780	850	–
	ph 349	620	700	–
	ph 643	630	550	200
	ph 839	700	550	–
PPF 0.94				
AD 680 mm				
(c) Type H; 3.0 x 3.2 m, 4 posts	ph 282	750	500	–
	ph 350	700	400	–
	ph 727	580	500	440
	ph 808	650	400	–
PPF 0.67				
AD 670 mm				

This structure has three phases, and where the postholes intercut, the relationships show that (a) is the latest and (c) the earliest, (b) being intermediate. Ph241 cuts ph281, which in turn cuts ph282. Ph227 cuts ph348, which cuts ph350. Ph349 is cut by P22. Ph619 cuts ph727, and ph839 probably cuts ph808. Ph643 is cut from the level of layer 6. This is the only relationship to tie in with the stratigraphy, and indicates that PS12b dates approximately to phase h/i.

PS13/72 (1978) (Fig 4.79)

		Diam	*Depth*	*Void*
Type H; 2.6 x 2.5 m, 4 posts	ph 3457	800	840	400
	ph 3469	900	700	230
	ph 3732	*c* 800	840	–
	ph 3464	1200	800	300

PPF 0.88
AD 920 mm

This four-post structure is fairly small, but has very massive postholes for its size. Its possible function is discussed above (p 94). It is associated with gully complex 1 (pp 123-4).

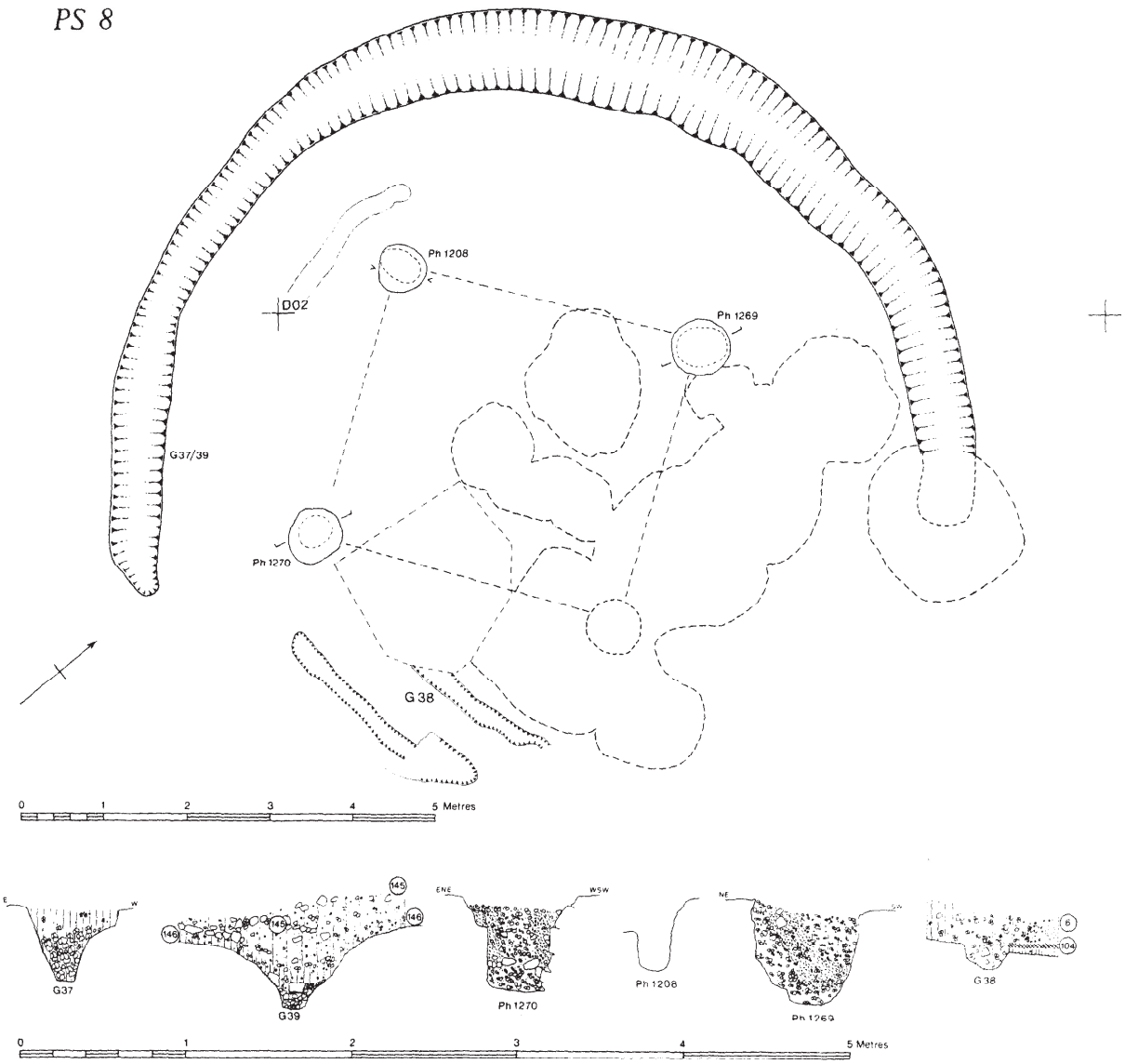


Fig 4.48

PS15 (1972) (Fig 4.53, P1 18)

Type F; 1.6 x 1.5 m, 4 posts

PPF 1-28
AD 310 mm

	Diam	*Depth*	*Void*
ph 1040	370	480	150
ph 1041	300	330	*c* 190
ph 1043	300	400	170
ph 1036	270	380	150

One of the two smallest structures, and not quite square.

PS19 (1972) (Fig 4.54)

Type E; 3.4 x 3.4 m, 4 posts

PPF 0.85
AD 400 mm

	Diam	*Depth*	*Void*
ph 935	350	420	–
ph 940	380	350	–
ph 942	350	250	250
ph 943	520	300	250

One of the larger structures of this type, and having some postholes somewhat intermediate in size between types E and F. Its postholes contain pottery dated to cp 3-4.

PS33 (1976) (Fig 4.55)

Type A; 4.0 x 4.0 m, 12 posts

PPF 0.36
AD 870 mm

		Diam	*Depth*	*Void*
(i)	ph 2522	900	380	–
	ph 2464	850	200	300
	ph 2595	900	320	–
	ph 2450	850	400	–
	ph 2452	900	250	–
	ph 2468	900	370	380
(ii)	ph 2521	800	300	–
	ph 2463	800	300	300
	ph 2594	900	250	–
	ph 2912	800	330	–
	ph 2453	750	250	–
	ph 2467	800	320	–

PPF 0.36
AD 810 mm

A six-post structure of at least two phases, and possibly three, of which (i) is the latest structure. Associated pottery is dated to cp 4-7. It is aligned on the main road

and probably post-dates PS32, though there is no definite relationship between the two structures.

PS34 (1976) (Fig 4.56)

Type G; 3.0 × 3·0 m, 4 posts

	Diam	*Depth*	*Void*
ph 2348	670	60	–
ph 2345	600	80	–
ph 2341	800	150	240
ph 2422	660	120	*c* 230

PPF 0.15
AD 680 mm

This is one of the shallowest examples of type G. It is aligned on the main road and, though in itself is only of one phase, it replaces or is replaced by PS35, which is slightly displaced to the east. Since the two structures do not intercut it cannot be ascertained which is the earlier.

PS35 (1976) (Fig 4.57)

Type A; 3.0 × 3.0 m, 6 posts

	Diam	*Depth*	*Void*
ph 2347	550	100	–
ph 2344	600	200	–
ph 2343	730	200	–
ph 2340	760	300	–
ph 2420	580	200	–
ph 2346	610	140	–

PPF 0.29
AD 640 mm

This six-post structure may have begun (or evolved) as a four-post structure. Three of the corner posts indicate two additional recuts while the fourth post may have been replaced on the same spot. The two intermediate posts are, however, only of one phase, which suggests that in only one phase was the structure composed of six posts. Since it succeeds or precedes PS34 a total of four structures stood here: all were aligned on the main road.

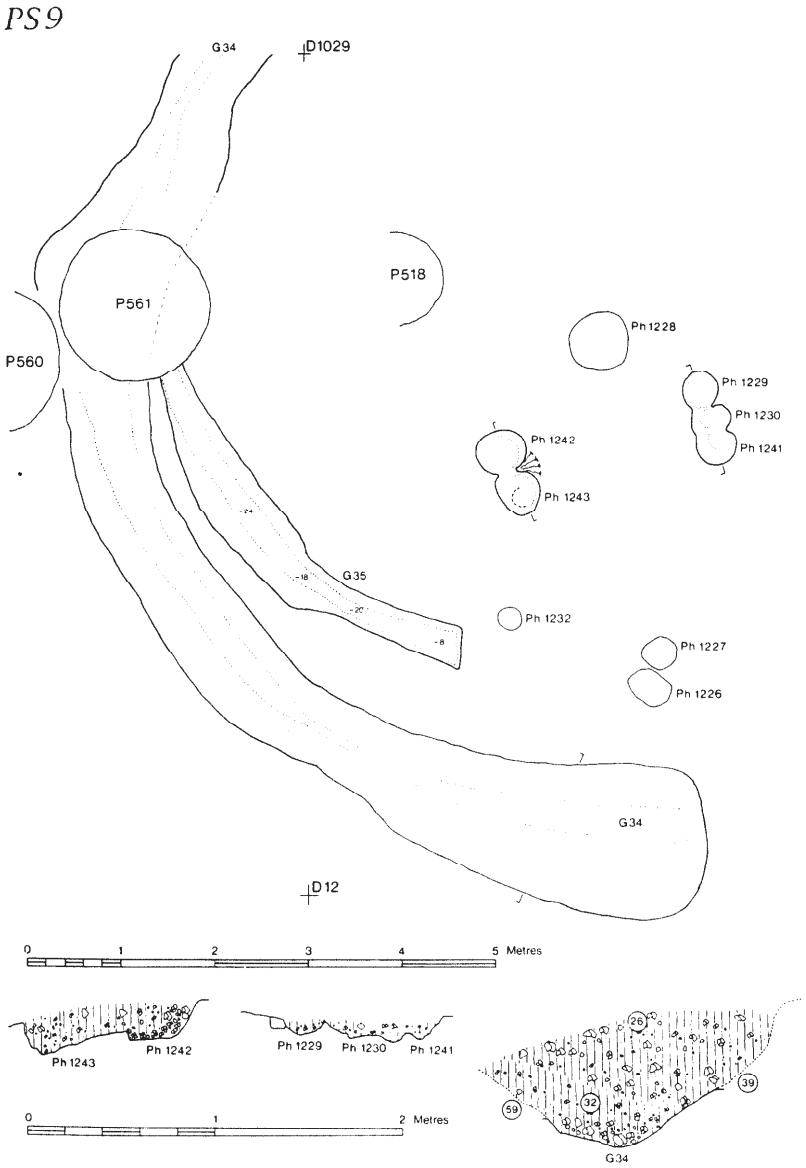


Fig 4.49

PS 10

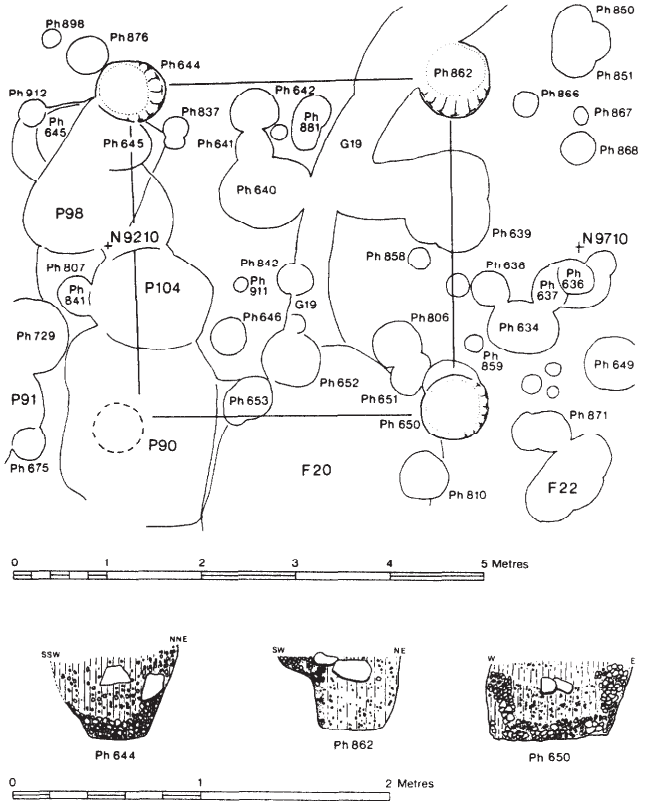


Fig 4.50

PS 11+PS2

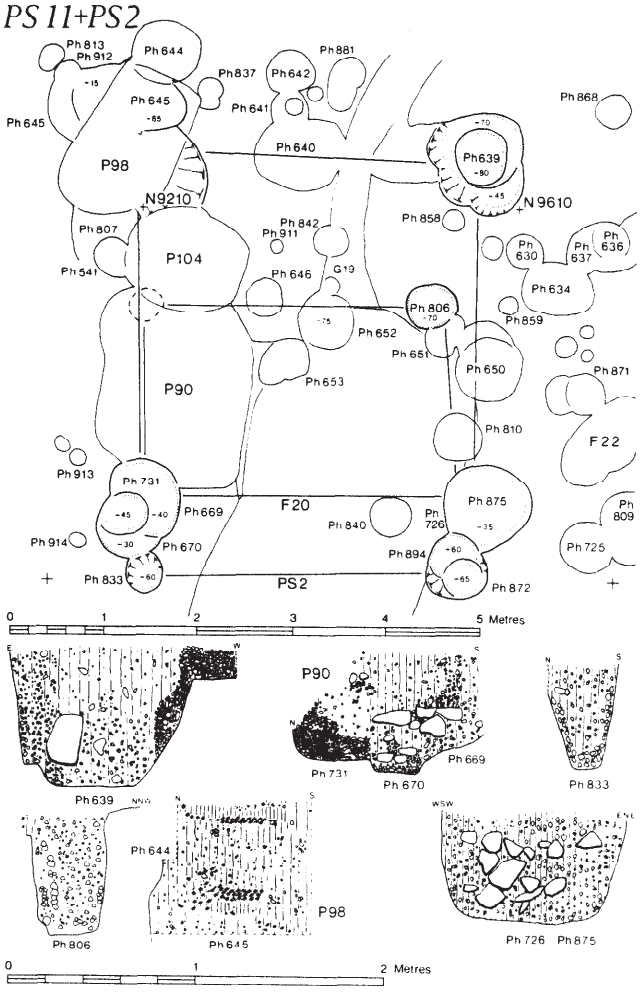


Fig 4.51

PS 12

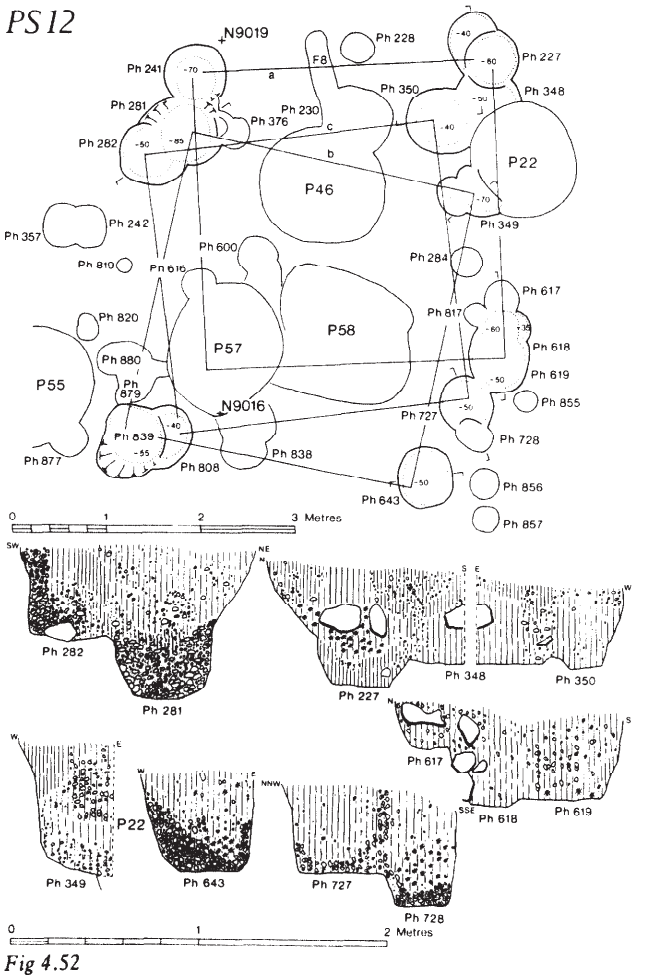


Fig 4.52

PS 15

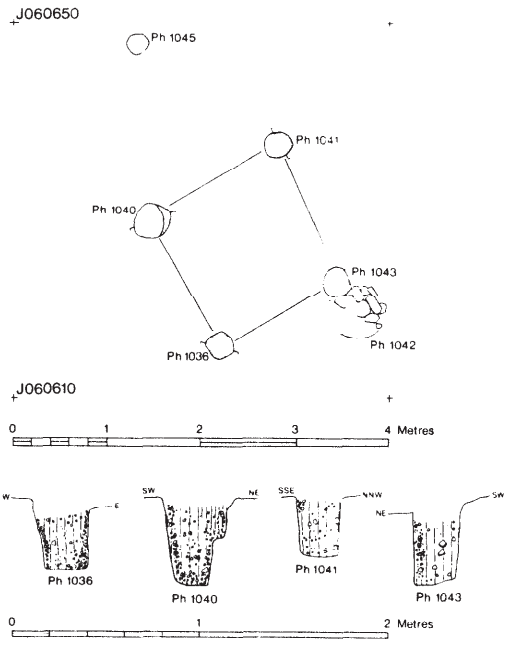


Fig 4.53

PS 19

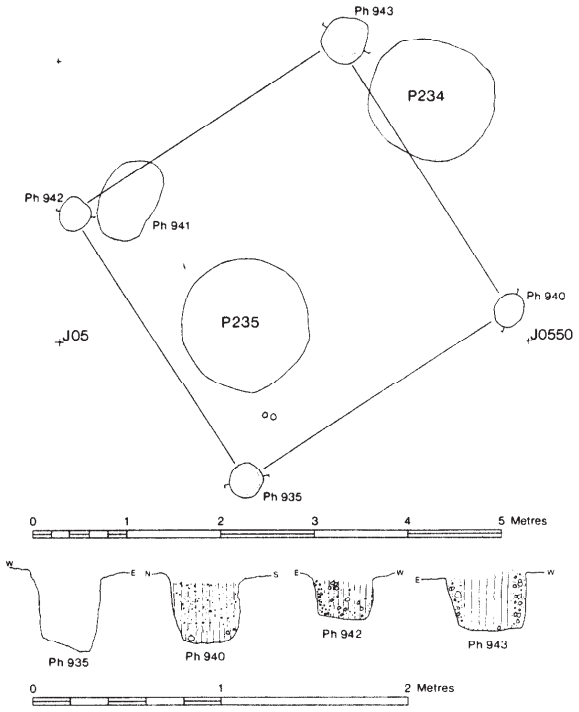


Fig 4.54

PS 34

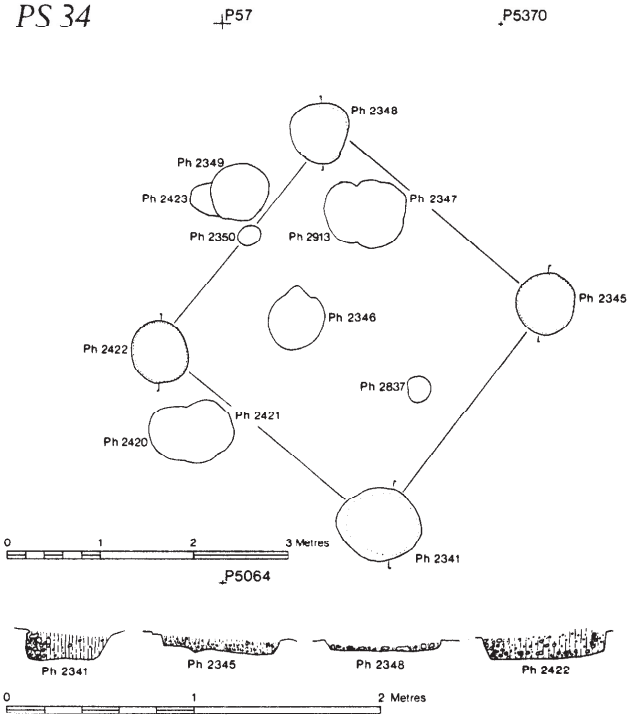


Fig 4.56

PS 33

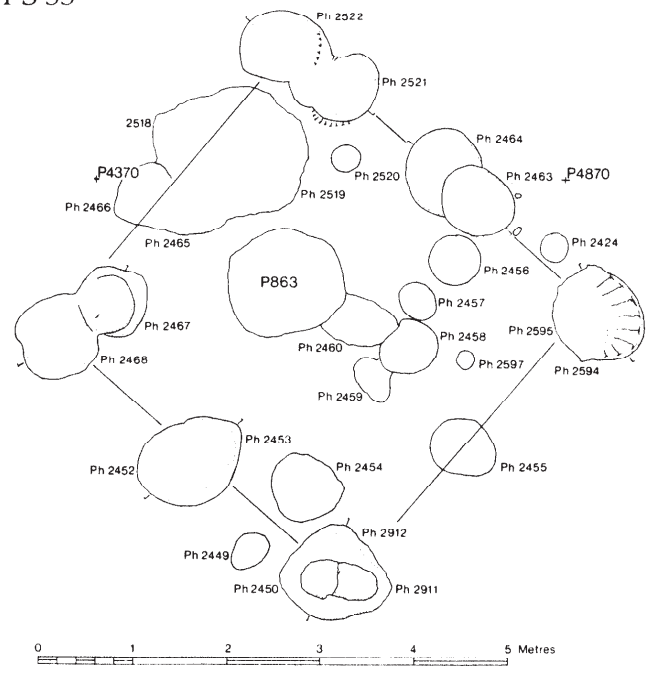
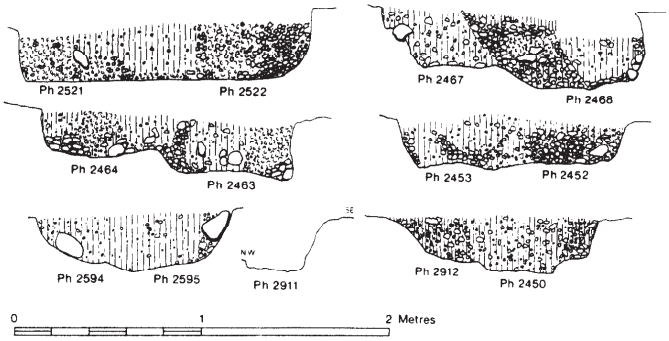


Fig 4.55



PS 35

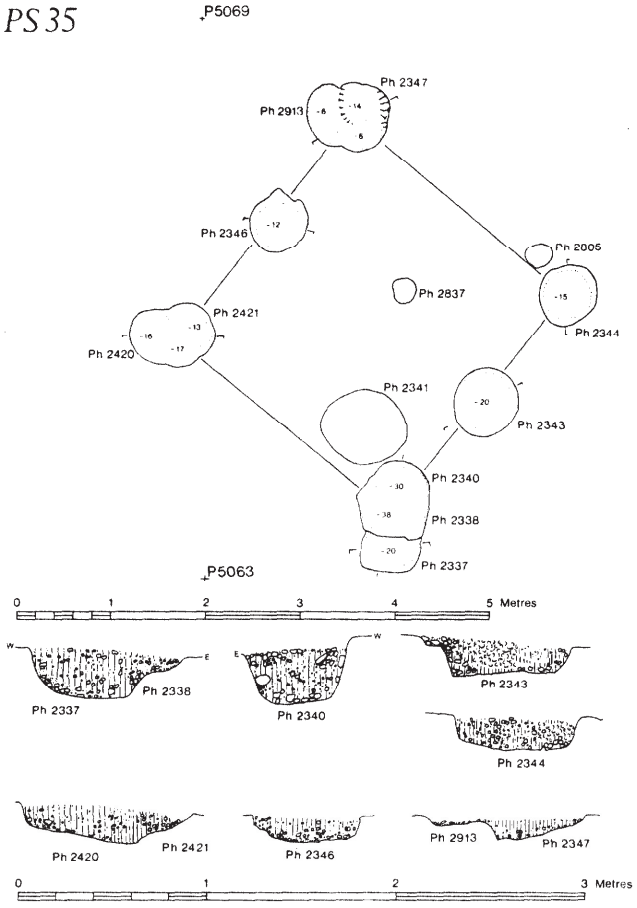


Fig 4.57

PS37 (1976) (Fig 4.58)

		Diam	*Depth*	*Void*
Type D; 5.0 x 5.0 m, 9 posts	ph 2537	650	260	*c* 200
	ph 2541	570	300	–
	ph 2549	600	360	300
	ph 2545	820×730	190	–
	ph 2835	600	200	–
	ph 2491	480	200	–
	ph 2322	600	220	–
	ph 2535	600	200	*c* 230
	ph 2578	600	320	–

PPF 0.42
AD 610 mm

This is the largest post structure at Danebury. It is of one phase only. It is aligned on the main road but set about 8 m back from the road edge.

PS39 and 8540 (1976) (Fig 4.59)

		Diam	*Depth*	*Void*
PS39: Type A; 4.0 x 4.0 m, 6 posts	ph 2397	770	330	–
	ph 2395	700	300	200
	ph 2391	650	200	–
	ph 2373	700	160	–
	ph 2599	610	130	–
	ph 2379	700	100	–

PPF 0.29
AD 690 mm

PS40 (a): Type A; 3.6 × 3.6 m, 6 posts

ph 2668	500	170	–
ph 2584	600	250	–
ph 2392	660	240	*c* 350
ph 2369	690	360	–
ph 2376	600	180	–
ph 2378	650	130	–

PPF 0.37
AD 620 mm

PS40 (b): Type A; 3.5 x 3.5 m, 6 posts

ph 2396	700	220	340
ph 2393	620	160	200
ph2390	800	150	–
ph 2375	600	230	–
ph 2377	650	150	–
ph 2380	700	230	–

PPF 0.28
AD 680 mm

This structure has three phases of which the latest has been designated PS39. The postholes of PS39 obliterate any relationship that may have been visible between PS40a and b. Ph 2397 cuts phs 2392 and 2390. So in the north row the postholes divide up into three groups, with postholes that can be easily assigned to each phase of the structure. However, in the southern row it is more difficult to assign the postholes to individual structures. The above division must, therefore, be accepted as being the best fit and it will be noted that there are several additional postholes in the immediate vicinity that may have been part of one of the structures, eg ph 2370, ph 2372.

The southern side fronts on to street 2 which branches off the main road. It is probably contemporary with PS42, PS44, and PS45 which are all multiphase structures and aligned along the same road, spaced at intervals of 2-3 m.

PS45 (1976) (Fig 4.60)

		Diam	*Depth*	*Void*
Type G; 3.5 x 3.5 m (a) 4. posts	ph 2657	520	250	–
	ph 2663	650	120	–
	ph 2653	540	300	–
	ph 2642	580	200	–

PPF 0.39
AD 570 mm

(b) 4 posts	ph 2811	520	230	–
	ph 2664	600	150	–
	ph 2810	600	220	–
	ph 2643	630	260	–

PPF 0.36
AD 590 mm

The relationships are not clear; it is, therefore, not possible to say which is the earlier of the two structures. The building is aligned on the side street, immediately adjacent to its junction with the main road.

PS46 (1976) (Fig 4.61)

		Diam	*Depth*	Void
Type E; 2.0 × 2.0m				
Early: 4 posts	ph 2287	450	230	
	ph 2641	480	310	
	ph 2624	320	200	
	ph 2246	440	150	

PPF 0.53
AD 420 mm

Middle: 4 posts	ph 2570	420	220
	ph 2640	350	270
	ph 2638	330	150
	ph 2571	400	280

PPF 0.61
AD 370 mm

Late: 4 posts	ph 2286	430	170
	ph 2639	420	200
	ph 2247	480	220
	ph 2245	440	260

PPF 0.45
AD 440 mm

PS 37

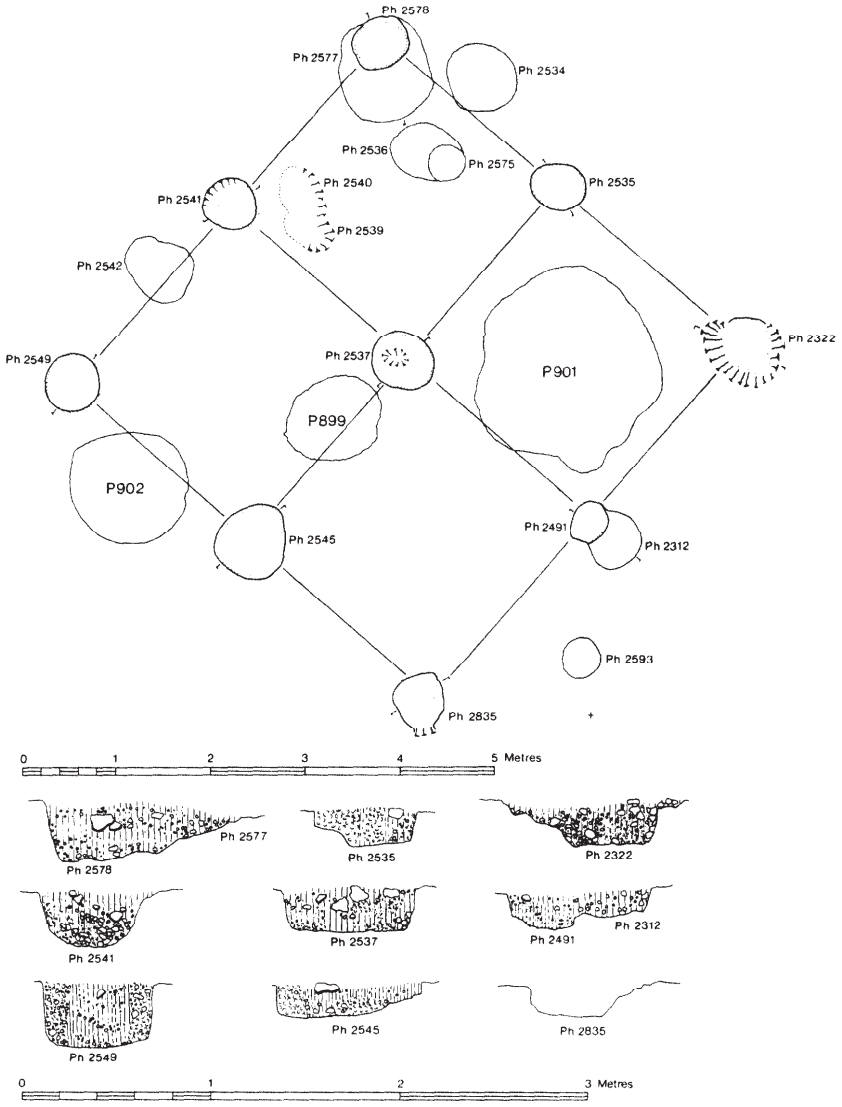


Fig 4.58

This structure was rebuilt on two occasions during which it shifted westwards. It is probably of early date, pre-dating the street in the line of which it lies.

PS52 (1976) (Fig 4.42)

Type E; 2.9 × 2.9 m, 4 posts

	Diam	*Depth*	*Void*
ph 2688	480	270	300
ph 2711	550	180	370
ph 2691	430	150	230
ph 2694	400	180	190

PPF 0-42
AD 460 mm

This structure is apparently aligned on the main road; it probably belongs to the early phase of the site.

PS53 (1976) (Fig 4.62)

Type E; 2.4 × 2.5 m, 4 posts

	Diam	*Depth*	*Void*
ph 2910	400	300	–
ph 2718	400	280	–
ph 2696	470	300	–
ph 2690	430	280	–

PPF 0.69
AD 420 mm

This structure replaces or is replaced by PS52. Ph 2910 is cut by P917, which contains pottery dated to cp 4, suggesting that this structure may belong to cp 3. It is likely that PS52 also pre-dates the pit.

PS54 (1976) (Fig 4.63)

Type G; 3-2 x 3.2 m, 4 posts

	Diam	*Depth*	*Void*
ph 2710	740	270	320
ph 2698	760	180	*c* 330
ph 2687	700	270	–
ph 2693	690	270	–

PPF 0.35
AD 720 mm

PS58 (1976/1977) (Fig 4.64)

Type E; 3.3 × 3.3 m, 6 posts

	Diam	*Depth*	*Void*
ph 2731	350	100	–
ph 2804	420	150	–
ph 2736	400	100	–
ph 3094	450	100	–
ph 2735	500	130	–
ph 2732	450	120	–

PPF 0.27
AD 430 mm

PS39+PS40

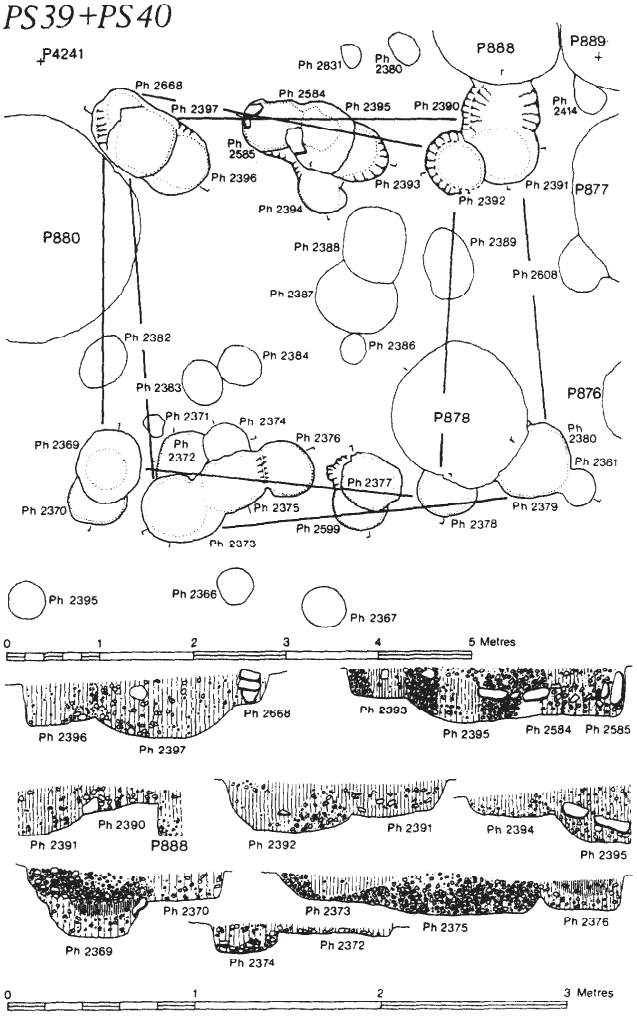


Fig 4.59

PS45

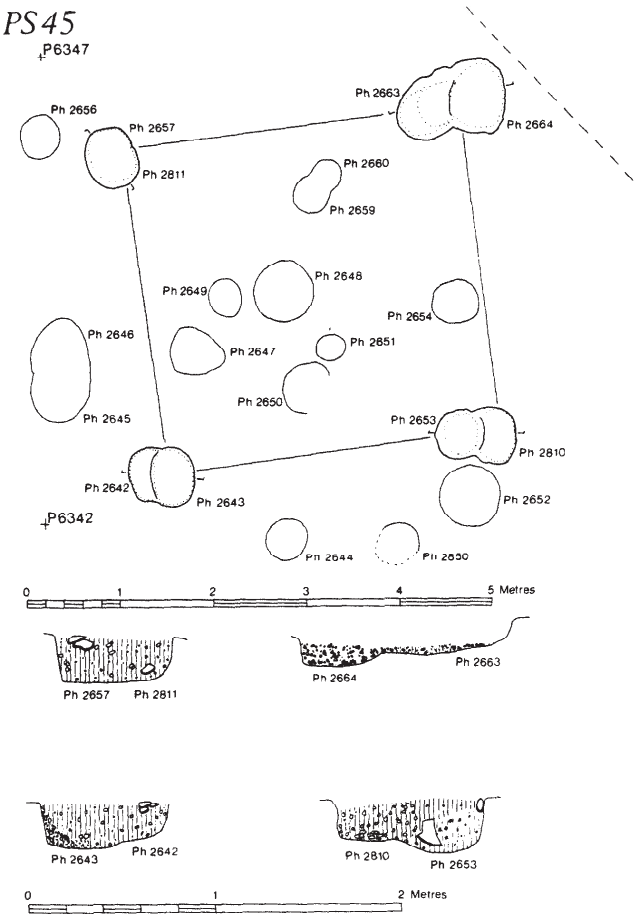


Fig 4.60

PS46

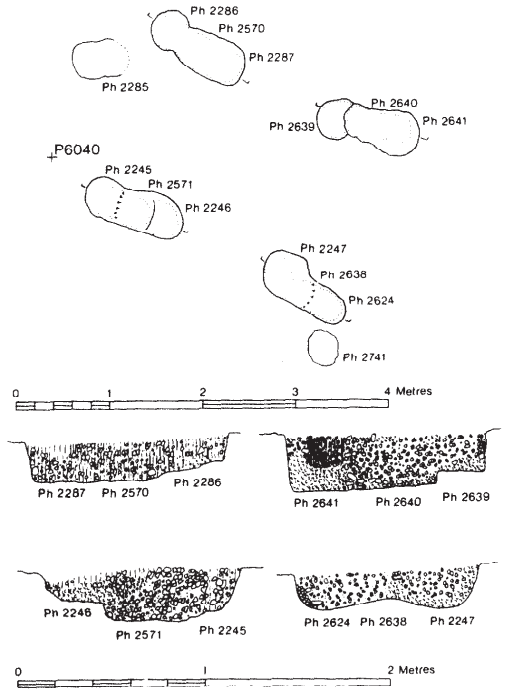


Fig 4.61

PS52+PS53

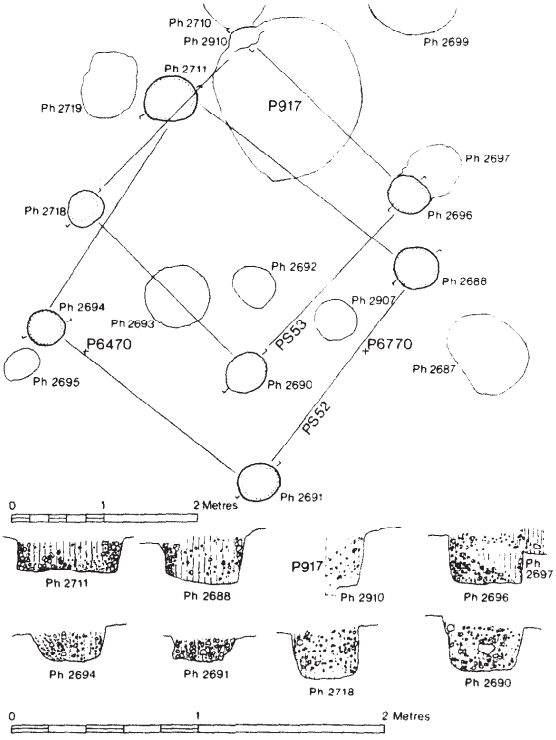


Fig 4.62

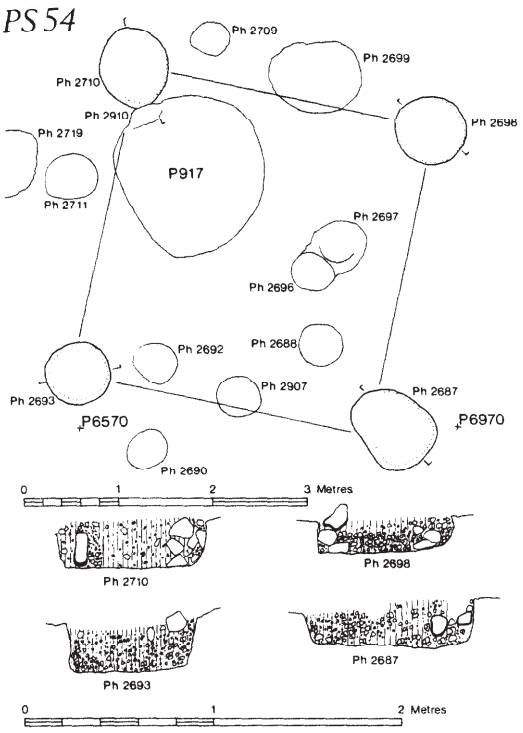


Fig 4.63

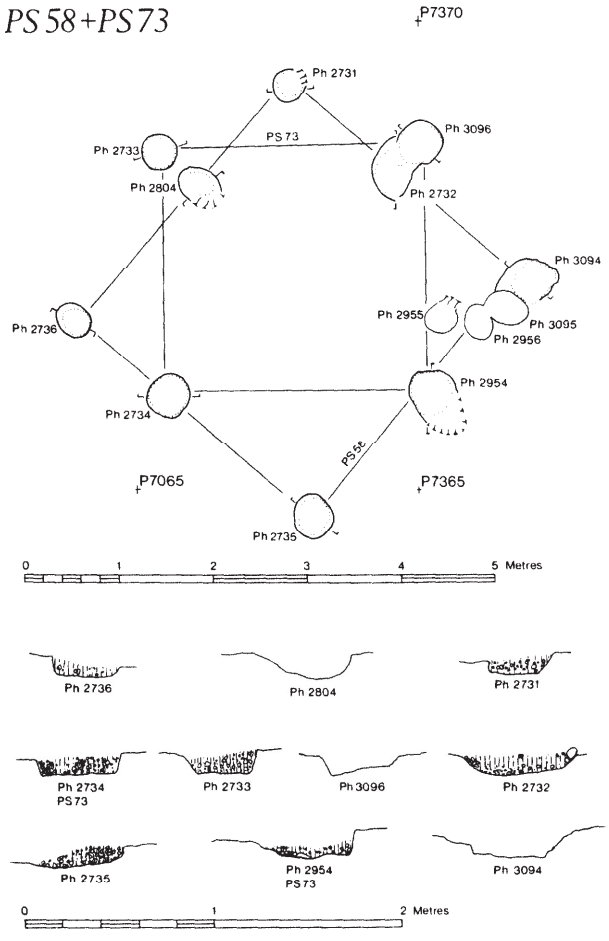


Fig 4.64

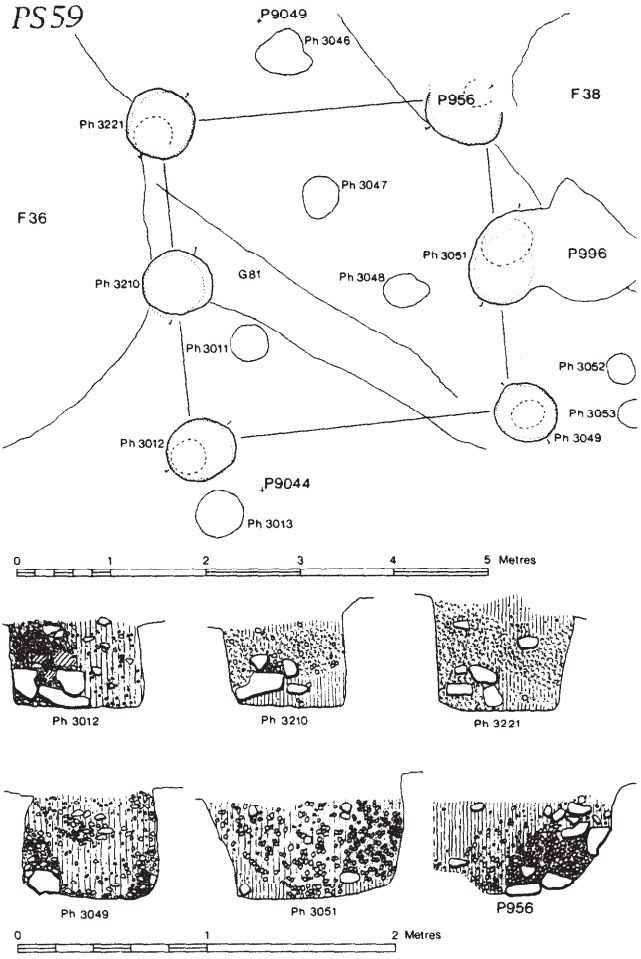


Fig 4.65

This structure is atypical of type E, in that it has two extra postholes, one each on the north and west sides. They are not placed in the middle of each side, but 1.4 m along from the corner post, ph2731. It is aligned on the main road, but is set back a few metres from it. Its relationship to PS73, on the same site but at 45°, was not recovered; it is not certain which is the earlier.

PS59 (1977) (Fig 4.65)

Type B; 3.6 × 3.6 m, 6 posts

	Diam	*Depth*	*Void*
ph 3012	740	450	300
ph 3051	860	650	300
ph 3049	660	600	350
ph 3210	730	450	—
ph 3221	720	600	300
ph 956	740	700	—

PPF 0.78
AD 740 mm

This six-post structure is situated just inside the main entrance between the quarry hollow F38 and F36 to the west. Its posts are quite massive and in all respects it is very similar to PS61, sited 2 m to the north. Ph3012 produced charcoal identified as oak, but there is no evidence to suggest that this was part of the post.

The structure contains pottery dated to cp 6-7, but this seems to disagree with the relationship of P956 to the quarry hollow. It would appear from the section that the posthole was cut by the quarry hollow F38, while it was

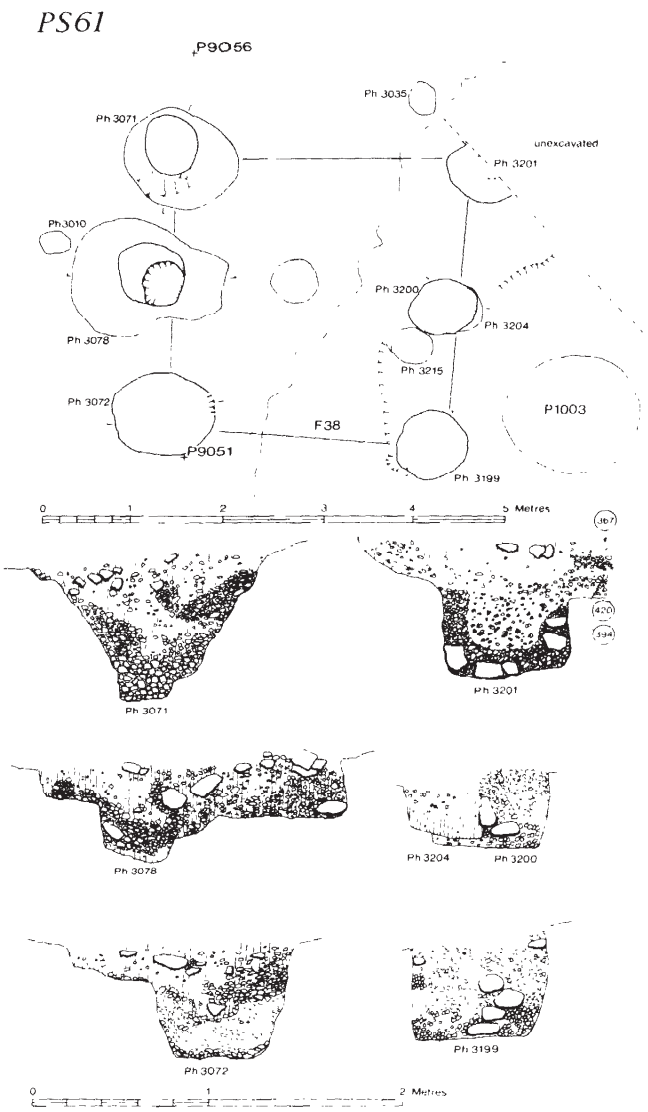


Fig 4.66

silting up, and that when PS59 went out of use some of the fill of P956 washed into the hollow of the quarry to be finally sealed by the latest silts.

PS61 (1977) (Fig 4.66)

Type B; 3·4 × 3·5 m, 6 posts

	Diam	*Depth*	*Void*
ph 3071	750	900	—
ph 3072	680	700	—
ph 3078	730	620	—
ph 3199	850	680	*c* 270
ph 3200	740	500	—
ph 3201	820	600	380

PPF 0·88
AD 760 mm

This structure would appear to be earlier than the quarry hollow F38, since it is clear from the section that ph 3201 is sealed by the silts in the quarry hollow. The relationship of ph 3200 and ph 3199 to F38 is not recorded, but they

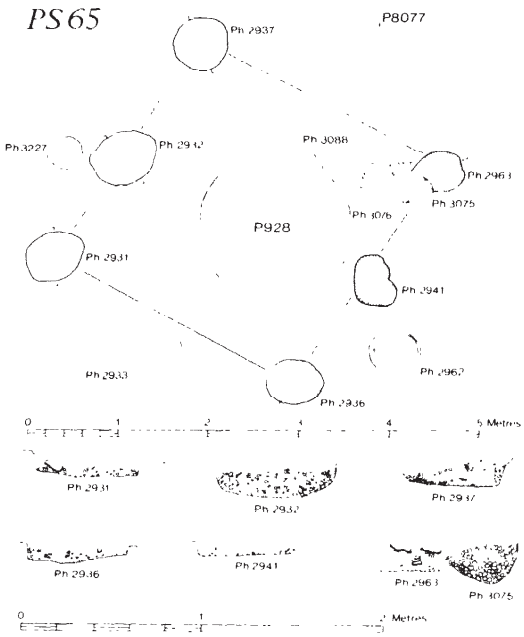


Fig 4.67

were not visible until the last of the quarry hollow layers were removed. It is possible, however, that these postholes, rather than being cut by F38, were the first features to be cut into the edge of the freshly dug quarry. The hypothesis would accord better with the pottery phasing and the same argument could be applied to PS59 which, from its great similarity, is likely to be contemporary.

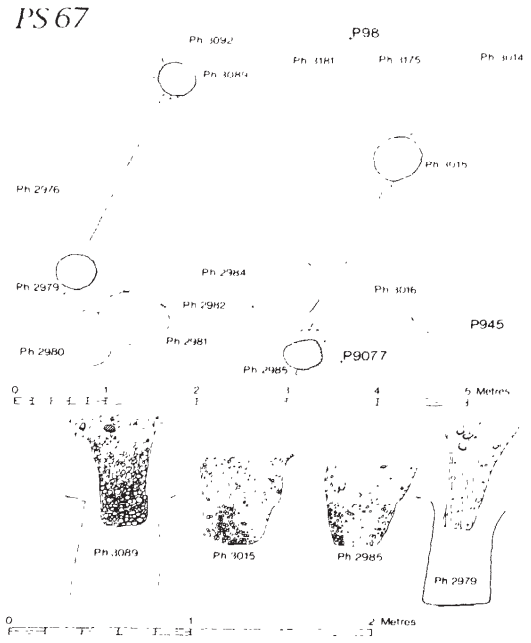


Fig 4.68

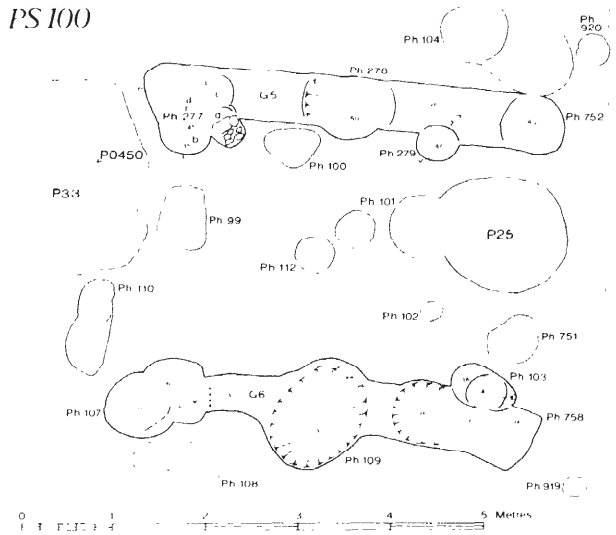


Fig 4.69

PS65 (1977) (Fig 4.67)

		Diam	*Depth*	*Void*
Type A; 3·1 × 3·1 m, 6 posts	ph 2931	600	170	*c* 330
	ph 2932	790	220	—
	ph 2937	640	180	—
	ph 2936	610	120	300
	ph 2941	600	90	—
	ph 2963	500	200	—

PPF 0·26
AD 620 mm

PS67 (1977) (Fig 4.68)

		Diam	*Depth*	*Void*
Type F; 2·7 × 2·7 m, 4 posts	ph 2979	450	700	200
	ph 2985	500	550	200
	ph 3015	520	550	—
	ph 3089	420	730	240

PPF 1·36
AD 470 mm

This is one of the best examples of type F. It will be noted that the two postholes to the east are shallower than the westerly ones, as they are slightly downhill. This suggests that the posts were precut to the same size.

It is likely that this structure is earlier than PS68 and PS69, which were built on the same site but on a different alignment.

PS100 (1971) (Fig 4.69, P1 29)

		Diam	*Depth*	*Void*
[illegible]	ph 278	800	460	*c* 420
	ph 252	700	400	*c* 420
	ph 107	660	300	—
	ph 109	550	280	—

PPF 0·53
AD 690 mm

This structure consists of two parallel gullies, G5 and G6, each of which held three posts. Both of the western posts, ph 277 and ph 107, present evidence of four phases, though such complexity is not apparent in the other features. There is some evidence from G5 that the gullies held smaller timbers in between the main posts. Between ph 277 and ph 278 are what appear to be the bases of two stakes. There also appears to be an extra post placed in G6

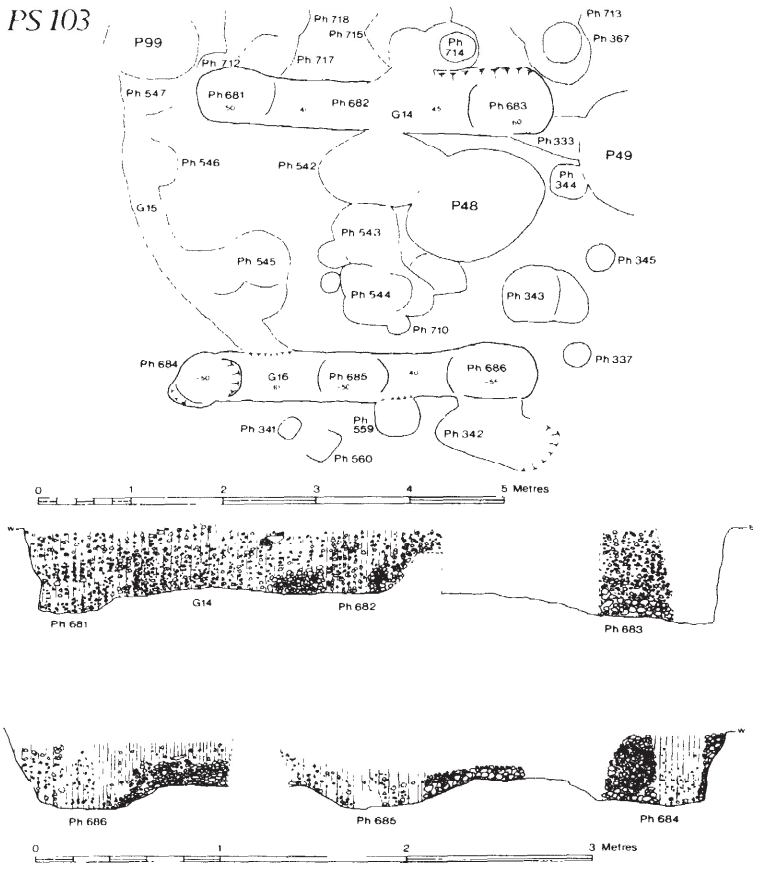


Fig 4.70

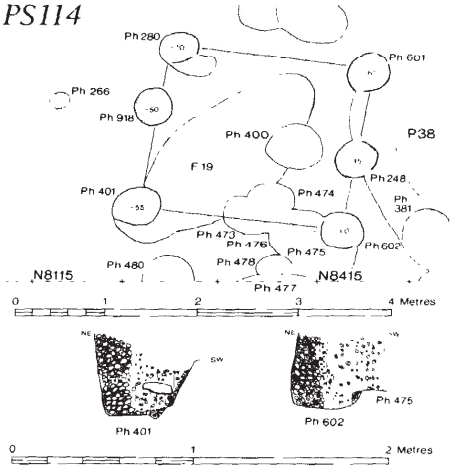


Fig 4.71

between ph 109 and ph 758. This suggests that wattle walls may have come right down to ground level, rather than there being a raised floor. The structure has been dated by associated pottery to cp 6-7. Phs 103 and 279 could form a two-post structure, or a small four-poster, of which the other two posts are under the baulk.

