SALVAGE EXCAVATION AT CHASE HIGH SCHOOL, MALVERN

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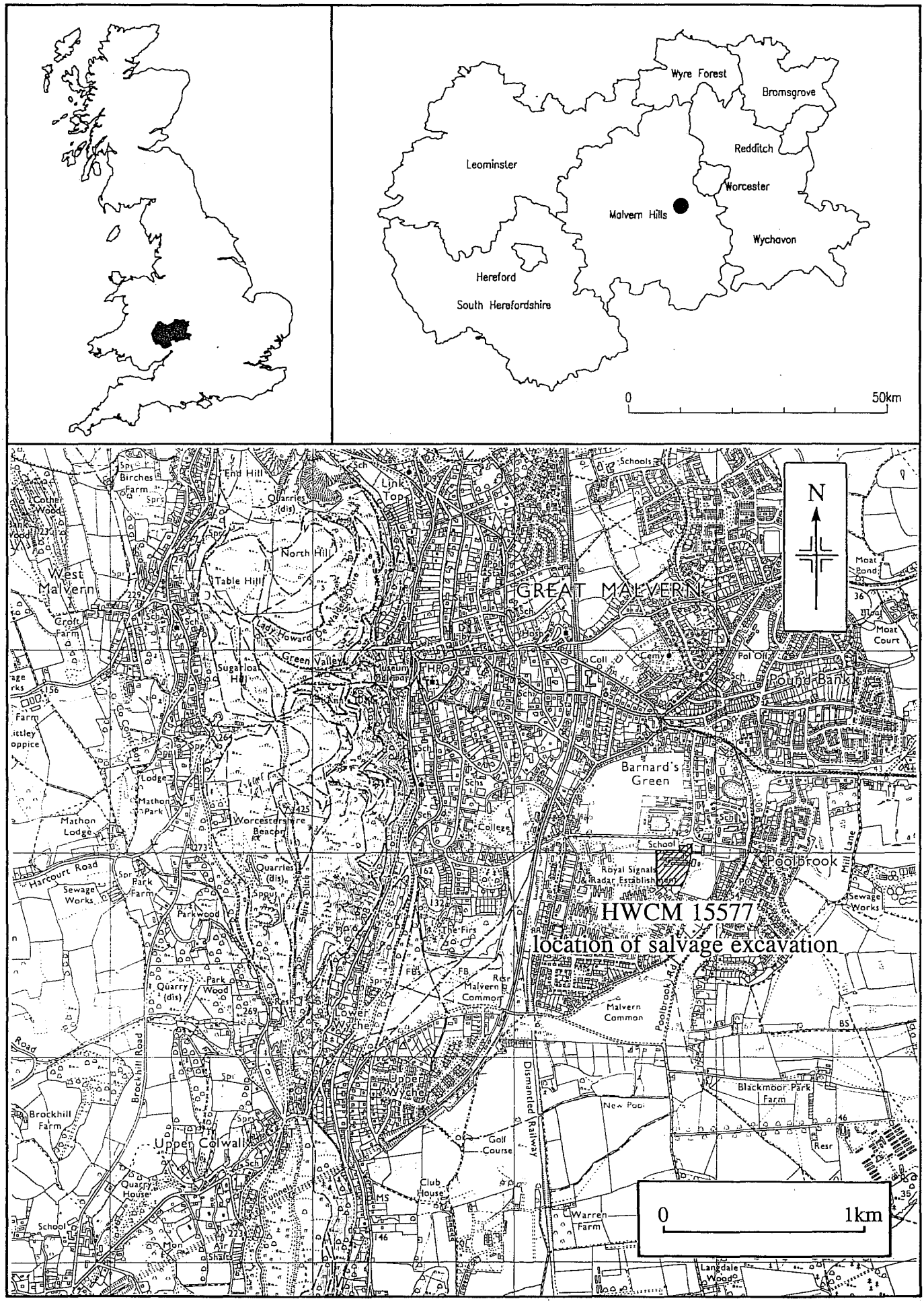
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Redditch
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GREAT MALVERN
West Malvern
Barnard's Green
Poolbrook
Upper Colwall
Lower Wyche
Upper Wyche
Malvern Common
Table Hill
North Hill
Sugarloaf Hill
Worcestershire Beacon
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End Hill
Pound Bank
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Brockhill Farm
Warren Farm
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Salvage Excavation at Chase High School, Malvern

Luke Fagan

1 Summary

Archaeological salvage excavation was undertaken at Chase High School, Malvern, in advance of building development. During previous construction works, the contractors reported the presence of many sherds of pottery, and this led to the area being registered with the County Sites and Monuments Record as a possible Romano-British kiln site associated with the nationally important Malvernian pottery industry.

The excavation revealed Romano-British deposits relating to a settlements associated with metalworking. These deposits were well preserved and included occupation layers, a crude yard surface, a substantial boundary ditch and a pit containing evidence of metalworking activity. The survival of pottery was good, and a potentially significant assemblage was recovered. This assemblage represented domestic debris as well as mould fragments, provisionally identified as copper alloy working debris. Significant environmental evidence was recovered, notably an assemblage of edible fruit stones and parasite eggs representing human waste that provides the first direct dietary evidence for the Roman period from the county.