PS103 (1971) (Fig 4.70, P1 28)

		Diam	*Depth*	*Void*
Type B; 3·5 × 3·2 m, 6 posts	ph 681	700	500	—
	ph 682	600	400	240
	ph 683	820	600	*c* 240
	ph 684	700	450	250
	ph 685	600	500	—
	ph 686	700	500	220

PPF 0·71
AD 690 mm

This structure is very similar in form to PS100, though smaller. It consists of two parallel gullies, which each held three posts. Though there is packing in the gullies between the posts there is no evidence from the sections to suggest that the gullies held any intermediate timbers or stakes.

Ph 681 is cut by ph 717, which belongs to PS104. PS104, displaced slightly to the north, has three distinct phases, and is dated to cp 6-7. It replaces PS 103, which is the earlier of the structures.

PS114 (1971) (Fig 4.71)

		Diam	*Depth*	*Void*
Type C; 2·0 × 2·0 m, 6 posts	ph 280	420	700	—
	ph 601	500	650	—
	ph 602	500	600	150
	ph 401	480	550	200
	ph 248	450	450	—
	ph 918	440	500	—

PPF 1·24
AD 470 mm

This is the only structure of type C and it is clearly very similar to type F, only differentiated by its two additional postholes. On the west side ph 918 is not placed exactly halfway between the corner posts, but is closer to ph 280, being 0·8 m from it. Ph 601 and ph 248 are cut by the erosion cone of P38, which contains pottery dated to cp 5. Thus PS114 is likely to date to cp 3 or 4. Ph 602 is cut by ph 475 of PS84, which pre-dates P55 dated to cp 4.

4.2.4 The structural use of daub, clay, and timber

by Cynthia Poole

Clay and daub

Approximately 950 samples of clay, baked clay, and daub have been found at Danebury. The samples vary in size from a few grammes to over 17 kilogrammes and they come from 733 individual contexts contained in 483 features, the greatest quantity coming from P166, which contained 88.5 kg. Various types can be identified: raw clay; clay that has been partly prepared; clay that has been utilised (and often baked) to make small objects such as weights; and daub (clay mixed with varying amounts of tempering material) employed for a wide variety of uses to make walls, ovens, hearths, and small objects. The latter include weights, spindle whorls, and sling shots, which are discussed separately elsewhere (Vol 2, pp 398-407). The present discussion deals only with the structural uses of daub and clay and is, therefore, mainly concerned with walls, ovens, and hearths.

Summary of the fabrics

A total of twelve fabrics could be discerned by visual inspection. It is possible that a few of these should be grouped together, but more detailed petrological work would be necessary to be certain. Each fabric has been given a letter from A to L. A detailed description of each can be found in fiche 3, frames D2-8. They divide into two groups: *unbaked clay* (types K, L, H) and *daub* (types A, J, F, C, D, E, G, B). Only the daub fabrics are here considered. Of the unbaked clays *fabric K* is from the Reading Beds, *fabric L* is probably London Clay, while *fabric H* may have come from the Bracklesham or Bagshot Beds.

Daub of sandy fabric

Fabric A: a distinctive dark brown daub characterized by coarse quartz sand temper to which sometimes chert, flint, or shell has been added. A large proportion of the samples had been used for oven plates of type 2.

Fabric J: a yellowish-brown daub tempered with fine-medium quartz sand with less than 15%, chalk and flint temper, This was most commonly used for small objects, but also occasionally for ovens.

Fabric F: a red or reddish-yellow daub tempered with fine to coarse quartz sand and occasionally other materials. Less than a quarter of the 77 samples produced evidence of function: uses included walls, ovens, and small objects.

Daub tempered with chalk/flint

Fabric C: a very pale brown daub tempered largely with chalk and to a lesser extent flint, chert, and snail shells. The temper constitutes between 25% and 40% of the bulk and is in pieces up to 30 mm in size. The temper was probably added to the clay as soil. It was commonly used for walls, oven bases, type 1 oven plates, and hearths. With 131 samples, this is one of the commonest types and includes some of the largest samples, eg that from P166.

Fabric D: a brown or reddish-brown daub distinguished by the addition of small pieces (2-4 mm) of burnt chalk. This is usually accompanied by chalk, flint, and other rarer materials. The amount of temper is mostly 20%-40%, individual pieces measuring up to 15 mm in size. It was used for walls, oven plates of type 1, and weights. There are 77 samples, of which one particularly large sample of *c* 17 kg comes from P878.

Fabric E: daub with colours ranging from reddish-yellow to pale brown. It is usually only tempered with chalk and

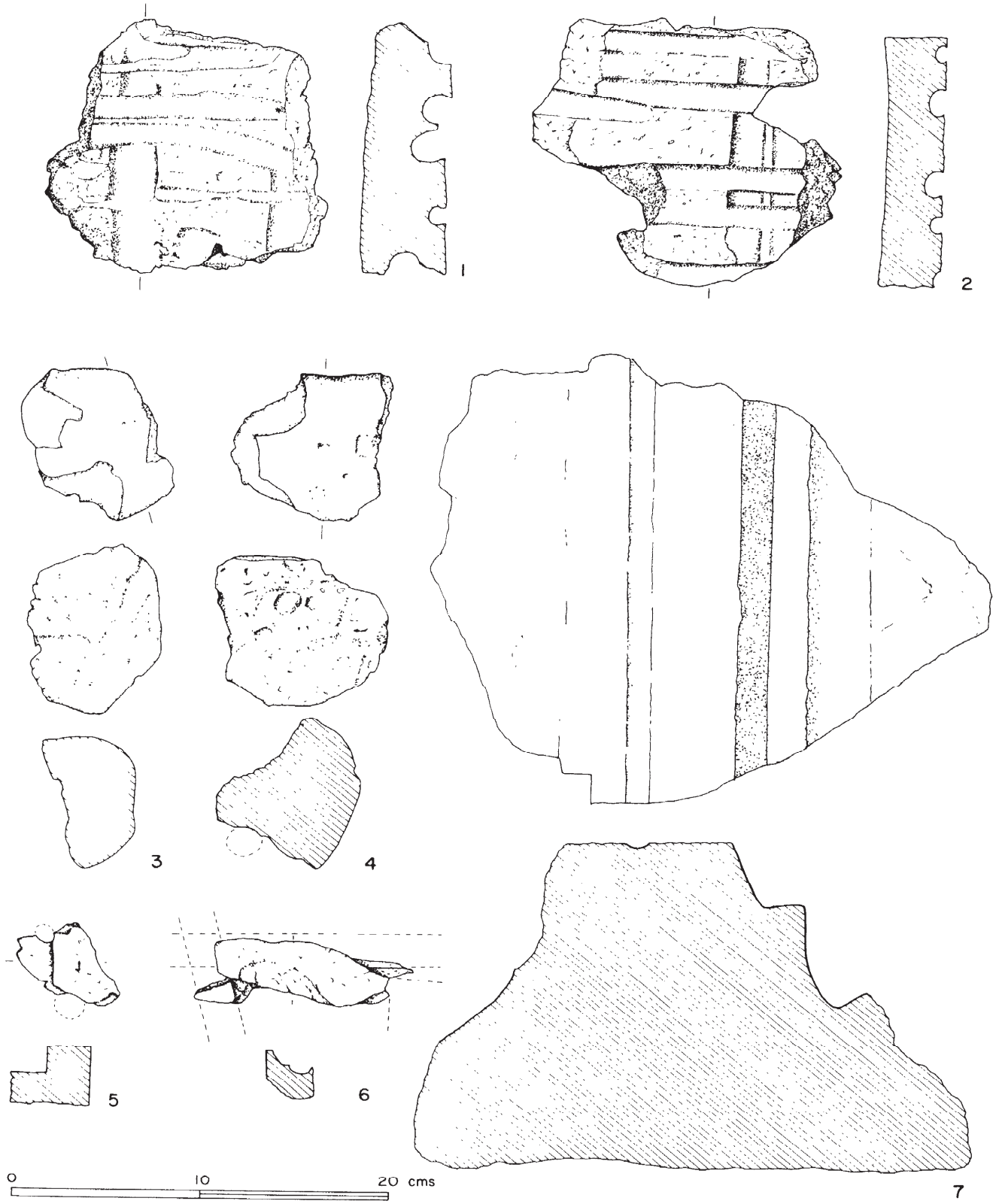


Fig 4.72 Wall daub. 1-2: wall daub with wattle impressions; 3-4: structural daub with wattle impressions; 5-6: wall daub with square poles; 7: structural daub with timber impressions



Fig 4.73 Distribution of wall daub

flint, the amount of temper varying from 25%-40%, individual pieces measuring up to 40 mm. It was widely used for walls, hearths, and ovens. This is the most common type with 321 samples. P23 produced nearly 15 kg.

Fabric G: distinguished from type E only by the smaller amount and size of the chalk temper and by its very soft and powdery nature. There are 89 samples.

Fabric B: daub reddened and made very brittle by intense heat. Flint is the usual temper, commonly less than 20% in volume. There are only eight samples.

Of the daub and clay only 31% could be assigned to some form of structural function, while an additional 13%) formed small objects (which are discussed in the small finds report, Vol2, pp 398-407). This leaves 56% to which no function could be assigned. Much of this was in small pieces either with no vestige of shape or with evidence of a smoothed surface but nothing more distinctive. The structural daub could be divided into wall daub (58%), oven plates of type 1 (23%), oven plates of type 2 (8%), hearths (8%), and large objects of uncertain function (3%).

Wall daub (Fig 4.72)

Wall daub occurred in 168 contexts in 122 features, which cover all ceramic phases (Fig 4.73). The fabrics most commonly used were C and E, followed by D, with only a very small number of examples in fabrics A, B, F, G, K, and L. Thirteen contexts produced large quantities of wall daub; these are discussed in detail in fiche 3, frames El-8.

The majority of the wall daub samples exhibit similar characteristics. The outer surface is usually relatively flat and even, with only fine striations remaining from the smoothing process. There are also a number of pieces with wide shallow parallel striations formed by the finger smoothing of the surface. Some fragments, however, have quite rough and irregular sulfates with protruding fragments of tempering material. In general, it would seem that the exterior was fairly well finished, though no more than was necessary for practical purposes, and the surface of a single wall may have exhibited considerable variation. The thickness of the daub varies from a few millimetres to about 70 mm, but the average is 20-40 mm. The inside of the daub was usually left rough, just as it had squeezed through between the wattles. There are, however, pieces which have had the inner surface roughly smoothed off between wattle impressions.

Normally the inner surface is covered by closely-spaced wattle impressions. They consist of the horizontal 'rods' and the vertical 'sails'. Where possible these were differentiated but where there were only one or two wattle impressions on small fragments, some vertical sails may have been mistaken for horizontal rods. The diameters of the wattles were measured, unless they were too fragmentary, and the numbers were noted. The measurements are very similar for all samples: the longitudinal rods have diameters from 4 mm to 30 mm and the transverse sails from 10 mm to 55 mm. A large proportion of the horizontal rods measure between 14 mm and 16 mm, with a rapid decrease above 16 mm. By contrast, nearly half the measurements in most cases occur below 14 mm, suggesting that most rods measured about 15 mm or 16 mm at their bases, gradually tapering to a much narrower width at the top. These sizes are comparable with modern rods obtained during experimental hurdle making in the Somerset Levels Project (Coles & Darrah 1977). These modern rods varied by 7-8 mm from top to bottom and were obtained from 3-4 year coppice. The modern hurdles were made to compare with those from Walton Heath track, Somerset, from which the rods measured 10-40 mm, the large majority being 14-18 mm. Similarly the rods from Rowlands track (Coles & Orme 1977) have the same range but most are 18-20 mm. From the Eclipse track (Coles *et al* 1975) the longitudinal rods measure 10-25 mm. None of these examples are contemporary with Danebury, being either Neolithic or Bronze Age.

The vertical sails at Danebury range from 10 to 50 mm, though the majority tend to be between 15 and 25 mm, with a distinct concentration at 18-20 mm. In general, the thicker stems have been selected for the vertical sails. The sizes are also similar to those used in the hurdles at Walton Heath, where most sails measure 20-25 mm, though the Eclipse track produced sails of 30-40 mm, a size not quite as common at Danebury.

The horizontal rods are nearly all represented by complete stems, though there are also a small number of cleft rods amongst them. Cleft rods are common in modern hurdle making, but were not represented in the hurdles from the Somerset Levels tracks. Amongst the vertical sails, though a large proportion are complete stems, there is a significant number of cleft or shaped poles. Many of the cleft poles were simply split in half, but others had more than one cleft surface and had a distinct similarity in shape to modern 'chestnut paling'. This was particularly noticeable in the samples from P166, from which 58% of the sails were cleft poles, largely of this type. It is not always possible to make complete measurements for the cleft poles, but in general they seem to be of similar size to the other sails, though tending to the larger end of the scale, being mostly greater than 20 mm in diameter. Cleft sails are a common feature of modern panels, though they were not in evidence on the Walton Heath hurdles.

A recent discussion of prehistoric hurdles by Coles (Coles *et al* 1982, 38) provides comparable data from Iron Age contexts at Glastonbury and Meare. The hurdles were made of cleft sails and round wood rods similar in size to those identified at Danebury and the sails were placed at 140 mm intervals comparable to those estimated for the Danebury wattlework. The worked ends of the Glastonbury sails show that the panels had been inserted into the associated timber beams.

Another feature of the vertical sails is that they did not only stand single; there was a significant number of pairs of poles and even a few examples of three poles side by side. They were definitely not longitudinal rods misidentified as all the examples recognized had impressions of the rods interwoven around them. P55 produced eight examples of pairs, most of which measured 15-24 mm in diameter; P684 produced five pairs measuring 16-19 mm, 33 mm, and 34 mm; P680 had one pair of 22 mm and 24 mm; P878 produced 17 pairs, designated on Fig 4.74 by paired letters and most of them measuring 15-27 mm. P684 produced three groups of triple sails, which measured 15 mm, 17 mm, and 20 mm; 15 mm, 20 mm, and 23 mm; 15 mm, 30 mm, and a cleft pole.

Occasional double and triple sails were reported from Walton Heath Track and Rowlands Track in the Somerset Levels. It is possible that they represent repairs where sails have broken during construction or, for Rowlands Track, the same stems bent back on themselves; the difference of diameter suggests this. This seems less likely at Danebury as many of the pairs were of similar size. It is possible that smaller poles had to be used and pairs would have provided additional strength.

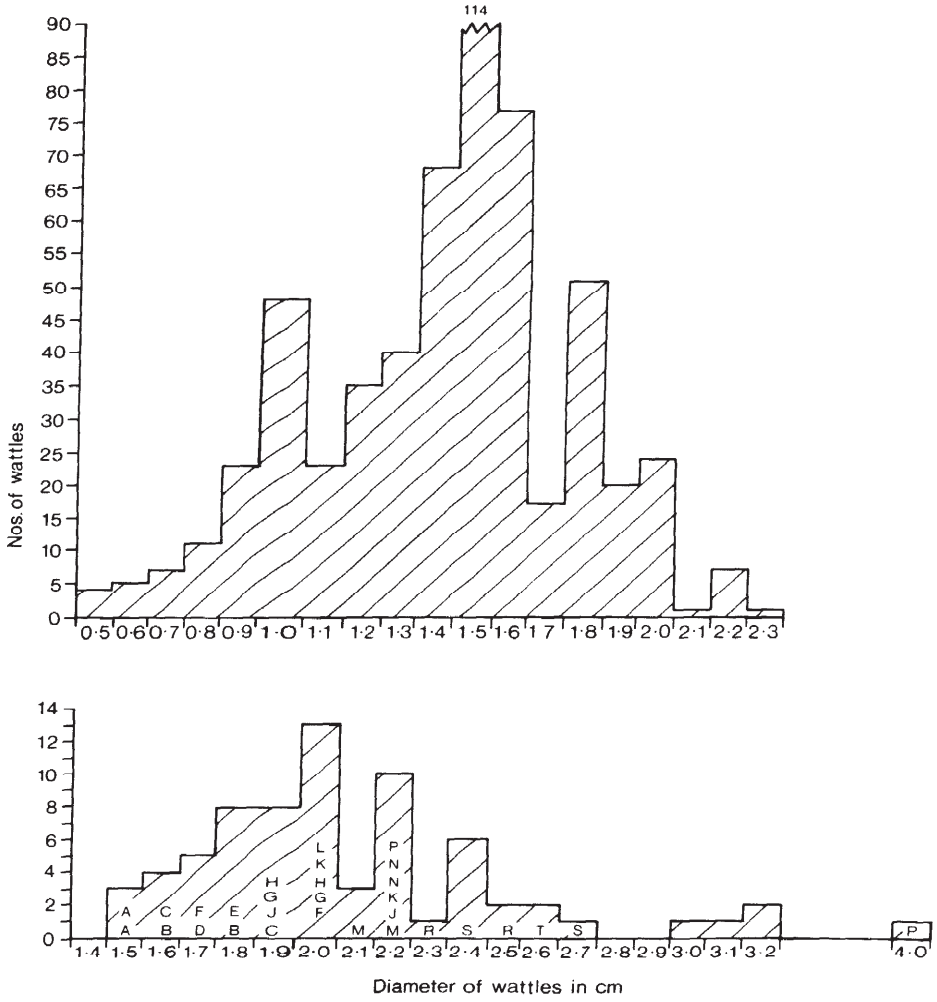


Fig 4.74 Sizes of wattle marks preserved in daub from P878. Top: horizontal wattles. Bottom: vertical wattles (paired letters represent double poles).

In general the horizontal rods were woven evenly under and over, but there are enough examples to show that this was not always the case. A piece of daub from P55 (Fig 4.72,l) has two vertical sails only 80 mm apart, which was too close to have all the rods evenly interwoven, so some of the adjacent rods were passed round the same sail, though the smaller more pliable rods were interwoven round each sail. From the larger pieces of daub from P878 (eg Fig 4.72,2) it is estimated that the usual distance between sails was 160 mm.

The wattles, as far as can be judged from the relatively short lengths of impressions available, were quite straight and the quantities involved suggest that they were obtained by coppicing. Three samples have produced the charred remains of wattles, which have been identified as hazel or hazel/alder.

Apart from the wattle marks, there are also impressions of shaped timbers on a small number of pieces. From P64 there is a vertical squared timber measuring at least 15 x 15 mm, with the two cut surfaces at an angle of about 100 to each other. This vertical timber has normal wattles woven round it horizontally (Fig 4.72, 5). Ph 510 produced daub bearing evidence of two squared timbers, one of which was certainly vertical and measured at least 24 x 15 mm (Fig 4.72, 6). The second was the end of a squared piece measuring 16 by 10 by 20 mm and it could have been either horizontal or vertical. Both timbers would have been visible on the outside of the daub. P128 produced possible evidence of planks. The daub had a raised ridge protruding about 5 mm between what appeared to be the impressions of two planks. Two other flat impressions occurred on daub from P231. These measured 25 mm and 32 mm and could have resulted from plank impressions; they could, however, have been caused by the flat sides of split wattles.

In addition to the typical wall daub, a few samples have produced larger pieces of structural daub. It cannot be certain that all the pieces come from buildings, as in all cases they are associated with both ordinary wall daub and oven daub. The largest amount comes from P166; most of the pieces are quite thick, 70-90 mm, with a slightly convex surface. Several of these have single wattle impressions, not interwoven, associated with a large

number of leaf impressions, which show the leaves still attached. One of these pieces has, at an angle of 80° to its convex surface, a flat surface with striations running along its length which look like the grain of wood, suggesting that the daub came up against a plank at least 28 mm wide. Another small fragment has impressions of two planks at right-angles to each other, one of which was at least 35 mm wide. A large piece has the impressions of the ends of two planks; one over 60 mm in breadth and 8 mm or more wide was butted up against the second one, over 16 mm wide, at right-angles to it.

On the largest piece of daub there are several timber impressions (Fig 4.72, 7). These include a squared plank 45 mm by 18 mm and running parallel to it another plank with a curved edge 60 mm wide. There are also a number of wattle impressions, but these do not help in assessing how the daub related to a structure.

Nearly all the wall daub has been found in pits, broken up and discarded as rubbish. As the daub is very fragmentary it is difficult to tell from the relatively small pieces whether it came from circular or rectangular buildings. Judging from the size of the vertical wattles, the majority being between 18 mm and 25 mm in diameter, it seems unlikely that the daub derived from the circular houses, since the stakeholes of their walls show their vertical poles to be more substantial, about 50-70 mm wide. It therefore seems more likely that the daub comes from the rectangular post-built structures, especially as most of the large groups of wall daub (discussed in fiche 3, frames El-8) come from the interior of the fort where no circular buildings are known. Those samples found closer to the deeply stratified layers (and circular houses) come from locations close to complexes of rebuilt four- and six-post structures. Slighter vertical poles could be used in rectangular buildings, because the wattle work was probably built as individual hurdles and inset into the cross-beams which supported the floor and the roof. By contrast, the stakes in the circular houses were a major structural element supporting the roof and therefore needed to be more substantial.

Hearths made of daub

Daub from hearths is the most difficult to recognize in the discarded state, as any fragment of daub with an intensely burnt surface could be part of a hearth. Daub from sixteen contexts has been tentatively ascribed to hearths; only one sample was definitely a hearth (fiche 3, frames E8-9).

Layer 562 was a hearth found *in situ* in the 1978 quarry hollow and layers contemporary with it date to cp 6. The hearth was approximately circular, 800 mm by 700 mm and 100 mm thick. It was formed of coarse daub spread over a foundation of flints and chalk lumps 70-100 mm in size, some burnt. The surface was smooth and reddened, changing to light reddish brown, then pink, below. This hearth is similar to many other hearths described from other Iron Age sites such as Maiden Castle and Glastonbury, where they are circular, convex in section, with the margin sloping gradually to the floor. Nothing comparable to the more complex forms at Glastonbury has been found at Danebury.

Most of the other samples of daub which have been tentatively described as hearth daub have been ascribed to this category on the basis of their similarity to S1859. Although other hearths have occurred *in situ,* this was the only one from which some daub was retained, apart from the hearth in CS14 (layer 215) which was composed of reused wall daub.

In addition to the typical hearth daub there are four samples of a different character made of fabric B, which have been blackened or reddened by intense heat and also become brittle and fissured. All the pieces look like small lumps of clay that have been used to plug cracks or holes in hearths or ovens and are best illustrated by a piece from P672.

Ovens (Fig 4.75)

Several different types of oven daub have been recognized, coming from different parts of the oven. For the purposes of this discussion the oven will be divided into three separate parts: the oven base built *in situ* on the ground, the oven plate, and the oven cover. Ample evidence for the oven base and plate has been recovered from Danebury; the nature of the cover is more hypothetical.

Oven bases

Four oven bases have been recognized *in situ:* F27, F44, and F45 in CS7/8, and the oven in CS14. These are all described in detail in fiche 3, frames E12-13.

F44 and F45 are both single circular ovens of similar size being 1.1 m and 1.25 m in diameter respectively, though the interior measured *c* 0.75 m in diameter in both cases. The walls varied between 180 mm and 280 mm in thickness. Both had openings on one side 240 mm and 400 mm wide. Neither survived over a height of 200 mm.

The base surviving in CS14 is similar, though it was a double oven forming a figure of eight shape. Both parts were smaller, measuring 860 mm and 660 mm in diameter and the overall length was 1-46 m. The walls were about 200 mm thick and both had openings on the same side about 450 mm wide.

F27 is slightly different in that it had its base cut into the chalk and no daub survived above the surface of the chalk. It was roughly circular in shape and was lined with daub of variable thickness. From the daub that has been retained, the shape of some pieces suggests part of an opening forming some sort of curved arch, which probably served as a stoke-hole. The fill comprised burnt material, including charcoal and burnt flints.

These oven bases are clearly incomplete, but none of the collapsed superstructure survives to indicate the form of the upper parts. It is likely that they had some sort of oven plate above the fire to support objects to be heated, but there is no indication whether either of the types discussed below were used. Additionally (or alternatively) they may have been enclosed by an oven cover.

Amongst the daub samples there are some large pieces of daub whose structural use is uncertain. Some pieces with plank impressions are probably part of buildings, but others which just have wattle impressions are possibly parts of oven bases. For example, the large piece from layer 395 may be the basal corner of a stoke-hole, as the wattle impressions suggest it may have curved round to form an arch. There are also several curved pieces of daub which have odd wattle marks and could be part of an arch over a stoke-hole, eg P166 and P657 (Fig 4.76, 13). It seems possible that the oven walls were supported on a rough frame of wattles during construction in some cases.

Oven bases have been found on other Iron Age sites such as Glastonbury and Maiden Castle. In general they appear to be of similar shape and size; one of the ovens from Maiden Castle had evidence of both an oven plate and the walls continuing upwards to form some sort of domed cover.

Oven plates

Oven plates are large discs of daub, up to 500 mm in diameter, which have been perforated through their



Fig 4.75 Distribution of oven daub

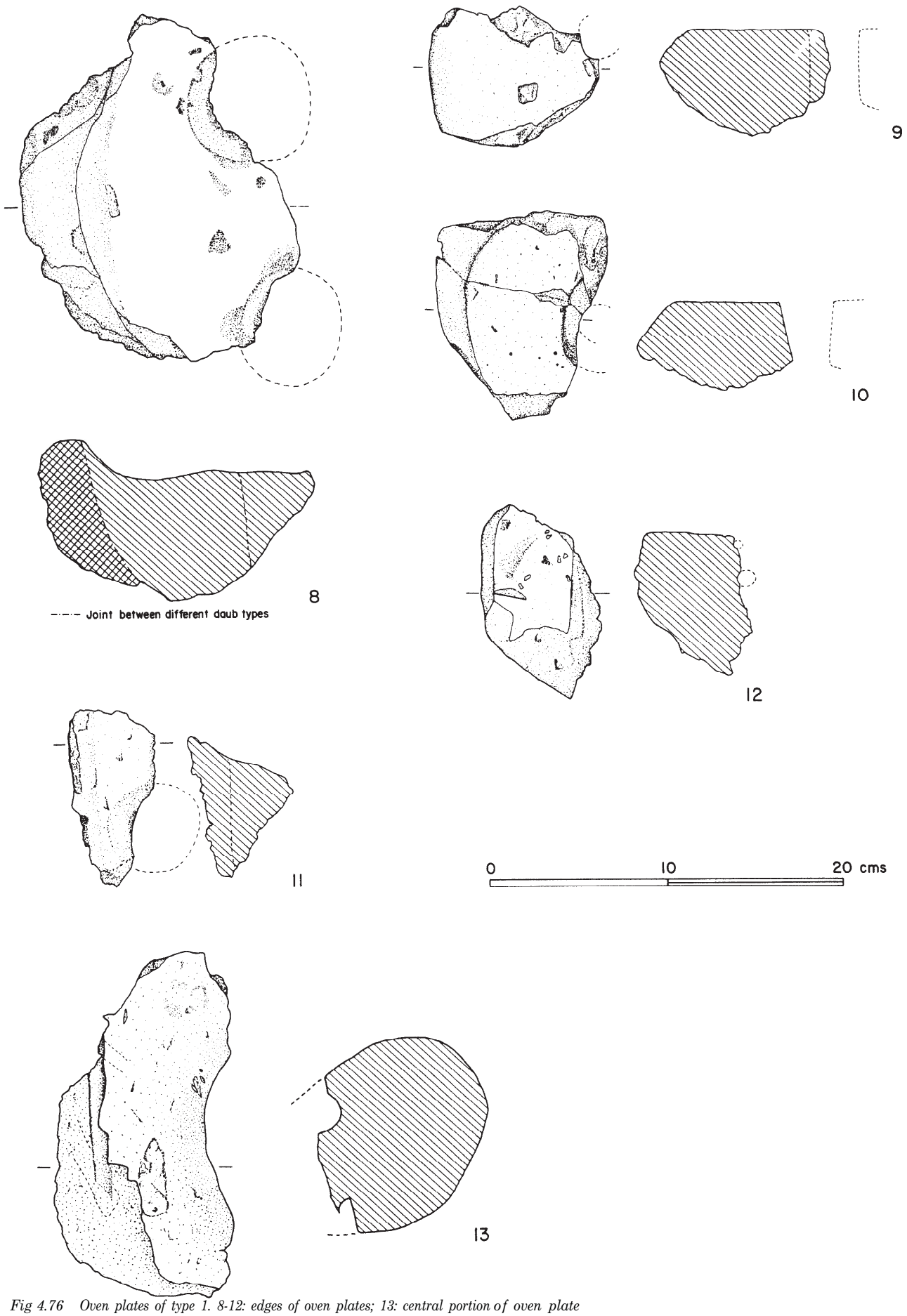


Fig 4.76 Oven plates of type 1. 8-12: edges of oven plates; 13: central portion of oven plate

thickness. No oven plates have been found *in situ*, nor even closely associated with any of the oven bases. The oven plates can be divided into two types: *type 1* perforated with small, close-spaced holes, and *type 2* with a large central hole surrounded by smaller holes. The most informative of the samples are described individually on fiche 3, frames E9-F4.

Type 1 (Fig 4.76, 4.78) There are 47 examples of this type of oven daub, of which over half occur in the later phases of occupation (cp 6-8). Fabrics C and D were most commonly used and only occasionally B, D, F, and G. Over half of the samples occurred in pits, also containing wall daub, and in the large deposits; the two types seem to have been discarded together. There is rarely any difference in the fabric between wall and oven daub, and with some of the pieces of indeterminate form it has been difficult to decide whether they should be assigned to walls or ovens. Several examples are described here: descriptions of the rest will be found on fiche 3, frames E9-F1.

The most complete example comes from P657 (Fig 4.78, 25). What remains covers an area of 11,500 sq mm. If circular, this example would have had a minimum diameter of 400 mm covering an area of at least 12,600 sq mm. It seems likely that these oven plates were circular, judging from fragments where the edge survives. A piece from P367 indicates a diameter of approximately 550 mm (Fig 4.76,8).

The thickness of the daub varies from 20 mm to 85 mm, but mostly averages 40 mm to 50 mm. There is a tendency for the daub to thicken round the base of holes and to thin away from them. These holes are quite numerous, randomly distributed in no regular pattern and generally quite closely spaced. The sample from P657 has evidence of at least eighteen holes, which are usually circular or oval, though occasionally subrectangular or figure of eight shape. Most measure 40 mm to 50 mm in diameter, though two are 70 mm wide. The distance between neighbouring holes varies from 20 mm to 70 mm, so the surface on which to place anything is relatively small in area. The surfaces are nearly always even and flat and the sides of the holes are also smoothed.

The under surface of the oven plate is usually covered in a mass of straw impressions but there are a few examples where the underside bears wattle impressions. This is well illustrated by the sample from layer 475, where a total of seventeen stems could be measured, varying from 3 mm to 15 mm in diameter, all with leaf impressions attached. The stems are randomly arranged like the straw impressions. A few samples have a mixture of both straw and stems, eg that from P612.

It would seem that these oven plates were prefabricated on a bed of straw or wattles and the plate was subsequently embedded into the wall of the oven base. The sample from P367 shows the edge of the plate set in a different type of daub, which had a few wattle impressions (Fig 4.76, 8).

It would not have been essential for these plates to be covered, since pots could be placed on them over a fire. However, in order to bake it would have been necessary to have an oven cover. It seems likely, from their close association with wall daub, that these ovens were for domestic use.

The daub from P23, though basically the same type, may have had a slightly different purpose. It is clearly more substantial, being up to 120 mm thick, and a considerably larger quantity survives with apparently fewer holes piercing it. The need to support the greater weight resulted in the base being covered in wattle impressions, of which 26 could be measured, ranging in size from 11 mm to 42 mm, arranged in an evenly spaced criss-cross pattern. In general the example seems to have come from a larger structure, providing a larger area for baking. It is possible that it may have had an industrial use, perhaps as a kiln or for drying cereals.

Oven plates very similar to those at Danebury were found at Maiden Castle, though they seem to be slightly smaller being about 30-40 mm thick and about 350-400 mm in diameter. The oven daub found at Little Somborne, Hants (Neal 1980, 118-21) may be of similar type, though its form is not clear from the published description. Fragments of pierced oven daub are mentioned from Gussage All Saints (Wainwright 1979, 100-4), but no measurements are given.

Type 2 (Fig 4.77) This type of oven plate is less common, with only 17 examples known. The samples occur across the site and no spatial pattern emerges. Unlike oven type 1, this daub rarely occurs with wall daub (except in P166 and P878, where it is also associated with oven plates of type 1). A domestic use, therefore, seems less likely.

The fabric most often used for these oven plates is type A, while C, H, J, and K occur only rarely. Each sample has its main characteristics summarized on fiche 3, frames F2-4 along with selected detailed descriptions.

Half the samples bear evidence of a large central circular opening between 120 and 150 mm in diameter, which was surrounded by eight or nine small holes 20-38 mm in diameter, usually at a distance of 25-40 mm. The plate is generally about 30 mm thick. Nearly all the surfaces were quite carefully finished, though the underside might be slightly irregular. Although more often flat, there is an indication on some samples that the surface was very slightly convex, with the merest suggestion of the daub curving down to the outer edge. There is at present only scanty evidence for the outer edge, which would appear to be circular and about 500-600 mm in diameter. The samples from P872 and P906 suggest that this oven plate had a properly formed outer edge. However, samples from P575 and P674 have fragments of this distinctive oven daub inset in type C daub, which was apparently part of the oven walls (Fig 4.77, 15).

It seems fairly clear that these plates were made separately with a good deal of care and were set into the oven walls. Alternatively, those plates with properly formed edges may simply have rested on supporting walls, to facilitate reuse. They were quite precisely made, in a distinctive sand daub, and were probably designed for some very specific purpose. The sand temper would have been necessary if the plate were to be subjected to high temperatures, which would have been more likely to occur in a non-domestic context. A possible suggestion is that they formed part of a crucible furnace, the crucible being placed in the central hole while the small encircling holes allowed smoke to escape. Such an oven need not be very large. To light it a tire could be started through the central hole, then the oven chamber could be filled with charcoal and the crucible placed in position; there need only be a small hole in the side of the oven to allow access for a pair of bellows to raise the temperature. Alternatively, if the plate were not fixed, the fire could be started in the oven base before the plate was placed over the top.

In the event of the oven having a different use the central opening could be covered over to varying degrees to act as a damper to control the temperature inside. In either event there is unlikely to have been an oven cover. An industrial use is therefore possible, but other explanations are not excluded.

This type of oven daub does not seem to have been commonly found (or at least is seldom reported).

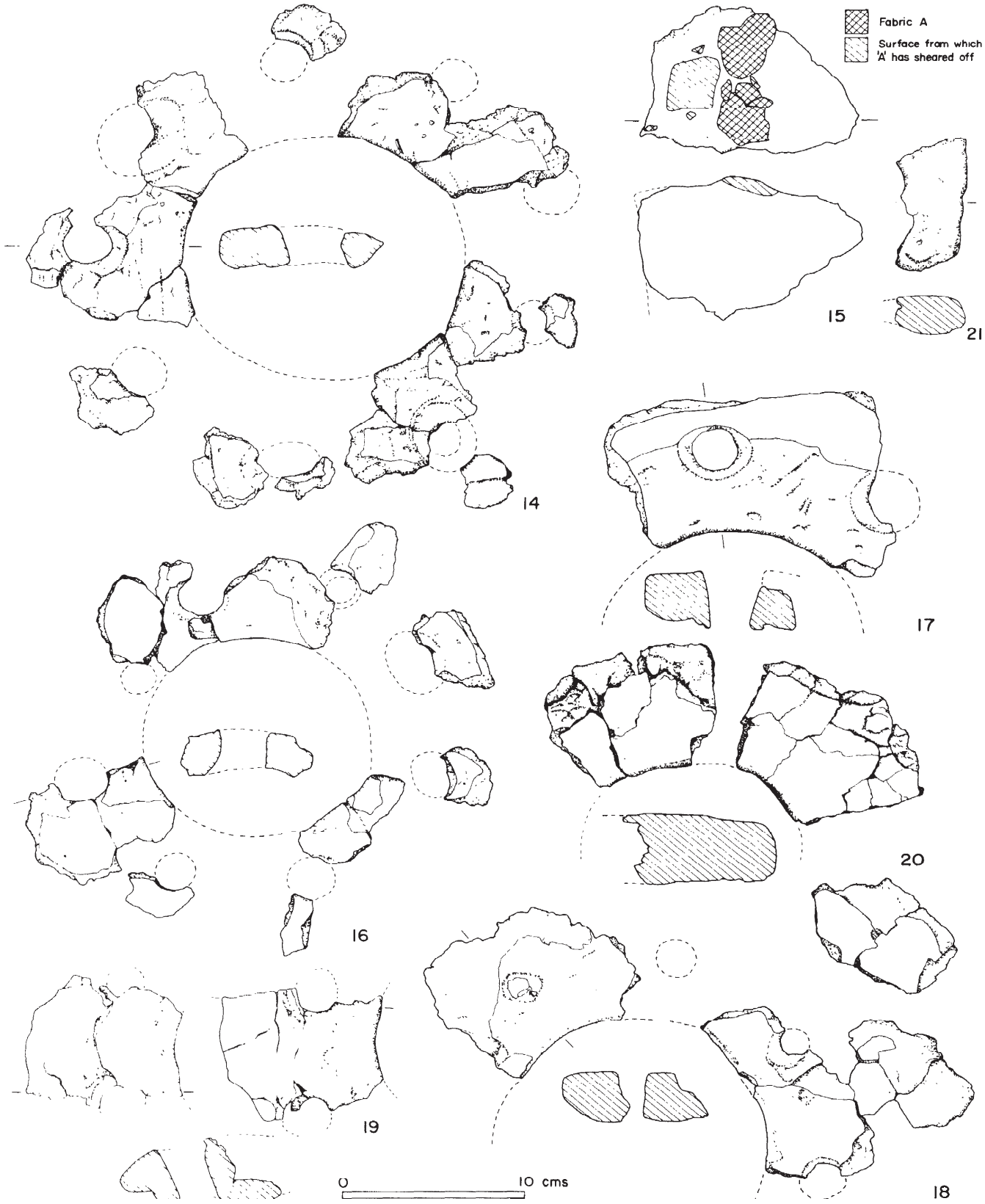


Fig 4.77 Oven plates of type 2. 14, 16-19: central parts of plates; 15: edge of plate embedded in oven wall; 20: oven plate or oven cover; 21: edge of oven plate

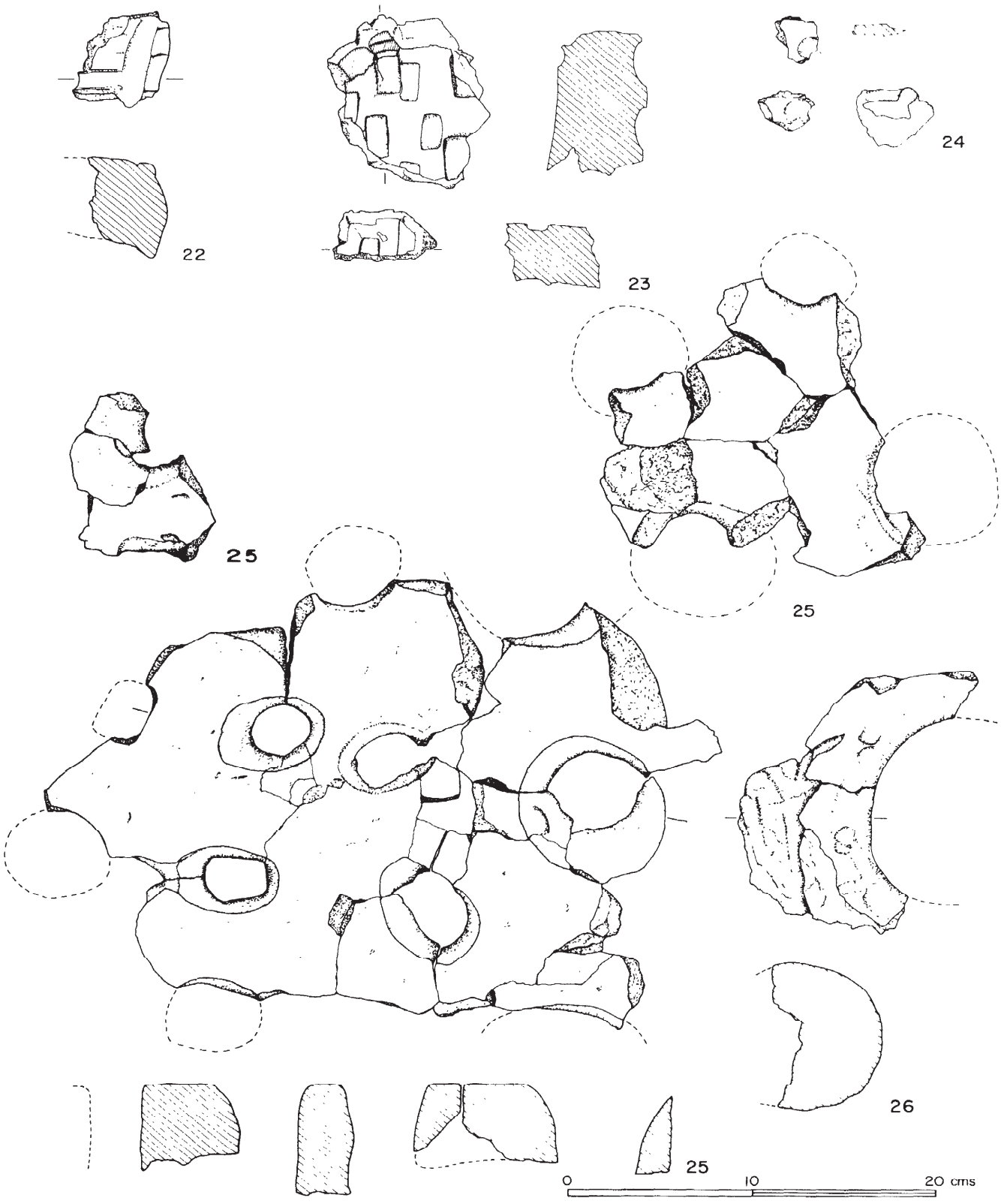


Fig 4.78 Decorated daub and part of oven cover

However, there is one piece illustrated from Gussage All Saints (Wainwright 1979, fig 78, 4057) which definitely appears to be of this type, and some of the other pieces are similar. At Boscombe Down West also (Richardson 195l), a number of comparable pieces of oven plate were found. The central circular hole, 230-250 mm, is, however, larger, though the encircling small holes are similar, 25-30 mm. A number of examples also came from Highfield Pits (Stevens 1934) where the central hole measured *c* 160 mm in diameter and was surrounded by ten or eleven smaller holes 20 mm across and about 60 mm apart. These are much closer in their dimensions to the Danebury examples,

Oven covers

The evidence for oven covers from Danebury is somewhat nebulous, though there are a few samples which could be interpreted this way. Firstly, the sample from P166 included with type 2 oven plates (Fig 4.77,20) may really be part of a cover; it has one large hole apparently with no small encircling perforations. It is similar to, though smaller than, oven daub from P761 (Fig 4.78,26), which is thicker and has part of a large opening 120 mm in diameter, possibly to allow smoke to escape. Similar oven covers were found at Highfield Pits (Stevens 1934), where they were supported on a wattle framework. There is nothing to suggest that the oven covers were domes and it is possible that they were flat or only very slightly convex. The miscellaneous structural daub (described in detail on fiche 3, frame F5) may be part of oven covers. Nearly all examples are flat and smooth and two samples have been decorated (Fig 4.78, 23, 24). Some small clay fragments from P79 have small circular depressions 13 mm across and from P761 some clay has rectangular impressions 22 mm and 25 mm long. These two examples are the only pieces of decorated clay or daub found at Danebury. Rectangular stamped impressions on clay oven fragments have also been noted from Gussage Ail Saints and at Marnhull, Dorset.

None of the ovens so far described need have had oven covers. Indeed in the case of oven plates of type 2, covers seem distinctly unlikely, but oven plates of type 1 probably were covered over, otherwise too much heat would have been lost. The oven bases found in ***situ*** may have had oven plates, oven covers, or both. Oven plates would not have been necessary for some functions; for example, birds and small game could have been covered in clay and placed in the hot ashes to bake in the base of the oven. However, with an oven plate, the oven would be more adaptable and could have been used for several different cooking procedures.

Structural timberwork

The evidence for structural timber comes from the voids of timbers in postholes, from stakeholes, and from impressions in daub.

The smallest timbers in use were wattles, preserved usually as impressions in daub. There are two size ranges represented: horizontal wattles measuring 10-17 mm in diameter, and vertical wattles 20-25 mm in diameter, though split and squared vertical poles tend to have a larger range from 20-30 mm at least. These wattles were probably obtained by coppicing, and their size suggests that they were probably utilized only to form wattle panels between the main posts of a timber framed structure. It seems most likely that the daub with wattle impressions came from the post-built structures.

Evidence for slightly larger poles comes from the stakeholes that occur in various regions of the site. So far they have formed a comprehensive structure only where they make up the walls of the circular buildings preserved in the stratified deposits. Most of the houses were stake-built, though not all the stakeholes necessarily survive. CS20 has its wail line virtually intact and represented by 114 stakeholes (with possibly about six additional stakes missing), which occur on average at 150 mm intervals but may vary from 60 mm to 200 mm. An arc of the stake circle was sectioned showing the widths to measure from 60 mm to 100 mm.

CS17 had at least two walls of stakes and possibly a third which is less well represented. It is estimated that the outer wall had a total of 218 stakes, of which 75 holes survived, and the inner wall 198 stakes, of which 44 are represented. The middle wall, if it existed around the whole circumference, would have had about 210 stakes. Three sections of the stakeholes were profiled and these indicate that the stakes measured between 40 and 110 mm in width, though the majority measured 50-70 mm. About half had pointed ends, while the other half were flat. The spacing of the stakes was between 20 mm and 250 mm though most were between 100 and 160 mm apart. The most common interval between stakes is 150 mm in all the wall lines and this is the closest distance at which the horizontal wattles can be easily woven.

Most of the houses had fewer recognizable stakes than CS17. CS3/4 has 62 stakeholes surviving and the intervening spaces suggest that about 40 are missing. CS10/l1 is estimated as having 125 stakes on the basis of the spacing of the 15 remaining stakeholes and its probable diameter. CSl5 probably had about 148 stakes; the 36 remaining stakeholes on the wall line are all regularly spaced at *c* 150 mm.

Though the stakes for these houses were not particularly large at 50-70 mm in width, their regular spacing at *c* 150 mm with tightly interwoven horizontal wattles must have provided enough strength to support the weight of a roof. If they had had a thick covering of daub, they would have acted as reinforced clay walls of mass construction, with load-bearing properties, as well as serving to provide the weather protective envelope to the building.

The evidence for large timbers comes mainly from the voids of postholes, and these indicate that in most cases the unshaped tree trunk was used. It is likely that the bark was stripped to lessen the chance of attack from insects while the wood was being seasoned, but little more than this need have been done by way of preparation.

Where soil-filled voids survive in plan, most are circular. Most of the evidence and measurements have been taken from the section drawings and, though it cannot always be certain that these cut across the middle of the void, they give an approximate indication of timber size. About 1200 posthole sections were examined from the years 1972-1974 and these produced evidence of 239 voids, of which 61 belonged to recognized post-built structures. The sizes ranged from 40-70 mm with the major concentration (156) between 150 and 250 mm. The 61 voids in the group from post structures reflected the same pattern. However, the void measurements from all the post structures noted on the site show a slightly different bias. They produced a total of 196 voids, which range in size from 100 mm to 470 mm, of which 43% are 300 mm or more in size. The larger void sizes come from the large post structures, which mainly occur in the southern part of the site, and are largely unrepresented in the 1972-1974 sample area.

The timbers in the 150-200 mm range could have come from long term coppice, but above that it is more likely that standard timber trees were used. Standard trees must

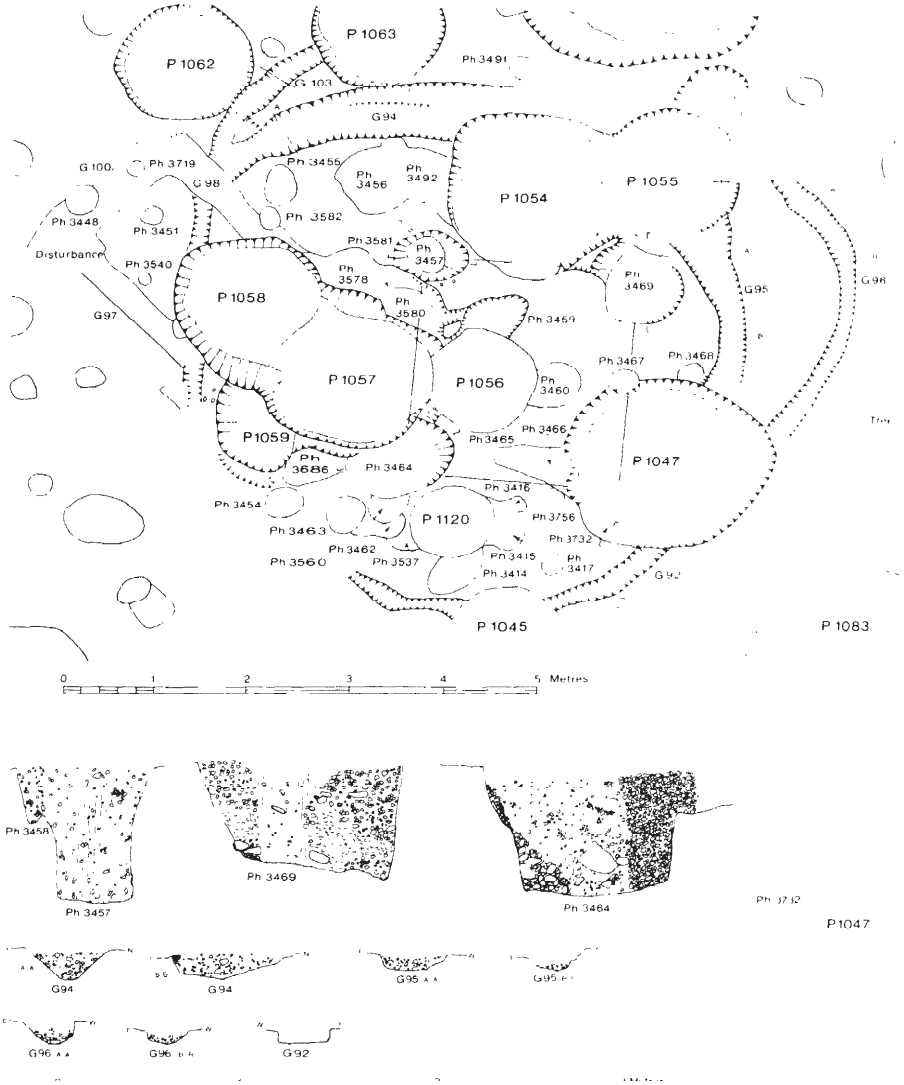


Fig 4.79 Gully complex 1, PS13, and associated features

also have been used for the shaped timbers, for which most evidence comes from the door-posts of the circular structures. Not all of them had shaped timbers; eg CS3/4 had circular posts, as did CS10/11. A number of the posts appear to be sub-rectangular in shape, eg CS5, CS7/8, CS14, and CS15. In these cases probably the whole tree trunk had been used and roughly squared off. Squared timbers had also been used for the posts in ph 3624 and ph 3629 of PS1; these measured 400 mm by 200 mm and 380 mm by 350 mm.

A number of voids were of triangular or sub-triangular plan; suggesting that tree trunks had been split into quarters or segments. This is best illustrated by the door-posts of CS1 and CS20 and also by ph 3385, which was not associated with any structure. This post appears to be a segment of a split tree trunk, which was probably about 800 mm in diameter.

In addition to these large shaped timbers, many of the door-posts have an associated second post projecting outwards. From most of the voids this would appear to be some sort of thick plank, eg CS1, CS10/11, CS14, and CS20. Some of the other circular structures probably had these in their double postholes, but the voids have not survived. The average measurement is 250 mm by 100 mm. Some of the voids suggest that the plank got thinner to one end, eg ph 3514, which might indicate that the planks were split radially from a substantial tree trunk.

More extensive evidence for planks has come from CS1, the wall of which was built of planks. The thin slot left by the plank voids could be traced on the north-east side of the house, but little detail could be obtained compared to the south-west section, where the shape of eight planks could be clearly seen . These were also wedge-shaped, suggesting they had been split radially from a tree trunk.

The eight measureable planks had the following dimensions: 180 by 40 mm, 190 by 20 mm, 210 by 50 mm, 240 by 40 mm, 190 by 40 mm, 220 by 30 mm, 210 by 30 mm, 120 (incomplete) by 60 mm. If these planks were split radially the tree trunks would have had a diameter of at least 400-450 mm.

The range of timber used, indicating the availability of both standard trees and coppice, suggests that managed woodland occurred in the territory of the hillfort. The matter is further considered in Vol 2 (pp 481-3).

4.2.5 Gullies and ditches (Fig 4.6)

Gullies and ditches are not numerous at Danebury. Most of those that survive were found in the stratified levels in the quarry hollow. They were of penannular form and dug around circular structures or four-post structures presumably for drainage purposes. Within the central areas of the fort six complexes of curvilinear gullies were found (gully complexes 1-6) some of which may have been associated with houses. These are listed and described below (pp 123-7).

Three lengths of linear gully were recovered, in all probability constituting a single feature, running diagonally across the site from the main entrance. It may have served to drain the road line which it followed but it could also have functioned as a boundary ditch.

Gully complex 1 and PS13 (Fig 4.79)

Five separately numbered lengths of gully (G92, G94, G95, G96, G103) appear to belong to a single complex. The exact relationship of all the elements is difficult to distinguish but it could be argued that G92, G96, and G103 were dug at the same time to define a roughly circular enclosure approximately 7 m in diameter, with G94 and G95 representing a separate arc of earlier or later date.

The fillings were of chalky silt and showed no significant variation but are suggestive of natural silting. Since the gullies were shallow and the area heavily disturbed by tree roots, stratigraphical relationships were usually impossible to distinguish with certainty. However, G103/G94 was earlier than building RS4 and G92 was definitely cut by pit 1045 which contained only sandy sherds of early or middle Iron Age date. The gully complex is therefore likely to belong to an early phase in the development of the site and all the pits could, therefore, be later.

Of the many postholes in this area three deserve special mention by virtue of their exceptional size: ph 3457 (0.81 m), ph 3469 (0.63 m), and ph 3464 (0.81 m). It is

GULLY COMPLEX 2

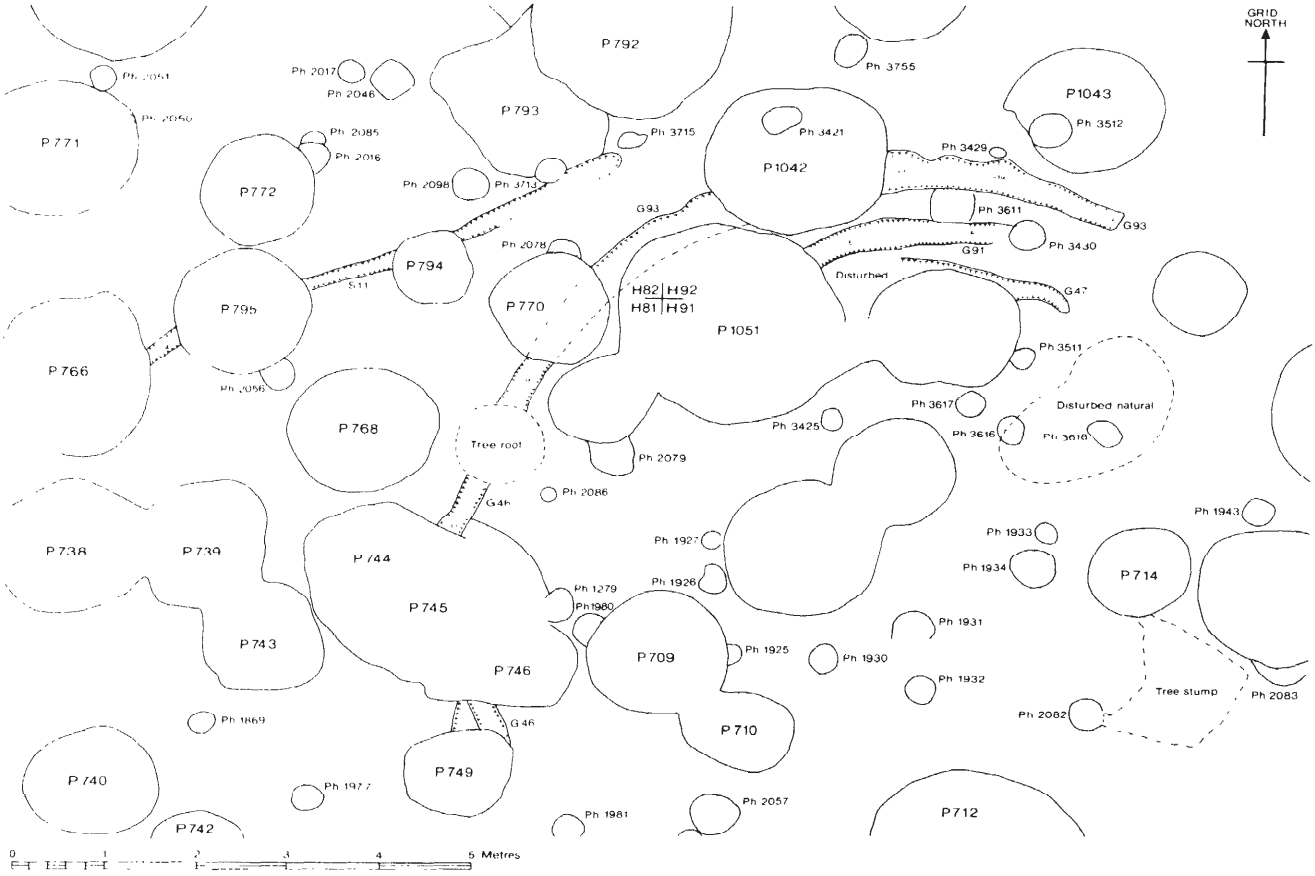


Fig 4.80 Gully complex 2

GULLY COMPLEX 4

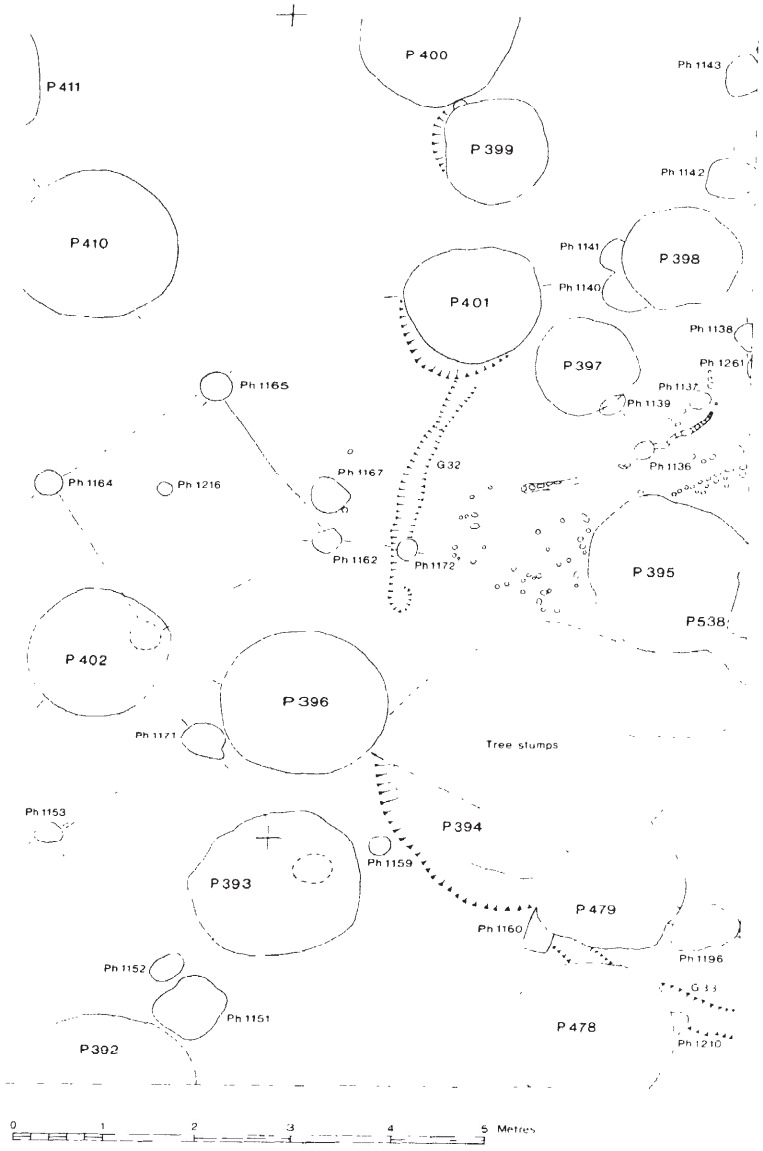


Fig 4.81 Gully complex 4

possible that these posts x-nay belong to a four-post structure, the fourth post, ph 3732, having been largely removed by P1047 which dates to cp 7. Posts 3664 and 3457 both produced small gritty sherds of saucepan pot type. Thus, while the supposed four-post structure may exist, pre-dating the digging of P1047, it is likely to post-date the gullies by a significant period. There remains the possibility, however, that it may replace an earlier four-post structure largely cut away by later pits (eg ph 3578, ph 3460, ph 3415) but since so much of the area has been damaged by pit digging further speculation is worthless. For discussion of PS13, see pp 99-100).

Gully complex 2 (Fig 4.80)

Five gullies (shown on Fig 4.74) may tentatively be considered as a single complex, G46, G47, G91, G93, and possibly Sl1. They are not however all contemporary since G93/G46 cuts pits 770 and 1051 whilst G91 appears to have been cut by P1051. G93 is cut by P1042 which contains pottery of cp 6. The relationships of G47 are undefined. Pits 770 and 1051 both contain early sandy wares of cp 3. The sequence must therefore be G91 : P1051 and P770 : G93/G46 : P1042. Gully Sll is cut by pit 766 which contains decorated saucepan pots of cp 7. The other relationships are uncertain due to extensive disturbance by tree roots. It is not clear whether the gullies relate to buildings.

Gully complex 3 (Fig 4.30)

Gullies G24, G25, G25a, G27, and G29 appear to represent

GULLY COMPLEX 5

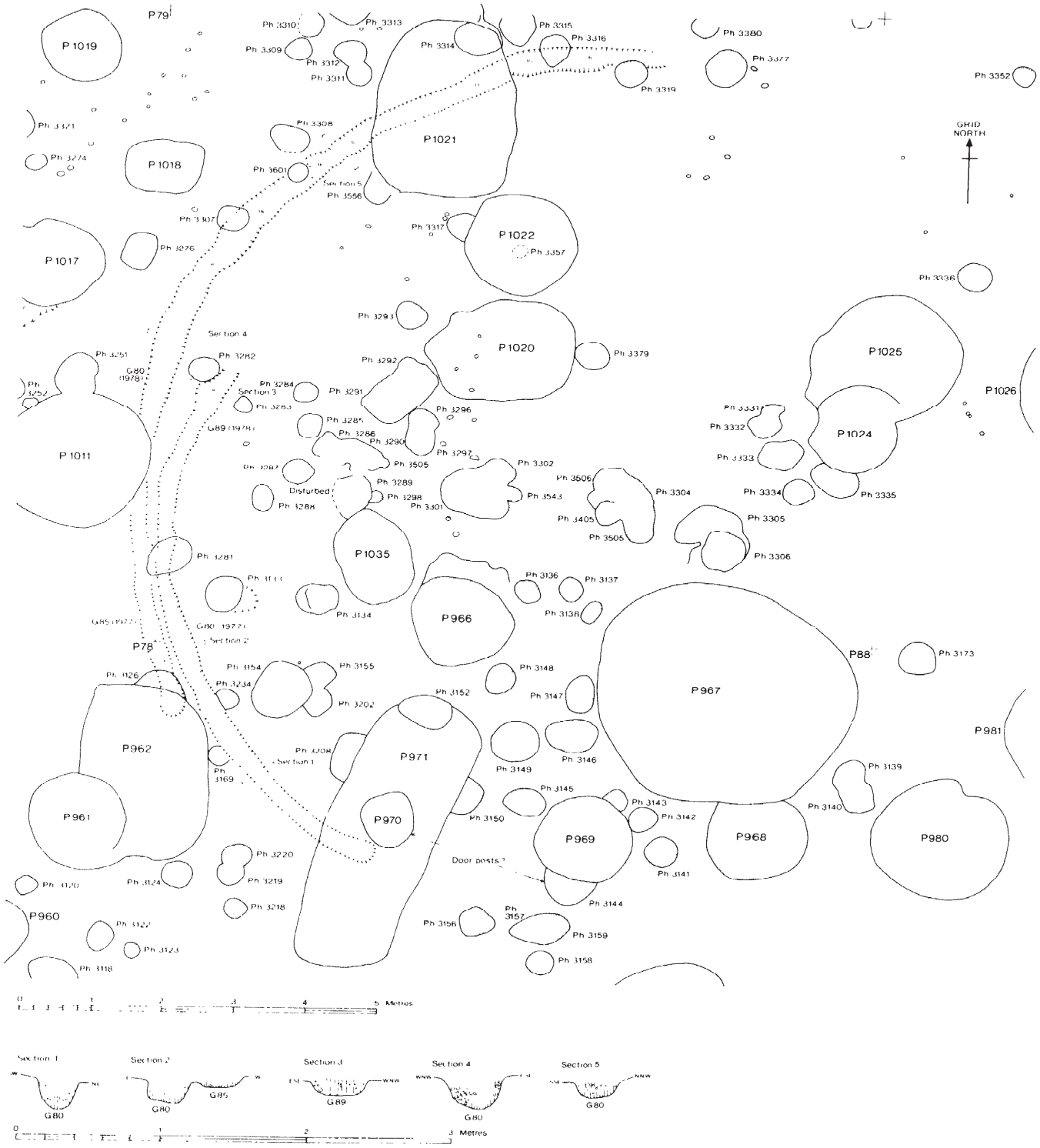


Fig 4.82 Gully complex 5 and CS24

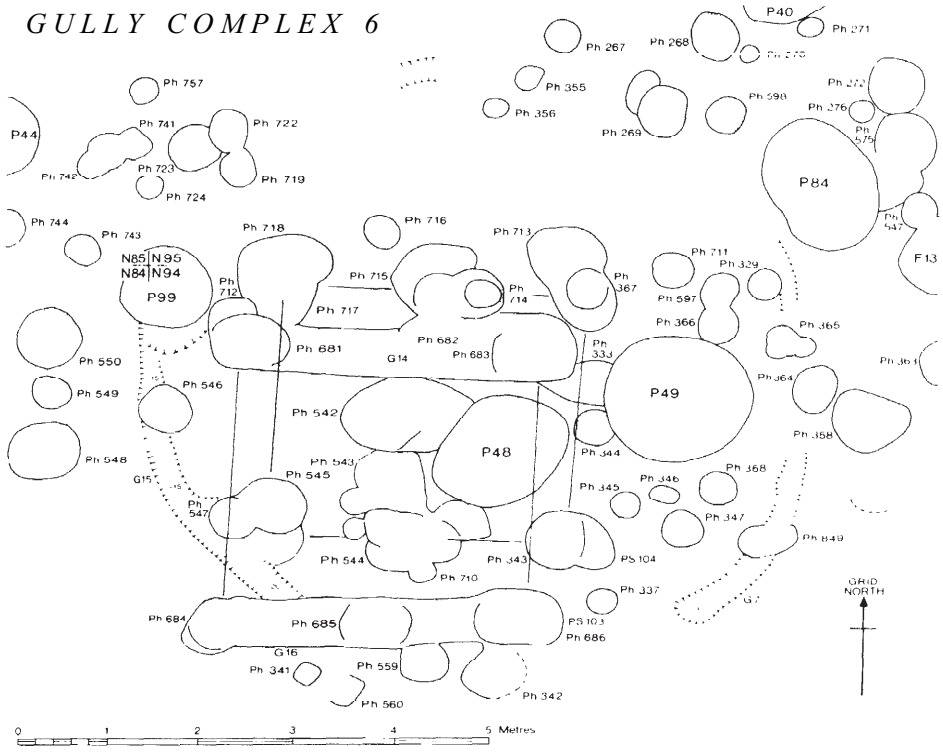


Fig 4.83 Gully complex 6

a single complex which could be interpreted as defining a roughly circular area some 18 m in diameter around a circular house (CS23). The interpretation is necessarily tentative.

The gullies vary in section and size but average 0.6 m wide and 0.4 m deep. The filling throughout is the result of natural erosion and silting. In one place on the south-east side two distinct phases are evident, the straighter length of gully, G25a, being later than the curved gully G25. On the north side there is also evidence of limited recutting (Fig 4.30, sections 8 and 9). The relationship, if any, of G27 and G24 is unknown.

The filling of the gullies produced a few sherds of pottery the latest of which were in the typical saucepan pot fabric (ceramic phases 6-7). This is consistent with evidence elsewhere which shows that the gully was cut by two pits, 333 and 334, containing decorated saucepan pots (ceramic phase 7), but was later than pits containing early sandy wares of ceramic phases l-5, eg P460, P457, P449, P459, and P352. Of these the latest was P352 which produced sherds characteristic of cerami c phase 5. The relationships of the gullies to pits 327 and 455 was debatable but all three pits contained early sandy wares. On this evidence the gullies should be equivalent to cp 6 or early cp 7.

Gully complex 4 (Fig 4.81)

Gullies G32 and G33 probably represent the remnants of a single curved gully which may have defined a roughly circular area. The gullies were shallow, up to 0.22 m deep, and varied in width between O-2 and 0.35 m. Their filling resulted from natural silting.

No pottery was found in them but G33 appears to have cut P478 which contained only early sandy wares, and P394 of ceramic phase 5. The relationship of the gully to pits 401 and 479 was not defined.

The gully partly enclosed an area containing a large number of stakeholes but the chronological relationship of the two groups of structures is unknown.

Gully complex 5 and building CS24 (Fig 4.82)

Two arcs of gully found in 1977 and 1978 constitute gully complex 5. The inner gully was numbered G80 (1977) and G89 (1978). The outer gully was numbered G85 (1977) and misnumbered G80 (1978) because it was mistakenly thought to be a continuation of G80 (1977). The finds can, however, be distinguished on the basis of the year code. The gullies were U-shaped in profile, up to 250 mm deep, and were filled with chalky soil resulting from natural erosion.

In total fifteen pot sherds were recovered, all of cp 3. the gullies cut P962, P971, and P1021, all of which contained pottery of cp 3. They also cut several postholes. The eroded top of P1011 which produced only cp 5 pottery appears to post-date G85/80 but the relationship is not precisely defined on the eroded pit edge and cannot be taken as positive evidence of dating. The complex is included on the plan of Late Period features (Fig 4.133) but may be somewhat earlier.

The existence of a circular structure within the gullies is dubious but possible. Two large postholes, P970 and ph 3144, could be door-posts. P970 cut P971. P969 (cp 4) cut ph 3144. If these posts are door-posts then they support a cp 3/4 date for the gullies. No stake-built or plank-set wall is evident but the area has suffered erosion and shallow stakeholes will have gone.

There are, however, plenty of postholes from which a post-built house could be tentatively reconstructed. There are so many variables that there could never be any certainty.

Gully complex 6 (or circular structure) (Fig 4.83)

G7 and G15 are part of a single gully system of circular plan surviving in an area of heavy Iron Age disturbance and later erosion. The gully defines an area *c* 6.5 m in diameter. It was 150-200 mm deep and was filled with brown soil and small chalk lumps. The filling could have been eroded or packed but the profile of the gully suggests that it had been left open and erosion had occurred.

The gully is cut by posts of PS103 and PS104 and possibly by P99 (cp 6). The filling contained three sherds of cp 3 date. It is therefore likely to belong to an early period in the site's history. The possibility that it served as a wall slot for a circular building is unproven but the bulging end of G7 could have taken a door-post with an equivalent in ph 342 or ph 559. The problem is unresolved.

Pond or quarry (1977) (Fig 4.125)

To the north of the main road, immediately inside the east gate, a hollow measuring approximately 8 by 15.5 m had been dug to a depth of about 0.5 m below the level of the surrounding chalk. The eastern edge of the quarry cut into a patch of natural clay-with-flints but the rest had been dug into the solid chalk. The quarry was filled almost to the top with a fine compact brown silty soil containing occasional large flints (layer 364), its consistency suggesting that it had accumulated as the result of flooding. At a later stage the ground had been consolidated with a spread of chalk, clay, and flints (layer 368) up to 100-200 mm thick.

A number of postholes found in the quarry bottom had either been truncated by the quarry (in the case of the shallowest) or had been dug from the quarry bottom. Pits 939 and 944 pre-dated the digging of the quarry while P1001 was dug through the silting. The linear gully, G81, was also dug through the top layers of silt.

The pottery from pits 939 and 944 is consistently of

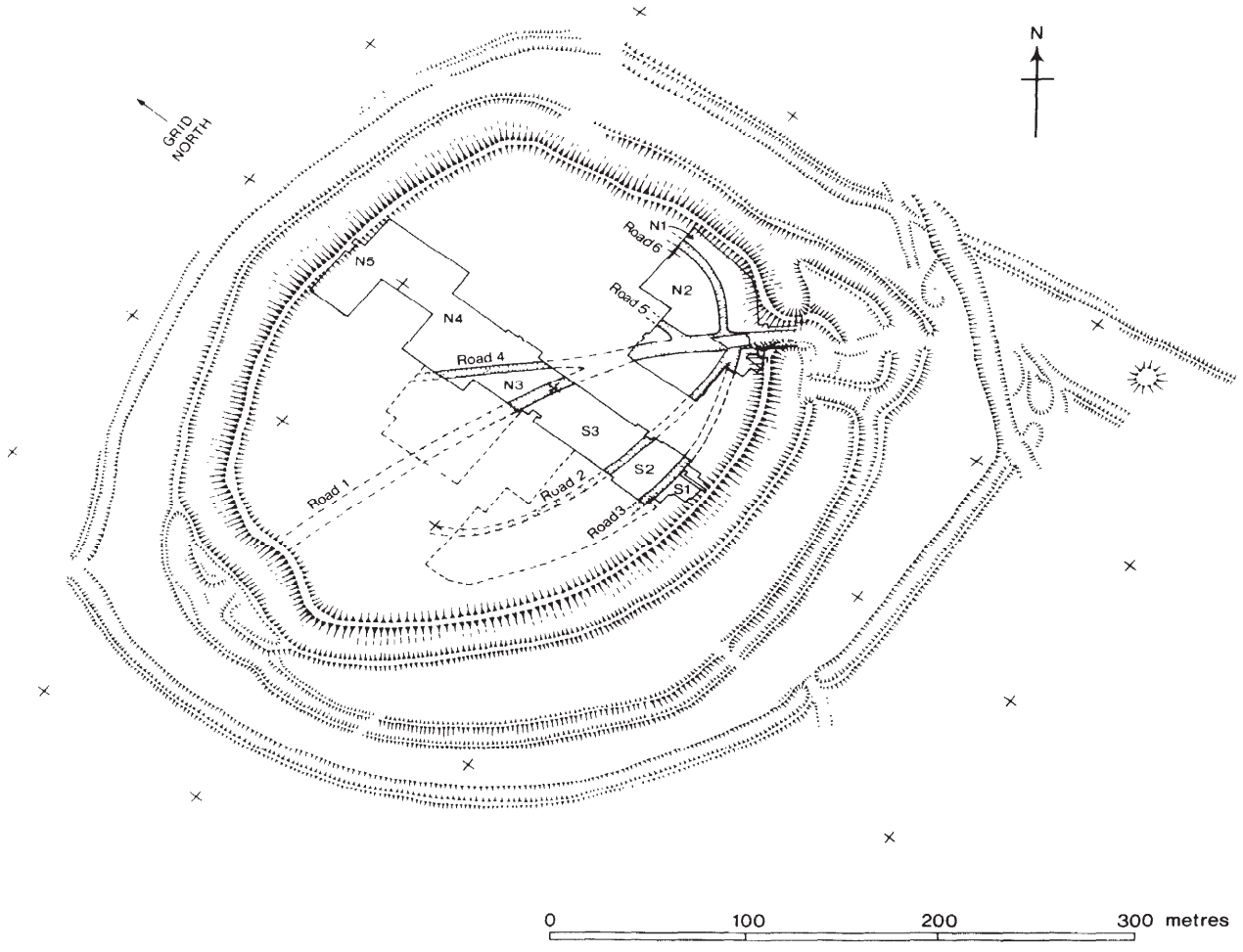


Fig 4.84 Plan of fort showing the position of the roads and the coding for the zones

ceramic phase 3. The 301 sherds from the silt range in date from cp 3 to cp 6. The pottery from P1001 is cp 6 while the gully contains nothing distinctive. Thus the digging of the quarry is likely to be in cp 3 or 4 while the final consolidation of the around surface probably took place lace in cp 6 of in cp 7

The function of the quarry is uncertain but it may well have been dug to provide material for one of the early gate extensions in gate periods 2 or 3. While open it would have collected surface water from inside the fort preventing it from running through the gate passage.

4.2.6 Roads (Pls 26, 27)

The road liner are shown in simplified form on Fig 4.84 but they are also self-evident on Fig 4.2, a composite plan of all Iron Age features, as strips largely free of post or pit digging.

The main road runs in an are across the fort from the main east gate co the site of the blocked south-west gate. Towards the centre it measures approximately 5 m in width and shows little sign of heavy wear, but as it approaches the gate it widens to 10-12 m and becomes a hallow-way worn traffic to a maximum of 1.5 m below the contemporary surface on either side. The absence of features along its line (even where it is uneroded) argues that it remained an open route throughout the life of the fort.

To the south of the main road two subsidiary road lines can be recognized. Across the 1971 area they run approximately 17 m apart and concentric with the rampart, but towards the gate (in the 1976 area) they converge to one line to join the main road at right-angles just inside the gate. In the excavations of 1979 and 1980 (which are not the subject of this report, but see Cunliffe 1982) the roads were traced further to the west where the northern road was found to retain much of its flint cobble metalling over a considerable length. In one place two distinct phases of metalling survived. Within the 1971 area no metalling remained along this line but one small Patch barely 500 mm across was found on the line of the southern road. A number of small postholes and several pits tic within the road limits. These belong to a phase of occupation pre-dating the layout of the roads. The 1979 and 1980 excavations clearly demonstrated the existence of extensive settlement traces of the 6th-5th centuries sealed by the road mecalling.

To the north of the main road only one certain road line could be traced, diverging from the main road cowards the highest point of the fort. Its spatial relationship to the early pits would suggest that the road was laid at the time of the 6th-5th century phase of occupation while its relationship to the rectangular buildings in this central area strongly suggests that it was still in use in the earlier phases of the building layout.

The area north of the main road just inside the gate may also have been crossed by subsidiary roads. One may have joined the main road within grid square P68 while it is possible that another ran along the inner lip of the quarry hollow. Both lines should however be regarded as tentative.

4.2.7 The pits (Pls 19-25)

by Alasdair Whittle

Introduction

In the ten consecutive seasons from 1969 to 1978 covered by this report some 1,122 pits were uncovered in the interior of the hillfort. Of these 1,062 were excavated, the remainder appearing only partly within the excavated area. The standard procedure was to lay out a section line across the pit an an arbitrary orientation; to excavate one half section with trowel, and in the case of chalk rubble layers with pick and shovel, with finds recorded by layer; to record the section; and finally, in the vast majority of cases, co excavate the remaming half of the pit. Extensive notes were taken in the field on each pit by the supervisors in each season; sections were drawn by separate draughtspersons, in consultation with the supervisors. These notes and drawings are kept as part of' the archive in the Institute of Archaeology, Oxford. For the analysis of the pits, it was decided in 1973, as the number of' pits rapidly increased, co make use of a computer. Data on the pits were transferred from the notes, drawings, and finds files to coded sheets for transmission to the computer. This work was not carried out in the field at any stage. The computer procedure is described above, p 8, and in fiche 4, frames A3-4. In the event the quantity of pits involved considerable labour for the manual part of the operation to be achieved, and this was not in fact fully completed and the computer facilities freely available until 1982. This has meant that a limited number of analyses only were possible in the time before the rest of the report was assembled. This report must therefore be seen as a preliminary one only, but further, more detailed analysis, making full use of' the data now scored on computer, is envisaged in the next Danebury report. A small collection of pits is illustrated here (Figs 4.92-4.98), and a further larger selection on microfiche (fiches 4 and 51, where descriptions of all illustrated pits will be found. The aim has been to present a representative selection of pit types, with three additional criteria in mind, to illustrate those pits from which radiocarbon dating samples were taken, those with important ceramic assemblages, and those within an observable structural context. The rest of the pits can be studied at first hand in the site archive.

The report is based on the work of many hands. I worked directly on the material chiefly for nine months in 1977-78 and subsequently, after computerization was completed. At early stages in the process Bill Startin and Tim Ambrose were involved in collation. Myra Shackley provided much guidance on the design of the coded data sheets and on questions of pit decay and silting. After I left the Institute, the work of coordination was continued by. Cynthia Poole, Lisa Brown, and Sylvia Pryor. To all of these thanks are due, and especially to J Wilcock and G Lock for their help with the computer facilities. I have also received valuable advice on Iron Age pits from J Collis and H Gent, and encouragement throughout from the excavator. Interpretation has been much aided by the experimental work at Butser Hill and elsewhere.

Construction

The great majority of pits of all four main types—beehive, cylindrical, sub-rectangular, and conical-survive in what we may assume co be their finished or final form, although subsequently, in a majority of cases, more or less eroded. About the construction of conical pits there is little to be said, the required form being dug out and the sides roughly smoothed. Unfinished examples of the other three main types, however, with the addition of some irregular pits, contribute to an understanding of how they were constructed. Pits were probably dug in an orderly fashion, being deepened spit by spit, progressing downwards by about 200 to 300 mm per spit. Projections of chalk or conversely hollows left on the bases of beehive (eg P112 (Fig 4.92) and P292, P354. P626, P636 (fiches 4

and 5) etc), cylindrical (eg P261 (Fig 4.93), P499, P521 (fiche 4)), and sub-rectangular examples (P875 (Fig 4.95)) show this clearly. In the case of P604 (Fig 4.95) it is possible that the high chalk pedestal left in the centre of the pit, itself 2 m deep overall, was left deliberately, If the pit was merely unfinished, the work would have been carried on in unnecessarily cramped conditions around the pedestal, although this itself could have served as a useful staging post in the lifting out of quarried chalk rubble. This feature occurs in less than 2% of the pits.

Pits 817 (Fig 4.95) and 1089 (Fig 4.98) are of unusual bilobate plan and may also be unfinished. There is no suggestion from their fill that intersecting pits are represented, though this is a possibility, and there is thus here a hint that elongated sub-rectangular pits could have been dug first as two or more contiguous circular pits and subsequently enlarged and straightened to their final form. Against this interpretation, however, may be put the observation that the sides and bases of these examples are otherwise of a reasonable standard of finish. Another pit, 456, (Fig 4.94) stands out for its irregularity both of plan and section. It too may have been unfinished, as well as less regularly dug.

The construction of steep or vertical sides in the chalk would have presented few problems to workers with iron tools. Most pits, with the exception of small cylindrical pits, were constructed with considerable care, as seen in their usually regular and symmetrical profile in cross-section, and in the generally accurate vertical alignment of base plan and surface plan. Most irregularities can be ascribed to the effects of a chalk bedrock which varies considerably in its structure and stability, determining in some cases a squarer plan than was evidently desired. This can be seen in one instance in a whole group of pits centred around pit 935 (Fig 4.97) a little to the north-west of the main entrance, but the less regularly dug pits occur sporadically. Some of course must simply be the result of poorer workmanship. Small rectangular pits less than 0·5 m deep seem to have been less carefully dug on the whole, with a higher proportion of irregular sides and bases.

Care is evident too in the finish of the pit sides and bases. At their finest, sides and bases were smooth and even, with no traces of tooling visible. A greater number of pits (in all 610, of which 492 were beehive and 57 cylindrical) have reasonably smooth and even sides and bases, but also visible marks, both vertical and diagonal, of bladed tools with slightly rounded ends 20-30 mm across like the actual iron adze no 2.49 illustrated in Vol 2 (Fig 7.12). The individual blade marks are rarely longer than 150 mm, and are generally about 100 mm long (Pls 21, 22), while the point marks are mostly little deeper than their diameter. On uneroded sides they can be seen right up to the pit mouth; where uneroded pits have been given a final smoothing, toolmarks survive most often at the base of the sides, presumably because these were hardest to finish. Floors were more often given a final finish than sides, if the whole pit was not so finished. The remaining pits have neither visible toolmarks nor particularly even sides, even though they were regularly and symmetrically cut in plan and section, and the laminated nature of the chalk is presumably again responsible for this condition.

Whatever functions the pits may have had, there is no clear evidence that their sides or bases were lined, for example with wickerwork or clay. Out of the large number of pits containing daub a small number (P55, P166, P878) have large concentrations of daub towards, and in, their basal filling. This occurrence might superficially suggest the possibility of clay lining but there are three objections. First, the small daub fragments seem to derive from walls or possibly ovens rather than linings. Second, the fragments do not invariably precede such primary chalk shatter recorded in these pits (eg in P878) as would presumably need to be the sequence of silting. Third, the pits in question were at least partly filled artificially, and we might reasonably expect to have found original linings or parts of them *in situ,* had they ever existed. Some care was clearly taken in finishing pit sides, but even rather irregular sides with small cracks and projections must have been acceptably efficient. The experimental pits at Butser Hill indicate that the critical factors for a pit dug in chalk were probably a good seal at the surface and the skin that stored grain develops itself at its point of contact with the chalk (Reynolds 1979). Experimentally, certain linings were found to offer some benefits, but on balance were usually unnecessary (Reynolds 1974).

The same considerations may not apply to intersecting pits. No traces of lining have been observed in the numerous cases where one pit intersects an earlier one. In most cases one pit may only be distinguished from the other in section by a slumping of the fill of the earlier towards or into the later. In some cases, where the separate fills are more clearly preserved, the later pit seems to have a steep rather than overhanging side at the intersection (eg P280/P282, P294/P349) (Fig 4.93)) and the fill of the earlier pit may have been sufficiently stable to be cut without collapsing. This kind of intersection can also be seen perhaps in the vertical step, 300 mm high, at the intersection of two pits of different depths, P1057 and P1058 (Fig 4.93). In others, however, it clearly was possible to establish a beehive shape when cutting into the fill of an earlier pit. This is generally only visible in the undercut chalk where the later pit is also deeper than the earlier (eg P280/P282). In one case however a beehive pit was cut into an earlier but deeper beehive pit (P231 into P253 (Fig 4.93)) and the form is detectable since the later pit was subsequently artificially filled. In these cases of intersecting beehive pits there must surely have been some sort of framework or lining to prevent the collapse of the sides, but no evidence for it has survived. It is possible too that pits of this kind would have been more susceptible to the effects of water and the activities of burrowing insects, molluscs, and animals, but this in itself cannot be used as an argument for or against the likelihood of additional linings. Pits 806 and 822 were both partially cut into a natural clay pocket, with clay remaining between them, and pit 514 (Fig 4.94) was partially cut into a pocket of clay-with-flints. Such subsoils must also have provided stable matrices.

Some pits which barely or only partially intersect were blocked off from their neighbours, either earlier or contemporary, by walls of chalk blocks. The walling provides, in most cases, a rather irregular surface but a more or less solid barrier (Pls 22-23); occasionally traces of clay material survive in the interstices. Pit 958 is separated from the earlier pit 960 by chalk walling, roughly faced in 960 but well smoothed and puddled on the sides of 958 itself. In one case clay was used to plug a small hole in thin natural chalk (not chalk walling) between pits 522 and 533.

There is little evidence for the treatment of the tops of pits because of the lowering of the chalk surface since the Iron Age by natural processes (Atkinson 1957) and by the digging of cultivation trenches (p 14). In most cases pits would presumably have been sealed off at the level of the top of the chalk. Pit 89 (Fig 4.122) was cut through several layers of the back of the rampart, these being

carefully revetted with large flint blocks. Pit 1115 (Fig 4.98) is the most completely preserved of all the pits excavated up to 1978 (Pl 24). It lay within the quarry hollow silts of phases h and i behind the rampart in the area excavated in 1977-8 on the north-east side of the fort. It is a deep, virtually uneroded, beehive pit, with a largely artificial fill. As such it can be compared with many others, but in this context the presumably fast-forming silts preserved evidence around its mouth that must otherwise and elsewhere have been lost. This consisted of a ring of angular chalk debris, interleaved on the west side with a very thin lens of silt. Such a dump of fresh chalk presumably derives from the digging of the pit, though it can represent only a fraction of the total volume excavated. The pit itself was dug from the level of the chalk on its north-east side but from the level of 150 mm of accumulated silt on its south-west side (which was more subject to the direction of silting in the quarry hollow as a whole). Such a chalk ring could presumably have been the source of chalky silt in the upper parts of many naturally silted pits. Of the actual treatment of the top of the pit itself nothing survives , even in this well-preserved example. Whatever seal was used may have been at the level of the natural chalk, though no trace was observed. The silts were not seen to be recut at this point, and layer 572 was indistinguishable from layers la and 1 above and at the top of the pit. (The void seen on the section is the result of later settling and compaction of the pit fill. This left a very loose deposit at its top and just above it, which collapsed during the course of excavation and was indeed the means by which the pit was first noted .)

Most pits could have been constructed within a day by a team of two or more men. Chalk can be extracted with iron tools, according to 19th century figures, at the rate of approximately 0·75 cu m per hour, though in the confined space of a pit this rate may have slowed to 0·5 cu m per hour or less (Startin 1982). This matches the experimental results achieved by Bowen and Wood (1968) except where digging was slowed by flints in the chalk. Pits could thus have been dug immediately before use. It is also worth considering where the excavated chalk rubble was put. In the case of those clearly within houses, rubble was presumably dumped elsewhere, and in the majority of other cases it may also have been removed. This view is suggested by the relatively few pits deliberately filled with a solid chalk fill, the rather chalk-free primary silts which accumulated in the bases of naturally filled pits, and the nuisance value of substantial mounds of chalk on the surface for subsequent pit digging and other activities within the hillfort. However, carting rubble to the ramparts, for example, would have added substantially to the real labour involved in pit digging. Some of this chalk spoil may have been absorbed by the making of daub for houses or buildings. Analysis shows a high chalk content in daub fragments from the interior, and the experimental reconstruction of a round house on Butser Hill, 6 m in diameter with walls little over 1 m high, used over 7 tonnes of daub, composed there of equal parts of clay and earth, with straw and organic matter added (Reynolds 1979). Another possibility is that the rubble was spread to consolidate hollows or puddles in the surrounding area.

Form

The pits have been divided into four main shape types on the basis of their profiles in cross-section and of their plans at top and bottom. These are:

1 Beehive: with overhanging sides and generally circular plan, though sometimes oval or squarish
2 Cylindrical: with vertical or near-vertical sides, and generally circular plan, though sometimes oval or squarish; distinguished in small examples from postholes chiefly by the fill or the ratio between depth and diameter
3 Sub-rectangular: with vertical or near-vertical sides, but elongated oval or sub-rectangular plan, generally with rounded corners
4 Conical: with straight sloping sides from a wide mouth to a narrow but rounded base

As will be evident from the illustrated examples, there is considerable variation within these types, and a certain degree of overlap between them, with the marked exception of the fourth-the conical pit. No systematic subdivisions of the types have been presented however, since we seem to be dealing with a continuum of forms, not a range of consistently separate shapes. The typology is thus simpler than even those offered by Jeffries (1979) or Davies (198 1) as reductions of the more elaborate Little Woodbury scheme proposed by Bersu (1940). The 'barrel' form is discussed briefly below as part of the beehive series. It might in the future be possible to test this general question further with the aid of the computer when digitizing facilities are available. A further difficulty concerns the size of the sample. 804 of the 1,062 pits excavated up to 1978 at Danebury have been eroded to some extent. Though much can be inferred of the original shape of a pit from its weathered plan and profile, it is only safe to rely upon uneroded examples to produce a detailed typology. At Danebury, however, despite the total number excavated there are only approximately 80 completely fresh beehive pits in mint condition, and approximately 50 cylindrical pits in a similar state, half of which are rather small and sometimes irregular. Further work at the hillfort may sufficiently augment the number of pits in undoubtedly mint condition to allow further types to be defined , but at present subdivision is unrealistic.

The quantities of different types are set out in Table 4.

Beehive

Pits with overhanging sides are the most common of the uneroded pits in the interior of the hillfort, and constitute an even greater proportion of the eroded examples, where weathered profiles and patterns of silting in most cases clearly indicate an originally similar form. The main features of a beehive pit are: a generally circular though sometimes oval or squarish mouth, by definition of lesser diameter than a base of similar plan; mouth and base usually concentric when seen in plan; sides showing considerable variety in profile from straight to concave, but never convex. A small series with concave sides but with the base little wider than the mouth may be noted (eg P426 (Fig 4.93), P902 (Fig 4.96), P960 (Fig 4.97)). The resulting barrel form is unusual. The clearly unfinished P902 suggests that others of this type may be unfinished

Table 4 Classification and quantification of Danebury pits

Type	*Condition*				
	Uneroded	*Eroded*	*Unfinished*	*Assigned to type but questionable due to heavy erosion*	*Total*
Beehive	84	580	8	81	753
Cylindrical	54	72	9	43	178
Sub-rectangular	33	21	1	7	62
Conical	5				5
Unclassified					64
Total	176	673	18	131	1062

too, though toolmarks on the lower sides of P960 are inconclusive. Others may be the result of cleaning out and reusing cylindrical pits (Collis 1970). In most beehives the sides either sheer away from the mouth directly or in some cases go down more or less vertically for up to 0·3 m before sheering away. The sides meet the flat base fairly abruptly, though the angle is often slightly rounded. In a few cases the sides may rise almost vertically from the base before beginning to overhang (eg I'74 (Fig 4.92), P911 (Fig 4.96)). The diameter of the mouth varies considerably, as seen in 80 of the uneroded examples:

0·5 0·7 0·9 1·1 1·3 1·5 1·7 1·9 2·1 metres in diameter
2 8 20 13 20 9 4 3 1 no of examples

There does not appear to be any consistent correlation between the size of the mouth and depth as the following small sample suggests:

Pit no	*Mouth diameter* (m)	*Depth* (m)
1002	0·53	1·6
848	0·55	0·7
742	1·02	0·35
897	1·05	1·05
75	1·1	2·2
935	2·0	2+6
541	2·05	0·45
658	2·2	1·1

Other metrical data on depth, base diameter, and volume are presented in summary form. It is hoped to carry out further tests on these variables, such as investigation of the relationship between depth and base diameter (cf Davies 1981) and a search for regular quanta in depth, diameter, or volume.

Volumes, except in the uneroded examples, cannot be taken as exact figures. In eroded examples, the likely mouth diameter was estimated from the angle of the sides, but it has already been seen above how varied both sides and mouth can be. Volume was calculated by the formula for truncated cones: $\frac{\pi}{3} \times d\ (r1^2 + r1\ r2 + r2^2$ where d = depth, rl = mouth radius, and r2 = base radius. A sample of 704 was measurable:

Depth (0·25 m units)

·25	· 5	·75	1·0	1·25	1·5	1·75	2·0	2·25	2·25
2 0	4 4	9 2	129	154	119	94	44	-	8

Base diameter (0·5 m units)

·5	1·0	1·5	2·0	2·5	3·0
13	178	316	152	35	8

Volume (1 cu m units)

<1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
97	190	143	102	74	33	22	13	4	7	6	3	1	2	2	3

Cylindrical

Cylindrical pits are the second most common form in the interior of the hillfort, but constitute only approximately 17% of the total. The main features of a cylindrical pit are: circular mouth, sometimes oval or squarish equal or greater in diameter to a flat base of similar form and sides thus vertical or steeply sloping. In the completely uneroded examples the sides are straight, and slightly concave examples (eg P104) are most probably slightly weathered below the mouth.

There is a different range of sizes and volumes in this type compared to the beehive type, depths sometimes being as little as 0·2 m or even 0·1 m as excavated (though probably originally a little deeper-see above p 129). It is hard to believe therefore that a small pit less than 0·5 m deep played the same role as a pit up to 2 m deep, though purely in terms of shape they are rather similar. The depths, base diameters, and volumes of all cylindrical pits again show a continuum of shapes and sizes so that typological distinctions would be for the present arbitrary.

The series of uneroded examples, however, suggests that the smaller pits tend to be less regularly cut or perhaps even unfinished (eg P391 (Fig 4.93)), though some shallow examples are, conversely, well finished (eg P285 (Fig 4.93)). Basic metrical data can be summarized thus (from a sample of 151 measurable examples):

Depth (0·25 m units)

0·25	0·25	0·5	0·75	1·0	1·25	1·5	1·75	2·0
10	23	40	33	17	12	11	2	3

Base diameter (0·5 m units)

0·5	0·5	1·0	1·5	2·0
1	37	80	26	7

Volumes (1 cu m units)

<1	1	2	3	4	5
80	44	13	7	3	4

In distinguishing the two main pit types it must be recognized that there are some examples with hybrid features. Thus, of the uneroded examples, pits 658 and 768 (fiche 5, frames A8, B2) are classed as beehive, and pits 331 and 428 (fiche 4, frames D12, E9) as cylindrical but both sets have features in common with the other type. For the most part the basic distinction seems at present valid, and the metrical data suggest too that the series are largely distinct. It has been suggested that there was a process of metamorphosis , from cylindrical to beehive form, due to erosion and reshaping (Collis 1970; Reynolds 1979). This may account for some cases of hybrids and also some 'barrels' but at Danebury the ranges of depths of the two types are rather different, the beehive being for the most part deeper, which makes the suggested process unlikely to have been common at this site. This does not affect the historical interpretation that beehives were found by experience to be more efficient than cylindricals and replaced them in greater numbers after cp 1-3 (see below, p 132).

Sub-rectangular

Pits of this type are rather varied and apart from their plan there is overlap in other features with both beehive and cylindrical pits. The main features of subrectangular pits may be defined as: generally vertical or steep sides but overhanging in a few examples (eg P658 (fiche 5, frame A8), P681 (fiche 5, frame Al 1)); flat base; matching surface and base plan of elongated oval, sub-rectangular, or even trapezoidal shape. Some other pits with a surface resemblance to the type can be discounted through not having a matching base plan; their surface plan may then be largely due to the local condition of the chalk or erosion. A majority of sub-rectangular pits have suffered little or no erosion. Basic metrical data can be summarized thus (from a measurable sample of 55):

Depth (0-25 m units)

0·25	0·25	0·5	0·75	1-o	1·25	1·5	1·75
1	5	9	13	13	7	5	2

Greater base length (0·5 m units)

0·5	1·0	1·5	2·0	2·5	3·0	3·5	4
4	17	16	10	6 -		1	1

Volume (1 cu m units)

<l	1	2	3	4	5	6	7	8	9	10	11	12	13
11	13	12	9	3	3	2	-	-	-	1	-	-	1

Conical

Conical pits have the form of a shallow pointed inverted cone (eg P571 (Fig 4.94), P717 (Fig 4.95, P1 25)). They are quite well finished and two have toolmarks surviving. Their form would not show much erosion. Their dimensions are slight , neither diameter nor depth reaching much over 1 m (see also Vol 2, p 244).

Table 5 Volumes of pits (in 1 cu m units) by type and phase (sample of 821)

cp 1-3

	<1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Beehive	53	89	75	54	34	13	3	5	1	2	2	—	—	—	1	1
Cylindrical	43	32	10	2	—	1	—	—	—	—	—	—	—	—	—	—
Sub-rect	9	12	8	6	2	2	1	—	—	—	1	—	—	—	—	—

cp 4-5

	<1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Beehive	11	41	27	13	7	6	2	1	—	1	—	1	—			
Cylindrical	8	2	—	2	2	1	—	—	—	—	—	—	—			
Sub-rect	1	1	4	—	1	—	1	—	—	—	—	—	—			

cp 6

	<1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Beehive	8	18	12	13	13	3	2	5	1	—	1	—				
Cylindrical	3	3	1	—	—	—	—	—	—	—	—					
Sub-rect	—	—	—	1	—	—	—	—	—	—	—					

cp 7-8

	<1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Beehive	4	21	20	18	19	10	14	2	2	4	1	2	1	2	1	4
Cylindrical	8	3	—	2	1	2	—	—	—	—	—	—	—	—	—	—
Sub-rect	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—

Function

It is likely that the general purpose of the pits was for storage and that a wide variety of produce and goods was stored in them (Bowen & Wood 1968; Reynolds 1979). The capacity, distribution, and chronology of the pits will thus be discussed first in general terms, followed by investigation of possible specific storage functions. The chronological discussion relies on the phasing of the pottery worked out on the basis of typology, seriation, radiocarbon dating, and stratigraphy. As far as the pits are concerned there is a problem of residual pottery. 129 pits have no datable pottery in them. Numbers of others contain only pottery which belongs to an earlier phase than that to which they can, on the evidence, be shown to belong. This can be demonstrated in the silts filling the quarry hollow behind the north-west rampart in the 1973-5 area, where the pottery from local phase g onwards is predominantly of ceramic phases 6-7 but phase g contexts include material assigned to ceramic phases 3, 4, and 5 as well. Since the bulk of the pits are from areas of the interior without linking stratigraphy, there is clearly a danger in believing that all pits with, for example, cp 3 pottery belong to cp 3, without giving a weighting to the quantity or the weathered state of the pottery concerned. Further analysis may suggest alternative phasing of a few of the pits and thus revise some of the figures presented here, but for the present the above working basis has been adopted. Volumes, where estimatable, are for unlined pits, calculated on the formula given above (a wicker lining reduced the volume of one experimental pit from 1·6 cu m to 1·5 cu m (Bowen & Wood 1968)); see Table 5. An average volume per pit can be achieved with the sample in Table 5 and this in its turn can be used to estimate a total volume for the datable pits in each phase (in all 933 out of 1,062), but see also below where the unphaseable pits are included. Figures for depths and base diameters according to type and phase are in the computer archive.

Several interesting contrasts can be emphasized. The greatest number of pits belongs to the early phase, when their distribution is centred on the central part of the interior excavated. Thereafter the numbers decline and the distributions become more scattered. (More elaborate analysis of distributions will be attempted in the future.)

Average volume per pit however (Table 6) increases steadily, with a marked jump in the final phase. The three different types seem more or less randomly distributed (Figs 4.85, 4.86), but the bulk of both cylindrical and sub-rectangular pits falls into the first phase (cp 1-3). This might suggest the notion that beehive pits are more efficient for grain storage, and that this was realized by experience (Reynolds 1974,129). The data are patchy and it is not easy to contrast the central part of the interior reliably with the silts of the quarry hollows, but a contrast in terms of context may be permissible between the more numerous and on average smaller pits of cp 1-3 and the less frequent but on average larger pits of cp 7-8. Those of the former phase are largely centralized, a certain number of them intersecting, while those of the latter are more dispersed. In the latter phase one can see the pits more in context. In the 1973-5 area (Fig 4.87) the pattern starts in local phases a-d and g with what could be taken as lines of pits, perhaps even continuing a possible double row of 4-post structures (PS3, PS5, PS4). The only pits within a structure (CS9) are three large sub-rectangular pits. Leaving aside the scanty data of phase h, local phases i and j presents a contrast. The impression of rows has gone (to be further tested in the future); seven out of nine possible circular structures contain pits-four have one each, one two, and one four. The bulk of these pits may well be contemporary with the structures, though the group P557, P556, and P564 in CS16 may not all have been in contemporary use. With the exception of CS13, all the pits in the structures are over 2 cu m in capacity and on average slightly bigger than the pits for the area as a whole. CS15 has the largest single pit. Outside the houses there is a scatter of smaller pits, and four clusters of pits of larger capacity (eg P536, P547, and P531; P814 and P815; P807 and P806; P800) with roughly 10 m between them. Most individual structures therefore contained internal

Table 6 Average pit volumes per phase, all types combined

	No of datable pits	*Total volume*	*Average volume*
1 - 3	532	1163	2.18
4 - 5	142	345	2.43
6	100	279	2.79
7 - 8	159	691	4.35



Fig 4.85 Distribution of pit types: cp 1-3 and cp 4-5



Fig 4.86 Distribution of pit types: cp 6 and cp 7-8

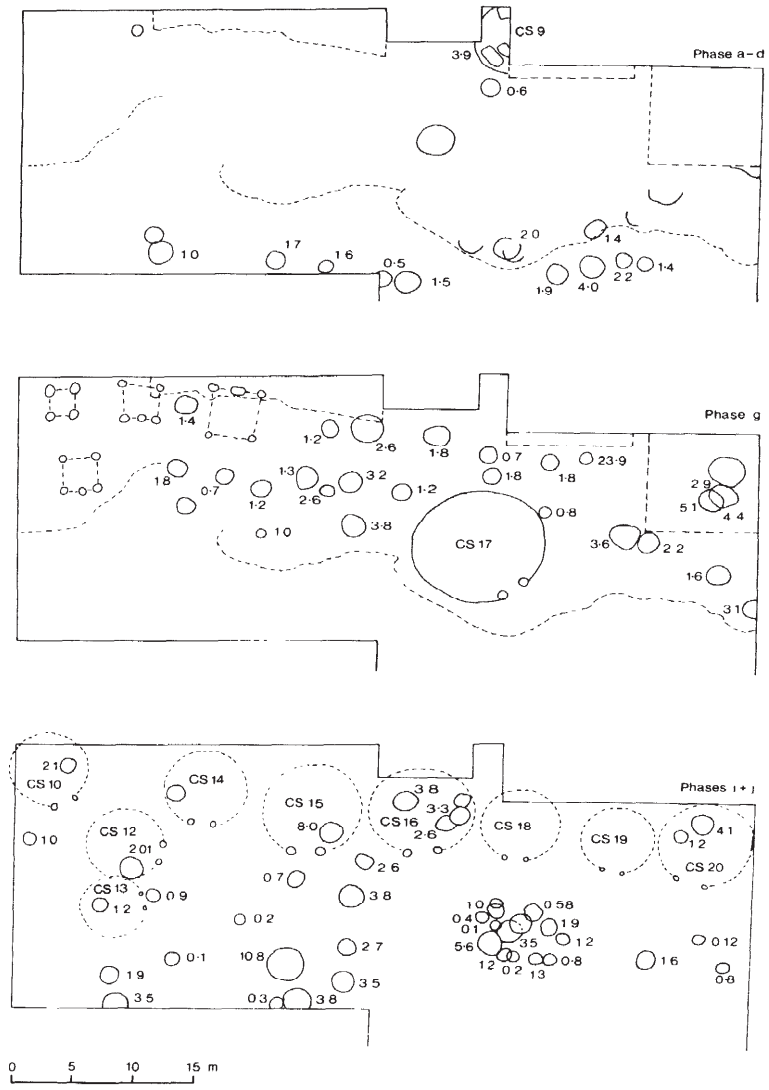


Fig 4.87

storage and may have had access to or controlled nearby centralized storage; see Table 7.

The 1977-8 area on the north-east of the interior near the entrance provides an analogous situation (Figs 4.88-4.90). The data of local phases a-e are incomplete but could suggest a dispersed pattern. From phases h and i the pattern is of more isolated, larger pits, though without a clear context. This is supplied better by phase j, where at a distance of 8-9 m from CS1, itself without pits, there is a cluster of smaller pits around pit 1038 with a capacity of 5 cu m. One cannot of course tell their relationship to CS3/4, but by comparison with the 1973-5 area it may be reasonable to suppose that pit clusters outside structures were connected with those structures whose doorway faced them. Indeed looking at both areas, there could be a pattern of circular structure with external pit up to 10 m in front, perhaps slightly to the right on the basis of CSl. It would be interesting to search for such regularities in other settlements. In phase k there is a single large pit within CS5 and in phase 1 the alternative of an external cluster outside CS7/8, not here to the right of its entrance, but again at a distance of some 10 m. The 1969-71 area on the south-east side of the interior did not preserve such good stratification, but at least the pits there are mostly large, and it is interesting to note again CS21 with P4 (capacity 5.5 cu m) some 8m to the right of its entrance in local phase g (Fig 4.91).

On a more general level it is possible that there is a contrast between the centralized pit storage in the centre of the

Table 7 Area 1973-5, phases i and j; pit capacities, total and in structures

Pits	*Total vol*	*Av vol*
41	96	2·34
Pits in structures	*Total vol*	*Av vol*
11	34·6	3·14

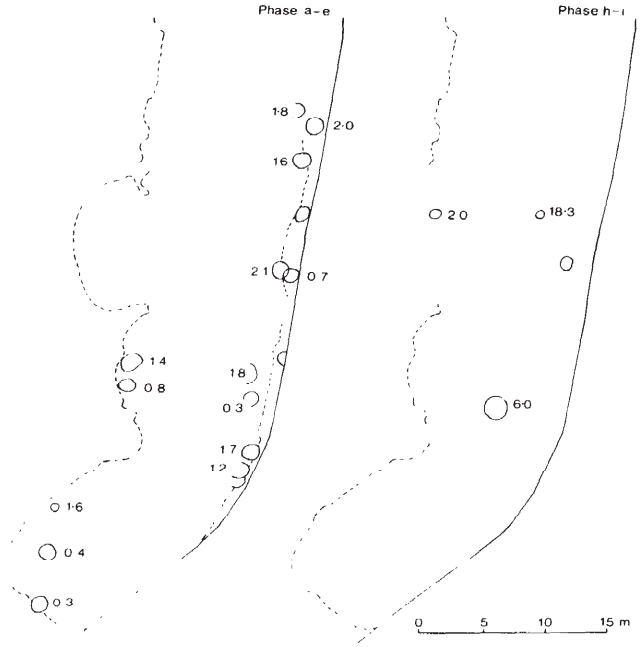


Fig 4.88

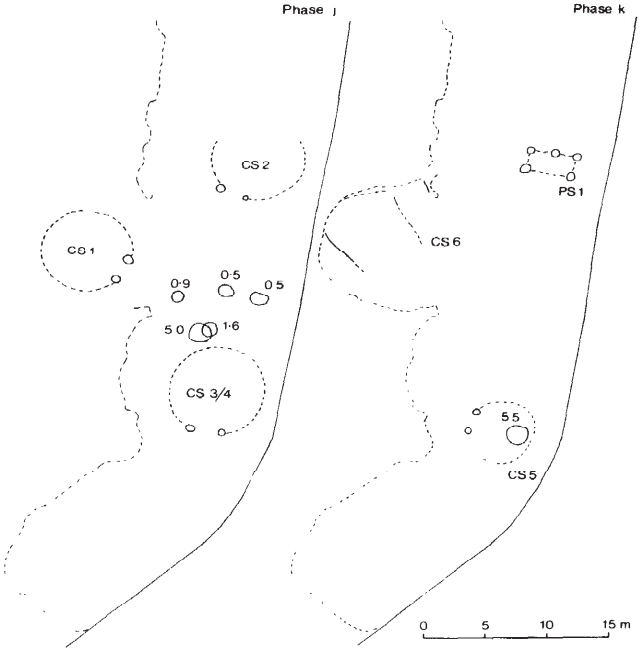


Fig 4.89

interior, and storage connected with individual structures on its edge. For once one begins to perceive, in the latter area, the context of Iron Age storage. The contrast may contribute to an understanding of the history of the interior as a whole. Further work is needed however on the spatial differentiation of volumes. In the 1973-5 area, for example, the volume per phase does not exceed 2.8 cu m, well below that for cp 7-8 as a whole (see above).

Another way to approach storage at a general level is to consider the duration of pit use. Bersu at Little Woodbury (1940) suggested that grain storage pits would go sour after five to ten years, but this has been doubted (Bowen & Wood 1968). The suggestion has also been made that pit life could be more or less indefinite with periodic scouring and cleaning (Reynolds 1974; 1979). Future study of the frequency of intersections of pits in the various phases may help to refine our understanding of the Danebury situation; the replacement rate in the quarry hollow areas might also contribute to the problem,

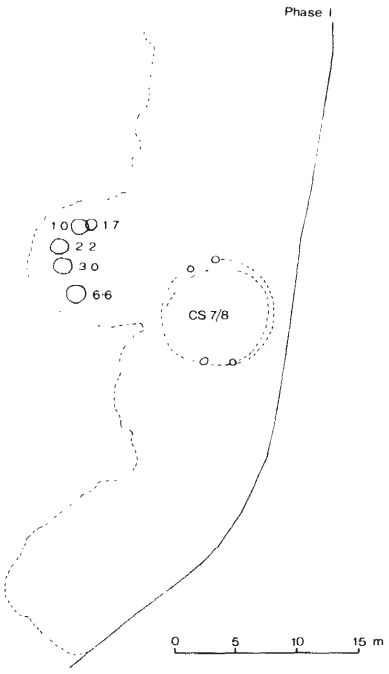


Fig 4.90

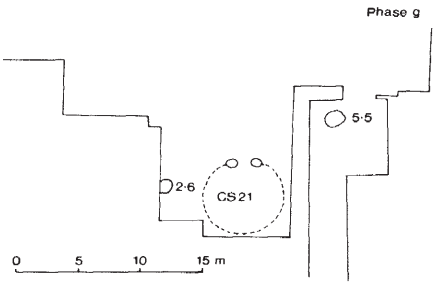


Fig 4.91

Table 8 Numbers and types of phaseable pits

	Beehive	*Cylindrical*	*Sub-rect*	*Conical*	*Unclass*	*Total*	%
cp 1-3	356	103	46	2	25	532	57.02
cp 4-5	113	16	8	1	4	142	15.22
cp 6	81	9	1	1	8	100	10.72
cp 7-8	133	17	3	1	5	159	17.04
					Total	933	

though here the rate may be determined by silting factors rather than by pit use and performance. Perhaps the best that can be supplied at the moment is a relative order of magnitude, for comparison of each phase. The numbers of phaseable pits are resummarized in Table 8 by phase and type.

To incorporate the total number of pits recorded in the calculations, the 129 unphaseable pits have been assigned to the phases by the percentage division of those phaseable, giving the following totals (for all types combined per phase):

cp l-3	605
4-5	162
6	114
7-8	181

Average volume per phase is calculated on the basis of the pits assignable to each respective phase. The 60 unexcavated pits have been ignored but if included would slightly increase the figures given. Table 9 makes two differing sets of assumptions, on pit duration that this was 1, 10, or 20 years, and on phase duration that this was 75, 100, 125, or 150 years. I have assumed also an even replacement rate and have made no attempt here to analyse bunched or staggered replacement rates.

The figures in Table 9 do not affect the result already noted of high pit capacity in cp 1-3, followed by a drop in cp 4-5 and 6, and then an increase in cp 7-8, if the assumption is made that pit duration was regular throughout all four phases. If that assumption is not made, and the alternative assumed that later, larger pits lasted longer, the figures should provide a preliminary means of comparison. If the pits in cp 4-5, for example, lasted twice as long as those of cp 1-3, the gulf in volume, in terms of volume in contemporary use, is obviously much reduced. (As stressed below, figures must be multiplied by five when considering the interior as a whole, since roughly one-fifth was excavated up to 1978.)

Specific function

It is difficult to recover directly the primary use of storage pits. Experiments have shown that grain, for example, is better stored in sealed pits with a reasonable moisture content than in a parched state, to allow the respiration cycle to continue till the build-up of carbon dioxide reduces fermentation, inhibits bacteria, moulds, and yeasts, and protects against insects and rodents (Bowen & Wood 1968: Reynolds 1974). It has been suggested that seed corn rather than grain for consumption is better stored underground (Reynolds

Table 9 Assessment of pit numbers (top line) and total pit capacity (in cu m; bottom line) in contemporary use within each phase, according to differing assumptions about individual pit duration and phase duration

Cp 1-3 (estimated total pits 605; estimated total volume 1322 cu m)

		Years in phase			
		75	100	125	150
Pit duration in years	1	8 17.6	6 13.2	4.8 10.5	4 8.8
	10	80 176	60 132	48 105	40 88
	20	160 352	120 264	96 211	80 176

Cp 4-5 (estimated total pits 162; estimated total volume 394 cu m

		Years in phase			
		75	100	125	150
Pit duration in years	1	2.16 5.25	1.62 3.94	1.29 3.15	1.08 2.63
	10	21.6 52.5	16.2 39.4	12.9 31.5	10.8 26.3
	20	43.2 105	32.4 78.8	25.8 63	21.6 52.6

Cp 6 (estimated total pits 114; estimated total volume 318 cu m)

		Years in phase			
		75	100	125	150
Pit duration in years	1	1.52 4.24	1.14 3.18	0.91 2.54	0.76 2.12
	10	15.2 42.4	11.4 31.8	9.1 25.4	7.6 21.2
	20	30.4 84.8	22.8 62.6	18.2 50.8	15.2 42.4

Cp 7-8 (estimated total pits 181: estimated total volume 787 cu m)

		Years in phase			
		75	100	125	150
Pit duration in years	1	2.41 10.5	1.81 7.87	1.45 6.3	1.21 5.25
	10	24.1 105	18.1 78.7	14.5 63	12.1 52.5
	20	48.2 210	36.2 157	29 126	24.2 105

Table 10 Pits with basal carbonized grain layers

	Beehive	*Cylindrical*	*Sub-rect*	*Total*	*Av vol*
cp 1-3	8	2	4	14	3.65
cp 4-5	7	—	—	7	2.5
cp 6	3	—	—	3	2.92
cp 7-8	8	—	1	9	9.2

1974; 1979)) for the former keeps well and germinates well if taken out in spring (cf Bowen & Wood 1968) and the latter does not keep well if the necessary seal is regularly broken; moreover, the average quantity per pit seems too large to be consumed within a reasonable span of time unless by a very large group. The chances, therefore, of recovering a pit full of preserved (and therefore at this site carbonized) grain are probably minimal. No chemical analyses of pit sides were undertaken at Danebury up to 1978 of the kind suggested by Reynolds (1979) to test for salt residues from meat storage or for calcium lactate as a possible residue of silage (producing lactic acid in reaction with chalk). The excavated contents of the pits are probably in all cases secondary.

Storage of grain is the most discussed function, following both classical writers (eg Pliny, *Nat Hist,* 18, 306 on pit storage of grain in the Mediterranean area, and Tacitus, *Germ,* 16, 4 on the use of underground storage in north-west Europe, though not specifically of grain) and the experimental evidence for the success of such an operation. The ingredients for success have been summarized as low temperatures, an impermeable seal, good production of carbon dioxide, and low lateral water flow (Reynolds 1979). Thirty-three pits were recorded with obvious basal layers of carbonized grain, as detailed in Table 10.

It may be noted that the average volume of these pits is greater than the respective phase average, and that the number in cp 7-8 is proportionately greater than in cp l-3 and the average volume radically larger, but there is no guarantee that these contents reflect the primary use of the pits or the varying use per phase. Such grain deposits could as well come from grain processing nearby and from any of the stages of that processing (see Vol 2, p 493-S). There is no sign of obvious spatial clustering. Less obvious cereal remains recovered by systematic sampling have also to be considered, but could also largely be derived from surface activities. If grain, however, were the main content of storage pits, it is worth considering the pit types and volumes again. The predominant type, and emphatically so after cp 1-3, is the beehive, shown experimentally to be more efficient since it reduces grain loss towards the top of the pit (Reynolds 1974). If consumption corn were stored, the quantities available at any one point within a phase (see Table 9) would be sufficient to feed, on the whole, large numbers of people, given a largely cereal diet and an annual per capita consumption of 12-14 bushels (Bowen & Wood 1968; 1 cu m = 27.5 bushels). Thus in cp 1-3, assuming a pit duration of ten years and a phase duration of 125 years, some 200 people could be supported from the 105 cu m of grain. (No allowance is made here for grain loss, found experimentally to be in the order of 2% around the pit edges (Reynolds 1974.) The figure doubles if pit length is extended to twenty years, and of course these figures must be multiplied roughly five times to arrive at a crude estimate for the interior as a whole. This would give approximately enough consumption grain for 1000 or 2000 people. If the experimental results suggest that such grain had to be used speedily once pits had their seals broken, such numbers of people would suffice. Alternatively the grain could be seen as tribute or some other form of social control, and the numbers of people these quantities could potentially feed could give a quantified evaluation of the social importance of hillforts in the Iron Age social landscape. In terms of acreages, it has been estimated that a 1 cu m pit could hold the produce of a little over one acre, on the basis of experimental and historical sources for high yields of up to 30-fold (Mercer 1981). If seed corn is considered the likely content of storage pits, the acreages involved are more impressive, since they can be multiplied by the seed yield. The experimental figures for winter sown emmer at Butser vary from 7-59-fold, with an average of 30-fold, over eight consecutive years, with no nutrients added (Reynolds 1981). Even if lower figures than this average were adopted, the area under cultivation represented by the total Danebury interior could run into thousands of acres, an alternative measure of the importance of the site.

In this context, it is useful to think of the 'enhanced' territories proposed for hillforts by Gent (nd), and the Danebury data seem to support his conclusion that hillforts were not supported by autonomous food production but largely by material introduced from a wider territory than could be farmed directly from these sites. The evidence for substantial storage can be enhanced further if four- and six-post structures are brought into the discussion, not as potential granaries themselves (cf Reynolds 1974 on the lateral thrust of stored grain) but as storehouses for grain in containers. Gent has suggested that there is a general trend in hillforts from above ground to below ground storage as the Iron Age progresses, but the picture is very different at Danebury, since in zones N1 and N2 and S1-S3 on the south-east side of the interior where roadways lead in from the entrance, there are substantial numbers of such above ground structures in the late phase.

This is not the place for extended discussion of other sites and the author is not anyway a specialist in the period. The figures cannot be taken too literally, given that volumes were estimated (though as accurately as possible) rather than exactly calculated, and given the chronological problems already mentioned. What they do offer is the opportunity to perceive the relative magnitude of storage capacities in different phases and parts of Danebury, and between this and other sites. It is for others now to compare the capacities of Danebury with other sites such as the hillfort of Balksbury near Andover (Wainwright 1970) or the open settlements on Meon Hill near Stockbridge (Liddell 1933; 1935) and Old Down Farm (Davies 1981), and further afield other sites like Little Woodbury or Gussage All Saints. Many sites appear to have had total capacities substantially below that of Danebury, one of whose roles may have been to act as a defended grain store at the heart of local and regional territories (Cunliffe 1976, 347).

Other specific primary functions have been mentioned but have left no direct evidence yet recovered. The small pits under 0.5 m deep may well have had a different function, though experiments with one sealed pit, only 0.6 m deep ; proved successful for grain storage (Bowen & Wood 1968, 8-9). The five conical pits were clearly clay puddling pits, since all have distinctive clay fills (Vol 2, p 244).

Decay and secondary use

Although it is recognized that the contents of the pits as excavated derive perhaps exclusively from the period of their decay and their secondary role as convenient rubbish containers, study of the varying kinds of decay of the pits through their types of fill can provide further useful insight into the nature of the interior of the hillfort, the

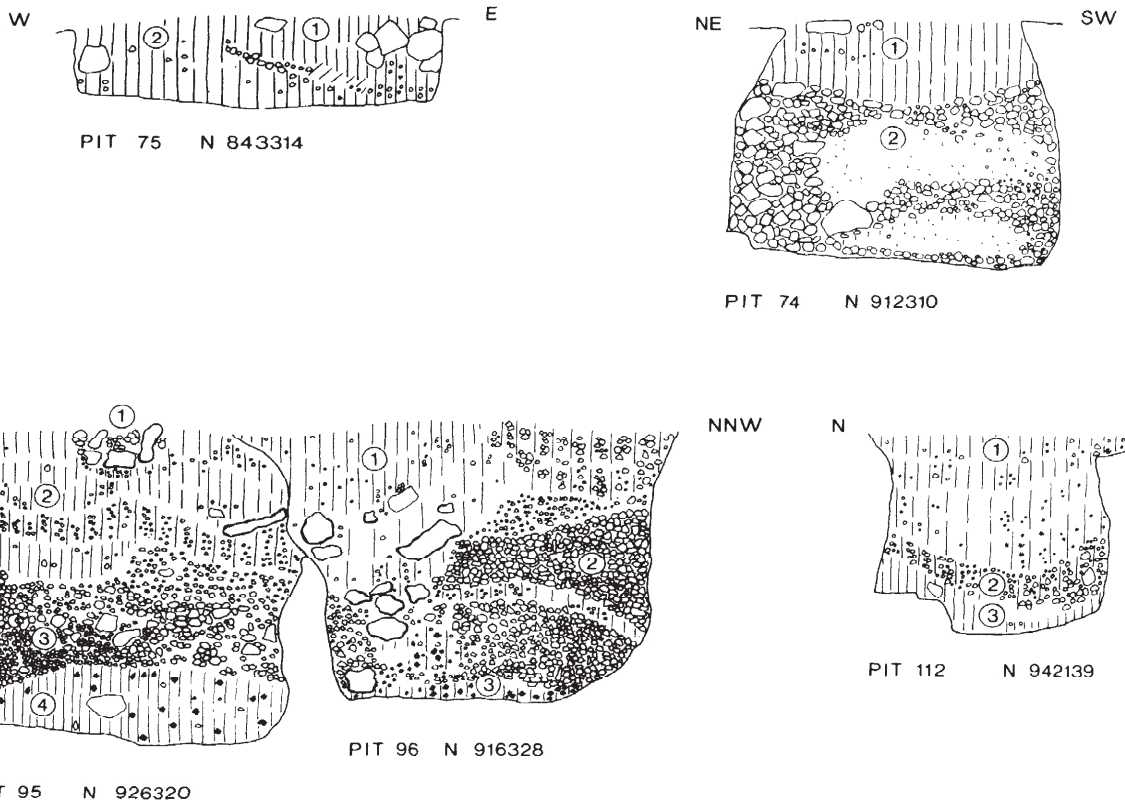
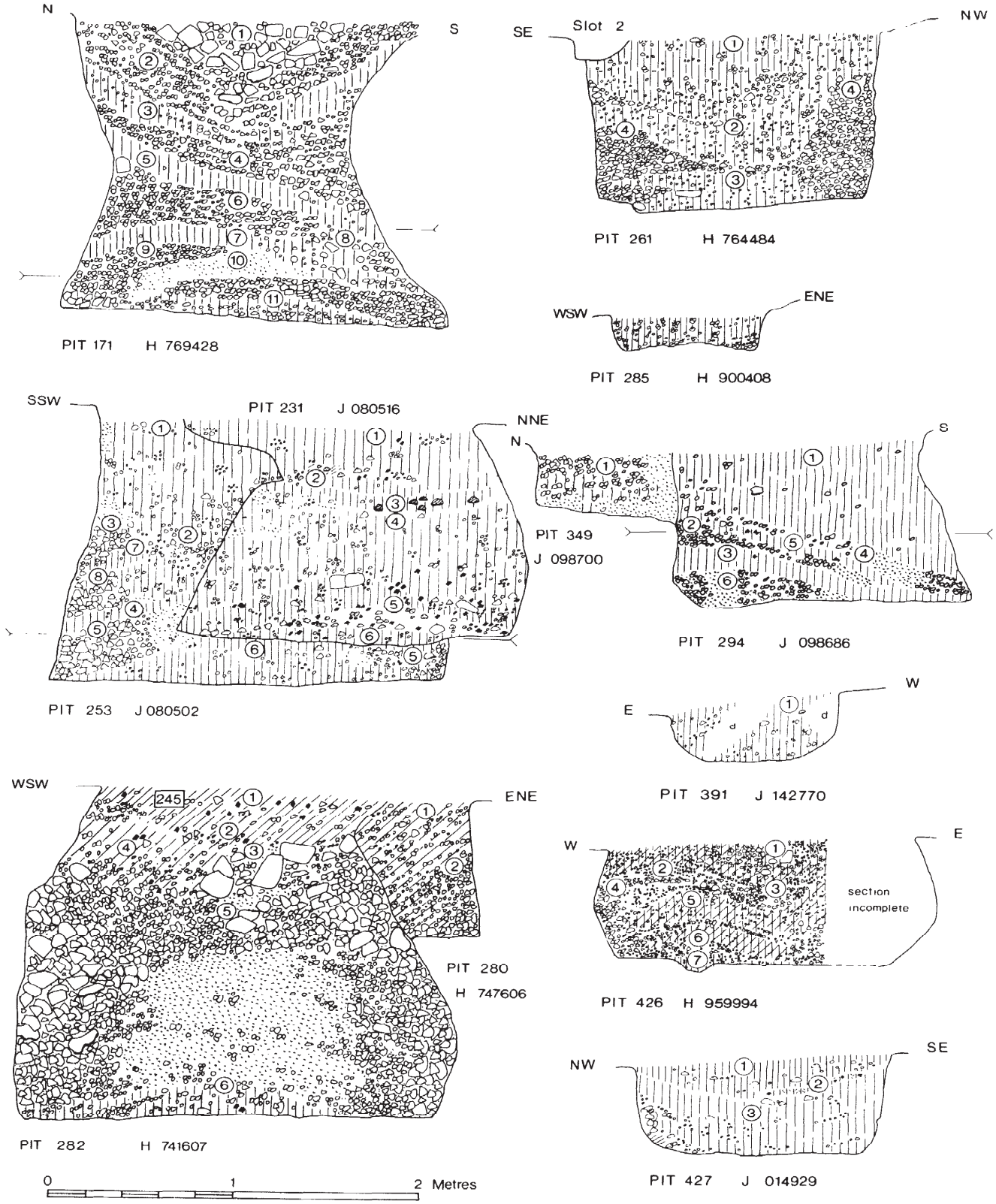

W
E
PIT 75 N 843314
NE
SW
PIT 74 N 912310
SSE
PIT 95 N 926320
PIT 96 N 916328
NNW
N
S
PIT 112 N 942139
N
S
PIT 167 H 721473
PIT 165 H 719451
PIT 166 H 719460
0
1
2 Metres

Fig 4.92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S
PIT 171 H 769428
SE
Slot 2
NW
PIT 261 H 764484
WSW
ENE
PIT 285 H 900408
SSW
PIT 231 J 080516
PIT 253 J 080502
NNE
N
S
PIT 349
J 098700
PIT 294 J 098686
E
W
PIT 391 J 142770
WSW
245
ENE
PIT 280
H 747606
PIT 282 H 741607
W
E
section
incomplete
PIT 426 H 959994
NW
SE
PIT 427 J 014929
0
1
2 Metres

Fig 4.93

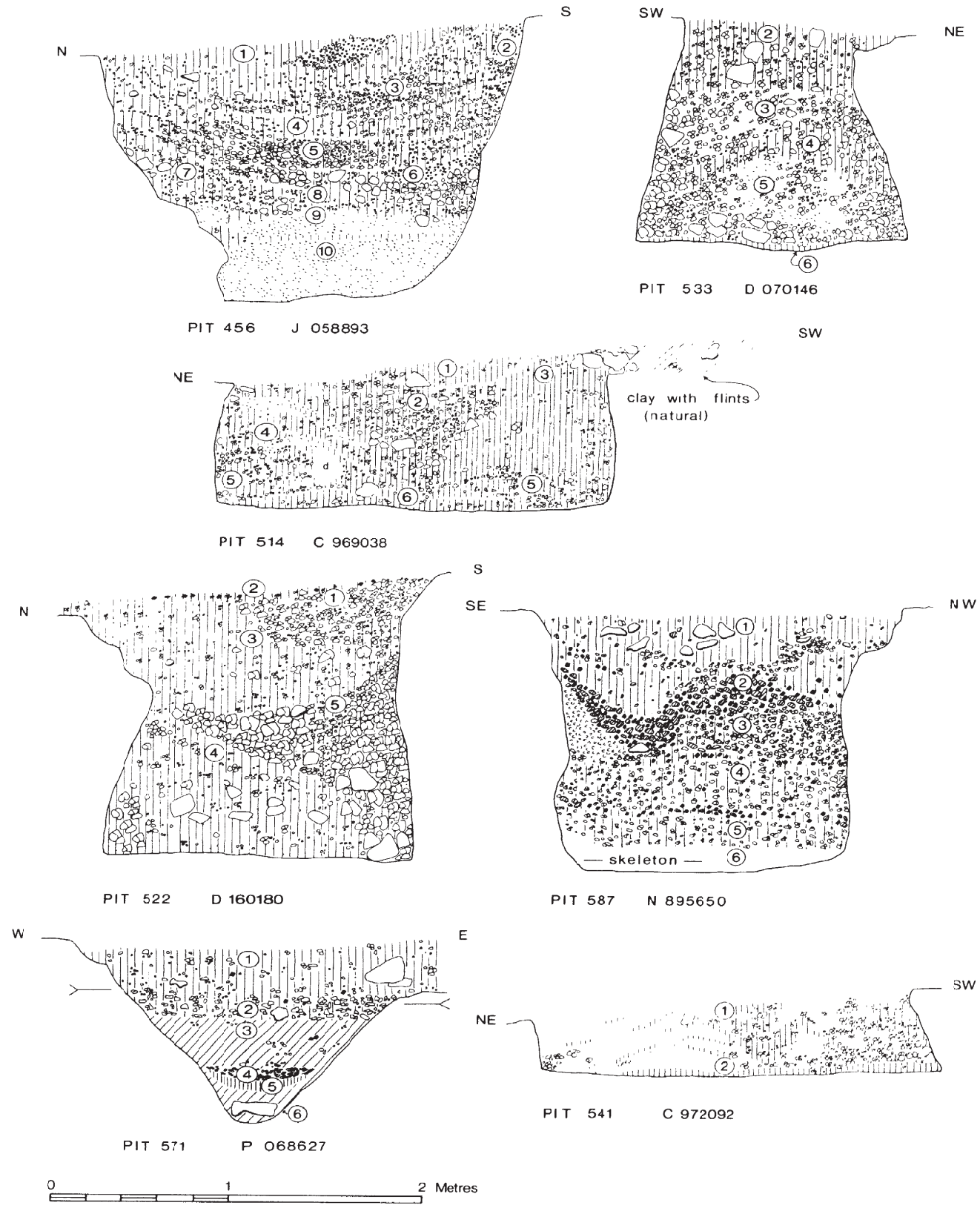
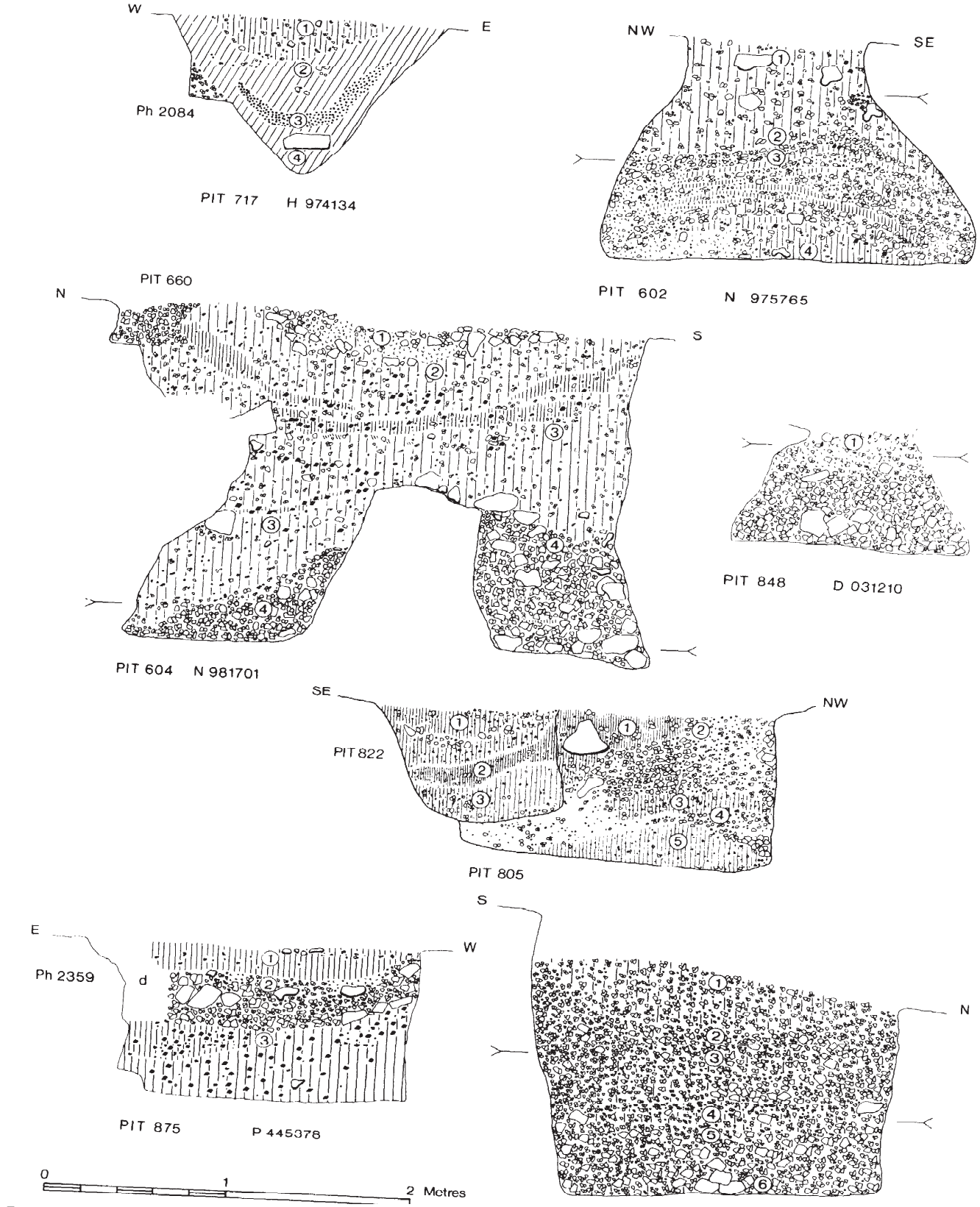

N
S
PIT 456 J 058893
SW
NE
PIT 533 D 070146
NE
SW
clay with flints
(natural)
PIT 514 C 969038
N
S
PIT 522 D 160180
SE
NW
— skeleton —
PIT 587 N 895650
W
E
PIT 571 P 068627
NE
SW
PIT 541 C 972092
0
1
2 Metres

Fig 4.94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E
Ph 2084
PIT 717 H 974134
NW
SE
PIT 602 N 975765
PIT 660
N
S
PIT 604 N 981701
PIT 848 D 031210
SE
NW
PIT 822
PIT 805
E
W
Ph 2359
d
PIT 875 P 445378
S
N
0
1
2 Metres

Fig 4.95

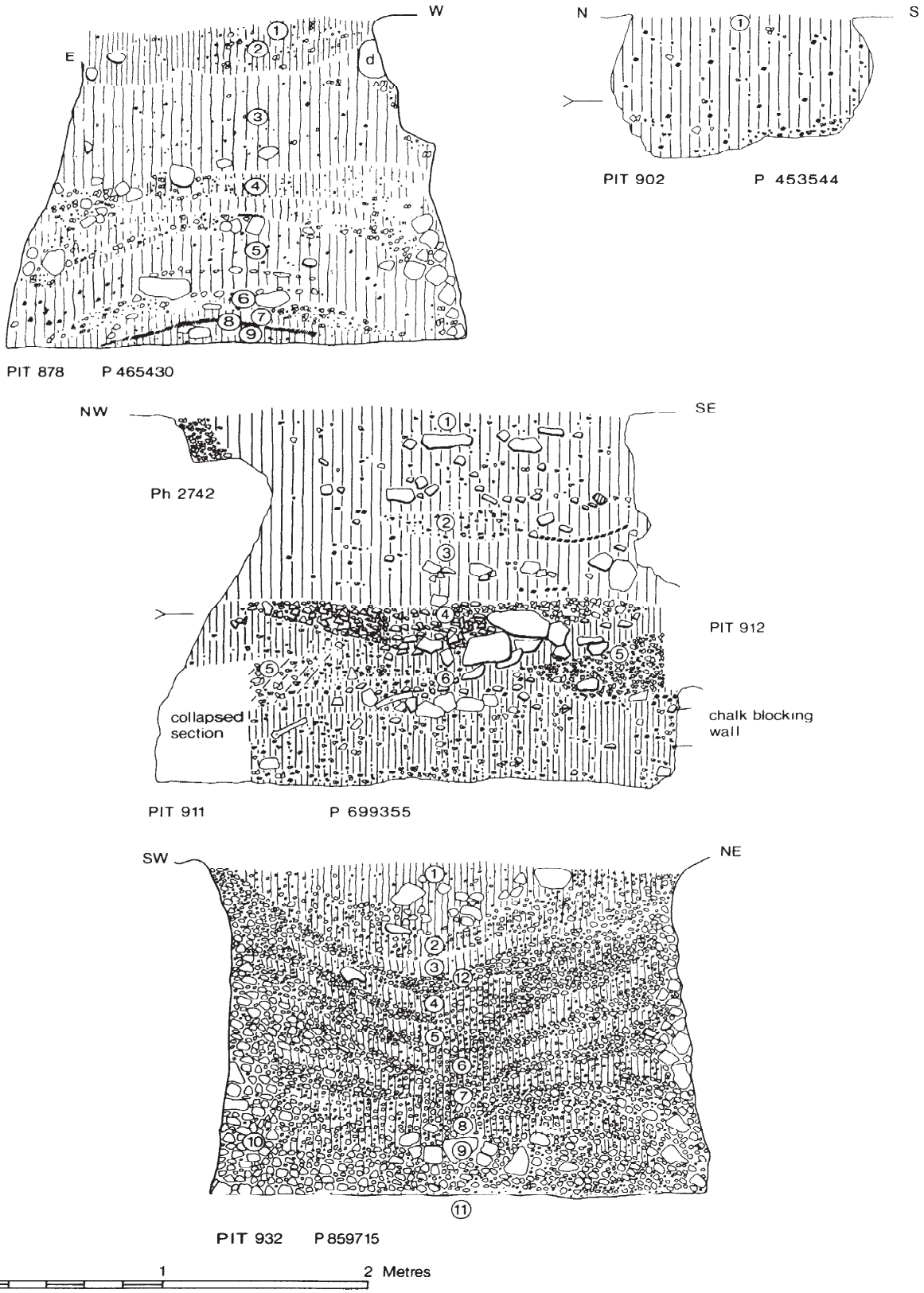
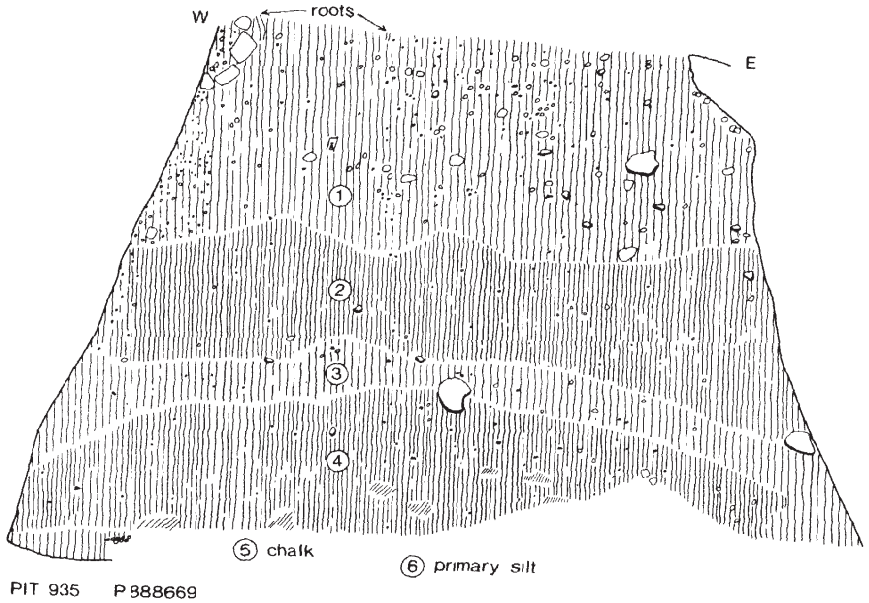

W
E
d
PIT 878 P 465430
N
S
PIT 902 P 453544
NW
SE
Ph 2742
PIT 912
collapsed section
chalk blocking wall
PIT 911 P 699355
SW
NE
PIT 932 P 859715
0 1 2 Metres

Fig 4.96



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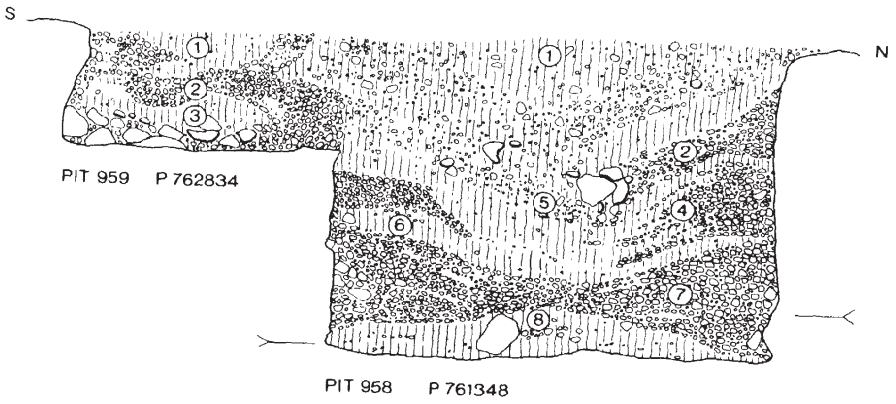
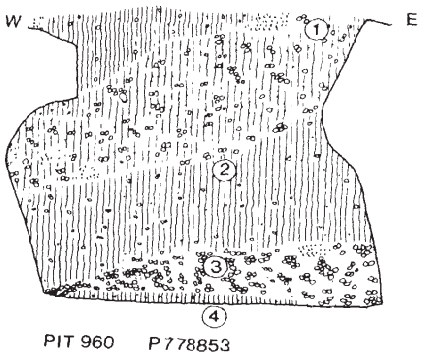
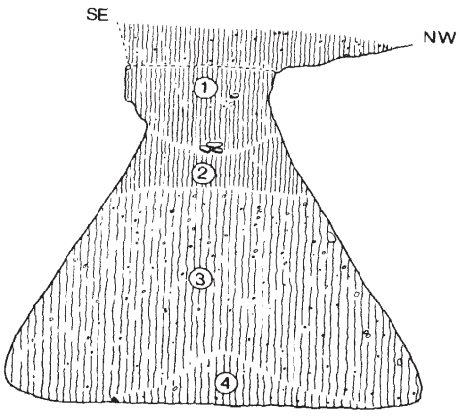


PIT 959 P 762834

PIT 958 P 761348



PIT 960 P 778853



PIT 1002 P 950558

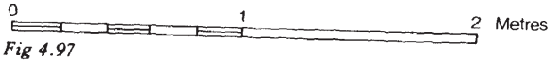


Fig 4.97

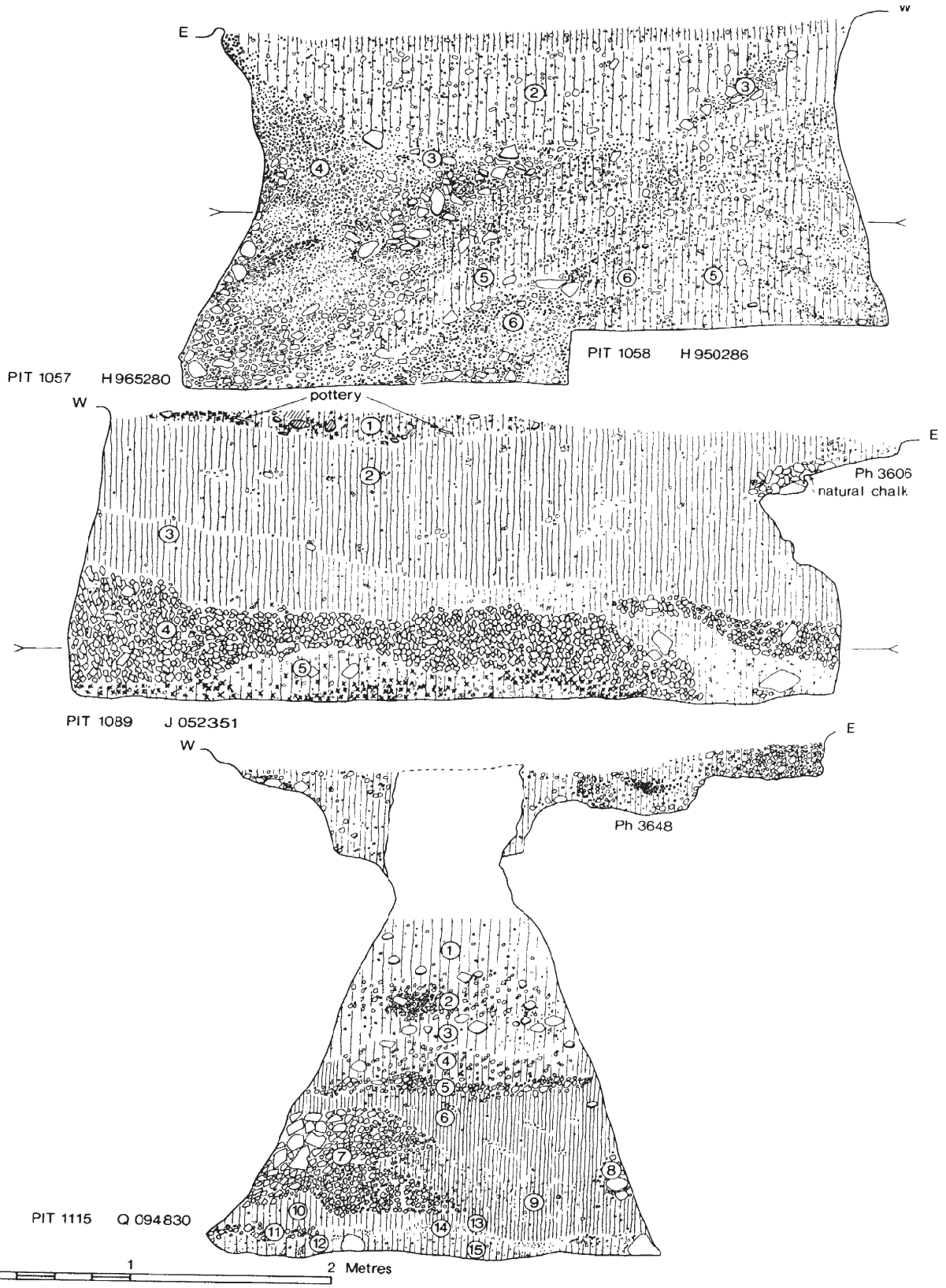

E
W
PIT 1057 H965280
PIT 1058 H950286
pottery
Ph 3605
natural chalk
PIT 1089 J 052351
Ph 3648
PIT 1115 Q 094830
0
1
2 Metres

Fig 4.98

Table 11 Pit types and pit fillings

	Beehive	*Cylindrical*	*sub-rectangular*	*Total*	
Natural	174	40	5	219	22.4
Artificial	130	48	30	208	21.2
Combination	440	90	27	557	56.4
Total	744	178	62	984	—

Table 12 Pit types and pit fillings by phase, with 106 unphased pits

		Phases					
		1-3	4-5	6	7-8	0	Total
Beehive	Nat	83	32	26	17	16	174
	Art	41	22	12	36	19	130
	Comb	227	54	44	78	37	440
	Total	351	108	82	131	72	744
Cylindrical	Nat	24	3	1	5	7	40
	Art	32	3	2	4	7	48
	Comb	47	8	12	7	16	90
	Total	103	14	15	16	30	178
Sub-rectangular	Nat	4	—	—	—	1	5
	Art	23	3	—	3	1	30
	Comb	19	5	1	—	2	27
	Total	46	8	1	3	4	62

density of occupation, and the intensity of pit use. Similar studies of other sites would be rewarding. In the context of the present report a full study of the Danebury pit fillings has not been attempted, though sufficient information is now computerized for analysis and will be presented in a future volume. For the purposes of this preliminary assessment, three basic types of fill were distinguished: natural, artificial, and a combination of natural and artificial. Table 11 sets out the basic data by pit type. Conical pits are ignored for this discussion, as are the unclassified pits. Eight beehive pits were too disturbed by tree roots or rabbits for safe analysis; a number of the unclassified pits were similarly disturbed, but the total so affected was remarkably low given the present tree cover of the site. Variation between the different phases can be studied in Table 12.

The fill types are very varied, and something of this variety can be seen in the text figures and the microfiche figures. Natural silting follows the basic pattern of erosion of chalk seen in ditches. There may be washed-in silts on the base. Primary angular chalk shatter from the pit top follows, with further interleaved chalk and silt lenses. In the upper part of the fill, chalk decreases in quantity and is smaller and more rounded, and the quantity of silt (presumably slowly accumulating) increases, to leave, finally, a shallow hollow on the surface. This basic pattern is varied. At the base of the larger beehive pits, for example, twin domes of silt and chalk (as seen in half sections) may accumulate. The patterning of chalk and lenses in the middle part of the fill is also very varied. Artificial fills are generally homogeneous, consisting largely of soil with some chalk (generally rounded), though compact, more chalky fills are also encountered. For the combination fills, a simple distinction between primary filling and the rest of the filling was made for the purposes of analysis. Of the 557 cases, only 28% had artificial basal filling, while 20% had primary chalk shatter, and a further 52% silt lenses, either fairly flat or domed, which appeared to be the result of natural silting. The combinations in the rest of the fill were very varied. For the most part, the proportions of fill types are fairly constant between the types and phases, though it is of interest to note the slightly different proportions of artificial and natural silting between the beehive and cylindrical pits, and the greater occurrence of artificial fills in the sub-rectangular pits.

Hardly any spatial analysis of fill types has yet been achieved. Preliminary assessment of the 1973-5 and 1977-8 areas, however, shows that the percentage of wholly artificial fills is low there, despite the regular succession of circular structures in areas presumably heavily frequented by people. Combination fills are the most frequent, but natural fillings are well represented (approximately 30-40%; note the small samples, above p 137 and Figs 4.92-4.98). A full analysis would require study of the whole excavated area, but the sample raises several questions, as indeed do the raw figures of Table 12. If one in five pits silted up naturally, what was the nature of the hillfort interior? How was space allocated to people and animals? Is this figure some measure of the intensity of use of space? Did different parts of the interior have different roles? One need is to consider the speed of natural silting. In one experimental observation, no natural silting was observed over three years in that there was no movement of material from a dump on the edge of a pit into it (Reynolds 1979). The experience of summer and winter conditions at Danebury, however, was markedly different. Heavy rain in the summer could rapidly produce lenses of silt, especially on the more sloping parts-and this with topsoil largely removed for excavation. Pits acted also as a trap for leaf fall. Winter frost produced much chalk erosion, though this was not systematically measured because most of the areas were by then backfilled. The observations show that the amounts could be substantial. Primary silting could, therefore, have been quite rapid, and basal silt lenses could even be an indication of pits opened in spring. The rest of the silting, however, could have spread over years. Up to sixteen alternating chalk and silt lenses have been observed in the middle silting, though we lack the means to evaluate the passage of time this may represent. Two alternative implications of even a short chronology for natural pit fillings can be considered. One is that very large numbers of pits were in use at the same time and that in their period of decay there were hiatuses in the local occupation which would have reduced the nuisance and danger of large open pits. On the other hand, the combined percentage of the other fill types suggests an active interest in the state of pits. The other implication is that space in the interior was closely organized so that pits may have fallen, in some parts at least, into defined plots or enclosures, where they could decay without affecting people or animals or be left, perhaps with a lid on to prevent erosion, to await future reuse. From the preliminary survey of the 1973-5 and 1977-8 areas there is also the possibility that artificial fills were more concentrated in the centre of the interior. Pits in this area may not, therefore, have been in the same context as those on the periphery.

Pits may have been filled on occasion to take spoil from fresh pits, though the main point seems to have been to remove the problem of open holes. One hundred and twenty-five pits have chalk cappings in the uppermost part of the filling which is otherwise natural or a combination. Ninety-nine of these are beehive pits, 23 cylindrical, and three sub-rectangular.

The conical pits have either artificial fills or combination fills with a little natural silting in the upper parts, above the lower layers of clay. The majority of pits had artefacts and bones of various kinds in them, particularly animal bones and pottery, but including also the range of artefacts reported on elsewhere. Much of this may be classed as rubbish but study of the patterns of deposition of such

Table 13 Pits with human bone by type and phase

	Beehive	*Cylindrical*	*Sub-rectangular*	*Unclassified*	*Total*
Phase **1–3**	18	9	10	2	39
4–5	10	—	2	—	12
6	11	—	—	1	12
7–8	29	1	1	—	31
Total	68	10	13	3	94

rubbish in relation to different areas of the interior or to different sorts of structure is beginning to yield further rewards (Vols 1 and 2 *passim).* It is already clear that some secondary contents of the pits were deliberate deposits with presumably intended significance for the users of the interior. These comprise the animal and human burials, and perhaps also the deposits of human bone not formally buried. Both these sets of evidence are described elsewhere in the report (Vol 2, pp 442-63, 523-43), and their pit context only is described here. Table 13 sets out some basic data for the 94 phaseable pits out of the 98 pits recorded with human bone. There is a slight preference for sub-rectangular over cylindrical pits for this purpose, which might be enhanced by the fewer numbers overall of the former. This need not mean that sub-rectangular pits had a primary role as 'ritual pits' but that their shape and size provided easy access for the secondary purpose. The overall volume range is large (in units of 1 cu m):

<l 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
1 7 2 1 1 1 1 3 6 9 1 0 - 1 1 3 l - 111

There was thus some preference for larger than average pits.

Future work

In the above pages we have offered a preliminary account of selected aspects of the pit data and have indicated the range of further, more detailed, studies now being undertaken. The results of the ancillary research, which will incorporate data from excavations undertaken after 1978, will be presented in a future volume in this series.

4.3 The establishment of a chronological sequence

4.3.1 Introduction and principals

Of prime importance to the establishment of a chronological sequence are the deeply stratified deposits in the quarry hollows on the east and north sides of the fort where the accumulation of deposits averages l-2 m in depth. Of less, but by no means negligible, significance are the shallower deposits preserved by natural silting in the lee of the rampart on the south. The advantages of these locations will be evident from the above discussion (pp 49-51); they may be summarized by saying that here the destruction of stratified levels was at a minimum, structural data were extremely well preserved, periodic flooding created silt horizons which nicely separate occupation phases, sufficient material was closely stratified to allow ceramic change to be demonstrated, and the close stratification allowed a relevant programme of radiocarbon dating to be undertaken. To these points may be added the observation that the preservation of contemporary ground surfaces is of great interest when matters of function are being considered.

The disadvantage of basing a chronology upon the quarry hollow sequences is that they cover only part of the history of the sits-in terms of the defence sequence (pp 47-9) periods 4-6c-but this shortcoming is to some extent compensated for by the areas of stratified deposits, admittedly only inadequately sampled, which are sealed by the period 4 rampart extension or truncated by the contemporary quarry.

Correlation with the defence sequence is, of course, direct at the moment of the period 4 constructional work, but before and after it relies entirely on estimates of absolute dates.

In the following sections the stratified sequences represented in the three areas examined behind the ramparts are individually discussed. The section drawings (Figs 4.107, 4.114, and 4.122) appear after the text relevant to them.

4.3.2 The excavations of 1977-8: sequence A (Pls 48, 51-2)

In the two seasons 1977 and 1978, a considerable stretch of the quarry hollow lying behind the rampart and extending north from the main gate for a distance of about 50 m was examined, together with the adjacent area of the interior of the fort. With the exception of two baulks left *in situ* the excavation was total. At the same time the tail of the rampart was cut back by about 1 m in order to expose the ground surface pre-dating the rampart extension. A matrix diagram of layers and features will be found in fiche 6.

The pre-quarry occupation

The features which can be shown to pre-date the digging of the quarry are included on Fig 4.99 while the stratigraphy recorded beneath the rampart is illustrated in section 26 (Fig 4.100). Little commentary is needed.

The original chalk surface shows a number of irregularities, all of which are likely to have derived from a variety of natural causes. Upon this a soil profile developed (layer 538) which varied in thickness but averaged 100 mm. Strictly the layer consists of two horizons, an upper which is essentially silty and largely without chalk particles, and a lower in which chalk particles are more numerous. It is typical of a worm-sorted soil profile indicating an absence of soil-disturbing activities. In places this soil has been worn away, or deliberately removed; elsewhere it has been overlain by layers deriving from human activity.

Over most of the ground surface, sealed by the rampart, a distinct occupation layer can be recognized (layer 514), consisting of a dark greyish brown soil containing fragments of weathered chalk, charcoal, daub, and small pieces of burnt chalk and flint. It varies in thickness from 50-150 mm. The layer represents a disturbed soil accumulating during a period of human occupation. Over a considerable area layer 514 lies directly above the natural soil (538) and is sealed by the layers of the rampart extension but in places other layers interleave. In one area a hard packed layer of trampled chalk (layer 575) was spread on the turf and an occupation horizon containing much charcoal and burnt material (layer 574) accumulated on it. A similar sequence is found further to the north but here the trampled chalk layer (layer 578) lies directly on the natural chalk, the turf-line having been removed. Above the chalk trample a discontinuous occupation horizon (layer 577) can be traced. The sequence is complicated by postholes and gullies, the stratigraphical relationships of which can be seen in the drawn sections. In this area layer 514 is overlain by a clean brown soil (layer 579) which has the appearance of having been worm-sorted.


QUARRY HOLLOW
1977-8
PHASE a-e
Section 26
P 1149
Ph 3734
Ph 3733
P 1150
G 116
Ph 3736
Ph 3735
P 1130
G 110
Ph 3641
Ph 3642
Ph 3640
Ph 8333
P 1131
Ph 3634
Ph 3637
Ph 3638
Ph 3636
Ph 3639
G 109
G 112
Ph 3731
G 111
P 1138
P 1139
Ph 3708
Ph 3707
Ph 3706
P 1145
G 117
R 1144
Ph 3704
Ph 3703
P 1133
P 1134
Ph 3711
Ph 3723
P 1146
P 1128
P 1007
P 1005
F 49
P 842
Edge of quarry in phase f
P 1002
P 1003
P 998
Ph 3179
Section 26
Ph 3211
P 988
0
5
10
15 Metres

Fig 4.99

SECTION 26
EARLY LAYERS BENEATH RAMPART EXTENSION

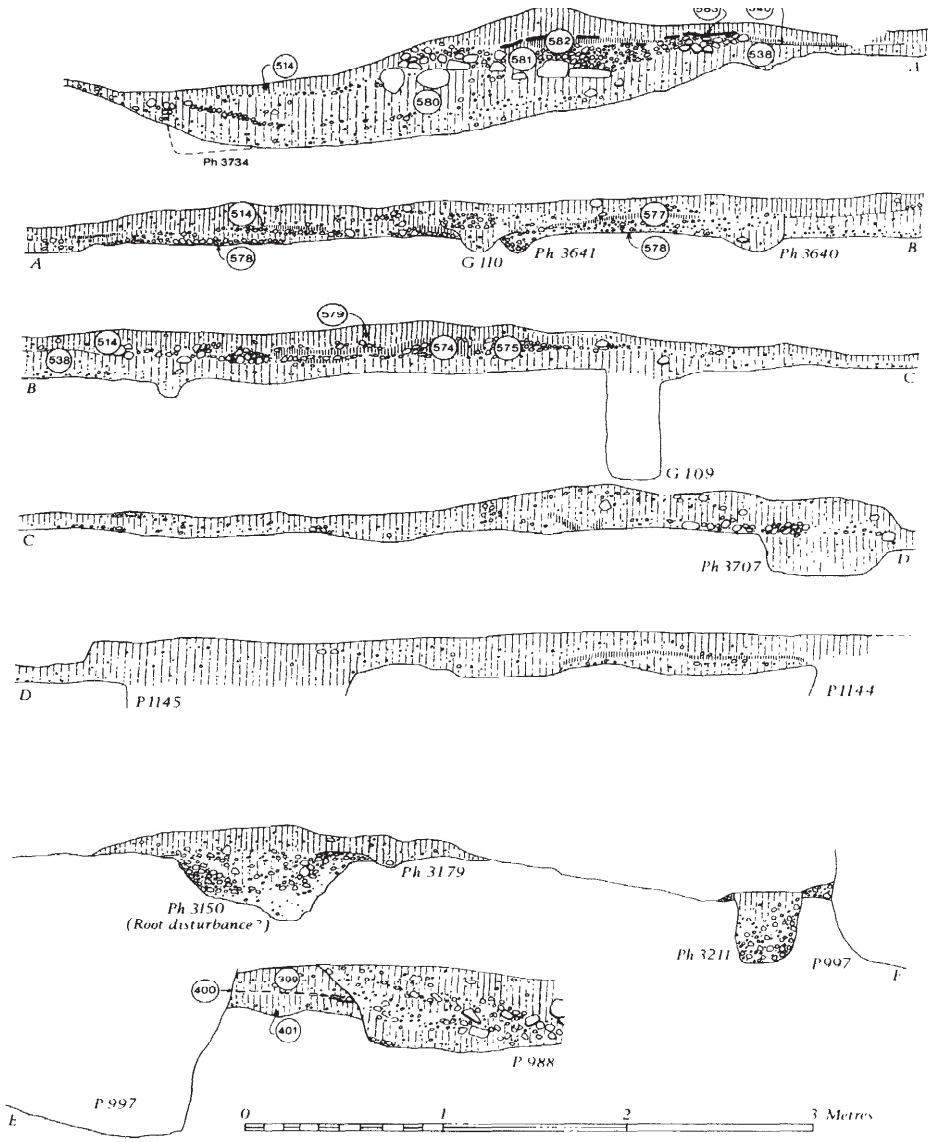


Fig 4.100

Still further to the north the sequence is more complicated. Here a distinct hollow had been cut or had worn or eroded into the natural chalk for a maximum depth of 0.4 m. It had tilled with a clean brown soil containing small chalk lumps and occasional burnt flints and flecks of charcoal (layer 580). Two postholes had been cut from the bottom of the hollow (phs 3733,3734). The filling and postholes show that it cannot have been a natural feature but it is evident that the silting took place largely under natural conditions since the soil is comparatively clean and merges imperceptibly with the natural turf-line (layer 538). The top of the partially silted hollow had been packed with large blocks of chalk and chalky rubble (layer 581) presumably to form a solid base for an occupation surface, perhaps a hut floor, upon which a hearth of flints set in clay was constructed (layer 583). Contemporary occupation was represented by a layer of charcoally soil (layer 540) upon which lay patches of burnt daub (layer 582), the entire sequence being sealed by layer 514. The occupation phases reflected in the stratigraphical sequence are associated with a number of pits, postholes, and gullies (Fig 4.99) some of which, by virtue of their relationship to the turf-line, 538, appear to be early, but most belonging with the main phase of occupation. One feature which requires particular note is the deep slot composed of two lengths, G109 and Gl11, both of which are sealed by the turf accumulation. The slot is vertical sided, 0.28 m wide and 0.65 m deep. Its function is unclear but it may well have taken upright timbers. Whether it is part of an early domestic structure or

whether it represents the trench for a defensive palisade must remain undecided. Of the various pits P1007 deserves special mention, having been partly cut away by P1128 and truncated by the quarry, not a great deal remained but there was sufficient to show that it had been dug to a depth of *c* 1 m below the surface of the natural chalk and had been filled with a brown chalky soil. No relationship to pre-rampart layers can be defined since the quarry and subsequent erosion had removed all linking stratigraphy. The significance of the pit lies in the fact that it once contained the hoard of bronzes, including Hallstatt C types; the finds are discussed in detail below (Vo12, pp 335-40). Several items were actually found in the pit fill whilst others lay in the silts in front, at the top of the quarry hollow sequence, having arrived in this position as the result of root disturbance and the activity of burrowing animals, after the main Iron Age occupation was at an end. While the pit clearly pre-dates rampart period 4, its relationship to the earlier part of the defensive sequence cannot be defined.

At the southern end of the excavation close to the gate, a thin occupation layer (layer 400) was found to lie on the original turf-line. A substantial quarry pit, 997, was dug through the original soil and into the top of the natural chalk, possibly to provide material for an early extension of the earthworks near the gate. The silts of the hollow were sealed by the rampart extension of period 4.

Although the evidence for early (pre-quarry) occupation is not particularly extensive, largely because the excavation beneath the extended rampart was limited, sufficient survives to indicate a complex sequence which may be divided into several phases:

a features cut into the chalk through the original turf-line, eg G109, G11, and the large hollow
b turf-line above these early features (layer 538)
c construction and occupation probably representing the building of houses; most of the pits belong to this phase.
d the accumulation of a soil containing occupation debris (layer 514)
e localized accumulation of clean soil (layer 579)

The summarized sequence reflects the excavated sample but whether it represents more than very localized phenomena is a matter of debate; it does, however, suggest a degree of complexity in the use of the fort equivalent to the defence sequence periods 1-3.

Unrelated to the preserved stratigraphy are a number of pits partially or substantially truncated by the quarry. These are shown on Fig 4.99. The pottery from the stratified levels and pits is considered in detail elsewhere (Vol 2, pp 233-44).

It will be remembered that the ramparts sectioned in 1969 show a phase of addition (rampart period 2) associated with the digging of discrete quarry hollows; the partial section of 1975 indicated a similar intermediate heightening before the period 4 activity greatly extended the rampart. Since it remains a distinct possibility that the rampart flanking the 1977/8 area also incorporates an extension equivalent to rampart period 2, it is relevant to ask whether any part of the quarry hollow complex can be distinguished which may pre-date period 4. On stratigraphical grounds one feature (F49; see Fig 4.107) would appear to pre-date the main quarry hollows. It was a shallow elongated hole 2·5 m wide of unknown length surviving now to a depth of 0.8 m below the bottom of the period 4 excavation. From the original ground surface it would have been l-l·4 m deep. The hole appears to have filled naturally with eroded and frost shattered chalk interleaved with lenses of silty soil (layers 488, 489, 490, 496, 497). The limited quantity of pottery sealed within the filling is consistent with a date equivalent to rampart periods l-3. Stratigraphically and chronologically F49 is likely to pre-date the main phase of quarrying. If so, it may represent a quarry pit belonging to an earlier period. More certainty attaches to the shallow scoop pre-dating the rampart extension at the south end of the site, though its position close to the gate may suggest that it was related to one of the many gate rebuildings.

The quarry of period 4 (Fig 4.101)

The characteristics of the quarry dug in period 4 to provide material to extend the rampart will be self-evident from the plan (Fig 4.101). Essentially it consists of a wide, shallow trench averaging some 13 m in width and dug to various depths up to l·5 m below the contemporary surface. Within this scoop a series of deeper delves created isolated holes extending down to a maximum of 2.2 m (the individual quarries have been given feature numbers for ease of reference). It is tempting to interpret these deeper excavations as the result of gang work, each gang being responsible for constructing a length of the rampart. The causeways left undug between would have been useful in facilitating the carting of spoil out of the hole and up the back of the rampart.

Once the rampart had been completed the quarries were left to silt up.

Occupation within the quarry hollows

From the moment that the quarries were dug, in the 3rd century BC, until the main occupation of the site ended at the beginning of the 1st century BC, the quarry hollows were used by the inhabitants of the fort for a variety of functions, traces of which survive in the stratification interleaved with silts and shattered chalk eroded and washed from the sides. Since these processes were continuous, and considerable lateral variation occurred along the length of the quarry, it is not possible to impose hard and fast 'periods'. Nonetheless, at least six distinct phases can be readily distinguished. For ease of reference we will call these phases g-l (a-e being reserved for the pre-quarry and f for the quarry digging phase itself).

Phases g, h, and i

These early phases represent the comparatively rapid silting of the freshly dug quarries with shattered chalk eroded from the sides and with silt washed in from the interior of the fort. Whilst these processes were in operation a few pits were dug. In the northern part of the quarry (F62, F61) the stratigraphical sequence allows three distinct phases to be recognized, separated from each other with lenses of silt. The first (phase g) consists of layers of shattered chalky silt (layers 573, 534) associated with a number of postholes (Fig 4.102). This is sealed by silt layers (layers 572, 486, 452). Then followed a second phase, phase h (Fig 4.103), during which deliberate spreads of chalk were laid and trampled (layers 485, 529, 531, 494) and two pits were dug (P1124, Pl115). Pit 1115 is of particular interest because of its unusually well-preserved state (p 30). It was cut to a depth of 2·8 m below the contemporary surface and retained its original truncated conical shape, 2.35 m in diameter at the bottom narrowing to 0·55 m towards the top. The spoil dug from the pit was piled around its upper edge, in two distinct layers (layers 566,564) separated by a thin silt lens (layer 565), to form a protective bank which would have prevented rain from washing in or soil slipping down into the pit from the neighbouring rampart. Whilst the pit was in use a gully (G115) was dug some distance

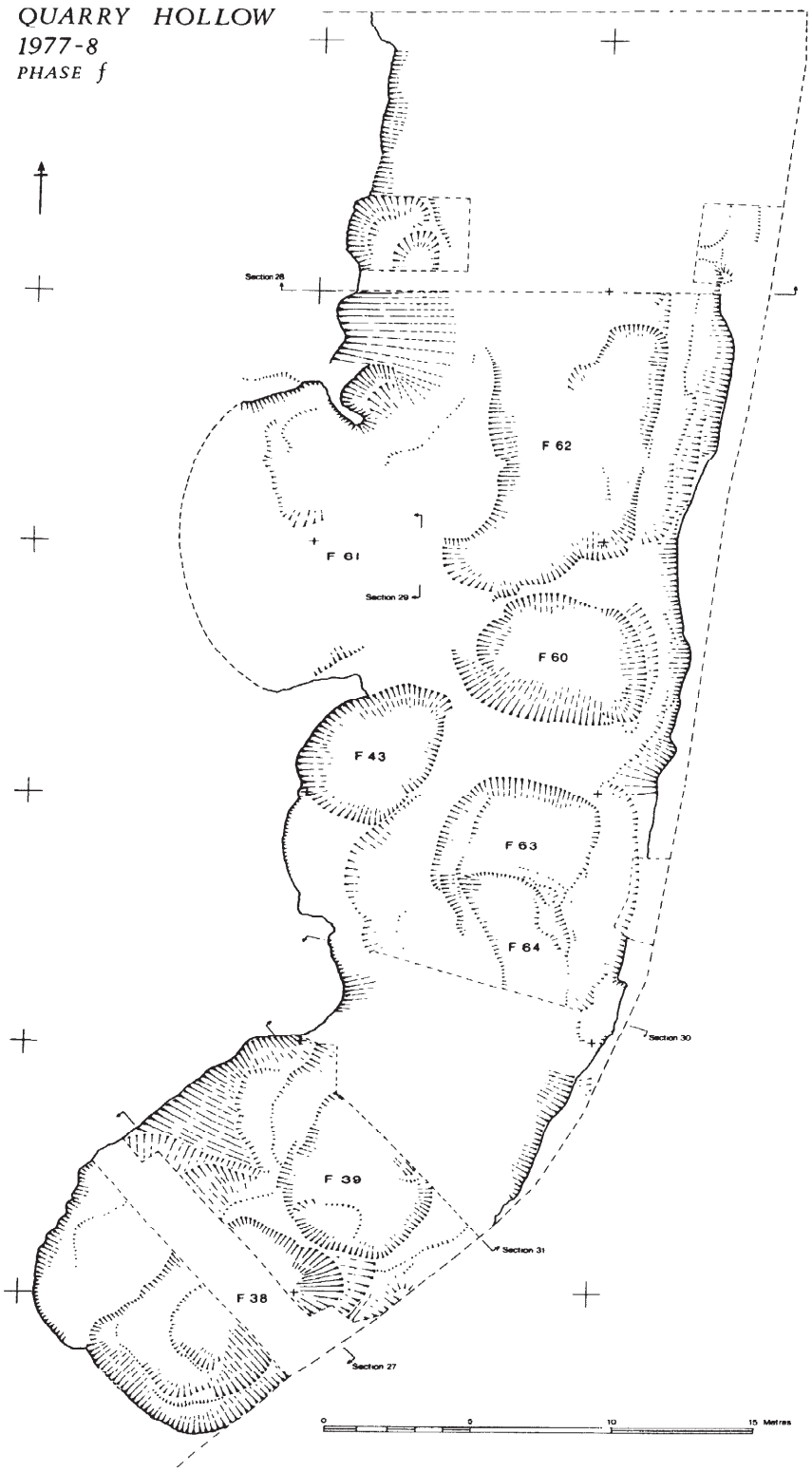

QUARRY HOLLOW
1977-8
PHASE f
Section 28
F 62
F 61
Section 29
F 60
F 43
F 63
F 64
Section 30
F 39
Section 31
F 38
Section 27
0
5
10
15 Metres

Fig 4.101

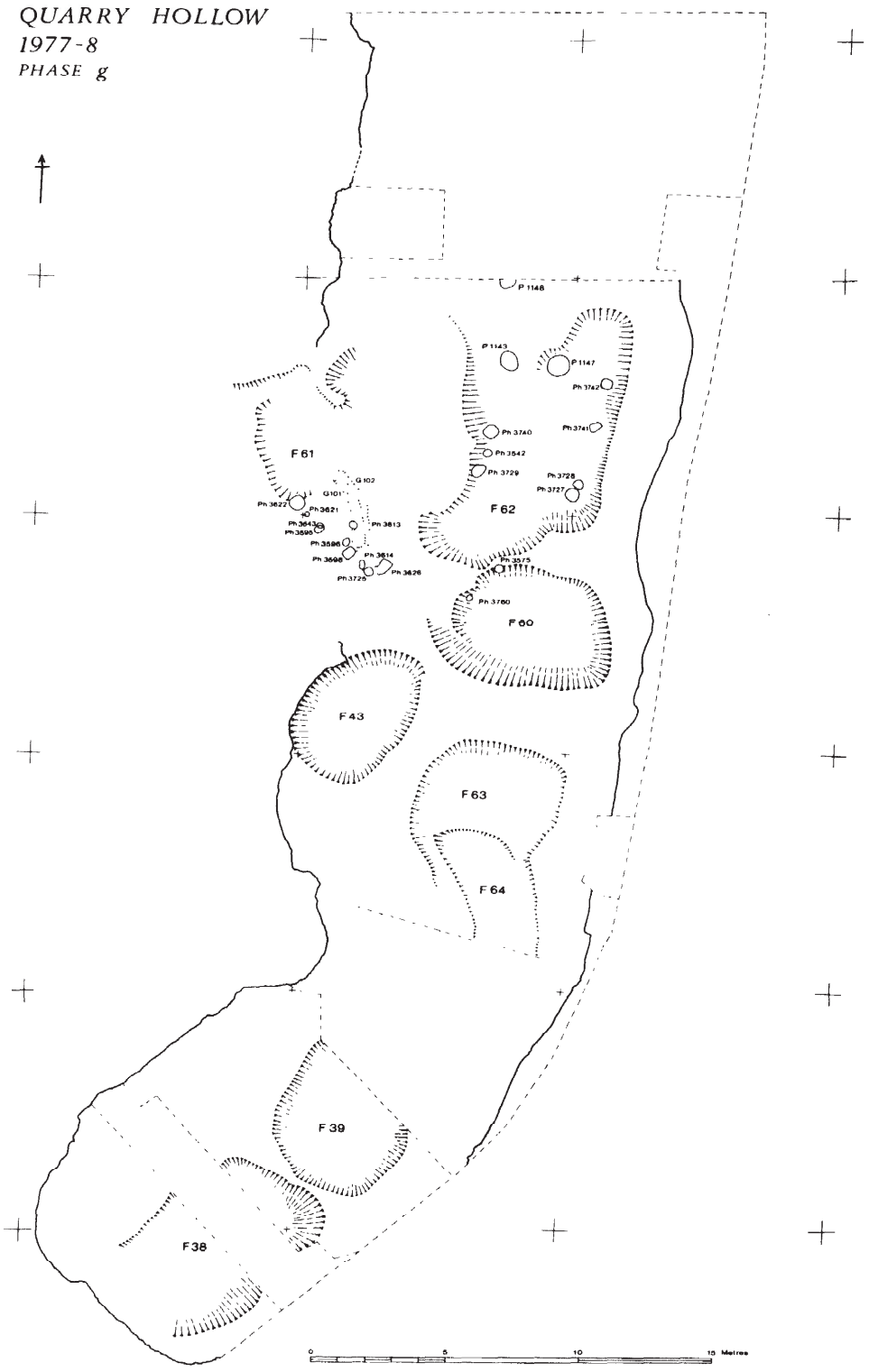

QUARRY HOLLOW
1977-8
PHASE g
F61
F62
F60
F43
F63
F64
F39
F38
P 1148
P 1143
P 1147
Ph 3742
Ph 3741
Ph 3740
Ph 3542
Ph 3729
Ph 3728
Ph 3727
G 102
G 101
Ph 3622
Ph 3621
Ph 3643
Ph 3595
Ph 3596
Ph 3698
Ph 3725
Ph 3813
Ph 3614
Ph 3626
Ph 3575
Ph 3760
0
5
10
15 Metres

Fig 4.102

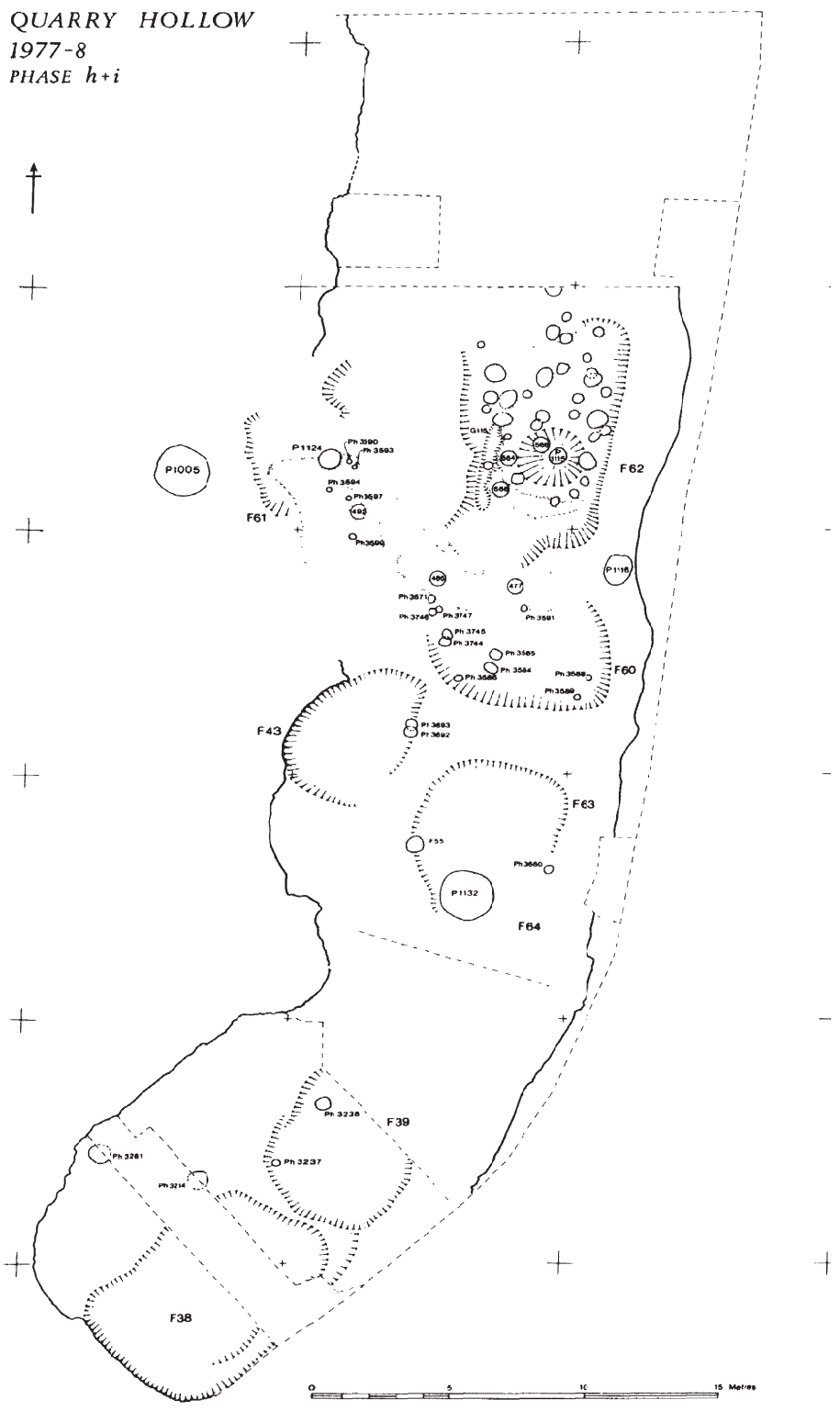

QUARRY HOLLOW
1977-8
PHASE h+i
P1005
P1124
Ph 3590
Ph 3593
Ph 3594
Ph 3597
Ph 3599
F61
F62
P1116
Ph 3671
Ph 3746
Ph 3747
Ph 3591
Ph 3745
Ph 3744
Ph 3585
Ph 3584
Ph 3588
Ph 3589
F60
F43
Pf 3693
Pf 3692
F63
F55
Ph 3660
P1132
F64
Ph 3238
F39
Ph 3281
Ph 3237
Ph 3214
F38
0
5
10
15 Metres

Fig 4.103

from its uphill edge perhaps to improve drainage in the somewhat difficult conditions in the bottom of the quarry hollow. Superficial details of this kind are seldom preserved elsewhere.

The pit continued to function for some while even after another layer of silt had accumulated in the hollow (layers 563, 478, 528, 493, 510) forming an horizon which divides phase h from phase i. In phase i pit 1115 was accompanied by another pit 1116 while at the same time, in F61, a number of postholes representing a structure of some kind were dug (Fig 4.103). Nearby, in F62, chalk spreads were laid and a small hearth (layer 562) was constructed apparently unassociated with an enclosing structure but contemporary with a number of postholes. All layers and features were sealed by another lens of silt (layers 513, 551, 530, 465, 464, 466, 463, 432) which brought phase i to a close.

Further south in F60 the sequence was less complex. Postholes and silts equivalent to phases g and h were sealed by a silt layer (layer 511) which can be directly related to similar silts further north. Then followed a trampled chalk spread (layer 506) associated with further postholes representing phase i.

Further south again in F43, F63, and F64 the sequence was equally simple. Chalky silt layers (layers 570, 571, 559) lay in the bottom of the hollow (phase g). Above this were chalk spreads (layers 567,558) with a localized layer of occupation debris on top (layer 560). This is likely to be broadly contemporary with phase h. It was sealed by a silt layer (layers 569, 568, 557) after which a number of postholes were dug, together with a pit (P1132). A lens of occupation debris was associated with this phase of activity which must be correlated with phase i.

Finally, in F38, the lower part of the quarry appears to have filled largely as the result of natural weathering throughout this period. At one phase, however, early in the process, a mass of occupation debris, composed largely of burnt flint and charcoal, was tipped in from the interior edge. The stratigraphy in F38 is too generalized to allow subdivision into phases but the lower part up to and including layers 446, 384, and 423 can be regarded as being contemporary with phases g-i.

Sufficient will have been said in this brief commentary to show that the earliest use of the quarry was not uncomplicated. The less constricted holes in the northern part of the area were already being utilized but it is difficult to be sure for what purpose (other than corn storage in pits) since the patterns of postholes defy analysis. It is, however, reasonably certain that circular houses were not, at this stage, being erected in the area. Moreover, occupation debris, other than tips thrown in from elsewhere, are rare. As to the duration of the three designated phases there is little that can be said except that the total period could well have been comparatively short. There is nothing in the surviving stratigraphical evidence to require more than a decade for the entire span of phases g-i but a longer period would be equally acceptable and is implied by the radiocarbon dates (p 193).

Phase j (Fig 4.104)

In the fourth phase at least three circular houses were erected, buildings CS1, CS2 and CS3/4, all of which can be shown to have been in use at broadly the same time.

Building CS1 was put up on a specially prepared site which had been terraced into the hill slope to create a level platform. It was circular, 7.4 m in diameter, with walls constructed of planks set upright in a continuous slot. (Structural details of this house and of all the others are provided separately above, pp 54-80; for CSI see pp 60-2). The platform, F37, had cut through the filling of pits 1004, 1006, and 1008. The construction phase can also be shown to be later than layer 432 which sealed structures of phase i.

Building CS2 was also circular though far less substantially built; all that survived were the doorposts and sill, chalk spreads representing its threshold and floor, and the remains of a central hearth. Its diameter can, however, be estimated as approximately 7.5 m (p 62 for details). The house was built after the silt sealing the structures of phase i had been deposited. No specially prepared platform had been created for it apart from minor terracing of the natural chalk on the east side.

Building CS3/4 lay to the south. It was a two phase circular house 7.8 m in diameter, and in its second phase, was built of stakes set in a foundation trench presumably to serve as the uprights for a wattle wall. Inside were a central hearth together with several postholes and shallow pits. Some limited terracing of the natural chalk behind the rampart tail was necessary to produce a level platform for the house (F50). Stratigraphically the house sealed layers assignable to phase i.

In the space between the three houses there appears to have been an open area within which five storage pits were dug (Pits 1036, 1037, 1038, 1040, 1118) together with a number of postholes.

The contemporary surface was consolidated in places with a heavily trampled spread of chalk (layer 503).

Further to the south, in F38, the sequence is less clear and direct stratigraphical correlation is not possible, but the level contemporary with phase j would seem to be the phase of occupation represented by a spread of occupation debris (layer 445), a hearth of burnt chalk (layer 383), and a layer of burnt occupation rubbish associated with it (layer 382). The chalk spread (layer 407) is probably also of this date. It is possible that these features belong to a house the details and exact position of which remain obscure.

The stratigraphical sequence is such that we can be tolerably sure that the structures outlined above were in broadly contemporary use. The overall plan also makes sense as a single phase layout; buildings CS1 and CS2 look towards an open area where pits and ancillary structures were concentrated. Building CS3/4 turns its back on this complex and faces southwards towards either another house or an activity area. It seems possible, therefore, that we are dealing with two distinct units of occupation.

Phase k (Fig 4.105)

The structures of phase j lie stratigraphically below those designated here as phase k. Buildings CS1 and CS2 were sealed by layers of grey-brown silty soil (layers 505, 547, 458,448) which extend over much of the area between the buildings but do not relate to the pit and posthole complex. Building CS3 was also sealed by a silt layer (layer 499) but this cannot be shown to be directly contiguous with those further north. Similarly, in F38, layers of grey-brown silt (layers 443, 444, 381, 422, 395) extend across the area sealing all earlier layers, but these too cannot be related directly to the other silt layers further north. It is, however, reasonable, on the available stratigraphical evidence, to suppose that all these layers accumulated at the same time. If so they create a useful horizon for dividing phases j and k. They also imply a period of abandonment in the quarry hollow when the buildings were no longer standing, for had walls still been in position it would have been impossible for the silt to spread itself so evenly across the site. What time interval is

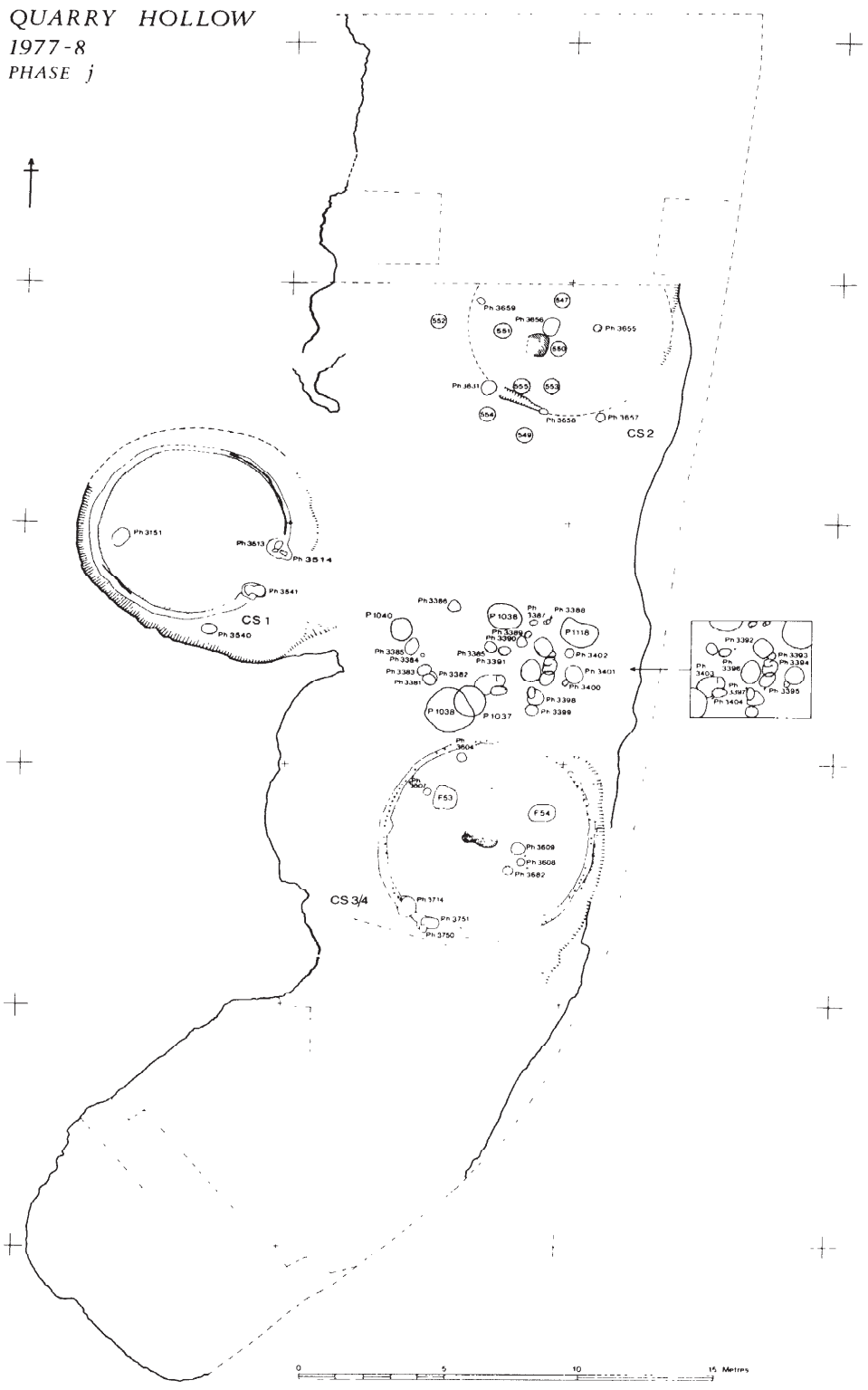

QUARRY HOLLOW
1977-8
PHASE j
CS 1
CS 2
CS 3/4
F53
F54
0
5
10
15 Metres

Fig 4.104

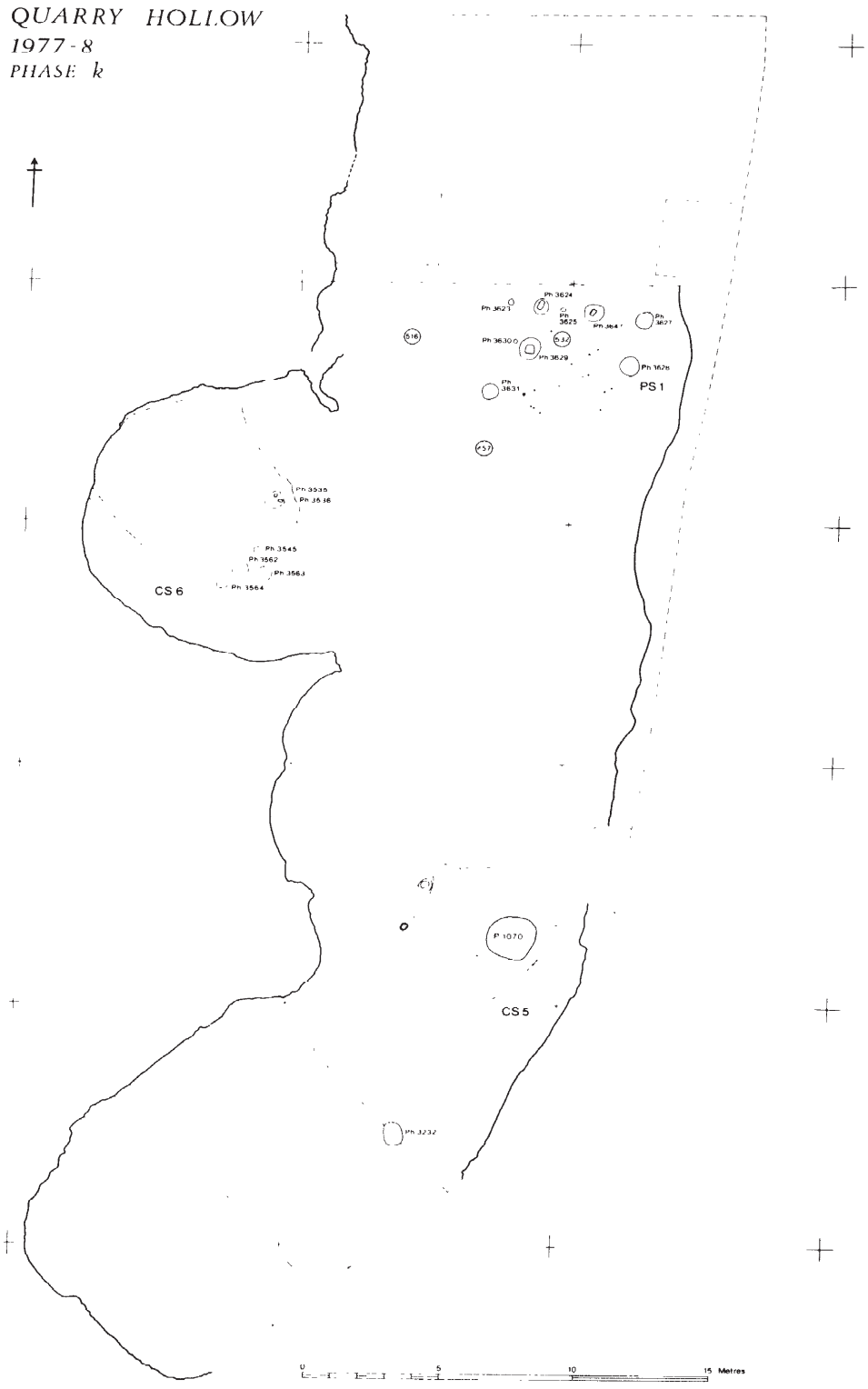

QUARRY HOLLOW
1977-8
PHASE k
Ph 3624
Ph 3623
Ph 3625
Ph 3627
Ph 3630
Ph 3629
Ph 3628
Ph 3631
PS 1
Ph 3535
Ph 3538
Ph 3545
Ph 3562
Ph 3564
CS 6
P 1070
CS 5
Ph 3232
0
5
10
15 Metres

Fig 4.105


QUARRY HOLLOW
1977-8
PHASE 1
522
406
P 993
P 999
G 86
P 1000
P 995
P 994
CS 7/8
417
413
418
Ph 3231
G 62
394
384
0
5
10
15 Metres

Fig 4.106

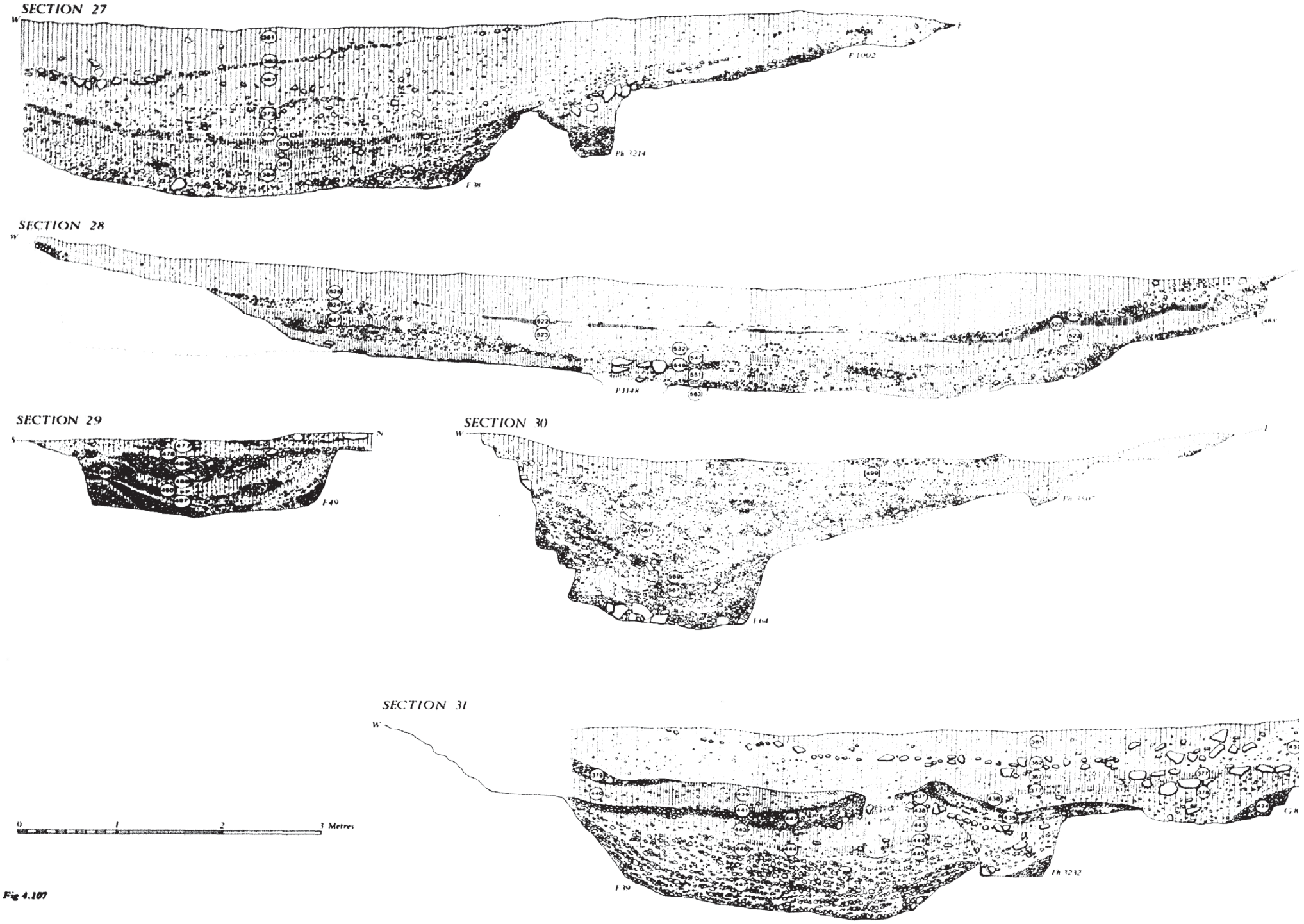

SECTION 27
SECTION 28
SECTION 29
SECTION 30
SECTION 31
0
1
2
3 Metres

Fig 4.107

involved is uncertain but once the houses had been abandoned and their superstructures removed a few good rain storms would have been all that was required to create a considerable blanket of mud.

Three structures were erected after the flooding: CS5, CS6, and PS1. CS5 was a small building of roughly circular plan approximately 5.6 m in diameter. Its walls, of stakes, were insubstantially founded in a shallow groove. The floor surface within and contemporary ground surface outside had been consolidated with tips of chalk but no special preparation of the site had been undertaken (p 65 for details). Its floor had subsided into the top of pit 1070.

Building CS6 which replaced building CSl was an altogether more unusual structure. It is represented now only by its trampled floor surface lying above the silt sealing CS 1 and requiring a partial recutting of the earlier terrace to accommodate it. The side walls may well have been constructed on horizontal ground sills creating a sub-rectangular structure 6 m wide and 7.5 m in length (p 66 for details).

Building PSI was also unusual in form. It was a rectangular structure approximately 4 m by 2.5 m constructed of five individually set vertical posts, the holes for which could be shown to cut through the silt sealing building CS2. Associated with it were three small posts and a number of stakeholes. No terracing was involved in its construction but the ground was consolidated with a chalk floor (layer 532). The posts may have supported an above ground storage structure (p 96 for details).

The area in between the structures does not, at this stage, appear to have been built upon or even to have been used for pit storage. Instead a layer of chalky silt was allowed to accumulate (layers 460, 462, 416, 429), the texture of which suggested that it had been constantly churned, presumably by feet, during the period of its formation.

Further to the south in F38 the earlier silt layer sealing the levels of phase j was overlain by a chalk floor and an area of burning (layers 380, 442) which were sealed by soil containing occupation rubbish (layers 375, 441). This phase of activity may well be contemporary with the phase k structures to the north, but direct stratigraphical proof is lacking.

Phase 1 (Fig 4.106)

Phase 1, the last major phase of occupation, is very clearly defined. In the central part of the site, previously unused for major structures , a large fairly level platform was prepared by cutting into the silts and chalk on the rampart side and filling the hollows further to the west. This platform is designated F40. Upon it a large stake-built house was constructed measuring 9.5 m in diameter (building CS7); it was later rebuilt to an almost identical plan but with the door positions reversed (building CS8). These structures are described in more detail above (pp 67-70).

The area to the north of the building, previously occupied by I'S 1, now became an open unused space over which a chalky soil developed (layer 523) but at a later stage, perhaps when the building was reconstructed (CS8), a chalk spread was laid and a lens of occupation debris accumulated (layers 522, 456).

To the west of the building, where in the preceding phase building CS6 had stood, the area was now given over to pit storage represented by five pits and a length of drainage gully. Around the pits tips of chalk and occupation debris accumulated, together with patches of silt (layers 404, 405, 406).

South of building CS7/8 the situation was altogether more complicated. After localized levelling with chalk rubble (layers 419, 473), sealing building CS5 and providing a hard surface, the area appears to have been given over to a range of activities which must have been carried out in the open since no structural traces were recognized. The result was the accumulation of spreads of occupation rubbish, areas of burning, and patches of chalk, spread to consolidate the ground. The principal elements resulting from this activity are illustrated in Fig 4.134. Precisely what activities were carried out here it is difficult to say but a range of small gullies were recovered. It is perhaps best to regard the area as a general working yard belonging to the house (CS7/8). Contemporaneity with the house is demonstrated by the stratigraphy.

In the area further to the south in F38 the silting of the upper part of the quarry hollow continued with little evidence of human interference but the chalk spreads 394, 435, and 434 together with the gully (G82) and a posthole suggest a period of limited activity belonging to phase 1.

In phase 1, therefore, occupation within that part of the quarry hollow seems to have been restricted to one unit comprising a house, a storage area, and a working yard. The intercutting of two of the pits, the rebuilding of the house, and the patching of the floor of the yard is suggestive of an extended period of occupation.

The end came when the house was burnt down. Following this, all occupation ceased in the quarry hollow and silt continued to form until the last phase of occupation was sealed by up to 1 m of chalky loam. The silt was derived partly from the continuous erosion of the back face of the rampart but largely from the interior of the fort. Such is its volume and consistency that it seems likely to have been washed in over a comparatively short period when the interior was being actively disturbed either by ploughing or, more likely, by the churning action of animals' hooves (P 189).

Summary of the stratified sequence

The details presented above may now be briefly summarized.

Pre-rampart extension (phases a-e)
- a features cut into chalk
- b turf-line forms
- C construction and occupation; pit digging and probably house building
- d soil accumulation heavy with occupation debris

Quarry hollow dug (phase f)

Occupation in quarry hollow (phases g-l)
- g, h, i } limited occupation—postholes, pits, and chalk spreads; no identifiable complex structure
- j ordered lay-out of buildings CSl, CS2, and CS3/4 together with an open yard and storage pit area
- k ordered lay-out of buildings CS5, CS6, and PSl, with an open area between
- l ordered lay-out; building CS7/8 with a working yard and pit storage area

Abandonment and silting

Problems of correlation and chronology will be returned to in section 4.3.5 below.

4.3.3 The excavations of 1973-5; sequence B (Fig 4.108)

Between 1973 and 1975 an area was excavated on the north side of the fort, stretching for 60 m along the back of the rampart, with the explicit purpose of examining in detail the deeply stratified layers preserved in the quarry pits dug when the rampart was extended in rampart period 3 (defence period 4, p 44). As part of the same programme limited areas of the period 3 rampart were removed to expose the earlier levels beneath.

Pre-rampart 3 occupation: phases a-d (Fig 4.109)

Well-stratified early deposits were exposed when the tail of the extended rampart was removed towards the centre of the excavation (between C9350 and D0344) and a narrow trench was cut to section the back slope of the rampart up to the line of its crest.

The earliest feature to be recognized in this area was a scarped hollow of natural origin which had formed on the shoulder of the hill slope and had developed a covering of brown soil (layer 285). The same turf horizon was found to continue in the rampart cut (layer 315) where a thin smear of burnt material survived on the surface (layer 314), perhaps representing the burning of vegetation. Similar soil-covered scarps were noted where the rampart tail was removed both to the west and to the east.

The turf was sealed by a layer of chalk rubble varying in thickness from 50-350 mm (layers 284, 313). It was heavily trampled on the surface and had clearly been subject to wear and erosion. Stratigraphically this layer is best regarded as being contemporary with the earliest rampart (rampart 1) which lies buried within the mass of the present rampart.

It was at this stage that a roughly circular terraced area approximately 7 m in diameter was dug into both the natural chalk and the rampart tail. The uphill side was a stepped terrace cut about 400 mm into the chalk while the downhill (ie rampart) side was defined by a gully. The terrace was evidently created to serve as a level platform for a circular house, CS9 (described in detail above, pp 70-1, Fig 4.16). Three pits were contemporary with the use of the house (P857, P858, P860) and its floor level was defined by an occupation layer (311). It seems probable that the layer of occupation debris found outside the house to the west (283) is contemporary with the building's use.

After the structure had gone out of use the hollow of its terrace silted with a layer of brown soil intermixed with eroded lumps of chalk (layer 310) which became more chalky at the scarp edge (layer 312). It was after this phase of inactivity that an addition of chalky rubble was made to the rampart (layer 316). The surface of this second period rampart was heavily weathered while over the area once occupied by the house soil continued to accumulate (layer 310). This phase was followed by the major extension of the rampart (rampart period 3) represented by a mass of chalk and soil tips (layer 282) which sealed the entire area.

Immediately to the east of the partial rampart section (ie D0344-D1360) a further area of the early ground surface was examined beneath the rampart of rampart period 3. Here the sequence was simpler. Part of an irregular natural hollow, similar to that noted above, was found filled with brown chalky soil (layer 61). This was sealed by a layer of compacted chalk rubble (layer 60), eroded on the surface, which must be equivalent either to the tail of the first rampart (ie layer 313) or to the second period addition (le layer 316); the former is more likely. Two postholes were dug through this layer before the period 3 rampart (layer 46) was thrown up.

The creation of the quarry, to provide material for the rampart period 3 extension, destroyed the structures and occupation layers, including pits, of the preceding phases, but some indication of the intensity of this occupation is provided by the lenses of occupation debris found redeposited within the body of the extended rampart. At least seven pits (Fig 4.109) belonged to this early phase and were truncated by the quarry; all trace of others will have totally disappeared in the quarrying.

The period 3 rampart and the quarry hollows: phase e (Fig 4.110)

The reconstruction of the rampart in rampart period 3 (pp 19-20) (in this local sequence here called phase e) entailed the digging of an irregular quarry averaging about 1 m deep and extending back from the rampart tail for a distance-of 10-15 m. As the plan shows the quarry was composed of several distinct delves, presumably representing gang work, which coalesced to become a more or less continuous trench interrupted by a single undug 'causeway'. This may have been deliberately left by the diggers to provide access to the rampart for ease of carting and construction.

The 'causeway' effectively divides the subsequent stratigraphy into two separate sequences which can be directly related only in the later phases. This fact, together with the comparatively shallow-nature of the stratigraphy overall, makes direct-correlation between the different localized sequences uncertain. Nonetheless, five major phases can be recognized in the structural development of the area.

The structural sequence in the quarry hollows: phases f-j (Figs 4.110 – 4.113)

Without prejudging the discussion to follow we may offer the generalization that the two most complex sequences, one in the north-west corner of the site, the other in the general vicinity of squares D01 and D02, allow the recognition of five major phases. The first (phase f) and the last two (phases i and j) can be correlated throughout the length of the quarry while the two separate intermediate phases (g and h), impossible to link on purely stratigraphical grounds, show sufficient similarity of structure and planning to suggest that they too represent uniform horizons. Thus, there is some justification for regarding all five stages in the two separate sequences as reflecting an overall pattern of development. This simple scheme will be used as a loose framework for describing the individual features.

Phase f

Immediately after the quarry hollow had been created a large but shallow oval-shaped pit (P829) was cut into the bottom in the north-west corner of the site. The pit appears to have been dug for the express purpose of burying three human bodies, the details of which are discussed elsewhere (Vol 2, p 447). That the pit came very early in the sequence and was dug for burial strongly suggests that it may have served a ritual function perhaps as a foundation burial following the refurbishing of the defensive circuit.

Thereafter a layer of grey-brown chalky silt interleaved with thin lenses of eroded chalk accumulated, sealing the pit and filling the lower part of the quarry hollow to a maximum depth of 250 mm (layers 217,230,239b,255,

1973–5 ALL FEATURES

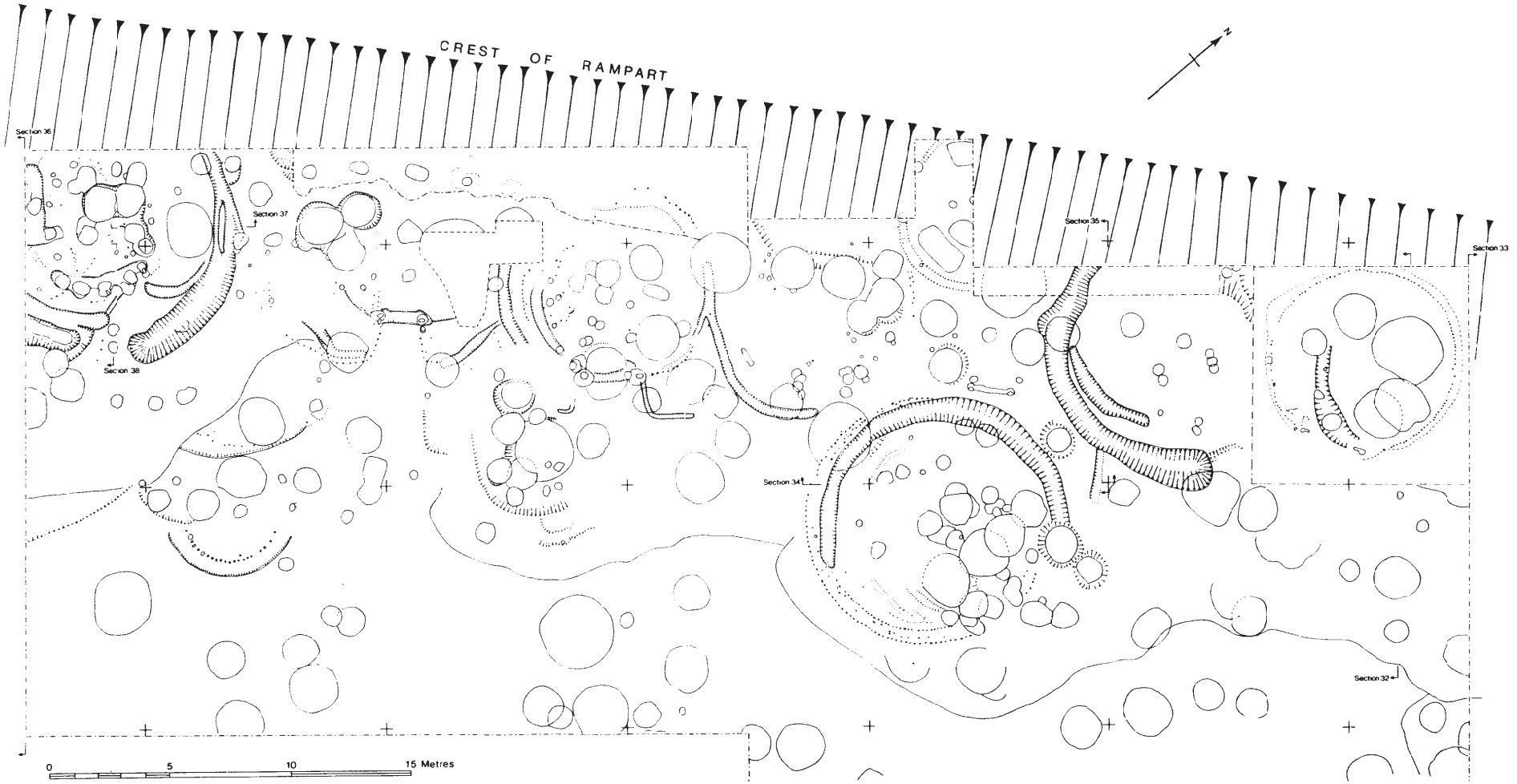


Fig 4.108

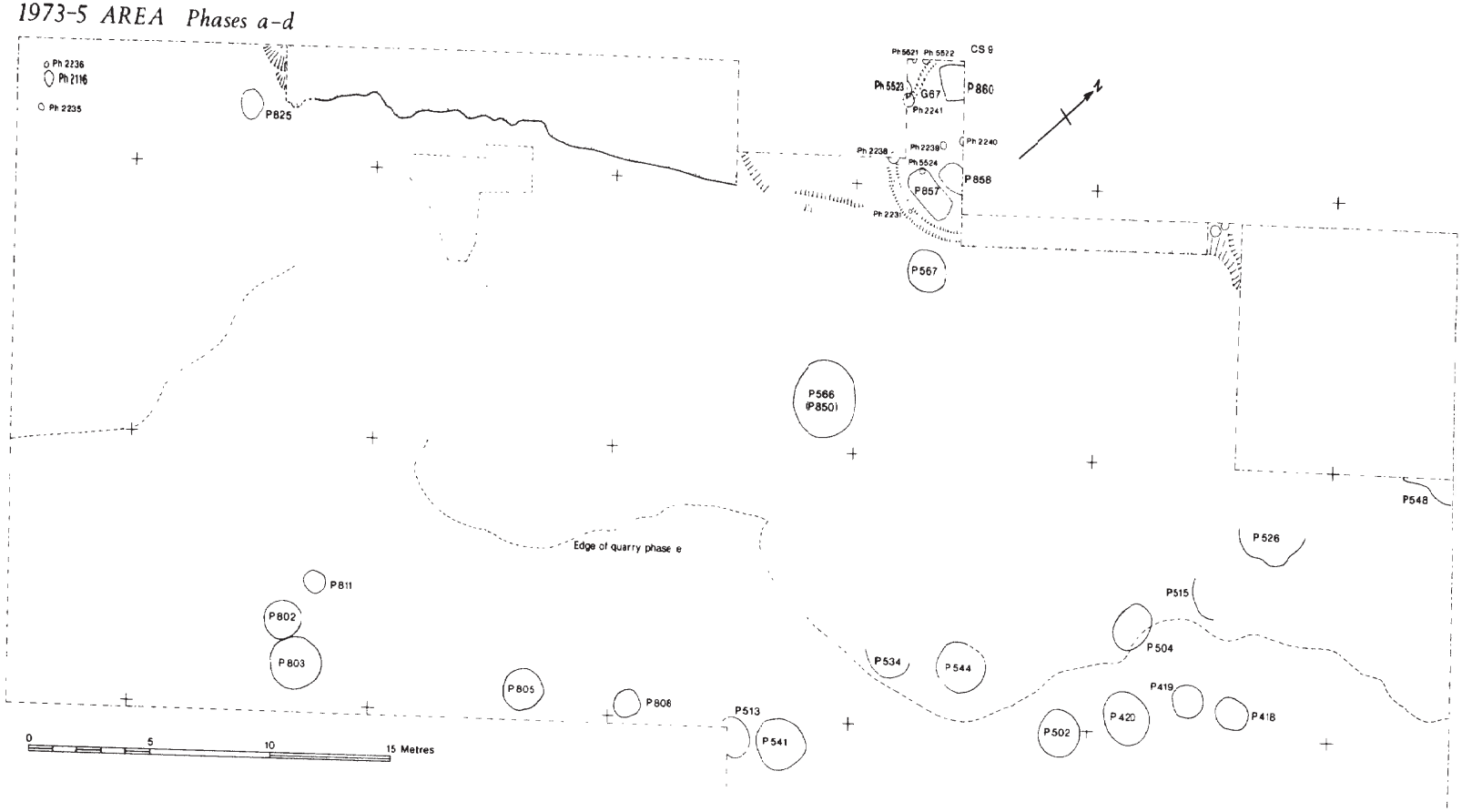

1973-5 AREA Phases a-d
Ph 2236
Ph 2116
Ph 2235
P825
Ph 5621
Ph 5622
CS 9
Ph 5523
G67
P860
Ph 2241
Ph 2240
Ph 2238
Ph 2239
Ph 5524
P858
P857
Ph 2237
P567
P566
(P850)
P548
P526
Edge of quarry phase e
P811
P802
P803
P515
P504
P534
P544
P805
P806
P513
P541
P419
P420
P418
P502
0
5
10
15 Metres

Fig 4.109

1973–5 AREA Phases e+f

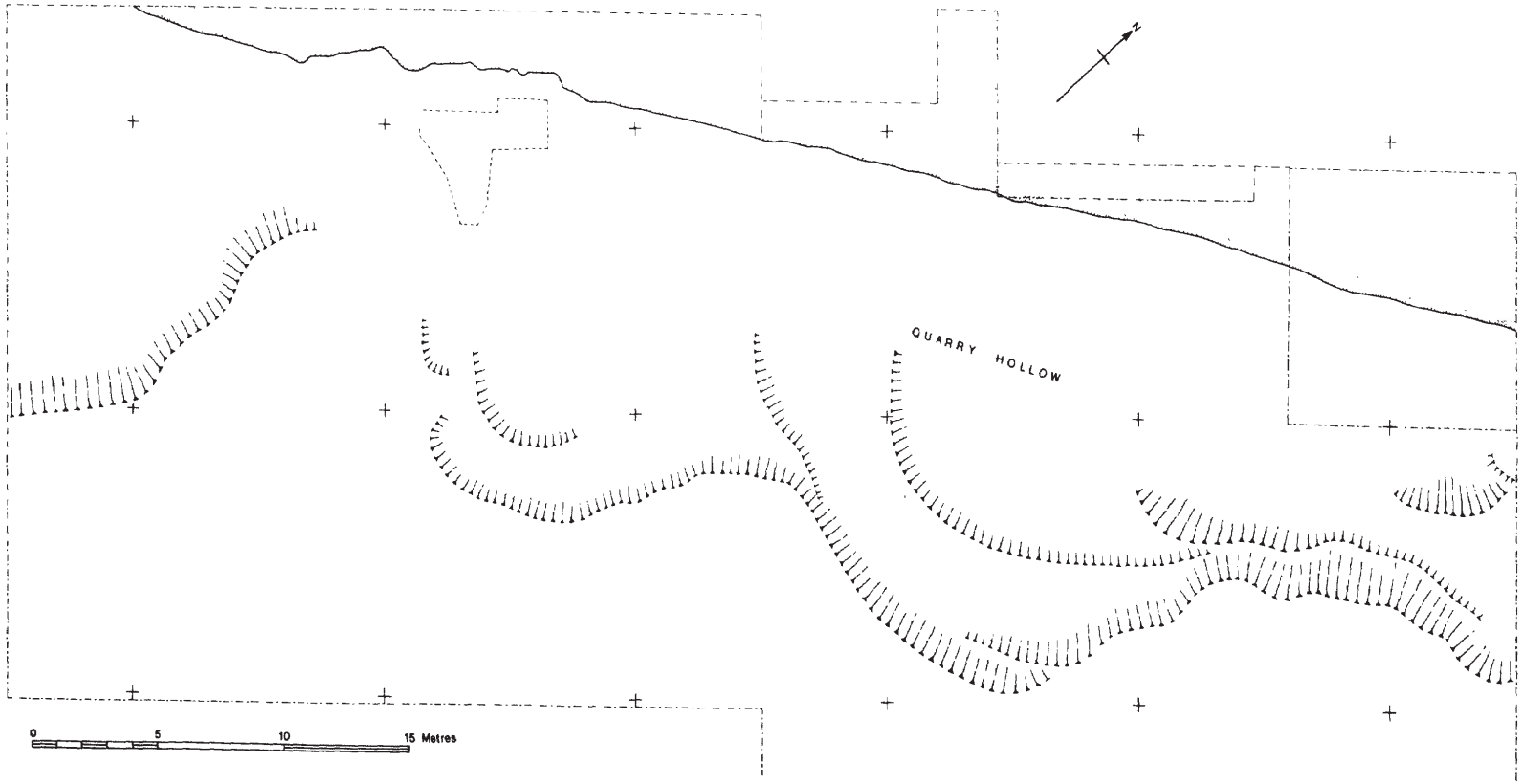


Fig 4.110

271). Some of these layers, in particular 217, 239, and 271, continued to accumulate during subsequent phases. In the rest of the quarry a few pits and postholes were dug while a similar range of silt layers formed (eg layers 27,295,280, 155, 121, 138,43,73), some deriving from the erosion of the back slope of the rampart, others, encouraged by periodic storms and flooding, washing in from the interior. These natural processes continued whilst the quarry area was used and occupied with the result that some of the silt layers represent a long period of time and can only be divided into separate phases where there is interleaving with tips of chalk or occupation lenses. This applies especially along the southern edge of the quarry, where the chalk lenses are discontinuous and of limited extent, and defy precise phasing. Moreover, it is often impossible to be sure which chalk and silt lenses are exactly comparable in date to individual phases of constructional activity.

Phase g (Fig 4.111)

In the north-west quarry the first major structural phase following the rital pit and silting is represented by the digging of two gullies, G54a and G55. Broadly contemporary with these linear features is the setting of four large posts, PS3. The southern pair of posts shows signs of recutting. Three other post settings in the immediate vicinity belong to approximately the same phase. PS4 and PS5, both of four or five post construction, depend for their recognition only on the spacing and similarity in form of the postholes (which may of course be fortuitous), but all may be roughly contemporary and the likelihood of the settings being deliberate is strong. Postholes in both groups were cut by a gully (G56) belonging to phase h. PS7 is less securely dated but is cut through the rampart tail and precedes a circular structure of phases i/j. Thus, while the overall plan might suggest that it be placed in phase g, a phase h dating is also possible. On the basis of post spacing it corresponds closely to building PS6 which is securely dated to phase h.

To phase g belongs a structure F75 of undefined size and form lying at the western extreme of the excavation 1.5 m east of PS3. It consists of a roughly rectangular area, terraced through the silt and into the underlying chalk, into the bottom of which, along the south side, has been cut a gully. The details are best appreciated in section 36 (Fig 4.114); elucidation is impossible without further excavation.

Further to the east the first major structural phase is represented by a circular building, CS17, constructed on a prepared terrace created by cutting back the scarp of the quarry edge. The building is not easy to interpret because it was later partially cut away by a gully and a number of pits and was subsequently mutilated by a massive tree root disturbance. Even so, sufficient has survived to show that the structure was composed of two concentric walls of vertical stakes, a pair of door-posts recut at least once, and two floor surfaces of chalk rubble (layers 119, 152) separated by a slight trace of occupation material. While superficially it may seem that a case could be made out for the walls to represent successive buildings, detailed consideration (pp 77-8) inclines to the view that CS17 was a double-walled structure throughout. The reflooring and rebuilding of the door, however, indicate a comparatively long life. The structure was built partly above a layer of natural silting lying on the quarry floor (layer 121) and partly upon chalky rubble (layer 155) deposited during the levelling process. The building was sealed by a layer of chalky silt (layer 150).

To the east of building CS17 was a short length of gully (G151) which by virtue of its stratigraphical position belonged to this phase. Elsewhere in the quarry a number of storage pits were dug. Those which on stratigraphical grounds may reasonably be assigned to phase g are shown on Fig 4.111 but some may not have been dug until phase h; precise phasing is frequently impossible. With this proviso in mind it may be remarked that the pits tend to occupy an arc around building CS17 dividing it from the zone of post-built structures to the west. There appears, therefore, to be some order in the overall plan.

Phase h (Fig 4.112)

The next structural phase in the north-west corner of the site was denoted by the digging of two lengths of gully G53 and G56 which succeeded (and may functionally have replaced) gully G54. At the same time a layer of chalk (254) derived from the gully digging was heaped up around its inner edge. Within the area thus defined it was possible to recognize a rectangular setting of five posts, PS6, two of which are later than those of PS3. While the proposed structure has a coherence of plan, proof of the absolute contemporaneity of all five posts is not forthcoming. A silt layer (253) accumulated while the building was in use. It should be noted that a similar structure, PS7, lay immediately to the east. Although, on grounds of overall plan, it is likely to be of phase g date, there is no stratigraphical reason why it should not be assigned to phase h.

It was during this period, and following the silting of the gullies, that a succession of silt and chalk layers was deposited along the edge of the quarry hollow. They represent a continuous process of weathering and flooding interspersed with the spreading of localized tips of chalk intended perhaps to consolidate the ground surface.

In the eastern part of the quarry the site previously occupied by CS17 was levelled and a gully of penannular plan (G37, G39) was dug cutting away part of the line of the wall of the earlier building. The material derived from the digging was piled in a shallow bank along the inner lip of the gully (layer 151) and within this a four-post structure (PS8) was erected of which three posts survive; the fourth would have been sited where a later pit was dug. Around the structure the contemporary chalk surface had been slightly pitted to form shallow irregular gullies, possibly the result of rain water dripping from the roof (P 98).

To the west of PS8 several other broadly contemporary gullies were found roughly defining enclosures adjacent to the back slope of the rampart. Two phases were distinguishable on stratigraphical grounds: first, gully G57 and slightly later, gullies G58, G64, and G66. Localized chalk spreads and a few postholes presenting no distinctive patterns are the only other surviving structures. These features cut through pits assigned to phase g and are sealed by layers of phases i/j. To the east of PS8 are two further lengths of gully, G34 and G35, which can be shown to be of the same general period, though the exact chronological relationship of G34 and G35 is not definable.

The overall plan, and in particular the way in which narrow gaps were left between the end of G64 and G37/39 and between G37/39 and G34, suggests that the gullies may have been laid out as part of a cohesive plan, though the function of the enclosures must, for the most part, remain uncertain. Within the area defined by G34 and G35, however, a group of paired postholes suggests a succession of two-post structures designated PS9 (pp 98-9).

1973-5 AREA Phase g

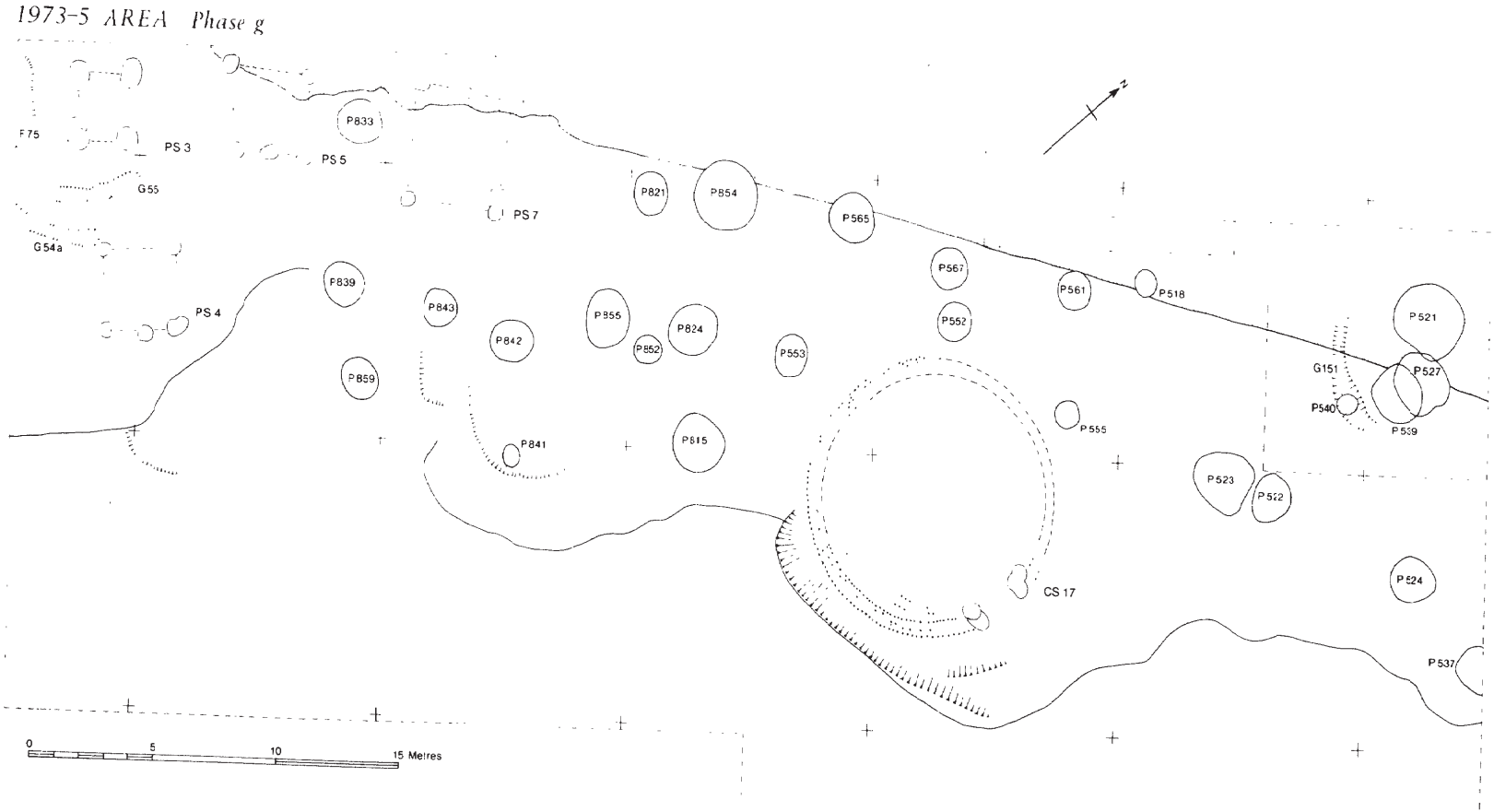


Fig 4.111

1973–5 AREA Phase h

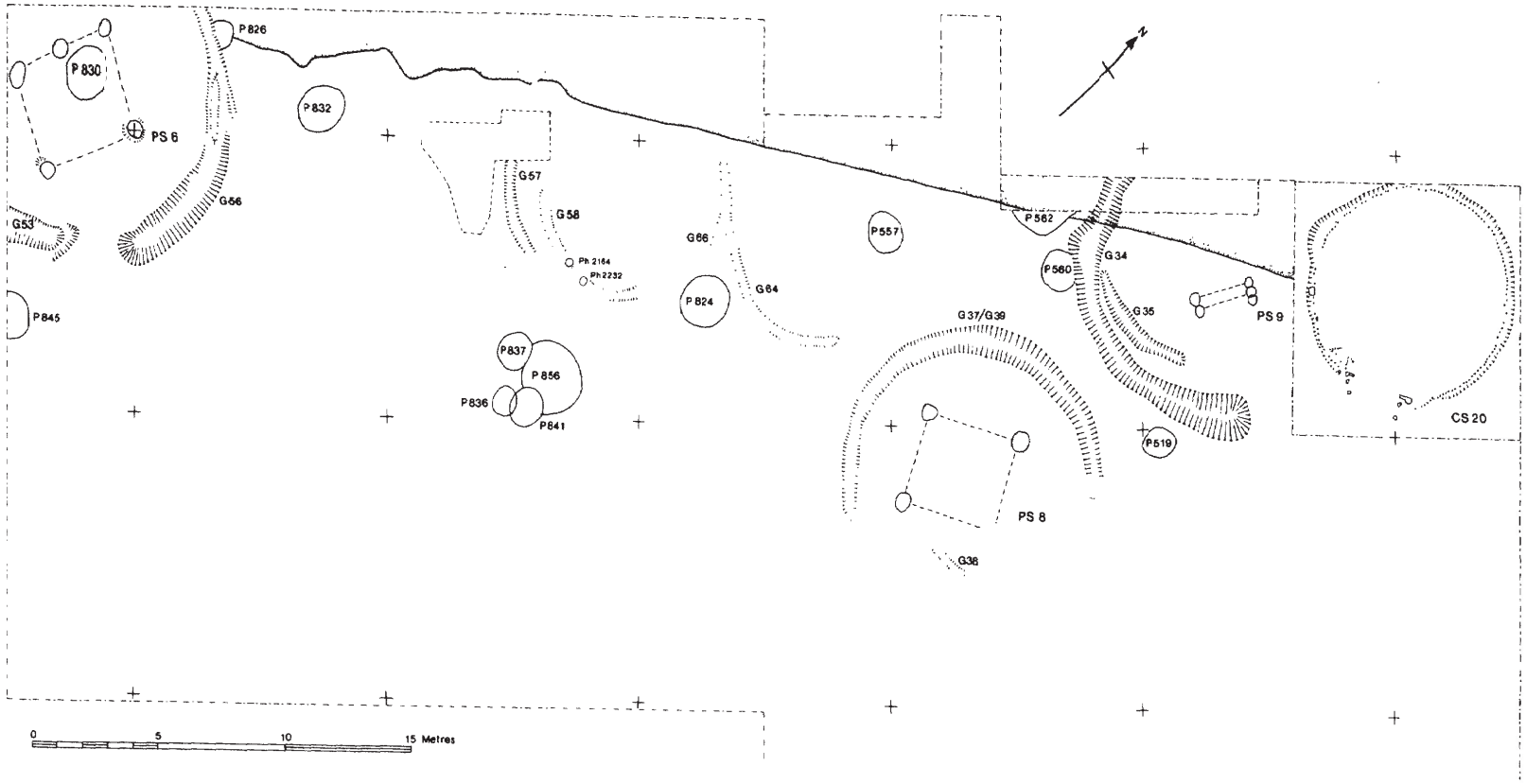


Fig 4.112

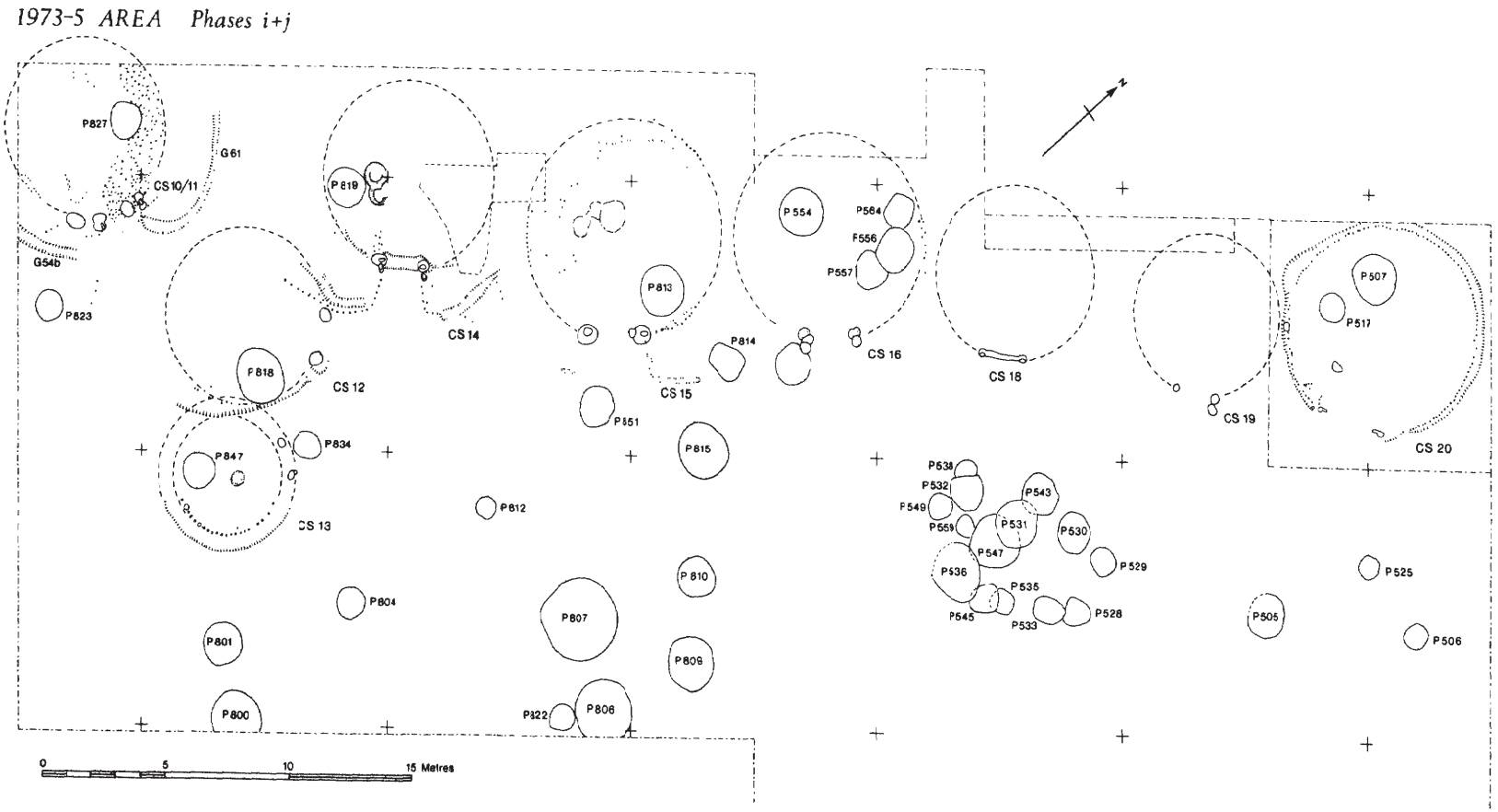

1973-5 AREA Phases i+j
P827
G61
CS10/11
G54b
P823
P819
CS 14
P818
CS 12
P847
P834
CS 13
P804
P801
P800
P813
P814
CS 15
P551
P815
P612
P807
P810
P809
P322
P806
P554
P564
F556
P557
CS 16
CS 18
CS 19
P507
P517
CS 20
P538
P532
P549
P559
P543
P531
P530
P547
P529
P536
P535
P545
P533
P528
P525
P505
P506
0
5
10
15 Metres

Fig 4.113

In the extreme north-east corner of the excavation a circular terrace was created at about this time in preparation for the building of a stake-walled house CS20. The terrace was cut into the tail of the rampart and the top of the silt (layer 73) covering the floor of the quarry. The construction evidently came early in the overall sequence but after C151 and pits P521, P527, and P539 had been filled. Although the creation of the building terrace cannot be directly related stratigraphically to gullies G34 and G35, it can be shown to have been broadly contemporary. If both had been in use together the plan would make good sense with G34 defining an enclosure adjacent to the house.

Building CS20 continued in use for some time as is demonstrated by the alterations made to its threshold and the attempts to consolidate the subsiding floors across the early pit tops (pp 79-80). At a late stage, two storage pits were dug through the floor (P507 and P517). They seem to have remained open until the house was abandoned. The house continued in use until a late stage in the quarry hollow sequence. Since its floor surface was not sealed by silt until all occupation ceased in the quarry we must suppose that the building was in use throughout phases h-i.

A few pits are shown on the plan of phase h structures; these can be demonstrated, on stratigraphical grounds, to belong to phase h but it should be remembered that some of those on the preceding phase g plan may belong to the later phase. Precise phasing is impossible in a number of cases.

One point to emerge from a study of the early layers is the paucity of occupation debris. For the most part the features and layers were without significant quantities of bone, pottery, or charcoal which suggests that the structural features described, with the probable exception of CS20, were not associated with rubbish-producing domestic activities.

Phases i and j (Fig 4.113)

For reasons which will become apparent in the following paragraphs, it will be convenient to describe the structures of the last two phases together, leaving for the end an assessment of the evidence for their separation into two chronological stages.

In the western part of the quarry four circular platforms, terraced into the underlying levels, were created in preparation for the construction of four circular timber buildings. In the extreme north-west corner of the site the terracing suggests a structure approximately 6.8m in diameter with well-defined door timbers and walls built of stakes. Two gullies, G54b and G61, belong to the complex, presumably serving a drainage function. Sufficient evidence survives to demonstrate two major phases of construction, the second involving a complete rebuilding of the door. It is likely that the entire house was reconstructed at the time and even though the wattle walls are not well preserved, evidence of two wall lines survives. The two successive buildings, here designated CS10 and CS11, have been described in detail above (pp 71-2). The structural elements of this complex are demonstrably later than the buildings and layers of phase h.

A few metres to the south is a second terrace cut to support a circular timber building, CS12, described above (p 72). Pit 818, which lay within the wall line, is broadly contemporary but could have been dug after the building was abandoned.

Immediately adjacent to CS12 a platform of smaller diameter was created for another circular timber structure CS13 (pp 72-3). No direct stratigraphical evidence survived to enable the relationship of CS12 and CS13 to be defined but since their plans overlapped they are unlikely to have been contemporary. It will be suggested below that CS13 was later than CS12.

The fourth building terrace lay on the unquarried causeway between the two quarry hollows. The terrace had been cut partly into the natural chalk and partly into the tail of the rampart to accommodate the circular building CS14, 7.3m in diameter (p 73). The door-frame structures were well preserved but little of the stake-built wall could be recognized. The worn floor surface and the occupation layer upon it, however, defined the hut plan with some degree of precision. The occupation layers sealed one of the postholes assigned to structure PS7. Outside the door of the hut fences of stakeholes, later partially replaced by gullies, enclosed narrow areas on either side of the entrance. These structures ran across the deliberately rammed filling of pits 839 and 843.

The western fence and gully of CS14 also impinged upon the plan of CS12 demonstrating that the two structures could not have been in contemporary use. Bearing in mind a similar relationship between CS12 and CS13, the most economic hypothesis is that CS12 was replaced by CS13 and CS14. There is, however, no direct stratigraphical proof of this and other more complex relationships are equally possible.

All four circular structures were associated with occupation layers while two of them (CS13 and CS14) contained hearths or ovens. To this late period can also be assigned a number of pits, including P819, P818, P834, P847, containing occupation debris. Evidently the use of the site had now taken on a more domestic character.

In the eastern part of the quarry the beginning of phase i is marked by extensive clearing and levelling leaving building CS20 to continue in use much as before, though it is perhaps to this period that the remodelling of the door belongs. In the area previously occupied by gullies G34, G35, G37, and G39, a thick layer of chalk rubble was laid (layer 122, 126, 145) sealing the soil which had accumulated in places over the earlier structures (layer 127); further to the west chalk layers 293, 294, and 301 covered the silted gullies G64 and G66. The overall effect of this activity was to create a firm, fairly level platform upon which three (possibly four) circular buildings were constructed: CS15 (immediately adjacent to CS14), CS16, and CS18. All three were slightly terraced into the lower slope of the rampart and all had well-defined door-frames and walls of wattle, the evidence for which survived in different degrees of preservation. Detailed descriptions of each are given above (pp 73-8). A fourth house, CS19, may have occupied the space between CS18 and the still functioning CS20, but its structural details are more obscure (pp 78-9).

The result of this major phase of rebuilding was to create a row of structures, tucked back against the rampart, all of similar size and construction and all facing uphill towards the inside of the fort. The space in front of them was consolidated with chalk rubble and in one area, in front of building CS18, was a region set aside for the digging of storage pits (P531, P532, P543, P545, P547, P549). The overall unity of the pattern is suggestive of a degree of concerted planning. Each house floor was sealed by a deposit containing occupation debris and patches of similar material occurred outside the buildings.

There is sufficient evidence among the structures assigned here to phases i and j to suggest more than one period; CS10/11 provides direct evidence of rebuilding and buildings CS12, CS13, and CS14 overlap in such a way

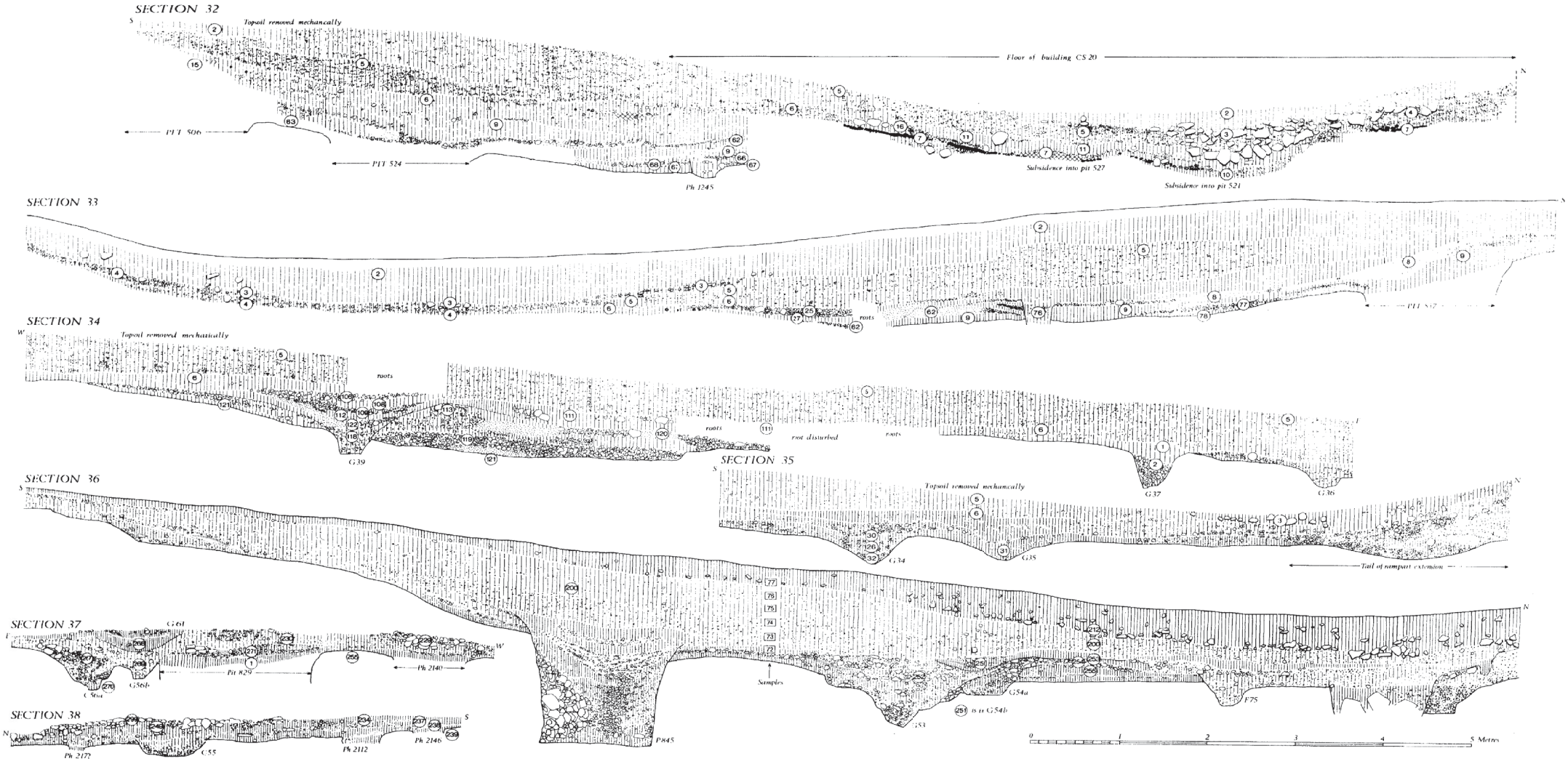

SECTION 32
Topsoil removed mechanically
Floor of building CS 20
PIT 506
PIT 524
Ph 1245
Subsidence into pit 527
Subsidence into pit 521
SECTION 33
PIT 517
SECTION 34
Topsoil removed mechanically
roots
G39
not disturbed
SECTION 35
Topsoil removed mechanically
G37
G36
G34
G35
SECTION 36
Tail of rampart extension
SECTION 37
G61
G56b
Pit 829
Ph 2140
SECTION 38
Ph 2172
C55
Ph 2112
Ph 2146
P845
Samples
G54a
is in G54b
F75
0 1 2 3 4 5 Metres

Fig 4.114

that at least two phases are demanded. Similarly the doors of CSl5 and CS16 were rebuilt at least once while the pits in front of CS18 would only have been intercut in the way they were if the time they represented was a comparatively long one. Presumably we are looking at evidence of a continuous period of occupation with frequent small-scale change and modification rather than major stages of rebuilding. Even so it is perhaps worth formalizing this time range into two stages: early and late. To the early stage (phase i) we might assign CSlO, CS12, CS15, CS16, CS18, (CS19?), and CS20 while to the later (phase j) might be given CSll, CSl3, CS14, the refurbished CS15 and CS16, CS18, and CS20. Such a division is, of course, somewhat arbitrary but serves as a reminder both of change and of the extended time span.

The last occupation layers of phase j mark the end of habitation in the quarry hollow. Then followed an uninterrupted period of silting giving rise to a layer of chalky soil varying in thickness up to the maximum of about I m. The layer was derived partly from the erosion of the back slope of the rampart but largely from material washed in from the inside of the fort. The finely-broken-up chalky component in the silt strongly suggests that while it was accumulating, the turf cover of the adjacent area inside the fort, from which much of the silt was derived, had been broken by cultivation, or more likely by the trampling action of animals' hooves. These matters will, however, be considered in more detail below (Vol 2, p 550). The chalky silt was sealed by an irregular carpet of flints in a very fine soil, probably representing tumble from the rampart crest after the enclosure had ceased to be used. Thereafter soil formation was uninhibited.

Summary of the stratified sequence

The detail presented above may now be briefly summarized.

phase 0 pre-rampart natural hollows and turf rampart period 1
- b construction and occupation of building CS9
- C abandonment of the building and subsequent silting
- di construction of the period 2 rampart
- dii turf
- e the quarry and the period 3 rampart
- f ritual burial and early silting in the quarry
- g building CS17, four- and five-post structures, and storage pits
- h building CS20, four- and five-post structures, ditched enclosures and storage pits
- i levelling and a row of circular buildings; extensive pit digging
- J continuation of above with modification
- K abandonment and silt formation

Problems of correlation and chronology will be considered in section 4.3.5 below.

4.3.4 The excavations of 1969-71: sequence C

The section cut through the main rampart in 1969 (trench 1) was extended back into the fort and expanded to explore the nature of the stratigraphy surviving behind the rampart. Although the area examined was limited to about 60 sq m, sufficient was exposed to show that stratified layers survivied in a strip 10-l1 m wide behind the rampart and that the density of features was considerable. Thus when, in 1971, the programme of area excavation began, as much as possible of the stratified deposits was examined between the surviving trees. In effect this added a further area 10·5 m in width (Fig 4.115).

The overall sample, in total 18 m in width, was too small to allow extensive phase plans of complete structures to be produced but it nonetheless demonstrated the complexity of the stratified sequence producing evidence of twelve distinct phases.

1969 - 1971 AREA All features

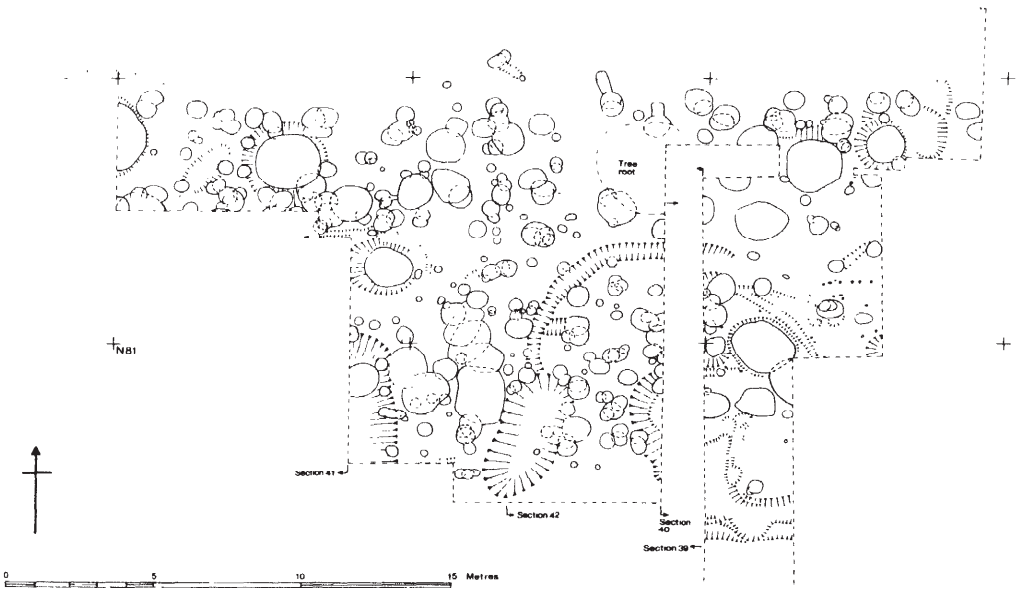


Fig 4.115

1969-1971 AREA Phase a and b

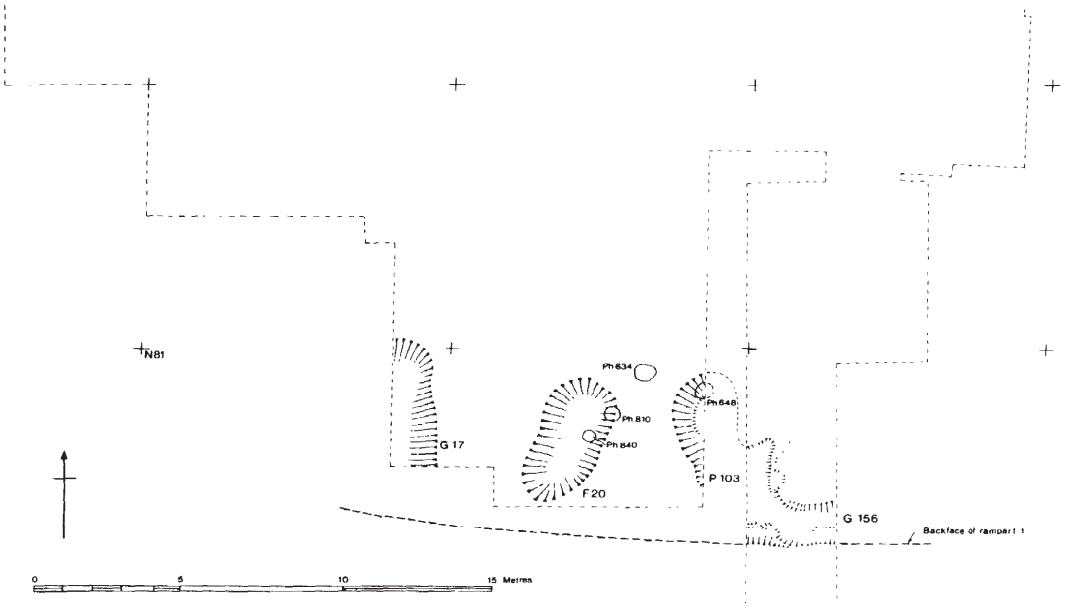


Fig 4.116

The earliest rampart and subsequent occupation: phases a-d (Figs 4.116, 4.117)

The earliest recognizable structures in the excavated area consist of three elongated quarry holes measuring approximately 5 m by 2·5 m and 0·5-1·5 m in depth. They were numbered G17, F20, and P103. P103 was more irregular than the others and merges with an east-west gully (G156) which appears to have been dug to define the inner limit of the first rampart. Although proof of exact contemporaneity is lacking, it seems likely that the quarries provided material for the first rampart implying that the ditch alone did not yield a sufficient bulk of material to build an earthwork of the required height and width.

All three quarries showed a similar sequence of filling. The lowest fill consisted of shattered chalk which had accumulated as the result of the weathering of the quarry

1969-1971 AREA Phases c-f

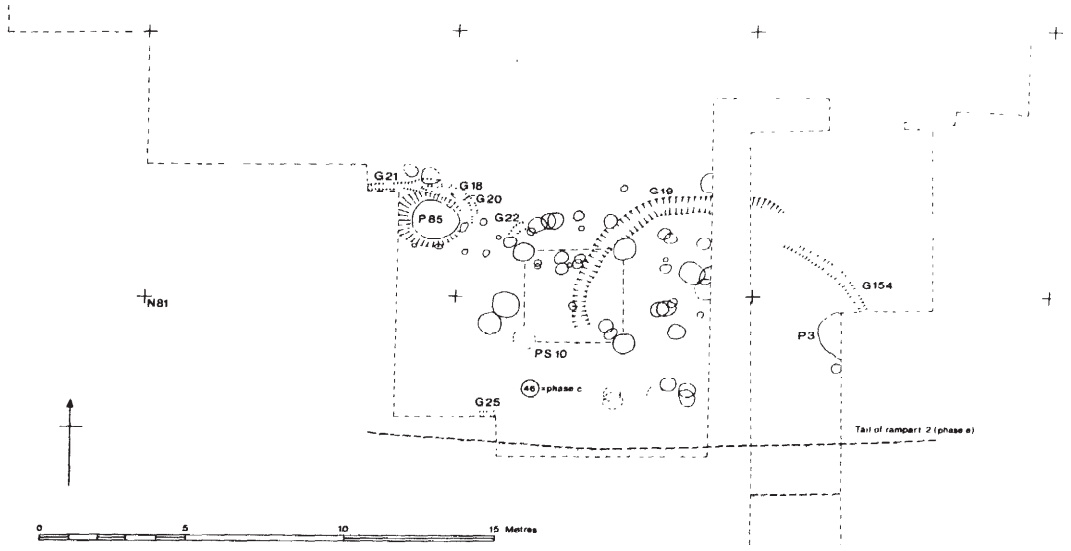


Fig 4.117

sides. This merged upwards to a more soily layer in which the brown clayey component was prevalent. The thickness of the soil (200 mm in G17, l00 mm in F20, and 200 mm in P103) suggests that a considerable (but indefinable) length of time elapsed before, in the next phase, a layer of occupation rubbish mixed with ash and charcoal was spread over much of the area in the lee of the rampart (P103 layer 1 and G17 layer 2). The layer was discontinuous and over F20 was associated with a thin chalk spread (layer 46). This occupation horizon produced an assemblage of pottery in which the scratched and cordoned haematite coated bowl was predominant. Then followed the accumulation of a further layer of sterile brown silty soil which completely filled the quarries and spread over the surrounding areas (1971 layer 37). This layer could be shown to rise up over the erosion (1969 layer 111) from the tail of the primary rampart where the rampart was sectioned in trench 1 (1969 layer 43). A similar relationship was noted in the south-east corner of the 1971 excavation where erosion from the rampart tail (layer 45) was sealed by the silt layer (37).

The sequence is therefore divisible into four phases:

phase a digging of quarries and construction of primary rampart
b silting
c occupation
d silting

Both silting phases represent long periods of inactivity in the area immediately behind the rampart but this is not to say that there were no contemporary structures slightly uphill. Indeed as Fig 4.115 shows a number of postholes and gullies can be associated with periods a-f, the majority of which are clear of the irregular ground caused by the silting hollows. These features cannot be assigned to individual phases , but four postholes pre-date the occupation layer (phs 840, 810, 634, 648) while the rest are sealed either by a layer of soil (layer 8) which accumulated on the natural chalk or by the 'lower chalk' of phase g. Thus strictly they belong to phases a-f but are more likely to be of phases c-f.

Of the features represented there is little to be said. At least one clear four-post structure can be distinguished (PSl0) while of the two complexes of gullies, G18, G20, and G21 could be for drainage around pit 85 while G19 and G154 might belong to enclosures of the kind noted on the north side of the fort in the excavation of 1973-S. The detailed stratigraphical positions of the individual features, where they can be defined, is given on the layer matrix (fiche 6).

The second rampart phase and subsequent silting: phases e and f (Fig 4.117)

Whilst the structures represented by the postholes noted above were in use and silt layers were continuing to form in the lee of the rampart, the rampart was extended (p 18). The sequence is particularly clear in the 1969 section where the chalk rubble tail of the rampart (layers 40, 107) lies above the silt in quarry P103. The same sequence can be distinguished in the 1971 excavation. The chalk layer is associated with a thin discontinuous lens of charcoal (1971 layer 27, 1969 layer 106) representing activity at this time. Then follows a further period of silt formation (1971 layers 34,44,48, 1969 layers 20, 28). The rampart building phase is designated e and the silting is called phase f. Features relevant to phases e and f are shown on Fig 4.117, their stratigraphical positions being recorded on the matrix diagram (fiche 6).

The third rampart phase and associated occupation: phase g (Fig 4.118)

The beginning of phase g is clearly defined by tips of chalk representing the second addition to the rampart (1971

1969-1971 AREA Phase g

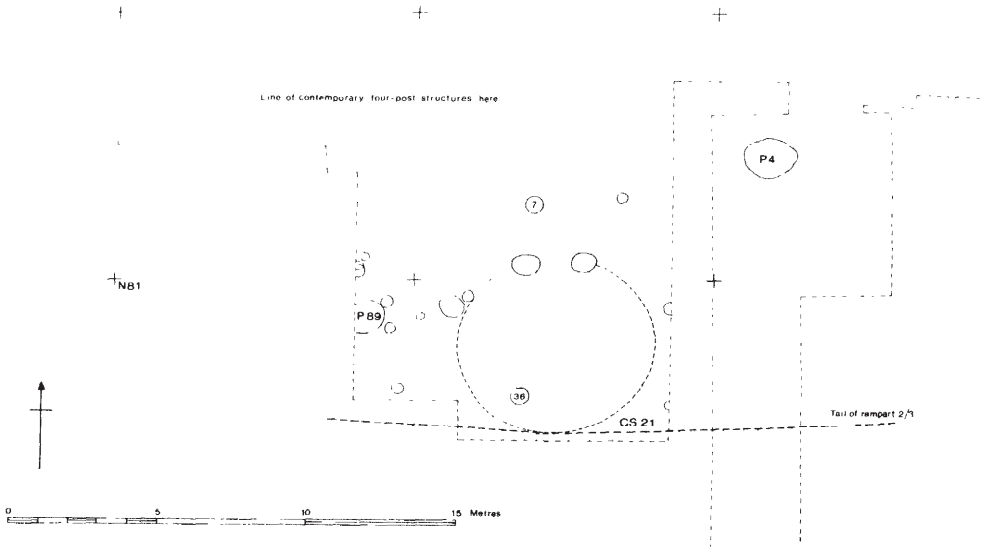


Fig 4.118

1969 - 1971 AREA Phase h

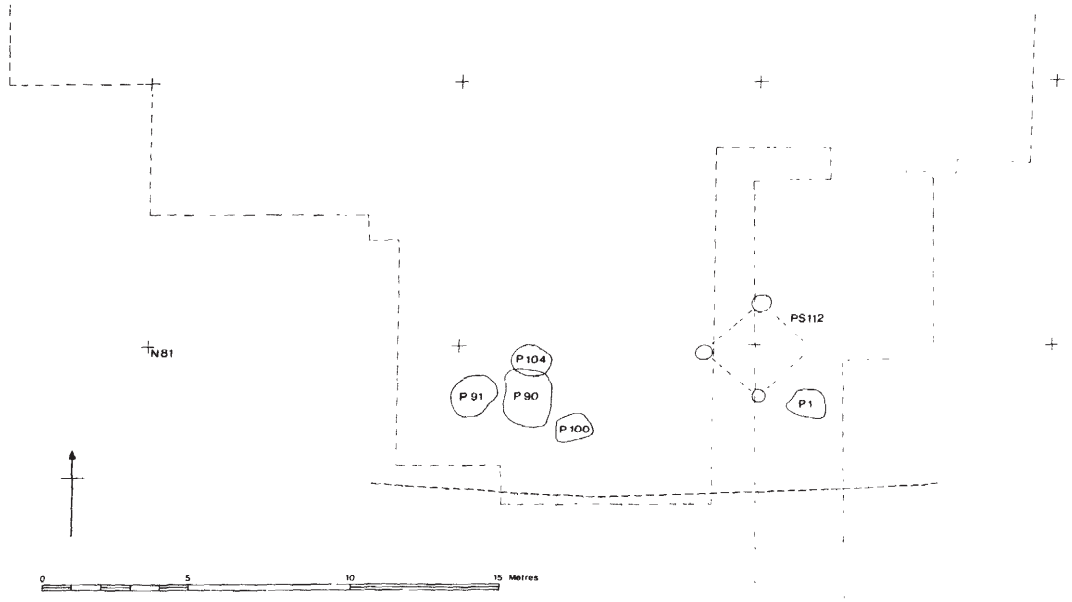


Fig 4.119

layer 43, 1969 layers 18, 19). These he above silt of phase f and are stratigraphically equivalent to the 'lower chalk'-an extensive but discontinuous spread of compacted chalk rubble averaging 50-150 mm thick (1971 layer 7).

The lower chalk, and, where it does not survive, the soil beneath is overlain by an occupation layer consisting largely of silty soil mixed with charcoal (1971 layers 20, 41, 42, 1969 layer 11).

The features associated with this phase are shown on Fig 4.118. They include two pits, P89 and P4, together with a number of postholes. Of the postholes, two of similar size (phs 639,640) are of particular interest in that they were dug immediately before the lower chalk was laid and their packing, but not the position of the actual posts, was sealed by the chalk. It is tempting to interpret them as the door-posts of a north-facing house, in which case the chalk spread in front of them could represent the

1969-1971 AREA Phase i

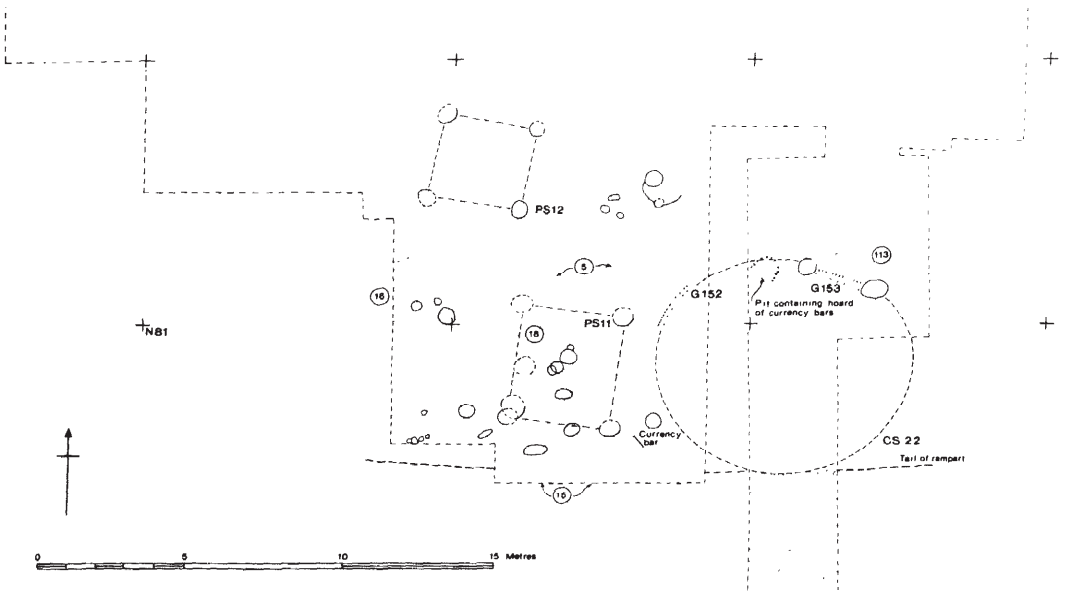


Fig 4.120

consolidation of the ground at the entrance while layer 36 is probably the remnants of its floor. This hypothetical house is called CS21 and is described above (p 80).

It will be apparent from the general plan (Fig 4.115) that many of the postholes along the northern edge of the illustrated area resolve themselves into four-post structures, the majority of which show evidence of replacement on a number of occasions. None of these posts can be shown on stratigraphical grounds to be of phase g date since the chalk spread and occupation layers stop before the line of buildings is reached, but it could well be that the chalk spread divides a zone of circular houses, set against the rampart, from a row of four-post structures.

Of the pits, P89 deserves note. It was dug through the silting of the quarry (G17) and into the natural chalk beneath. The silt layers were supported by a dry built wall of flints (Fig 4.122, section 41). The pit, the use of which was contemporary with the occupation on the lower chalk, produced a distinctive assemblage of pottery which can be broadly dated to the 4th century BC.

Silting and accumulation: phase h (Fig 4. 119)

Following the occupation of phase g a layer of silty soil accumulated (1971 layers 6, 22, 28, 47, 1969 layers 12, 114, 115, 118) marking a period of temporary inactivity designated here as phase h. It was in this period that a number of pits were dug including Pl, P90, P91, Pl00, and possibly P104. These features cut through layers of phase g and are sealed by chalk spreads belonging to phase i. A thin lens of occupation debris (1969 layer 105) and associated postholes are also of this phase. One possible four-post structure can be isolated (PS112?)

Occupation: phase i (Fig 4.120)

The structural elements which constitute phase i consist of a chalk spread (layers 5, 16, 18) and the deliberate terracing of an area behind the rampart which itself was floored with a layer of compacted chalk (1969 layer 10). The terrace represents the position of a circular house (CS22), the door-posts of which were excavated in the 1969 area. No trace of wall timbers or stakes was seen but a narrow slot to take the west wall was recognized cut into the underlying chalk (G152) (for detailed description see pp 80-l). The chalk spread, layer 5, which was outside the house may well have been laid to consolidate the ground thereabouts. Within the house discontinuous spreads of occupation rubbish accumulated (1971 layers 17, 9, 1969 layer 9). Elsewhere material continued to wash down from the rampart (layer 21).

Features which can be associated stratigraphically with this ‘phase are shown on Fig 4.120. Of the posts two possible structures can be isolated, a five-post structure close to the house (PSI 1) and one phase of the rebuilt four-post structure PS12. The fact that it is not the first four-post structure on this site adds strength to the view, offered above, that the row of four-posters of which it forms a part may well date back at least to phase g.

Silting: phase j

The hut terrace (CS22) and the area around was covered with a thick layer of silt (1971 layer 4, 1969 layer 3).

Upper chalk spread: phase k (Fig 4.121)

Whilst the silt (layer 4) was accumulating close to the rampart discontinuous spreads of chalk were being laid (layers 3, 10) the extent of which is shown on the plan. Those postholes which are cut through the earlier layers and are not sealed by the chalk spreads are also shown. Their distribution appears to be casual. No distinctive structures can be detected nor is there any contemporary occupational layer.

1969 - 1971 AREA Phase k

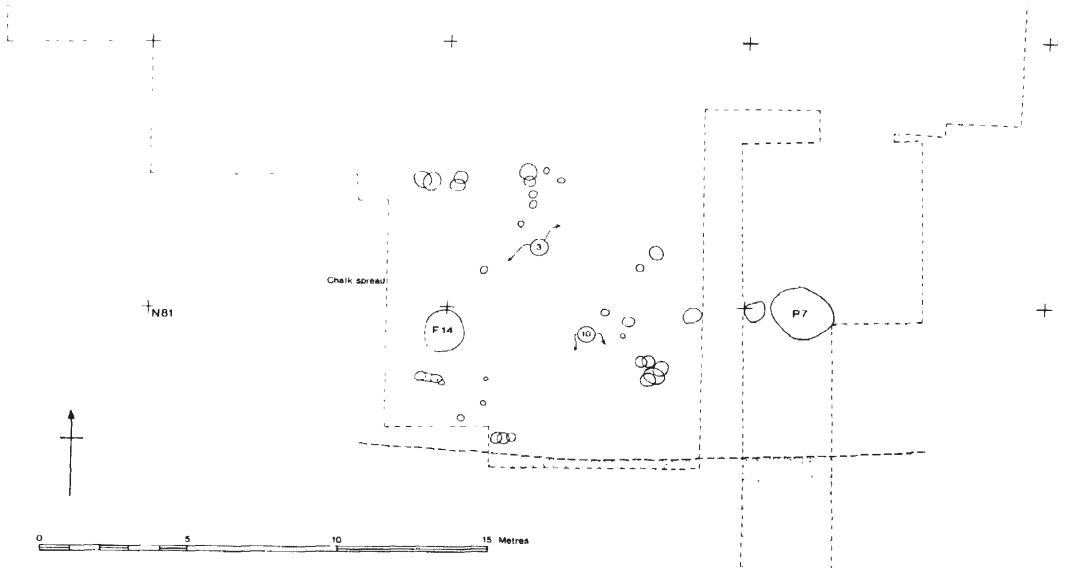


Fig 4.121

Late silting and the period 4 rampart: phase i

A further layer of silt (layer 2) accumulated above the chalk spread but in places where the chalk was missing it was continuous with and indistinguishable from layer 4 which lay beneath the chalk. It was at some stage after this that the third addition was made to the back of the rampart (p 19). It is probable that much of the material used in this refurbishing was scooped up from behind the rampart but there is no clear stratigraphical evidence that this was so. Flints (layer 13) which subsequently rolled down from the rampart mark an angle of rest after which soil accumulation continued to the present.

Summary of the stratified sequence

Although individual structures are not well represented in the 1969/1971 excavation behind the rampart and the comparatively limited area excavated makes their reconstruction more difficult, the stratigraphy is sufficiently well preserved to allow a number of distinct phases to be isolated and related to the rampart sequence. These may now be summarized.

phase a quarry hollows and construction of rampart 1
b silting
c occupation rubbish but few distinguishable structures except gullies
d silting
e construction of rampart 2 and some associated occupation, possible PSl0
f silting
g construction of rampart 3; levelling with 'lower chalk'; pits and circular house CS21; early version of PS12 and probably other four-post structures in this region
h silting and some pit digging; limited occupation traces and possible four-post structures PS112
i levelling with 'middle chalk' and construction of terrace for CS22 associated with PSl1 and PS12
j silting
k upper chalk layer
l silting and rampart period 4

Problems of correlation and chronology are discussed in the following section.

4.3.5 Correlation and chronology

The three stratigraphical sequences have been presented separately because each is distinct from the others and there is no direct linking stratigraphy. There are, however, two horizons which allow all three to be compared: the enlargement of the rampart and digging of the quarry hollow in Danebury period 4, and the cessation of occupation, followed by silt formation, at the beginning of Danebury period 7. A further tentative correlation can be used to link sequences B and C. In sequence C, phase e is equivalent to the construction of the first rampart addition (= Danebury period 2) and it seems probable that the first part of phase d in sequence B relates to the same constructional event. Further correlation is impossible without more extensive excavation. Thus, the scheme outlined in Table 14 may be offered.

To calibrate the sequence there are two approaches open to us:

a to obtain a series of radiocarbon dates from stratified features and layers
b to relate the phase to ceramic development which is, in turn, dated by radiocarbon methods

Both approaches have been adopted and the results are fully discussed in the appropriate section below (pp 190-7). Here it is necessary simply to summarize the conclusions.

A series of sixteen dates was obtained from the stratified layers excavated in 1977-8. Only one date, of 500 bc, was available for phases a-e, the rest of the series relating to the sequence of occupation levels post-dating the reconstruction of the rampart in Danebury period 4. The dates suggest a span covering the period from the 4th century bc, to the end of the 2nd century bc. In other words the quarry hollows were dug about 350-300 bc and occupation continued until *c* 100 bc when the site was abandoned. Both dates are directly relevant to the sequences examined in 1969-71 and 1973-5.

The second approach is by reference to the stratified pottery. Assemblages sealed beneath the reconstructed rampart of Danebury period 4 were predominantly of ceramic phases 1/3 and 4 but some material distinctive of ceramic phase 5 was present. The earliest material sealed in the quarry hollows is also of ceramic phase 5 but the

Table 14

Period	*Defence*	*A (1977–8)*	*B (1973–5)*	*C (1969–71)*
1a	rampart 1	Aa–Ad	Ba–c	Ca–d
b				
c				
2a	rampart 2		Bdi	Ce
b				
c	fire			
d		Ae	Bdii	Cf
3a				
b				
4	rampart 3	Af	Be	Cg
5		Ag–l	Bf–j	Ch–k
6a				
b				
c	fire			


SECTION 39 (1969)
SECTION 40 (1971)
SECTION 41 (1971)
SECTION 42 (1971)
Ph 870
G 19
F 21
Ph 843
Ph 647
P 103
F 85
P 89
G 17
F 20
0 1 2 3 4 5 Metres

Fig 4.122

bulk of the deposits are of ceramic phases 6 and 7. The latest layers contained only ceramic phase 7 vessels but the silt deposits which sealed the final occupation produced a few sherds of ceramic phase 8. On this evidence, the quarry hollow is likely to have been dug towards the end of ceramic phase 5 or at the beginning of ceramic phase 6 (some residuality is allowed for), and occupation had ceased by the end of ceramic phase 7. Radiocarbon dates for the ceramic phases corrected to calendar year (p 194) suggest that ceramic phase l/3 lies within the period from the mid 6th to mid 5th century BC, ceramic phases 4 and 5 belong to the late 5th century, while ceramic phases 6 and 7 span the 4th, 3rd, and 2nd centuries BC. Thus, on the evidence, the digging of the quarry hollow probably took place at the beginning of the 4th century and occupation ceased at the end of the 2nd.

The two approaches to dating are therefore consistent, suggesting the following broad chronology:

early-mid occupation (Danebury periods l-3) 550-

rampart reconstruction (Danebury period 4) *c* 400 BC
late occupation (Danebury periods 5-6) 400-100 BC

The 4-6 stratified phases recognized in the early-middle period and the 5-7 in the late period each represented respectively 150 and 300 years; in *very* approximate terms, each early phase would average 30 years and each late phase 50 years. Bearing in mind the problems inherent in radiocarbon dating, without a massive and costly programme of sampling, we are unlikely to arrive at a better approximation by this method but seriation experiments with pottery hold out the hope for further refinement given adequate sample sizes. Future work may enable us to approach the question of whether the occupation was continuous or episodic.

4.4 The interior occupation in time and space

4.4.1 Introduction

In the preceding sections we have described the range of components comprising the structural evidence for occupation at Danebury and we have shown something of the complexity of the site as encapsulated in those areas where deeply stratified levels survive. It remains now to consider the spatial distribution of structures and activity across the entire excavated area of the fort and to assess changes with time.

The limitations of the evidence have been set out above (p 49) and are further elaborated in the microfiche notes (fiche 1, frames Gl-3). In brief, while the stratified deposits immediately adjacent to the ramparts provide a full range of relevant data, the actual area of stratigraphy is minute compared with the rest of the fort where stratigraphy, in the form of superimposed layers, is virtually absent. Here the only relationships that can be defined are those observed when features impinge upon each other. At best all that is possible in these areas is to observe a large number of unrelated relativ e stratigraphies.

Two other sources of evidence can, however, be called into use. The first is the relative dating of features based on associated finds. In practice this means assigning phases to structures based on the ceramic sequence set out in Volume 2 in the knowledge that the divisions are coarse and may represent a century or more each. The second is by recourse to plan, allowing, for example, the possibility that like structures logically sited in relation to each other stand a reasonable chance of being approximately contemporary.

Given the limitations of the evidence one cannot expect the data-set to yield a finely graded development sequence. There is, however, little doubt that further excavation elsewhere in the fort will enable observations to be tested, modified, and made to yield more information. An example of this is the new light which observations made in 1979/80 shed upon the results of the 1971 excavation (below, p 189), requiring the earlier work to be reinterpreted. The case for large-scale excavation is easy to justify in the face of examples of this kind. The implications, for our present discussion, are that as excavation proceeds the picture drawn below, in blurred outline, will become increasingly sharper. It is advisable, therefore, to regard what follows simply as a preliminary assessment.

4.4.2 General spatial considerations

Even a cursory examination of Figs 4.4 and 4.5, which together present all features created during a half millennium or so of Iron Age occupation, vividly demonstrates the structure of the settlement. An open strip, representing the main road, sweeps through the centre of the fort from the east gate towards the south-west gate neatly dividing the enclosure into a northern and a southern zone. In the southern zone postholes are numerous while in the northern zone pits predominate. Evidently this axis retained its significance throughout the life of the settlement, thus providing a useful divide for descriptive purposes.

For ease of discussion the two major areas are further divided into smaller zones. Fig 4.84 presents the scheme in simplified form. It should be stressed that these divisions are proposed essentially to facilitate description and that, while most of the dividing lines are based on roads (except that between N4 and N5), there is no evidence that the subsidiary roads (roads 2-6) were relevant to more than a limited period in the fort's history. Moreover, far from dividing one functional area from another, there are times when the roads acted as links between like activities taking place on both sides. In other words, the zonation used here should not be given too great a significance in terms of the functioning settlement.

4.4.3 A simple chronological model

We have seen that the defensive sequence of Danebury can be divided into eight periods, most with subdivisions, and we have shown that the periods may be grouped into four stages, *early, middle, late,* and *latest,* each being divided from the next by a major event. Of some importance to our present concerns is that the beginning of the late stage (ie Danebury 4) is defined by the extensive refurbishing of the defences which entailed the digging of a quarry behind the old rampart to produce spoil for the reconstruction. This quarry horizon provides a major interface in the three stratified sequences A, B, and C and in part can be extrapolated into the settlement area. The late destruction horizon at the main east gate (Danebury 6c) can also be correlated with the latest occupation horizon in the quarry hollows after which there are signs of widespread abandonment.

Using the quarry hollow stratigraphies and to a lesser extent the defence stratigraphy, the sequence of ceramic phases (defined after a consideration of a large number of close associations, Vol 2, pp 233-44), can be cross-related to the principal Danebury sequence. Danebury periods 1 and 2 are associated with pottery of ceramic phases l-3 while during Danebury periods 4-6 ceramic phase 6 and 7 pottery was current. The position of ceramic phases 4-5

Table 15

Danebury periods		*ceramic phases*
1 a-c, 2 a-b	early	cp 1-3
c	early destruction horizon	cp 4?
d, 3 a-b	middle	cp 5
4	quarry horizon	
5, 6 a-b	late	cp 6-7
c	late destruction horizon	
7 a-b, 8	latest	cp 8

cannot yet be tied down with precision. Ceramic phase 5 pottery appears to be broadly contemporary with Danebury period 3, but ceramic phase 4 may overlap between the end of period 2 and the beginning of period 3. Ceramic phase 8 wares appear after the late destruction horizon. Thus, a simple chronological model can be offered (Table 15) which will serve as a means of ordering the settlement evidence into its broad phases of development.

4.4.4 The early occupation (periods l-2b)

The elucidation of the early phase of occupation depends upon a number of separate observations which must be paraded at the outset:

a Beneath the period 4 rampart on the north side of the fort (1973-S), the east side (1977-8), and the south side (1969-71), extensive traces of occupation have been recognized. These include occupation levels *in situ,* pits, postholes, and the remains of at least one circular house. Given the validity of the above sequence, these elements must belong to the early and middle phase. If we are correct in assuming that the turf-lines and silt layers which seal much of this occupation horizon are of the middle phase, then it is likely that most of the sealed layers represent activity of the early period.

b In the excavations of 1979-80 it was possible to observe a considerable length of road 2. Although the details of this area do not form part of the present report it would be perverse to try to analyse the structural history of the site without reference to the highly significant stratigraphical observations made here. Briefly, it was possible to show that road 2 was laid out and metalled after elements of the early settlement had been abandoned since layers of road metalling sealed pits, postholes, and the wall slots of circular houses all associated with pottery of ceramic phase l-3. Moreover. there was clear evidence to show that large four- and s&-post structures, erected along the road and contemporary with it, cut through features of the early settlement. In other words, the lateral roads (roads 2 and 3) and their associated rectangular post-built structures were not primary but were erected some time after extensive occupation had already taken place. This observation is of value not only in showing a reordering after the early settlement had been abandoned but in demonstrating stratigraphically that the large rectangular post-built structures were broadl y contemporary with the lateral roads-a point which will be returned to below (p 179).

c The third observation concerns the relationship between the small four-post structures and pits in the area excavated in 1972 (zone N4). Here eleven small four-post structures were found similar in size and alignment; of these three could be shown to be earlier than pits containing only pottery of cp l-3. While all that this proves is that some of the four-post structures were earlier than some of the pits, the regular layout of the small four-post structures and the density of the early pits strongly suggest that the two types of structure were chronologically exclusive.

General considerations

The most direct approach to the problem of phasing is to offer a plan showing all pits producing distinctive assemblages of ceramic phase l-3 pottery. There are, of course, dangers that some of the pits included are in reality later in date and contained only residual material. The problem is real and insoluble, but when it is remembered that the vast majority of the later pits produced assemblages of reasonable size and that rubbish survival was very slight, the actual number of later pits attributed to ceramic phase l-3 is likely' to be minimal (fiche 1, frame El). Fig 4.123, therefore, can be accepted as a fair representation of the distribution of early pits of which there are 532 in the excavated area.

The plan brings out with some clarity the very uneven distribution of pits within the early settlement. Most noticeable is the dense concentration north of the main road (road 1) in the centre of the fort where the number of intercuttings between the pits shows that pit digging continued for some time in the early period. The pits in this northern zone are fairly evenly spaced, extending from the main road to within 20 m or so of the northern rampart, the only variations being a slight thinning out in the middle and a narrow strip unencumbered by pits which probably marks the position of a pathway (called here road 4). The path may persist into later periods but the fact that later pits do not cut its line need be little more than a coincidence since the density of the later pits is too thin to make their apparent avoidance of the path line significant (cf Figs 4.127-4.129).

Elsewhere in the fort the early pits are more thinly spread. In the area north of the main road just inside the gate (zones Nl and N2) the pattern is not unlike that of the north central area (zones N3 and N4), except that the density is less great, but the pits stop well clear of the line of the hollow-way of road 1 (the gap in the distribution in zone Nl is created by the later quarry which destroyed all trace of earlier layers).

South of the main road a rather different distribution pattern prevails. Pits are far less numerous but show some signs of clumping, particularly in zone S2. There can be no possibility that road 2 existed at this stage, for reasons given above (p 128) but there is no evidence to preclude the early use of road 3.

If the distribution of pits implies a strong functional differentiation within the fort, so too do the contents of the pits. In summary, the majority of the early pits in zones N3 and N4 contained little occupation debris while the reverse is true of pits to the south of the main road and in zones Nl and N2. The evidence for this is presented in fiche 8, frames C8-12. The implication would seem to be that since more rubbish was disposed of in pits in the southern and eastern part of the fort these are the zones in which areas of occupation are likely to have been sited. Some further light is shed on this problem by a consideration of pit type. Two basic forms are represented: circular pits often of bell-shaped profiles, and rectangular pits usually with vertical sides. Although some of the rectangular pits were dug for special purposes connected with ritual, most were filled with domestic rubbish and silt. As Fig 4.123 shows, rectangular pits are


C70
C80
C90
D00
D30
H70
J00
J10
J20
J30
J40
J50
J60
J70
N71
N81
P01
P11
0 10 20 30 40 50 Metres

Fig 4.123

more numerous in the southern and eastern parts of the site where they form a high percentage of the total. If the generally accepted view, that bell-shaped pits were usually used for grain storage, is adopted then zones N3-4 would seem to have been set aside for storage purposes to the exclusion of other activities while zones Sl-3, Nl-2, and N5 supported a different set of activities yielding domestic debris. The functions of the rectangular pits are obscure but the three found inside building CS9 might suggest some kind of domestic use associated with houses. To summarize the argument so far, it would appear that during the early phase of occupation the interior of the fort was divided into at least two functionally distinct zones: a central area, on the highest part of the hill, was reserved for grain storage in pits while the lower slopes on the southern and eastern side of the site may have been used as an occupation area. We must now consider the zones of the fort in some detail in order to explore this proposition further.

The southern zone: SIC3

The first question to ask is whether there are any traces of domestic structures in the southern zone of the fort. There are, as the plan (Fig 4.4) shows, large numbers of postholes in this area and we know from the excavations of 1979-80 that a similar density continues for at least 100 m further to the west. The problem is how to select the features of the early period from the mass which represents the full time span of the fort's life . Comparatively few postholes contain pot sherds or other datable artefacts and the presence of a few abraded early sherds is no proof of early date. Given these constraints we are unlikely ever to arrive at a definitive plan of the early postholes. What, therefore, has been attempted here is to remove all posts containing late pottery and to remove all that can reasonably be shown to belong to *large* rectangular post-built structures; Fig 4.124 illustrates what is left. The reason behind omitting the large rectangular post-built structures is that the majority of them can be shown to belong to a later period when the lateral roads were laid out (above, p 174 and below, p 179). The *small* four-post structures, on the other hand, are likely to belong to the early period. It has already been shown that this was the case with the small four-post structures in zones N3-4 and at least five of those in the southern zone (PS44/6, PS47, PS99, PS108, PS115) impinge upon the route later taken by road 2 which can be shown elsewhere to have succeeded the early settlement. It is a reasonable assumption, therefore, that many if not all of the small four-post structures belong to the early settlement.

The remaining postholes shown on Fig 4.124 include all early postholes which have escaped later pit digging together with a residuum of later posts which cannot be identified and cannot therefore be filtered out.

The general plan suggests a well-defined area of pit digging in zone S2 with a fairly even scatter of small four-post structures to the north and west of it. Further north and east, in zone S3, there appear to be two further concentrations of pits. The line of the southern road, which can be shown to have been in use in the late period, is relatively clear of features, suggesting that it may have functioned as a major route in the early period as well.

The excavation of a further substantial area of the southern zone in 1979-80 (to be described in detail in Vo14) exposed a number of circular houses of the early period partially sealed by road 2. The houses were represented by slots dug into the chalk to take vertical wall timbers and by the pair of postholes for the doorframe. Within the area of the southern zone here under consideration there is only one structure of generally comparable form, gully complex 6 (Fig 4.83). Extensive later disturbance has considerably damaged the area, but sufficient survives to suggest the existence of a circular structure *c* 7 m in diameter pre-dating a row of large four- and six-post structures which later occupied the site. It is, however, impossible to be certain from the surviving evidence that the slot represented a house. Further south, in zone Sl, occupation layers of early date were noted together with a few postholes, but no convincing structures could be discerned. The implication of all this would seem to be that one principal habitation area of the early period was centred on that part of zones S2 and 3 which was excavated in 1979-80 and that it extended into the 1971 area. Elsewhere in the southern zone the absence of recognizable house structures may well indicate that houses did not exist here.

Little has vet been said of the small four-post structures except to emphasize that they may well belong to the early period and that some at least of those in zones N3-4 pre-date the digging of early pits. Of those in the southern zone, none can be shown to be in relationship with early pits and we must, therefore, allow that they could have been constructed at any stage throughout the life of the early settlement.

The northern zone: N1-N2

Turning now to that part of the northern zone which lies in the eastern part of the fort (ie zones Nl, N2, and the eastern end of N4), we can select all potentially early postholes by the methods noted above (p 51), and present them against other features (Fig 4.125). The overall pattern indicates a concentration of pits with a group of small four-post structures occupying the area between the pits and the main road. The date of gully complex 5 is uncertain (p 126). Close to the gate a shallow quarry pit was dug in cp 3 or 4 (p 127). The area around it and to the north was largely devoid of features.

The northern zone: N3-N4

The contrast between zones Sl-3 and Nl-2 on the one hand and zones N3-4 on the other has already been emphasized in the general discussion (above, p 49). Fig 4.126 presents all early pits and small four-post structures against a background of postholes and other structures which are potentially of early date.

Two concentrations of pits in zones N3 and N4 stand out clearly with an area less densely occupied by pits between. The southern cluster of pits respects the line of the diagonal path which is, therefore, likely to have been in use at this period.

Several rows of four-post structures can be defined but where they are in relationship to pits, the pits are always later. In the area of less dense pit digging pairs of posts can be recognized. This kind of feature was probably widespread but is very difficult to recognize where pits and postholes are densely packed. Buildings RS3 and 4 are shown on this plan because they may have been constructed in the early period (p 87). Their alignment with the diagonal path is presumably significant.

The northern zone: N5

Finally the extreme northern part of the enclosure (zone N5) should be briefly mentioned. Fig 4.109 sums up the principal structural components in the area. From what survives the digging of the quarry it would appear

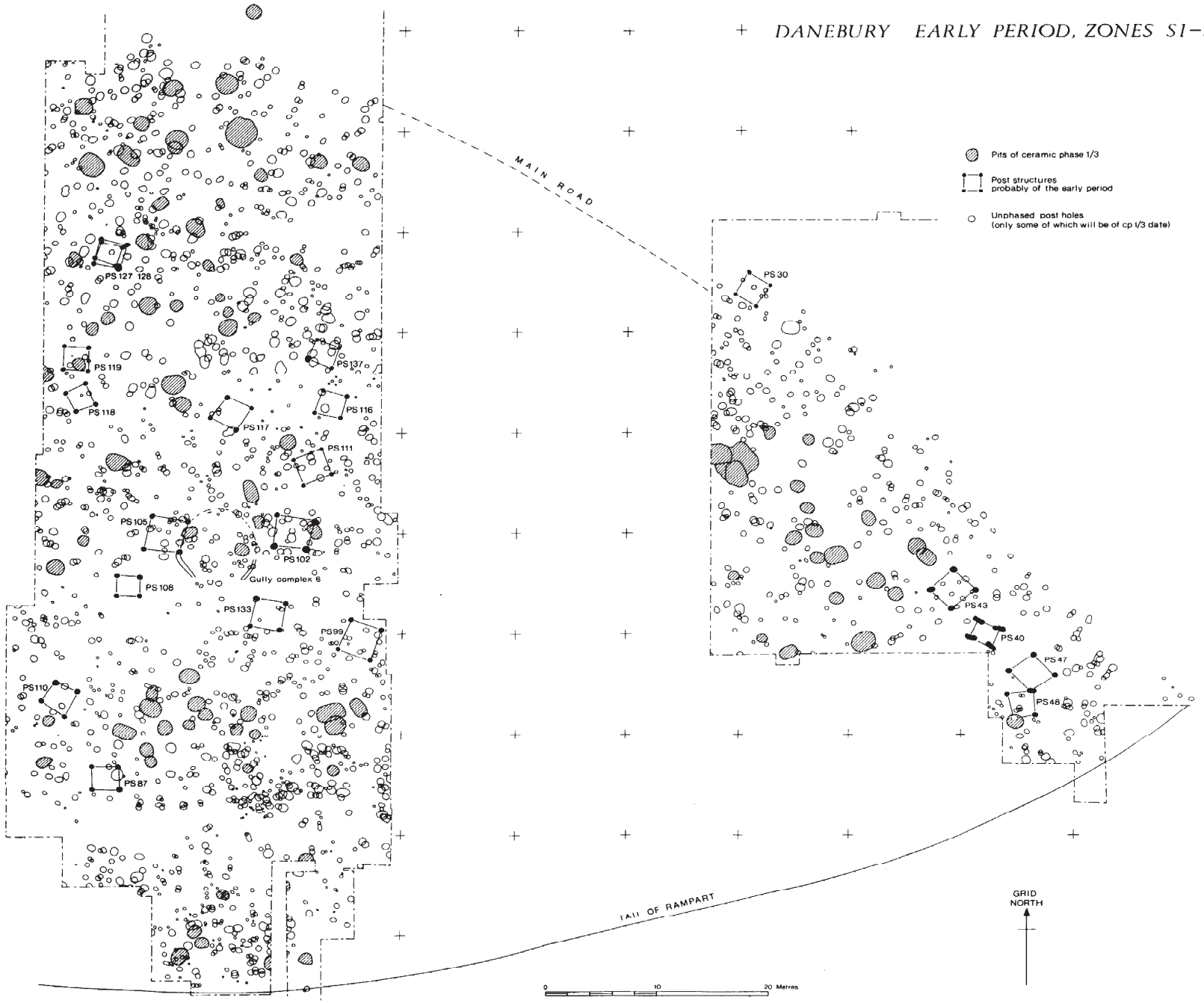

DANEBURY EARLY PERIOD, ZONES S1–S3
Pits of ceramic phase 1/3
Post structures probably of the early period
Unphased post holes (only some of which will be of cp 1/3 date)
MAIN ROAD
TAIL OF RAMPART
PS 127
128
PS 119
PS 118
PS137
PS 116
PS 117
PS 111
PS 105
PS 102
Gully complex 6
PS 108
PS133
PS99
PS110
PS 87
PS 30
PS 43
PS 40
PS 47
PS48
GRID NORTH
0
10
20 Metres

Fig 4.124

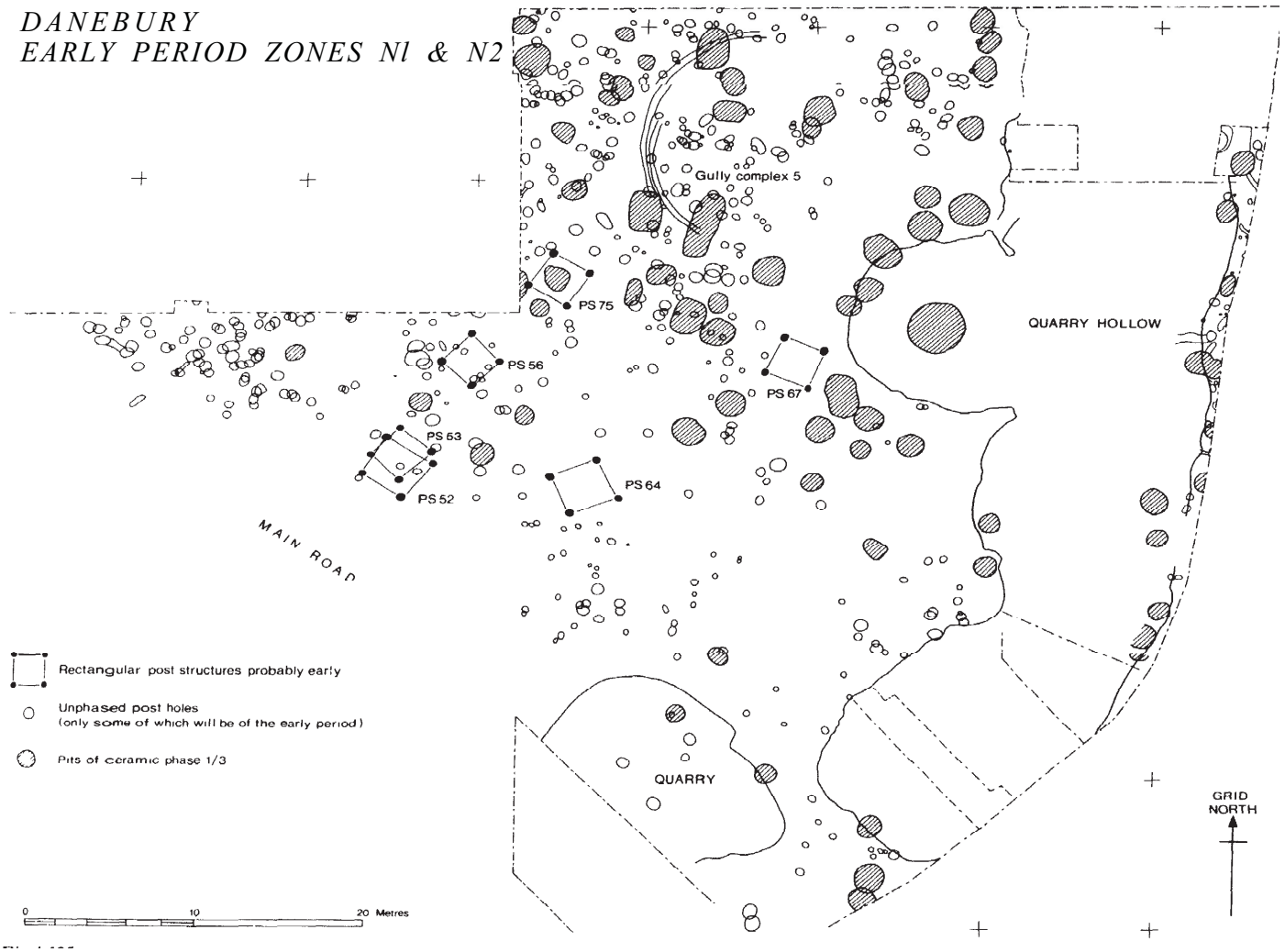


Fig 4.125

that the density of pit digging thins out considerably before the rampart is reached, and there is evidence to suggest that domestic structures (eg CS9) occupied the zone immediately in the lee of the rampart.

Summary of the early occupation

From what has been said above it will be apparent that the main road (road 1) formed a major divide in the early period. To the north of it, in the central part of the fort occupying the highest part of the site, was an area measuring more than 100 m across which was given over to storage pits. The southern part of the site, south of the road, served domestic functions centred upon a group of circular houses (most of which lie to the west of the area considered in this report). Other areas of occupation have been traced in the shelter of the rampart on the north and east sides of the fort.

Since the early period occupied at least a century and possibly two it is highly probable that there were significant changes of plan during the life of the settlement. The clearest evidence for this is to be found in zones N3-4 where a number of the early pits are intercut and where there is reasonable evidence to suggest that the small four-post structures preceded the pits. One possible explanation for these observations would be to suppose that the earliest phase of settlement was represented largely by small four-post structures and that the pit storage and occupation areas developed later . Alternatively the development may have been more complex; for example, the replacement of small four-post structures by pits in that part of the northern zone excavated may be matched by a reverse trend elsewhere in the fort. Until a far larger area has been examined possibilities of this kind cannot be ruled out. However, without prejudicing the general discussion to follow it should be noted here that there is evidence from the excavation of other hillforts to suggest that a number of sites began their lives as enclosures containing little more than small four post structures. This might lead us to suppose that the earliest Danebury period conformed to this pattern and that the pit storage and habitation areas represent a later aspect of the early period. To allow for this possibility we may divide the early period into *earliest* and early.

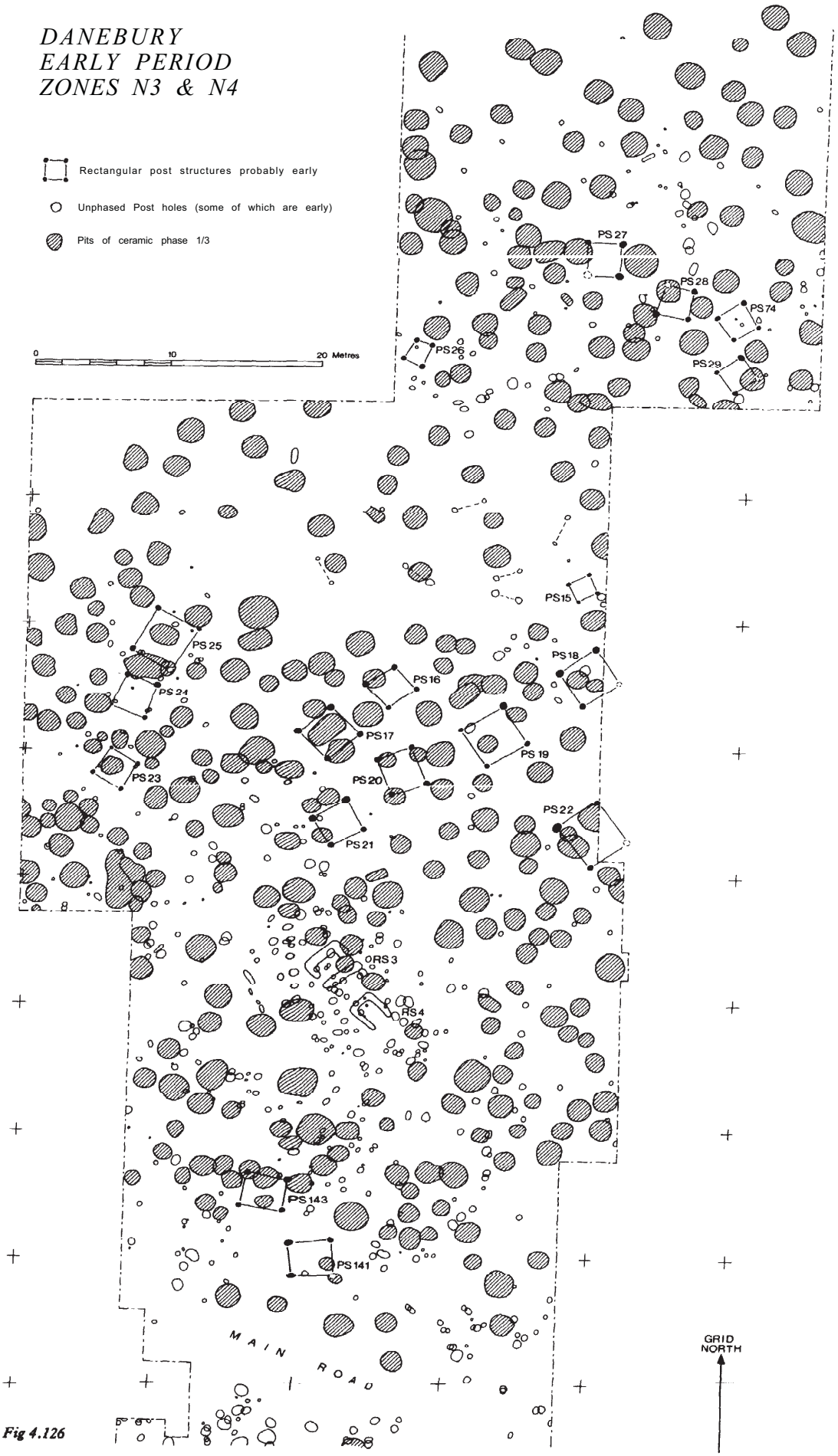

DANEBURY
EARLY PERIOD
ZONES N3 & N4
Rectangular post structures probably early
Unphased Post holes (some of which are early)
Pits of ceramic phase 1/3
0
10
20 Metres
PS27
PS28
PS74
PS26
PS29
PS15
PS25
PS18
PS16
PS24
PS17
PS19
PS23
PS20
PS22
PS21
RS3
RS4
PS143
PS141
MAIN ROAD
GRID NORTH

Fig 4.126

4.4.5 The middle occupation (periods 2d-3b)

It must be admitted at the outset that the elucidation of the middle period occupation presents certain difficulties, not least because the exact relationship between the pottery of ceramic phases 3, 4, and 5 and the rampart sequence is difficult to define (pp 45-6). What is, however, perfectly clear is that cp 4-5 pottery represents a period intermediate between cp 3 and cp 6-7 and this is taken to be broadly equivalent to our middle period. In structural terms the middle period spans the time between the early *destruction horizon* (period 2c) and the *quarry horizon* (period 4). The problem which arises is the position of these two distinctive horizons within the ceramic development. On present showing, period 2c is probably best taken to occur during cp 4 while cp 6 starts, if not at the moment of the quarry horizon (period 4), then quite soon afterwards. In terms of the analysis to follow this means that some of the features containing cp 4 pottery *may* belong to the early period and some of those containing cp 5 pottery *may* belong to the late period. The majority of the features producing this range of pottery must, however, be of the middle period. The slight blurring caused by this uncertainty is unfortunate but, at present, inevitable (fiche 8, frames D5-7).

General considerations

The distribution of pits producing pottery of ceramic phases 4 and 5 is given in Fig 4.127. The contrast between this plan and that of the early period pits is particularly striking; what immediately stands out is their comparatively even distribution throughout the site though there does appear to be a slightly increased density in zone S3. The implication is clearly that the well-defined functional differentiation of the early period which called for a concentration of grain storage pits in zones N3-4 had been abandoned and was presumably replaced by new organizational systems.

A question which must be raised at this point is at what stage were the lateral roads (roads 2 and 3) and their flanking rows of large four- and six-post rectangular structures laid out? Could it be that they belong to the middle period? On balance it seems more likely that the large-scale replanning which this entailed should be ascribed to the beginning of the late period. The evidence for this may be briefly summarized:

a The stratigraphical sequence observed in the levels behind the rampart excavated in 1969/71 shows that the row of four- and six-post buildings along the south edge of road 1 should best be assigned to phase g of the local sequence, which can be directly correlated with the major extension of the rampart (rampart 3) equivalent to Danebury period 4. If this correlation is accepted (and it must be stressed that it is a likely hypothesis and not a proven fact) then the layout of the roads and buildings was part of the major reorganization of period 4 which heralded the beginning of the late period of occupation.

b A survey of the pottery from the postholes of four- and six-post structures (fiche 3, frames C4-7) showed that of the sixteen structures to which ceramic phases could be assigned nine contained pottery assignable to cp 6-7 and a further four produced sherds which could be as late as cp 6-7 but were not exclusively dated to these late phases.

c In several cases in the southern zone pits of cp 4 and 5 impinged upon the sites of rectangular post-built structures in such a way as to suggest that the two categories of structure could not have been in contemporary use.

d Pit 874 of cp 5 date lay on the line of road 2.

These scraps of evidence are not in themselves conclusive but together they make a tolerably convincing case for the assertion that the new road system is best correlated with Danebury period 4-the beginning of the late period.

If all early and late period features are removed from the plans, comparatively little, other than the pits, is left. We must, however, remember that large numbers of unascribed postholes remain and many could, in theory, belong to this period. This applies to any of the isolated posts shown on Fig 4.9. It is also quite possible that some of the large four- and six- post structures ascribed to the late period are in fact of middle period date but there is no way to separate them from the later structures (but see comments on PS59 and PS61, p 107 above). The only features which can be definitely assigned to this period are the postholes and gullies found in the 1969/71 area sealed beneath layers of phase g (Fig 4.117) and assigned to phase f of the local sequence. A strong case can also be made for building RS4, in the centre of the fort (zone N4), to be of this period (pp 86-7). If so, it must represent a continuity of function and structure between building RS3 of the early period and RS2 of the late period.

If the structural evidence for the middle period is elusive, the occupation debris from the pits leaves little doubt that a full range of domestic activities was practised within the fort.

4.4.6 The late occupation (periods 4-6a)

The late phase of occupation coincides with ceramic phases 6 and 7, which the radiocarbon dating suggests span a period of about three centuries. As might be expected there were significant changes during this time, but even so the broad division of the site into functional regions, once established, seems to have remained largely unchanged

As in previous periods the main east-west road (road 1) divided the fort into two zones. The distribution of pits of cp 6 and cp 7 (Figs 4.128, 4.129) broadly reflects an even scatter throughout the excavated area though there are suspicions of localized clumpings which will be considered in more detail later. Crucial to our understanding of the late occupation is the assumption that the layout of the lateral roads in the southern sector (roads 2 and 3) and the four- and six-post buildings which flanked them took place at the beginning of the late period at the time when the defences were refurbished and the quarry dug behind the ramparts on the north and east side of the fort. The arguments for this assumption have been set out above (p 174).

Standing back from the detail we can say that in the late period the centre of the fort was occupied by a group of religious buildings. The southern sector was filled with four- and six-post structures presumably for storage and this arrangement extended to the area on the north side of the main road, while the houses were built in the shelter of the rampart extending, in the northern zone, for some distance in towards the centre of the fort. To fully appreciate the lateral and temporal variation we must consider each area in turn, but before doing so something must be said of the overall development of the site with time. Seriation analysis of the pottery from the cp 7 pits has allowed the period to be divided into five subphases A-E (Vol 2, pp 242-4). The pits of each have been separated and are plotted on Figs 4.130 and 4.131. If each phase is of approximately equal length (an untestable assumption) then each subphase will represent a period of 40 years. Even allowing that some pits have to be omitted from the exercise because they produced too little material

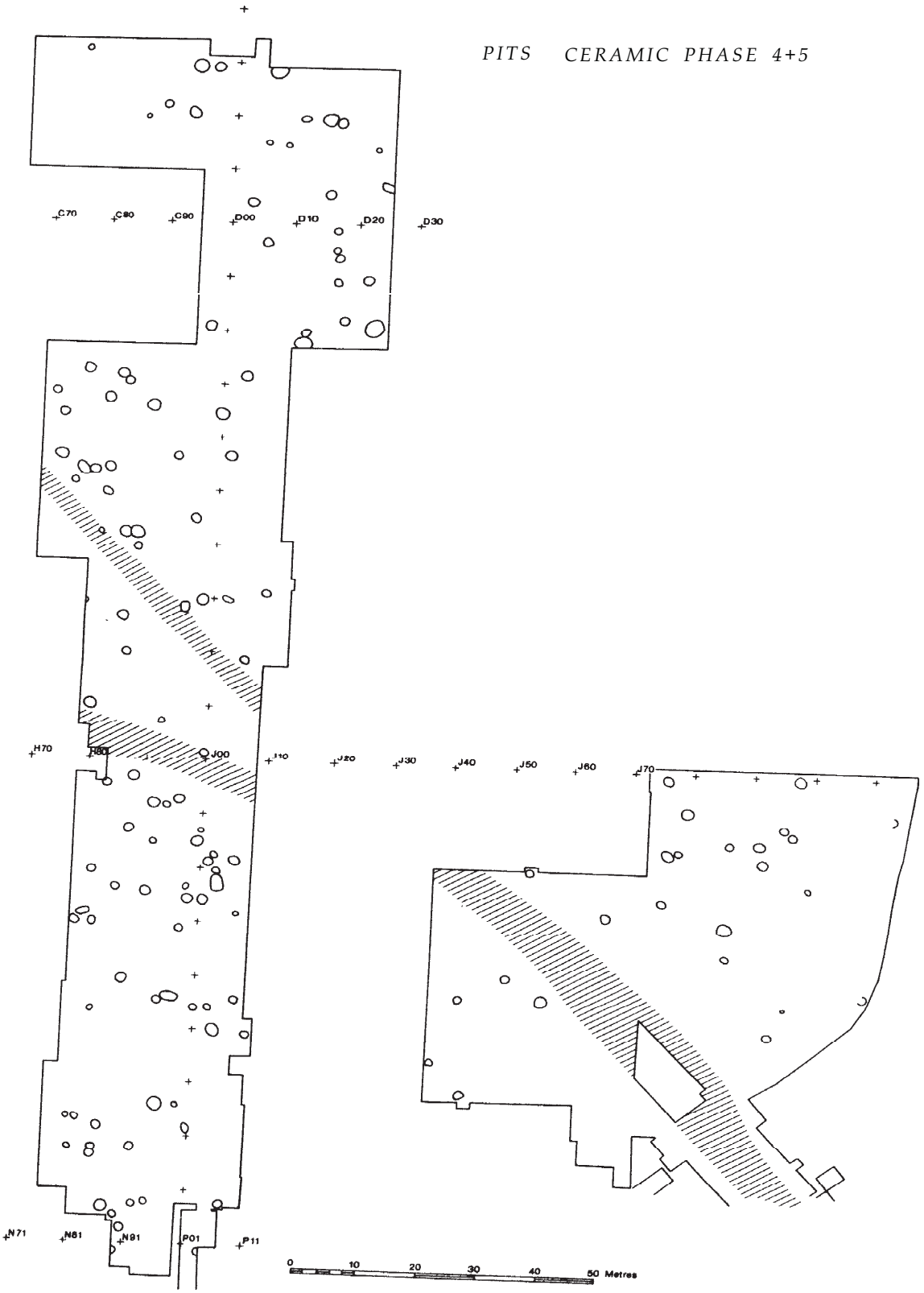

C70
C80
C90
D00
D10
D20
D30
H70
H80
J00
J10
J20
J30
J40
J50
J60
J70
N71
N81
N91
P01
P11
0
10
20
30
40
50 Metres

Fig 4.127

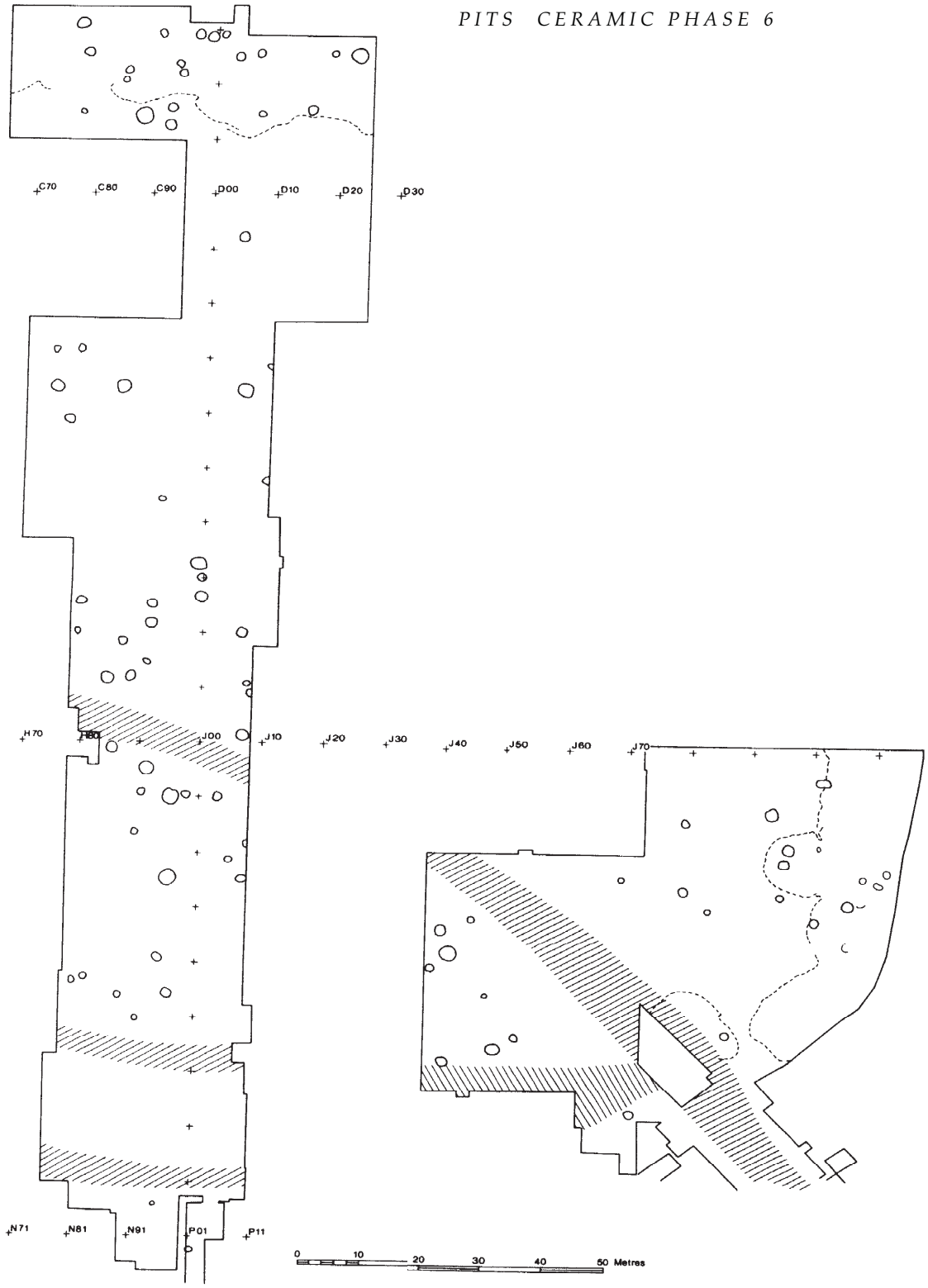

C70
C80
C90
D00
D10
D20
D30
H70
H80
J00
J10
J20
J30
J40
J50
J60
J70
N71
N81
N91
P01
P11
0
10
20
30
40
50 Metres

Fig 4.128


PITS CERAMIC PHASE 7+8
O Ceramic phase 7
O Ceramic phase 8
C70
C80
C90
D00
D10
D20
H70
J00
J10
J20
J30
J40
J50
J60
J70
N71
N81
N91
P11
0
10
20
30
40
50 Metres

Fig 4.129



Fig 4.130 Distribution of pits *of ceramic phases 7A-7D based on the seriation analysis discussed below (Vol2, pp 242-4)*

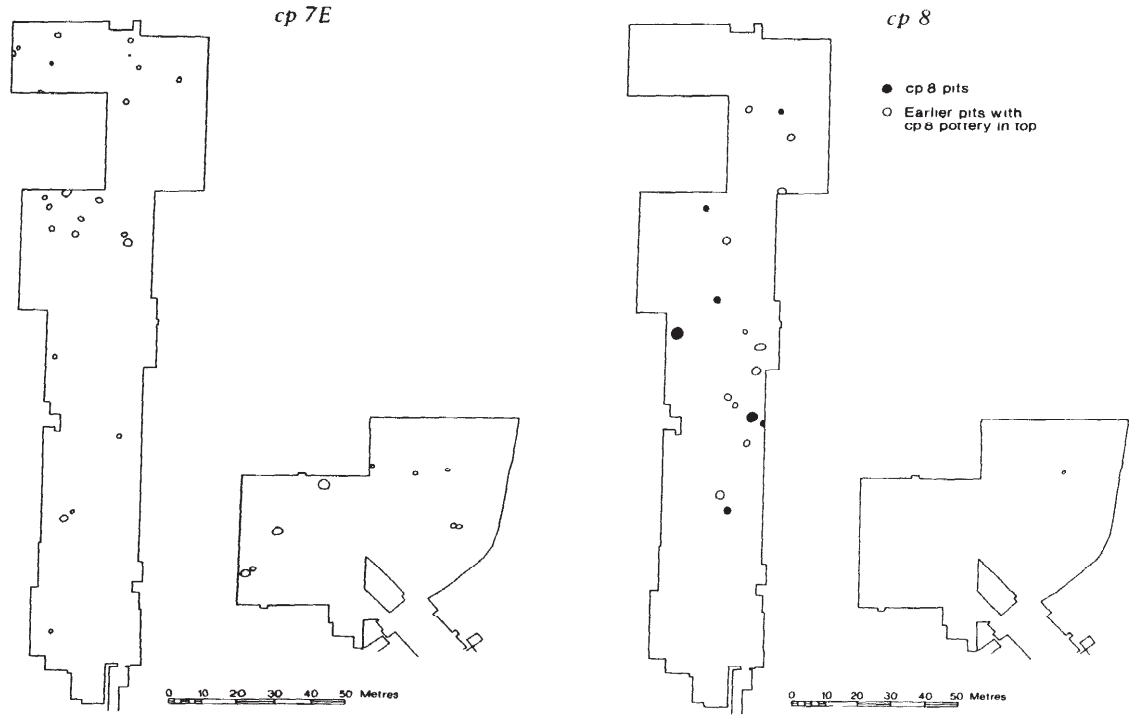


Fig 4.131 Distribution of pits of ceramic phases 7E and 8 based on the seriation analysis discussed below (Vol 2, pp 242-4)

to permit phasing, the comparative sparseness of pits in each phase is noticeable.

There are differences in the spacing of pits in each phase. In cp 7A the spacing appears to be even, but in cp 7B there is a distinct clustering in zones S1-3. In cp 7C the spacing is again more even but with a slight emphasis on the area around CS23 and gully complex 3 in zone N4. In cp 7D the concentration north of the road appears to continue and is even more apparent in cp 7E and cp 8.

These observations are a firm reminder of the constantly shifting nature of the activity areas within the fort. The present sample is too small to allow an overall pattern to be perceived.

The southern zone: S1-S3

The arrangement of this area is summarized in Fig 4.132 which shows the two lateral roads (roads 2 and 3) diverging from each other at their junction with the main road just inside the east gate. The roads were lined with four- and six-post buildings. Similar structures could be traced along the south side of the main road (road 1). The space between roads 1 and 2 was occupied by a number of rectangular structures, several of which were placed in a row in the centre of the area. Isolated structures were also found between roads 2 and 3 and between road 3 and the rampart. Since much the same pattern continued throughout the length of the 1979-80 excavation it is reasonable to assume that the entire southern zone was infilled in this manner. There can be little doubt that the layout was the result of a deliberate act of planning. That the scheme was maintained for a considerable period is shown by the frequent replacement of a number of the structures on more or less the same sites and by the periodic remetalling of road 2 in the 1979-80 excavation.

The relationship of the rectangular structures to broadly contemporary pits can be studied in Fig 4.123.

The potential complexity of the development of the site in the late period is well demonstrated by the stratified sequence recovered in zone S1 where five separate phases have been recognized. At first there appears to have been an open strip metalled with chalk dividing the zone of rectangular buildings flanking the south side of road 3 from an occupation area against the rampart in which at least one circular house (CS21) was built. This divide seems to have been maintained, and subsequent phases of occupation saw the construction of more circular houses as well as four-post structures. The details of the sequence have been laid out above (pp 167-71). When looking at the plan of zones S2 and 3, where no vertical stratigraphy survives, it is well worth remembering that the simple plan represents activity and changes spanning a period of some 300 years (fiche 1, frame G2).

The northern zone: N1-N2

There is some uncertainty about the road lines in this region (Fig 4.133); two have been tentatively proposed on the basis of there being comparatively open strips of chalk uncluttered with pits and postholes, but neither is particularly convincing. On present evidence all we can say is that the road lines are possible but unproven. Further excavation will be necessary before the matter can be tested. If, however, road 6 had existed it would have run for part of its length across the edge of the quarry hollow, an area which excavation has shown to have been filled with rammed tips of chalk immediately after having been dug. This observation adds support to the view that a road existed and provides a precise chronological context for its supposed construction.

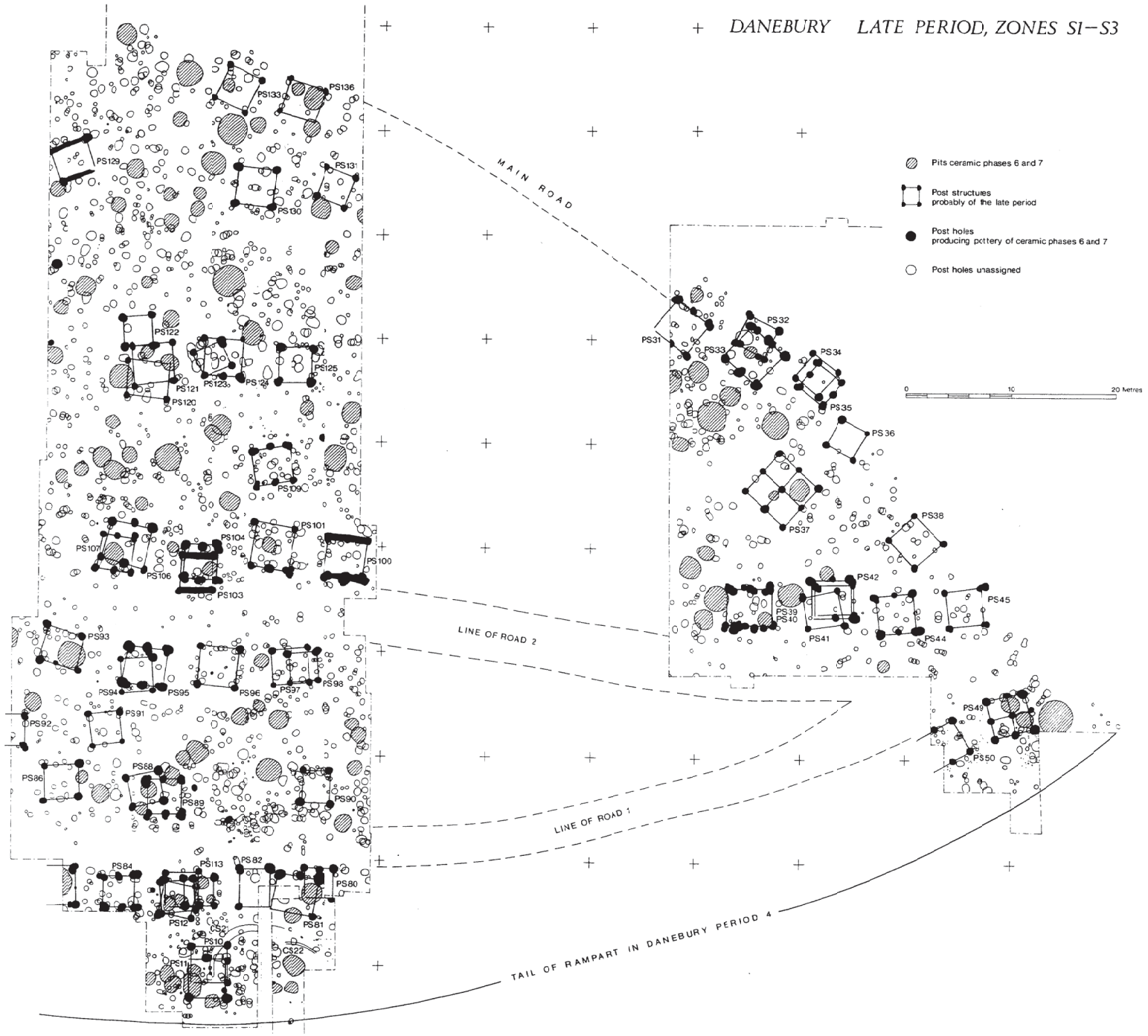

DANEBURY LATE PERIOD, ZONES S1–S3
Pits ceramic phases 6 and 7
Post structures probably of the late period
Post holes producing pottery of ceramic phases 6 and 7
Post holes unassigned
0
10
20 Metres
MAIN ROAD
LINE OF ROAD 2
LINE OF ROAD 1
TAIL OF RAMPART IN DANEBURY PERIOD 4
PS136
PS133
PS129
PS131
PS130
PS122
PS121
PS123
PS124
PS125
PS120
PS109
PS101
PS104
PS107
PS106
PS103
PS100
PS93
PS94
PS95
PS96
PS97
PS98
PS92
PS91
PS86
PS88
PS89
PS90
PS84
PS113
PS82
PS80
PS12
PS81
PS10
CS22
PS11
PS31
PS32
PS33
PS34
PS35
PS36
PS37
PS38
PS42
PS39
PS40
PS41
PS44
PS45
PS49
PS50

Fig 4.132

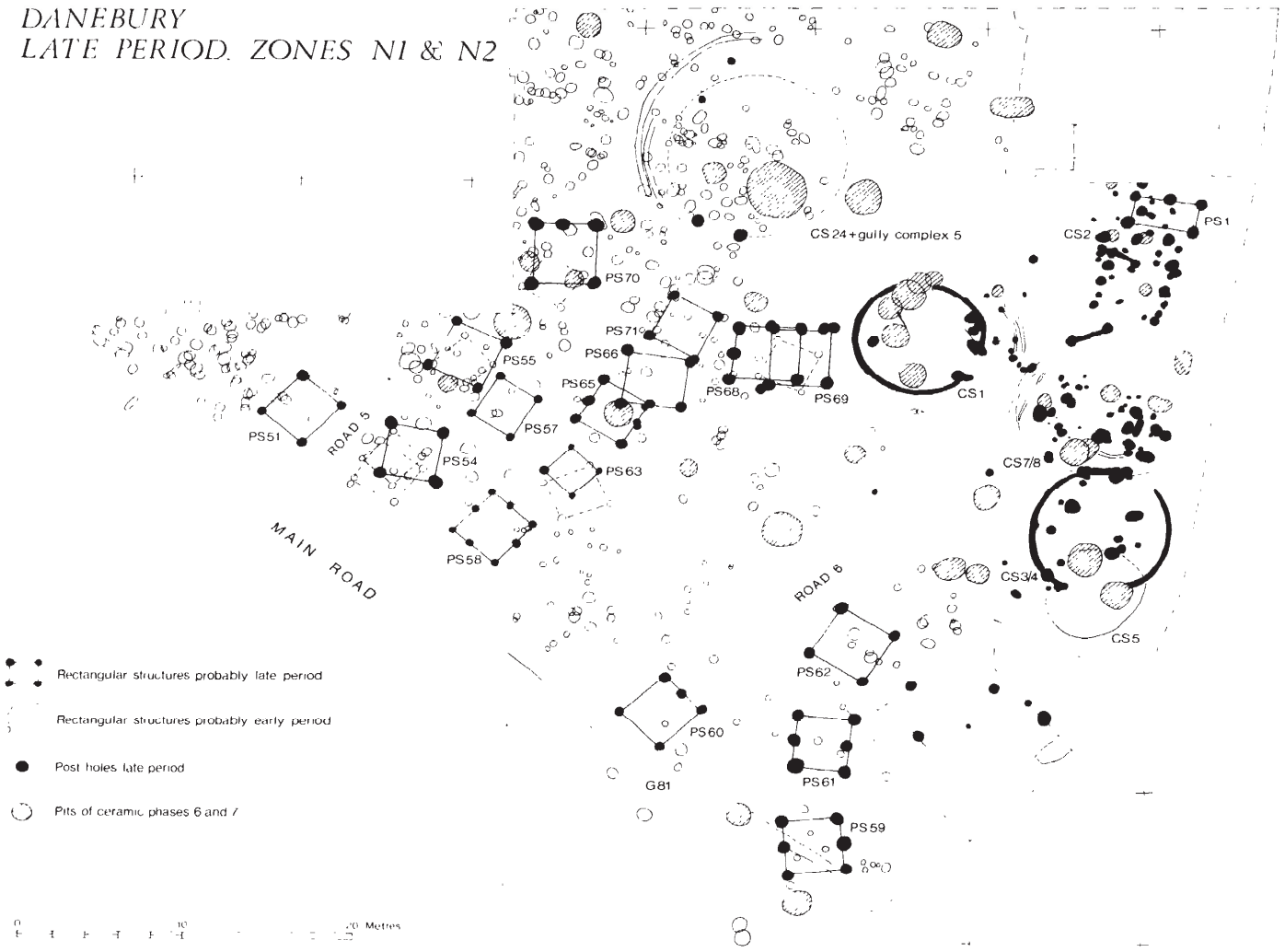


Fig 4.133

Zone N1 covers the area of the quarry hollow where six distinct phases of occupation have been recognized in the well-preserved stratified sequence. The details of this area have already been considered above (pp 1467); in summary, the sequence shows a period during which the quarry area was occupied by a few storage pits and involved structural activities which have left a number of postholes and chalk spreads (phases g-i). By the end of this period the sharp contours of the quarries had to some extent been levelled out providing space for circular houses to be erected. In phase j it is possible that two discrete habitation units existed within the excavated area: a northern unit comprising two houses (CS1, CS2) looking in towards their working yard, and a southern unit of one house (CS3/4), its back to the northern yard, facing south across its own working area. In this arrangement the supposed road 6 would have run through the northern unit. The next phase (k) was represented by a sub-rectangular structure (CS6), a small house (CS5), and a five-post rectangular structure (PS1), well spaced with an open area in between. Finally (in phase l), a single large house (CS7/8), once rebuilt, was erected with an extensive working yard on the south side and an area of storage pits to the west. Three rectangular post-built structures (PS59, PS61, PS62), occupying the western fringe of the quarry hollow, evidently relate to the occupation sequence, though to what phase is uncertain. The distribution of small objects in and around the house is shown on Fig 4.134.

With the exception of the circular building CSl and the subsequent phases which seal it, zone N2 is without the benefit of vertical stratigraphy. Within the area the structures represented are: pits which are generally scattered but stay well clear of the main road; rectangular post-built structures which cluster together in two rows with isolated structures between and beyond; and two segments of circular gully occupying an area exclusive of the rectangular post structures. If, as seems possible, the gullies delimit one side of a house, once rebuilt (pp 26-7), and if the door-posts occupy the south side as suggested, the door aligns exactly with the gap between the two rows of rectangular post structures in such a way as to suggest broad contemporaneity, the implication being that a path, lined with post structures, led from the

CS 7/8
DISTRIBUTION OF SMALL FINDS

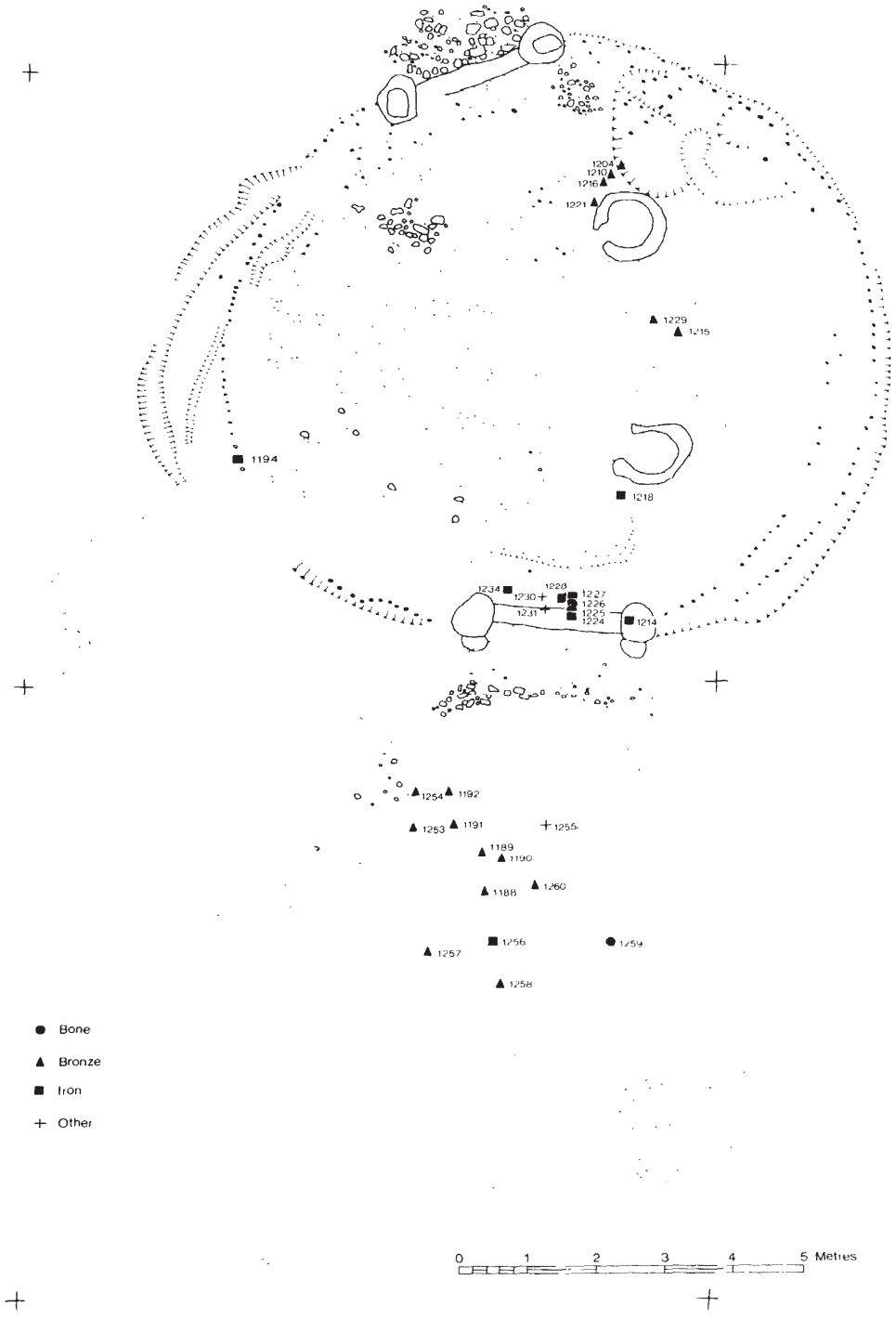


Fig 4.134 Distribution of small finds in occupation layers associated with buildings CS7/8. Small finds shown are 1188, bronze coiled fragment; 1189, bronze chisel; 1190, bronze spear; 1191, bronze axe fragment; 1192, bronze rod; 1194, iron sickle; 1204, bronze ring; 1210, bronze terret ring; 1212, iron blade; 1215, bronze loop fastener; 2216, bronze strap fitting; 1218, iron hook fragment; 1221, bronze fragment; 1224, iron chape; 1225, bone weaving comb; 1226, worked bone; 1227, iron file; 1228, iron fragment; 1229, bronze loop fastener; 1230, glass bead; 1231, whetstorte; 1234, iron object; 1253, bronze fragment; 1254, bronze chisel; 1255, shale bracelet; 1256, iron rod; 1257, bronze nail; 1258, bronze rod; 1259, bone toggle fragment; 1260, bronze chisel

main road to the circular building.

On the extremity of the main road was the quarry or 'pond' belonging to the early period. It had silted by the beginning of the late period and it was probably as part of the reorganization at the beginning of period 4 that the surface was consolidated with freshly quarried chalk rubble. Road 6, if it existed, would have crossed this area. At a later date a linear gully (G81) was dug across the filling and along the north side of the main road. Its western continuation has been destroyed by later wear on the road but it may well once have formed a continuous feature with the gullies in zone N4. Dating evidence is limited to a few sherds of indeterminate Iron Age date, but it is possible that as a linear boundary dividing the fort the gully belongs to the latest period (ie Danebury period 7 or 8).

The northern zone: N3-N4 (Fig 4.135)

The division between zones N3 and N4 was made on the basis of the roadway (road 4) which was functioning in the early period. It is not known, however, whether it remained as a significant feature during the middle and late periods. All that can be said is that no pits were dug across its line, but the fact that its orientation was closely followed by the rectangular buildings put up here in the middle period suggests that the path may have remained in use for some time.

In the late period the area can be divided into three functionally different regions: a southern area flanking the main road occupied by a row of rectangular post-built structures; a central area of rectangular buildings possibly of a religious nature; and a northern area of circular houses interspersed with pits.

The southern area immediately adjacent to the north side of the main road was taken up with four large four-post buildings aligned along the edge of the road. There is no relative dating evidence from the postholes but two (PS142, PS138) are impinged upon by pits producing pottery of cp 6. The area is entirely clear of pits of cp 7 but is taken over again by pits of late date with pottery of cp 8 in their upper fills. The most satisfactory chronological context for the structures would, therefore, seem to be in the latter part of the late period (ie Danebury period 6).

The central area sequence is more complex. In the early period the area was crossed by a path (road 4) on either side of which were a large number of pits, two complexes of gullies, and various postholes, some of which resolve themselves into early four-post structures (Fig 4.135). A large number of the posts, however, concentrate in the central part of the area impinging upon the line of road 4 and must, therefore, either pre-date the path or belong to the period after it had gone out of use. The latter is more likely since some of them have produced pottery of cp 6 and 7. The only recognizable structure is a four-post setting of unusually deep posts (PS13/72), from two of which have come sherds of cp 6-7 date. One post of the structure was removed by a pit producing cp 7 pottery.

The most notable structures in the central area were the four rectangular buildings (RS l-4), all of which were laid out on the same axis. RS2, 3, and 4 were of similar construction and the front walls of RS2 and RS4 were well aligned. The regularities of plan might suggest a degree of contemporaneity but this appears not to be so. Dating evidence was limited; building RS2 was later than three pits, the latest of which produced sherds typical of cp 6, while from the soil filling the construction slot came a few sherds of cp 6-7. Building RS3 was cut by two pits and several postholes from which the latest pottery belongs to cp 3, while building RS4 was cut by a pit producing pottery of cp S (p 86 and fiche 1, frame G3).

If it is assumed that all three structures were of the same construction date then they cannot be earlier than cp 6 and this would mean that all three pits cutting RS3 and RS4 contained only residual material. If, on the other hand, no residuality is allowed, building RS3 would then have to belong to the early period (cp 1-3), RS4 would be no later than the middle period, and RS2 would most likely belong to the beginning of the late period. Acceptance of this dating would allow a degree of continuity with one building in use at a time throughout much of the life of the fort. On balance this seems to be the more reasonable interpretation. It would take with it the interesting implication of a continuity of function. Their relationship to the path line (road 4) is also noteworthy. If the buildings succeeded each other in the manner suggested it seems likely that the path would have been kept in use-a possibility which, as we have seen, the distribution of pits would allow.

Building RS1 lies about 10 m to the north-west of the group of three rectangular buildings astride the line of road 4. Stratigraphically it is the latest structure to be built on this part of the site cutting into a number of pits, the latest of which contained pottery of cp 5; it is otherwise undated. While its position and alignment strongly suggest that it is part of the complex of rectangular Iron Age buildings coming late in the sequence, there is nothing to prove that it is of Iron Age date. That it may be the last of the series of rectangular buildings dating to the latest period (ie Danebury period 7 or 8) is a possibility. The fact that gully 26/99, with which RSl is roughly parallel, produced a sherd of cp 8 may be thought to add some slight support to the contention.

If this sequence is correct it implies that a continuity of planning and possibly of function existed over a considerable period of time. It has been suggested (above, p 85) that RS2 is closely similar in structure to a building at Heathrow which may reasonably be interpreted as a temple. If so, then the possibility that all four rectangular buildings may have had a ritual or religious function is raised, the sanctity of the location being reflected in the successive replacement of one building with another. There is no independent archaeological evidence to support the idea of the area constituting a religious location but the siting of the buildings on the false summit of the hill, viewed from the east entrance, and their alignment facing the entrance gives substance to the hypothesis.

The northern area of zone N4 was differently organized in the late period. Although the structural evidence is not well preserved, the remnants of two domestic structures survive: gully complex 3 around house CS23 and gully complex 4, which may be the remnants of a house or houses. Both complexes are described and illustrated in detail above (pp 81, 126). The dating evidence for both indicates a date equivalent to ceramic phases 6 or 7. What is particularly noticeable is the way in which the pits, producing pottery of cp 6 and 7, avoid the structural complexes. As the plan shows they concentrate to the south of gully complex 3 and between gully complex 3 and 4. The clear implication is that we are dealing with an ordered layout in which a tight functional differentiation was imposed. Another notable feature is the open area which divides the pit group south of CS23 from the area of the rectangular buildings. It is the largest open area so far discovered in the fort.

DANEBURY
LATE PERIOD
ZONES N3 & N4



Fig 4.135

The northern zone: N5

The quarry hollow against the northern rampart is arbitrarily taken to be a distinct zone for the purpose of this discussion. Its separation from zone N4 is to some extent justified by the fact that a 20 m band, devoid of postholes and with only sporadic pits, divides the two areas.

The stratified sequence recovered from the quarry hollow has been described above and five separate phases have been recognized (Figs 4.110-4.113). After a ritual foundation burial and a period of silting buildings began to be erected. The first major structural phase (phase g) was represented by a single house (CS17) surrounded by a zone of pits beyond which, in the western part of the site, was a group of large rectangular post-built structures. There followed a phase (phase h) dominated by post-built structures partly enclosed by drainage gullies but including a single house (CS20). The final phases (i and j) saw the erection of an additional eight circular houses facing an open area within which a number of storage pits were dug. The developing settlement here would seem to suggest a gradual change of emphasis away from storage in above-ground granaries (if that's what they are!) to densely packed habitation. It should, however, be stressed that the excavated sample is comparatively limited and the observed changes need have nothing more than a local significance.

Summary of the late occupation

The overall picture which can be constructed of the late phase of occupation suggests a densely-packed and well-ordered settlement.

The main functional differentiation seems to have been between the southern part of the site with its serried ranks of rectangular post-built structures, probably functioning as storage buildings, laid out along well-metalled roads, and the rest of the enclosure, though rectangular buildings did extend to the north side of the road in places. The highest part of the site, near the centre, was reserved for small shrine-like structures continuing a tradition which may have extended back into the early period. Beyond this the shoulder of the hill, on the north and east sides of the fort, was chosen for well-spaced domestic buildings while the lee of the rampart was densely settled with a changing pattern of houses.

Constant rebuilding and the remetalling of roads leave little doubt that the settlement continued to be maintained throughout the period with a degree of control sufficient to retain the main functional differences.

4.4.7 The latest occupation (periods 7-8)

The intense occupation activity in the quarry hollows ended during the currency of pottery of cp 7, after which the hollows filled with a fine chalky silt. Meanwhile at the main gate, following its destruction by fire during cp 7, the timbers were not replaced. Superficially the evidence might be thought to point to abandonment, but the presence of some later pottery suggests that it is safer to think in terms merely of a change of use, there being no further need to maintain the defences while the dense habitation of the earlier period now gave way to some other mode of occupation.

It is not easy to define the nature and extent of this late use, but pottery of cp 8 has been found in a number of pits shown on Fig 4.129. Except for two pits, P761 and P1089, the late pottery was recovered from the topmost silting of the pits; in other words, it accumulated in the hollows remaining after earlier pits had almost completely silted up. In the two exceptions cp 8 pottery was found throughout the filling. The plan then indicates the general spread of late occupation suggesting a concentration just north of the main road. No structures can with certainty be ascribed to this period but it is not impossible that building RS2 remained in use, and we have hinted that RS1 may even have been built at this time. At any event it is probable that the linear gully, G26/99/81, was funtioning in the latest period. In default of other evidence it is tempting to suggest that late occupation was of limited extent and centred around the traditional religious focus of the site. This should not, however, be taken to imply that the late use of the fort was no more than casual religious observance at an old shrine. The late pottery found was of normal domestic kind and was mixed with food refuse. There was nothing to distinguish the range of domestic rubbish from that discarded in the earlier periods, the only significant difference being that sherds of Dressel IA amphorae had now found their way to the site. No postholes can be assigned to the latest period on the basis of pottery found in them but in theory any of those which cannot be shown to belong to early structures could be of the latest period. There are many to choose from, and the probability that some at least belong to buildings of this period is strong. No convincing plans can, however, be made out.

While limited domestic activity was in progress in the central part of the site, silt was washing down into the quarry hollows behind the ramparts. The nature of the silt and the thickness of the deposit would require the ground surface of the higher parts of the interior to have been kept clear of binding vegetation, a situation which could have been achieved by cultivation or by intensive corralling of animals. The snail evidence (Vol 2, pp 476-8 1) would point to the latter. Thus, the picture to emerge is of limited occupation closely associated with agricultural activities-a combination which could have arisen if Danebury had become a single farmstead in the latest period. The dating evidence for this settlement depends entirely upon an assessment of the ceramics (cp 8) for which the best estimate is the first half of the 1st century BC. The activity constitutes Danebury period 7.

It is an interesting comment on the dangers of generalizing from too small a sample that it was not until the eleventh year of excavation (1979) that the first traces of limited occupation of the mid 1st century AD were discovered in Danebury. The ceramic finds are distinct from those belonging to the activity just described (ie cp 8) in that the coarse wares are regularly wheel-turned and are associated with Gallo-Belgic types. The mid 1st century AD settlement will be described in Vol 4. Here it is sufficient to note its existence as providing a possible context for the final stage of redefence at the entrance (Danebury period 8).

5 Radiocarbon age assessment

by Barry Cunliffe and Clive Orton with dates provided by Bob Otlet and Jill Walker

5.1 Introduction

Since the Danebury excavations were planned as a long term programme, and were therefore likely to produce a large number of samples suitable for radiocarbon dating, it was decided to use the facilities of the sire to examine the problems posed by applying radiocarbon dating methods to later prehistoric settlements. With this aim in mind samples were selected according to certain well-defined criteria:

a The sample had to be well sealed and related either to a distinctive ceramic assemblage or to a clearly defined structural phase,

b Where possible different types of material were selected for dating from a single context, eg wood charcoal, grain, and bone.

c Preference was given to samples from stratified sequences.

d As many samples as possible were obtained from closed contexts producing the same pottery styles.

In all some 70 samples were dated from the excavations of 1969-1978, 51 wood charcoal, 9 grain, and 10 animal bone. The complete list of samples submitted is given in Table 16, together with a brief comment. Further, more detailed comments will be found in fiche 7.

Following the list we examine groups of dates in three different ways: first we look at those dates from contexts yielding more than one type of material for dating; next we consider the consistency of dates obtained from the stratified sequence in the south-east sector of the site excavated in 1977-8; and then we examine the date range presented for each of the main groups of pottery styles.

Throughout the first part of the report all dates are quoted on the 5568 half-life without correction to absolute years. In a later section we consider possible calibrations (pp 195-7).

Of the 77 samples submitted to Harwell, 7 were too small for dating by the standard process. Of the rest HAR-2586 produced a modern date, while HAR-966 was not totally pre-treated and must therefore be ignored. Three would seem to be significantly too young: HAR-1426 and HAR-1801, for the same sample, produced ad assessments for a context thought to belong to the middle of the 1st millennium BC, while HAR-2040 gives a 2nd century ad date for a context which should be no earlier than the 2nd century BC. Presumably these samples have become contaminated with more recent charcoal either by the activity of roots or burrowing animals. They are therefore omitted from further consideration. This brings the total usable sample to 65 dates. The dates which can be assigned to ceramic phases are presented in diagrammatic form in Fig 5.1.

Detailed comments on the individual dates, including a description of the material dated, will be found on fiche 7.

5.2 Comparative measurements

Two sets of check measurements were made on the same charcoal samples (Table 17).

The difference between the first pair of measurements is 170 ± 106 years and between the second pair 70 ± 106 years. These are both within a statistically acceptable range of variation. In the further analyses these results have, therefore, been replaced by their weighted means.

Nine pairs of measurements were made on bone and charcoal, one on grain and bone, and two on charcoal and grain taken from the same archaeological contexts (Table 18).

The differences between the paired measurements on charcoal and bone range from ± 360 years (P885) to -310 years (layer 511) with an average of only 5 years. There is thus no evidence for bias, but the standardized range of 6.6 lies well outside the 99% confidence limit of 5.08 (Pearson & Hartley 1954, tables XX and XXII) . Examinaion of the distribution of the standardized differences (ie differences divided by standard deviations, see Table 19) suggests that the two extreme values quoted above are outliers and should be rejected. The standardized range of the reduced sample is 3.5, which lies within the 90% confidence limit.

In both extreme cases, it is the measurement for bone which appears to be out of line. For both P885 and layer 511 the measurement for charcoal lies close to both the preferred archaeological date and within the range of other dates from the same phase, while those for bone do not. These two measurements for bone have therefore been omitted from further analyses.

The differences between the paired measurements on grain and bone or charcoal range from - 250 years (P1089) to - 160 years (P589) with an average of about - 200 years. The standardized differences are - 1.2, - 1.8, and - 25,

Table 16 List of samples submitted for dating

HAR no	*context*	*material*	*age bp*	*date ad/bc*	*ceramic phase*
963	tr11 layer81	charcoal	2180 ± 70	230 bc	gate
964	P657layer 6	grain	2230 ± 70	280 bc	cp 6
965	P757layer 4	grain	2210 ± 70	260 bc	cp 6
* 966	P604 layer 2	grain	3520 ± 70	see above	
967	P574 layer 8	grain	sample too small for standard proces s		
968	P589	grain	2140 ± 80	190bc	cp 7
1425	P802layer 7	charcoal	2040 ± 80	90bc	—
*1426	P858 layer 3	grain	1760 ± 80	ad190	cp 1-3
1439	P860 layer 5	charcoal	sample too small for standard proces s		
1440	P813 layer 10	charcoal	2160 ± 70	210 bc	cp 7

Table 16 contd

HAR no	*context*	*material*	*age bp*	*date ad/bc*	*ceramic phase*
1441	P829 layer 3	charcoal	sample too small for standard process		
1442	P809 layer 4	charcoal	2090 ± 90	140 bc	cp 6
*1801	P858 layer 3	grain	1930 ± 70	ad 20	cp 1-3
2028	P891 layer 7	charcoal	1980 ± 80	30 bc	cp 7
2029	P868 layer 2	charcoal	2530 ± 110	580 bc	cp 1-3
2030	layer 357	charcoal	2290 ± 60	340 bc	cp 4
2031	P925 layer 8	grain	2030 ± 70	80 bc	cp 7
2032	P906 layer 7	charcoal	2370 ± 80	420 bc	cp 1-3
2033	P875 layer 3	charcoal	2460 ± 60	510 bc	cp 1-3
2034	P901 layer 5	charcoal	2200 ± 80	250 bc	cp 7
2035	P885 layer 2	charcoal	2260 ± 80	310 bc	cp 7
2036	P925 layer 8	charcoal	2100 ± 90	150 bc	cp 7
2037	P866 layer 2	charcoal	2060 ± 80	110 bc	cp 6
2034	P912 layer 3	charcoal	2090 ± 70	140 bc	cp 6
2039	P908 layer 5	charcoal	2420 ± 80	470 bc	cp 1-3
*2040	P878 layer 8	charcoal	1830 ± 70	ad 120	cp 7
2085	P906 layer 7	charcoal	2440 ± 70	490 bc	cp 1-3
2564	P978 layer	charcoal	2300 ± 70	350 bc	cp 7
2567	P944 layer 1	charcoal	2210 ± 60	260 bc	cp 1-3
2568	F40	charcoal	2090 ± 60	140 bc	cp 7
2571	P955 layer 2	charcoal	2110 ± 80	160 bc	cp 7
2573	layer 393	charcoal	2060 ± 70	110 bc	cp 7
2581	P945 layer 1	charcoal	2160 ± 80	210 bc	cp 1-3
2585	P936 layer 4	charcoal	2330 ± 60	380 bc	cp 1-3
*2586	layer 313	charcoal	modern: see p00		
2969	P1089 layer 5	grain	2120 ± 70	170 bc	cp 7
2970	layer 522	charcoal	2060 ± 60	110 bc	cp 7
2971	Ph 3619	charcoal	2110 ± 70	160 bc	cp 6
2972	P1078 layer 10	charcoal	2170 ± 70	220 bc	cp 7
2973	layer 450	charcoal	2000 ± 70	50 bc	cp 7
2974	P1078 layer 10	charcoal + grain	1990 ± 70	40 bc	cp 7
2975	P1089 layer 5	charcoal	2370 ± 70	420 bc	cp 7
3021	layer 478	charcoal	2210 ± 70	260 bc	cp 6
3022	layer 511	charcoal	2210 ± 70	260 bc	cp 6
3026	P1131 layer 6	charcoal	2450 ± 80	500 bc	cp 1-3
3027	P1115	charcoal	2130 ± 60	180 bc	cp 7
3726	P875 layer 3	bone	2270 ± 70	320 bc	cp 1-3
3733	P901 layer 5	bone	2170 ± 70	220 bc	cp 7
3743	P891 layer 7	bone	2120 ± 70	170 bc	cp 7
3899	P885 layer 2	bone	1900 ± 60	ad 50	cp 7
3901	P1115 layers 4, 6	bone	2040 ± 70	90 bc	cp 7
4206	tr 10 layer 20, ph 23	charcoal	2400 ± 70	450 bc	gate
4207	tr 11 layer 30, ph 20	charcoal	2650 ± 70	700 bc	gate
4208	tr 11 layer 28, ph 16	charcoal	2380 ± 70	430 bc	gate
4243	ph 3627	charcoal	2250 ± 70	300 bc	cp 6
4244	ph 3629	charcoal	2120 ± 80	170 bc	cp 6
4278	ph 3628	charcoal	2470 ± 90	520 bc	cp 6
4279	ph 3624	charcoal	2280 ± 70	330 bc	cp 6
4325	P554 layer 9	charcoal	2270 ± 90	320 bc	cp 5
4326	P183 layers 2, 9	charcoal	sample too small for standard process		
4327	P35 layer 2	charcoal	2120 ± 70	170 bc	cp 4
4328	P19	charcoal	2330 ± 90	380 bc	cp 5
4329	P932	charcoal	2140 ± 80	190 bc	cp 5
4330	P969	charcoal	2580 ± 80	630 bc	cp 4
4331	P51 layer 3	charcoal	2340 ± 100	390 bc	cp 4
4337	layer 393	bone	2150 ± 70	200 bc	cp 7
4339	layer 478	bone	2380 ± 90	430 bc	cp 6
4343	layer 511	bone	2520 ± 80	570 bc	cp 6
4366	P589	bone	2300 ± 100	350 bc	cp 7
4372	layer 357	bone	2300 ± 90	350 bc	cp 4
4464	P1131 layer 4	charcoal	2300 ± 70	350 bc	cp 1-3
4465	P1135	charcoal	sample too small for standard process		
4466	layer 568	charcoal	2220 ± 90	270 bc	cp 6
4467	P1040 layer 3	charcoal	sample too small for standard process		
4368	Ph 3113	charcoal	2330 ± 70	380 bc	cp 6
4469	layer 472	charcoal	sample too small for standard process		
4470	layer 497	charcoal	2180 ± 90	230 bc	cp 4-5

* dates regarded as unacceptable

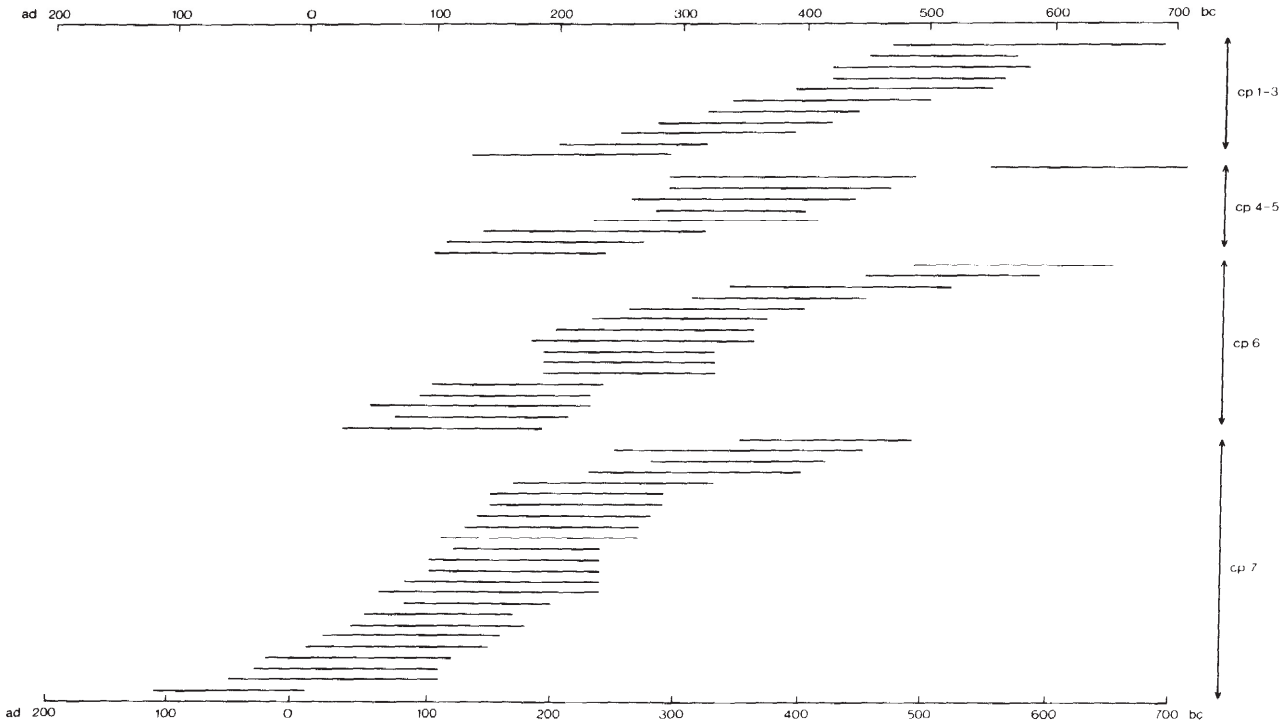


Fig 5.1 Visual presentation of radiocarbon dates

Table 17 Measurements for same contexts

HAR-1426	P858	1760 ± 80 (ad 190)	mean bp 1855 ± 55 (ad 95)
HAR-1801		1930 ± 70 (ad 20)	
HAR-2032	P906	2370 ± 80 (420 bc)	mean bp 2416 ± 55 (460 bc)
HAR-2085		2440 ± 70 (490 bc)	

Table 18 Measurements for different materials from same context

HAR reference		*material*		*difference*
HAR-2033	P875	charcoal	2460 ± 60 (510 bc)	- 190 ± 90
HAR-3726		bone	2270 ± 70 (320 bc)	
HAR-2034	P901	charcoal	2200 ± 80 (250 bc)	- 30 ± 105
HAR-3733		bone	2170 ± 70 220 bc)	
HAR-2028	P891	charcoal	1980 ± 80 (30 bc)	140 ± 105
HAR-3743		bone	2120 ± 70 (170 bc)	
HAR-2035	P885	charcoal	2260 ± 80 (310 bc)	- 360 ± 100
HAR-3899		bone	1900 ± (ad 50)	
HAR-3027	P1115	charcoal	2130 ± 60 (180 bc)	- 90 ± 90
HAR-3901		bone	2040 ± 70 90 bc)	
HAR-2573	layer 393	charcoal	2060 ± 70 (110 bc)	90 ± 100
HAR-4337		bone	2150 ± 70 (200 bc)	
HAR-3021	layer 478	charcoal	2210 ± 70 (260 bc)	170 ± 120
HAR-4339		bone	2380 ± 90 (430 bc)	
HAR-3022	layer 511	charcoal	2210 ± 70 (260 bc)	310 ± 105
HAR-4343		bone	2520 ± 80 (570 bc)	
HAR-2030	layer 357	charcoal	2290 ± 60 (340 bc)	10 ± 115
HAR-4372		bone	2300 ± 90 (350 bc)	
HAR-968	P589	grain	2140 ± 80 (190 bc)	160 ± 130
HAR-4366		bone	2300 ± 100 (350 bc)	
HAR-2972	P1078	charcoal	2170 ± 70 (220 bc)	180 ± 100
HAR-2974		grain	1990 ± 70 (40 bc)	
HAR-2975	P1089	charcoal	2370 ± 70 (420 bc)	250 ± 100
HAR-2969		grain	2120 ± 70 (170 bc)	

Table 19 Standardized differences between paired measurements on charcoal and bone

Difference in standard normal deviates	*Number of pairs*
3.0	1
2.5-3.0	0
2.0-2.5	1
1.5-2.0	0
1.0-1.5	0
0.5-1.0	1
0-0.5	1
-0-0.5	1
-0.5-1.0	1
-1.0-1.5	2
-1.5-2.0	0
-2.0-2.5	0
-2.5-3.0	1
-3.0	0

suggestive of bias, with gram giving a lower measurement than bone or charcoal. However, this is based on only three comparisons, and more work is needed to assess the significance of this possible bias. The evidence does not permit an assessment as to whether the gram or bone/charcoal measurements are the more reliable.

5.3 Measurements of samples from the stratified sequence

In all, 19 samples suitable for radiocarbon dating were obtained from the stratified sequence excavated in 1977-8. These are presented in Table 20 in order of the phases discussed above (pp 172-3).

The exact stratigraphical position of layer 497 is ambiguous; it may well belong to phase h.

The four postholes in phase k are of some interest since all four can be shown to belong to a single structure (PSI) and are thus archaeologically contemporary. The wide date range, and the early bias which the dates as a group suggest (earlier by a century than the stratigraphic position would imply), is best explained by supposing that the timbers of which the structure was built may have been derived from an earlier building.

All four dates from phase 1 are consistent with their mean, which is 133 ± 32 years bc. Those from phase k are inconsistent, since their standardized range of 4.1 is greater than the 95% confidence limit of 3.63 (Pearson & Hartley 1954). The two dates from phase i are consistent, but the five from phase h have a standardized range of 4.1, greater than the 95% confidence limit of 3.86 *(ibid).* The culprit appears to be HAR-4343, which has already been identified as an outlier in the paired comparisons (p 190). Removing this value leaves a consistent set with a mean of 280 years bc ± 38. The difference of 270 years between the two dates for phases a-e, compared with its standard deviation of 120 years, suggests, but not strongly, that the dates may be from different phases.

Table 21 shows a summary of these dates. The internally inconsistent dates for the four contemporary postholes in phase k are also inconsistent with their stratigraphic position. In the further analyses they have been replaced by an interpolated date of 2085 ± 35 (135 bc).

Table 21 Mean dates and standard deviations for phases a-e to I, after elimination of outliers

phase	*mean date*		*sd*
	(bp)	*(bc)*	
a-e	2450	500	80
h	2224	274	35
i	2087	137	45
k	2256	306	37
l	2083	133	32

5.4 The dating of the ceramic phases

Elsewhere in this report (Vol 2, pp 233-44) the stylistic development of the Danebury pottery has been discussed and the ceramic sequence divided into nine ceramic phases. In an attempt to test the validity of the scheme and to attach absolute dates to it we have assembled 60 radiocarbon dates, which considerations of reliability (pp 190-3) reduce to 54; 9 each in cp l-3 and cp 4-5,12 in cp 6, and 24 in cp 7. The imbalance in the numbers of samples reflects the availability of dated material. The dates for each ceramic phase assemblage are presented diagrammatically on Fig 5.1 based on Table 16 before statistical cleaning.

Because of the amount of overlap between the dates from each phase, a statistical test was carried out (the *k* sample generalization of the Wilcoxon-Mann-Whitney test; see Kendall & Stuart 1973, 522-4) which showed that the distribution of the dates in each phase differed

Table 20 Measurements from the stratified sequence of 1977/8

phase l	layer 522	HAR-2970	charcoal	2060 ± 60 (110 bc)
	layer 393	HAR-2573	charcoal	2060 ± 70 (110 bc)
		HAR-4337	bone	2150 ± 70 (200 bc)
	F40	HAR-2568	charcoal	2090 ± 60 (1470 bc)
phase k	ph 362 4	HAR-4279	charcoal	2280 ± 70 (330 bc)
	ph 3627	HAR-4243	charcoal	2250 ± 70 (300 bc)
	ph 3629	HAR-4244	charcoal	2120 ± 80 (170 bc)
	ph 3628	HAR-4278	charcoal	2470 ± 90 (520 bc)
phase j	no dates availabl e			
phase i	P1115	HAR-3027	charcoal	2130 ± 60 (180 bc)
		HAR-3901	bone	2040 ± 70 (90 bc)
phase h	layer 511	HAR-3022	charcoal	2210 ± 70 (260 bc)
		HAR-4343	bone	2520 ± 80 (570 bc)
	layer 478	HAR-3021	charcoal	2210 ± 70 (260 bc)
		HAR-4339	bone	2380 ± 90 (430 bc)
	layer 568	HAR-4466	charcoal	2220 ± 90 (270 bc)
phase f	quarry hollow create d			
phases a-e	P1131	HAR-3026	charcoal	2450 ± 80 (500 bc)
	layer 497	HAR-4470	charcoal	2180 ± 90 (230 bc)

Table 22 Expected proportion of observed dates lying outside the time date range of a phase, for various values of the ratio of range to standard deviation of errors

	range/sd	expected percentage of dates outside range
calculated values	1	60
	2	40
	3	25
extrapolated values	4	20
	6	12½
	8	10

Table 23 Maximum likelihood estimates of the opening and closing dates of each ceramic phase (in years bc, rounded to nearest ten years), for all (54) dates and with one outlier (HAR-4330) removed from cp 4-S

	ceramic phase	date range (bc)
all dates	cp 1-3	470-370
	cp 4-5	370-295
	cp 6	295-220
	cp 7	220-80
outlier removed	cp 1-3	440-350
	cp 4-5	350-300

significantly from those in the other phases, and that the postulated order of the ceramic phases was correct. It therefore made sense to try to find 'frontier' dates between the phases. A detailed account of the work can be found elsewhere (Orton forthcoming); here we summarize the method and present and discuss the results.

A technique based on maximum likelihood estimation (mle; see Kendall & Stuart 1973, 37-77) was devised to estimate (i) the opening and closing date of each phase, independently of the other phases, (ii) the overall opening and closing dates, treating the whole site as one 'phase', and (iii) frontier dates between phases, on the assumption that they did not overlap in date. The results of (ii) and (iii) were to be used to provide consistent dates for all the phases, which could be checked against the results of(i) to test the validity of the ceramic phases (using likelihood-ratio tests). Difficulties were met in estimating (i), because the technique did not always find the 'best' result, and it was necessary to make several attempts and compare the results. Even then, the best result achieved was not necessarily the best possible.

Initial work suggested that one date (HAR-4330, cp 4-5, 630 bc) was out of line with the rest, so parallel analyses were carried out with and without this date.

It was thought desirable to use a second method of estimation to provide an independent check on the results of the mle method. Theoretical calculations were therefore carried out to ascertain the proportion of observed dates that could be expected to lie outside the true date range of a phase, assuming the true dates to be distributed uniformly within the phase. They showed that this proportion depends only on the ratio of the range of the phase (ie its length in years) to the standard deviation of the dates: approximate results are given in Table 22. High proportions, well over 50% in some cases, can thus be expected when the date range is short in relation to the standard deviation. This table can be used to make empirical estimates of the opening and closing dates of a phase (or group of phases), by choosing dates in such a way that about half the proportion shown lies outside each end of the range. Such dates will be called poor (Proportion Outside Of Range) estimates. This method cannot be used in isolation, since under certain circumstances it does not have a unique solution and a range of equally good solutions may be possible. A combination of mle and poor estimation seemed to give the most reliable results.

The results of straightforward application of mle are given in Table 23; poor estimation gives similar results except that the closing date for cp 7 could be anything from 110 to 50 bc. The assumption of a uniform distribution of dates throughout all phases does not however hold, since there is about one observed date every ten years in cp 7, compared to every twenty years in cp 1-3, casting some doubt on the overall opening and closing dates. It is better to use the dates from cp l-3 to estimate the overall opening date and those from cp 7 to estimate the closing date. The outcome, taking both methods into account, is given in Table 24, while Table 25 shows which dates fall within their respective ranges. There is a very good fit between the observed and expected numbers of dates which lie outside their respective ranges (Table 24), but a likelihood-ratio test applied to the date ranges gives unacceptably high values of x23 = 10.6 (or 8.6 if the outlier is excluded). This apparent discrepancy can be explained by noting that although the number of dates lying outside their range is as expected, they tend to lie further outside the range than one would expect (best seen in Table 25). An archaeological explanation can be offered. The long tails of late dates for cp l-3 pits and for cp 4 pits might be explained by supposing that the samples include a few later pits containing only residual earlier ceramic material. This effect is likely to be more severe in the earlier periods because the absence of distinctive later pottery will cause pits to be dated earlier than they were dug. The opposite effect, a tailback of early dates from demonstrably later contexts, is only to be expected in the later ceramic phases in which old timbers were probably being reused on an extensive scale.

The range of dates for cp 6 is particularly interesting since they fall into two distinct groups, the later of which lies within the range of cp 7. This is understandable because,

Table 24 Poor estimates of opening and closing dates of overall sequence, with ml estimates of 'frontiers'; also showing expected and observed proportions of dates lying outside each date range (the effect of removing the outlier is shown in brackets)

ceramic phase	date range (bc)	range	'typical' sd	range/sd	number of dates	no outside of range observed	no outside of range expected
cp 1-3	520-360	160	75	2.1	9	4	3.4
cp 4-5	360-290	70	80	0.9	9 (8)	6 (5)	5.7 (5.)
cp 6	290-210	80	75	1.1	12	7	7.1
cp 7	210-80	130	70	1.9	24	10.5	10.3
total	—	—	—	—	54 (53)	27.5 (26.5)	26.5 (25.8)

Table 25 Numbers of dates falling in 20-year spans, showing proposed frontiers between phases and numbers of dates falling within the date range of each phase

years bc	*cp 1–3*	*cp 4–5*	*cp 6*	*cp 7*	*all*
639–620		(1)			(1)
–600					
–580	1				1
–560					
–540					
–520					
–500	2				2
–480					
–460	2				2
–440					
–420			1	1	2
–400					
–380	1	2	1		4
–360					
–340		2	1	2	5
–320	1	1			2
–300				1	1
–280			1		1
–260	1		4		5
–240				1	1
–220		1		2	3
–200	1			2	3
–180		1		2	3
–160		1	1	3	5
–140			2	2	4
–120				1	1
–100			1	2	3
– 80				2	2
– 60					
– 40				2	2
– 20				1	1
Total	9	9 (8)	12	24	54 (53)

although cp 6 can be shown to exist on stratigraphic grounds and to be earlier than cp 7, the pottery assemblage of cp 7 differs from that of cp 6 only in that it includes decorated vessels. Thus if an assemblage of cp 7 date was without decorated types it would be classified as cp 6. Some overlap of the two ceramic phases might therefore be expected. Repeating the mle technique (see above) but allowing cp 6 and cp 7 to overlap gave an increase in overall likelihood at the cost of one extra parameter. The lr test gave χ^2 not significant, suggesting that from a purely statistical point of view there is no need to suppose that the later group of dates in cp 6 really belongs to cp 7, although archaeologically this may be likely.

5.5 Calibration and absolute chronology

The section above demonstrates a reasonable fit between the radiocarbon dates and the ceramic phases, without any calibration or other adjustment. Nevertheless, much of the published work suggests that there is at least one

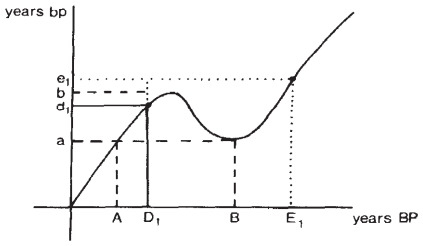


Fig 5.2 Hypothetical calibration curve

'inversion' in the calibration curve in the date range we are considering (eg Suess 1970; Ralph *et al* 1973; Clark 1975; McKerrell 1975). By 'inversion' we mean a folding back of the calibration curve on itself (see Fig 5.2) so that one radiocarbon date corresponds (generally) to three calendar dates. Two questions arise: (i) would the use of one of the published calibration curves improve the fit between the observed dates and the ceramic phases, and (ii) do our data give independent support to the idea of one or more inversions in their range (say 520-50 bc)?

Use of the figures given by Clark (1975, 264-5, table 8) makes virtually no difference to the fit between our dates and the ceramic phases. Use of the curves given by Suess (1970) and Ralph *et al* (1973, fig 2) did give a noticeable improvement, provided that favourable assumptions were made whenever a radiocarbon date corresponded to more than one calendar date and a choice between the calendar dates had to be made. Ralph's curve had first to be transformed because it is based on the 5730 year half-life while the other authors (including ourselves) worked with the 5568 year half-life. It is doubtful whether the improvement of fit justifies the extra parameters introduced by the use of a calibration curve, especially in view of the arbitrary choices that have to be made to secure even a modest improvement. The reason for this ineffectiveness of the calibration curve may be that the statistical errors inherent in the observed dates move them away from the curve, and in regions where the curve is complex this effect can greatly confuse the picture. A hypothetical example is shown in Fig 5.2. It was not possible to use the most recent calibration table (Klein *et al* 1982), because it is intended for the calibration of 'single' dates (ibid, 104), not sequences.

There are two ways of detecting an inversion from our data: (i) by detecting 'bunching' in the observed dates (suggested by Ottaway & Ottaway 1975), and (ii) by taking advantage of the partial ordering of the dates imposed by the ceramic phases.

The bunching effect is illustrated in Fig 5.2; it can be measured as an increase in the density of dates within a

Table 26 Increase in density of observed dates relative to calendar dates within or overlapping the range 520-80 bc (after Suess 1970; Ralph *et al* 1973; Clark 1975)

	radiocarbons		*calendar dates*			
	dates bc	*range*	*dates BC*	*range*	*ratio of ranges*	*factor (k) of increase in density*
Clark	250-210	40	370-215	155	3·9	2·9
	530-510	20	730-615	115	5·8	4·8
Suess	100-20	80	140-AD50	190	2·4	1·4
	270-200	70	400-180	220	3·1	2·1
	530-420	110	790-500	290	2·6	1·6
Ralph *et al*	240-165	75	390-200	190	2·5	1·5
	505-445	60	730-500	230	3·8	2·8

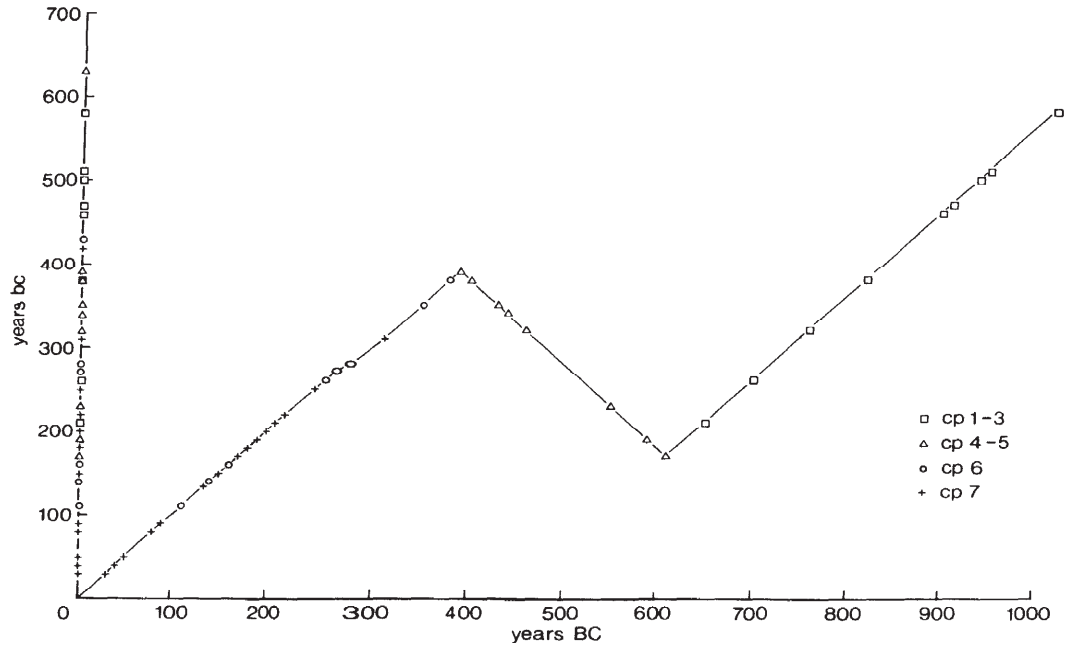


Fig 5.3 Ad hoc *calibration curve*

certain range, since a long range of calendar years corresponds to a short range of radiocarbon years. The increases in density implied by the relevant segments of the calibration curves of Suess (1970), Ralph *et al* (1973), and Clark (1975) are given in Table 26. The extra density varies from about 1 to 5 times the underlying density, and typically is a factor of 2. As a model for investigation, we therefore assume that a uniform distribution of calendar dates transforms under calibration to a uniform distribution plus a 'hump' of uniform distribution, of density *k,* over the range of the inversion. This hump will to some extent be smoothed out by the normal statistical errors. The abilities of two standard techniques-the Kolmogorov-Smirnov test, used by Ottaway and Ottaway (1975, 31) to detect possible inversions, and the chi-squared test, which could be used to verify an inversion suggested by other evidence-to detect such 'smoothed humps' were investigated theoretically, over a wide range of parameters (number and range of dates, range of inversion, typical standard deviation). For a density factor *of k* = 2 and a sd of 80 years, an absolute minimum of 100 dates was needed to verify an inversion at the 95% confidence level, and 150 dates at the 99% level. At least 250 dates would seem to be needed to verify inversions over a range of parameters. For detection, a minimum of 300 dates (95% confidence level) or 400 dates (99% confidence level) seem to be needed. Since we have only 54 usable dates, we cannot expect to be able to detect an inversion by the bunching method, and indeed the data as displayed in Table 24 show no evidence of bunching. If the sd were halved to 40 years, a minimum of 50 dates would be needed for verification, or 100 over a range of parameters. For detection, the minima became 150 and 250 respectively.

The information from the ceramic phases is potentially more useful-possibly too useful, since it is always possible to separate out three phases by a carefully chosen inversion, four or five phases by two inversions, and so on. The opportunity to over-fit the data by constructing *ad hoc*

Table 27 Dates for beginning and end of each ceramic phase

	dates bc (i)	*Sues (ii)*	*dates BC Ralph (iii)*	*Clark (iv)*	ad hoc *(v)*
cp 1-3	520-360	550-440	740-430	635-430	600-430
cp 4-5	360-290	440-400	430-410	430-395	430-230
cp 6	290-210	400-360 or 320 or 185	410-380 or 310 or 240	395-215	230-190
cp 7	210-80	360-130 or 320 or 80 or 185 or 50	380-105 or 310 or 240	215-80	190-90

(i) 'best' uncalibrated dates
(ii) dates calibrated by Suess' curve
(iii) dates calibrated by Ralph's curve
(iv) dates calibrated by Clark's curve
(v) dates calibrated by *ad hoc* curve (see Fig 5.3)

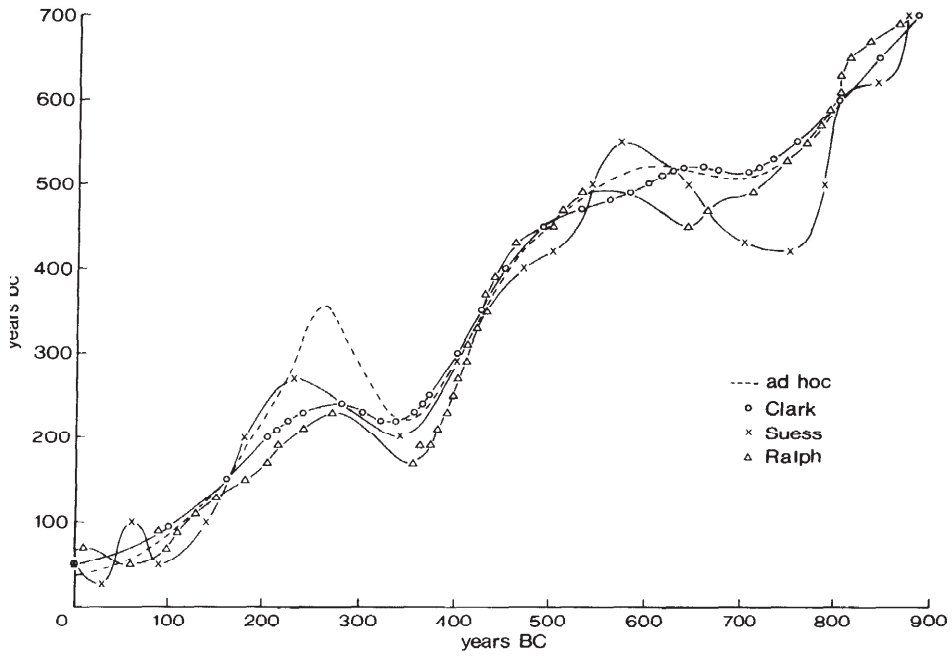


Fig 5.4 Calibration curves compared

calibrations is therefore enormous. Also, since we have used the dates as a check on the validity of the proposed ceramic sequence, there is a danger of circularity in now using the ceramic phases to adjust the dating.

What follows should therefore be regarded as an exploratory foray into an area beset with pifalls, and not as a definitive solution.

Fig 5.3 shows a calibration curve designed to separate the dates in cp 4-5 from those in cp l-3 on the one hand and those in cp 6 and cp 7 on the other. This curve is constructed by Postulating a 'maximum' in the calibration curve at 390 bc (the earliest date in cp 4-5 except for the outlier at 630 bc) and a 'minimum' at 170 bc (the latest date in cp 4-5). The dates from cp 6 and cp 7 are then assigned to the first up-slope, those from cp 4-5 to the down-slope, and those from cp l-3 to the second up-slope. This assignment, which produces total separation of the ceramic phases (except of cp 6 from cp 7), is quite arbitrary and is imposed on the data simply to make them tit. Since we have seen above (pp 193-4) that a certain proportion of the dates must be expected to lie outside the range of their phase, the model we have constructed here is 'too good to be true'— the fit is so good that it is statistically incredible. Use of the poor method (p 194) leads to revised estimates of the maximum at 360 bc and the minimum at 220 bc. Lr tests show no significant improvement in fit.

This approach estimates the y-coordinates of turning points of a possible inversion (ie their radiocarbon dates), but says nothing about their x-coordinates (ie calendar dates), and to proceed further we need to compose our hypothetical curve with the appropriate parts of published curves (we use Suess 1970; Ralph *et al* 1973; Clark 1975). All three curves have an inversion within or overlapping the range of our hypothetical one (Suess *c* 270-200 bc, Ralph c 240-165 bc, and Clark 240-220 bc, compared with our 360-220 bc). The maximum occurs at c 230 BC (Suess) or c 280 BC (Ralph, Clark) and the minimum at c 340 BC (Suess), c 350 BC (Ralph), or c 320 BC (Clark), while our overall starting date of 520 bc falls within a second inversion, the latest corresponding dates being c 540 BC (Suess), c 735 BC (Ralph), and c 635 BC (Clark). Fitting our curve as closely as possible to these points leads to the result shown in Fig 5.4, with the Suess, Ralph, and Clark curves for comparison. The calibrated dates for the beginning and end of each phase are shown in Table 27.

Some points can be fixed with reasonable precision, for example the opening and closing dates of cp 4-5, where all three curves are in agreement. Other points are more difficult; the opening date of cp l-3 lies on a 'flat spot' of the calibration curve, and small differences in the curve or in the radiocarbon date can make a large difference in the calendar date. Most difficult of all is the introduction of decorated types that marks the transition from cp 6 to cp 7, as this falls in a large inversion, and three widely separated dates are possible. Smaller inversions also cause problems at the end of the sequence. Very roughly, the calibrated dates for the ceramic phases can be assessed to be:

cp l-3 550-450 B C
cp 4-5 450-400 BC
cp 6 400-300 BC
cp 7 300-100/50 BC

5.6 Summary and conclusions

Despite the degree of overlap between the dates from the different ceramic phases, it is possible to disentangle them using a technique based on maximum likelihood estimation. It is more difficult to estimate overall opening and closing dates, but a combination of mle and a new technique, poor estimation, gives reasonable results. The amount of overlapping between the phases, which at first sight appears excessive, can be theoretically predicted as a function of the ratio of range to standard deviation. Since

the range of a phase is beyond our control, the overlap can only be reduced by reducing the standard deviations of the dates; very roughly, halving the sd would halve the overlap. The proportions of observed dates that lie outside their time range (Table 22) have serious implications for sites with relatively few dates from each phase.

It is not clear whether it is better to carry out these calculations on uncalibrated dates and to calibrate the results, or to calibrate each date first and then perform the calculations. Where the calibration curve is reasonably straight, the difference will be negligible, but where it has inversions both approaches run into difficulty. An inversion will disrupt the assumption of a uniform distribution of radiocarbon dates (on the a priori more reasonable assumption of a uniform distribution of calendar dates) and so undermine the theoretical basis of the statistical methods used. The robustness of the techniques under such disturbances is yet to be examined. On the other hand, calibrating first presents us with a choice of (generally) three calendar dates for each of a subset of the radiocarbon dates-a choice which at best is purely arbitrary. Also, calibration at this stage can introduce the possibility of serious errors due to 'near misses' of turning points in the calibration curve (see Fig 5.2). On balance, we have preferred to carry out the calculations on uncalibrated dates.

The dates from Danebury shed little light on the nature of the calibration curve in the range that they cover. Although there is almost certainly a major and well-defined inversion in this range, they do not demonstrate a need for it; indeed, use of three published curves with inversions (Suess 1970; Ralph *et al* 1973; Clark 1975) fits the data no better than no calibration at all, bearing in mind the extra parameters involved. This may well be due to the blurring effect of the statistical errors, which are of the same order of magnitude as the detailed 'wiggles' of the curves. There is a slight suggestion that Suess's curve may be overfitted and that Clark's may be too smooth; Ralph's appears to be marginally the best for these data. Although it is possible to construct an *ad hoc* curve which will fit the dates very well, both the arbitrariness of the assumptions behind it and the discrepancies between it and the published curves cast considerable doubt on its validity.

This work suggests that even a precise and agreed calibration curve would not overcome all the problems of interpretation encountered here. It seems to be equally important to reduce the standard deviation of the errors attaching to the dates by a factor of perhaps two or three, in order to reduce the blurring of the pattern that seems to be taking place. We hope that a new programme with this in mind will be instituted in the near future.

The calibrated best-fit dates suggested above (p 197) are archaeologically acceptable. The only slight surprise is the shortness of cp 4-5 and the length of cp 6 and 7. But in support of the short duration of cp 4-5 we would draw attention to the significantly fewer pits in that phase and the corresponding paucity of other archaeological debris. If however the 'frontier' with cp 6 was advanced to 350 BC (and cp 6/cp 7 to say 250 SC) the quantity of cp 4-5 occupation data could still be accommodated and the later phases would not have to be so extended. Another alternative is that there was a gap in occupation in the first part of the 4th century BC. The possibility is interesting and will be considered in more detail later (Vo1 2, p 549 Meanwhile, for the purpose of discussion elsewhere in this report, we propose to use the best-fi t approximations in the knowledge that they provide the most objective absolute chronology it is at present possible to obtain.

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