The excavated deposits were of considerable significance to our understanding of Romano-British rural settlement associated with industrial activity and it's relation to the nationally important Malvernian pottery industry, especially in terms of its local economy and organisation.

2 Introduction

Archaeological salvage excavation was undertaken at Chase High School, Malvern, in advance of building development. The work was undertaken on behalf of the Property Department of Hereford and Worcester County Council. The site is registered on the County Sites and Monuments Record as a site of archaeological interest (HWCM 15577) . The site was however of unknown archaeological significance. During previous construction work, the contractors reported the presence of many sherds of pottery. This led to the school being recorded as a possible Romano-British kiln site associated with the nationally important Malvernian pottery industry (Waters 1976, 66).

The excavated area is located at NGR SO 7880 4510 (Fig 1) and is currently school grounds. The area will be developed for an additional classroom.

The solid geology of the area consists of Mercian Mudstone (Keuper Marl) overlain by drift deposits of the Brockhurst 1 association (Ragg *et al* 1984, 116-8), seasonally waterlogged reddish fine loamy over clayey soils.

The excavated area lies within a locale containing the Malvernian prehistoric, Roman and medieval ceramic industries which supplied pottery and tile throughout the Midlands, and beyond. These industries are of great archaeological significance due to their longevity and large scale. This was first noted over 20 years ago (Peacock 1968), and yet these industries have received very little research attention. The importance of major regional production sites, such as those of the Malvernian industries, has recently been highlighted, "clearly priority should be given to those kilns whose products are known to have firstly, a provincial and secondly, a regional distribution" (Fulford and

Huddleston 1991, 52)

The site was within an area of pottery production in the Roman period and a number of sites dated to that period are listed on the County Sites and Monuments Record (HWCM 1315, HWCM 1510, HWCM 4072, HWCM 4073, HWCM 4585, HWCM 6004, HWCM 7061, HWCM 9317 and HWCM 11392). Two of these (HWCM 4073 and HWCM 7061) are surface scatters of pottery including over-fired pottery and wasters. The remainder have been subject to salvage recording of disturbed buried remains or limited excavation. Excavation has been undertaken on only three sites (HWCM 1315, Waters 1976; HWCM 4072, Dalwood 1992a; HWCM 4535, Waters 1969). No kilns were located but excavated features contained very large quantities of locally produced pottery, charcoal, burnt clay and some wasters. Kilns were reported at one site (HWCM 6004) but these were excavated in 1887 and although the finds have been kept and recorded (Peacock 1968, 18-20) no record of the excavation survives. At the remaining three, salvage recording and observation noted large quantities of pottery and possible kilns at two sites (HWCM 1510 and HWCM 9317) and a dump of wasters at the third (HWCM 11392; Waters 1970). Dating of the pottery from these sites and others in the Midlands indicates that large-scale production in the Malvern area in the Roman period dated from the 1st through to the 4th century AD.

Thus the information available indicates a large-scale, long lived, significant, but probably scattered, pottery industry. Little is known of the production sites and their associated settlements or of the social and economic organisation of them at any given period. Although the pottery, fabrics and forms produced are widely recognised and recorded, little is known of the organization of associated settlements, their occupants or their way of life.

As a whole, the industry, its products and associated settlements have considerable national importance. This importance is increased by the presence within the same part of the Midlands of two other major industries in the Roman period, the iron industry in Worcester and Ariconium and the salt industry of Droitwich. Together these three industries must have had considerable significance within the regional and national economies.

3 Aims

The aims of the salvage excavation were twofold. The primary aim was to excavate and record any archaeological deposits that faced destruction during the development programme. Secondly, the excavation aimed to determine the extent, state of preservation, date, type, vulnerability, documentation, quality of setting and amenity value of the archaeological deposits. The purpose of this was to establish their significance, since this would assist in determining the significance of surviving deposits in the vicinity of the excavated area.

4 Method

The project was undertaken in two phases; firstly, an evaluation, intended to determine if archaeological deposits were present. In this stage, four 3m long trenches were excavated by hand (Fig 2). When it became clear that archaeological deposits were present, Trenches 2 and 3 were extended using a mechanical excavator (Fig 3). In addition, Trenches 5, 6 and 7 were excavated in order to assess the extent of archaeological deposits. Topsoil and subsoil were removed down to the interface with archaeological deposits. Selected deposits were then excavated by hand according to standard County Archaeological Service recording practice (County Archaeological Service Recording System, 1988 as amended).

5 Analysis

Four phases were identified.

Phase 1 Natural deposits

The natural geology of this area is Mercian

Mudstone (Keuper Marl). This was observed beneath archaeological deposits, notably to the south. To the north there was additionally a very compact layer of gravel in a reddish clay matrix, with occasional lenses of bluish grey clay (104, 230, 403 and 501). This layer contained no evidence to suggest that it was not naturally formed.

Phase 2 Roman deposits

Roman deposits were encountered in Trenches 2, 3 and 7. The earliest deposits in Trench 3 consisted of small intercutting features lying towards the south-west of the trench (Fig 4).

The earliest of these features was an irregular linear cut aligned north-west to south-east (331). It was *c* 0.88m wide and contained two silty clay fills (329 and 330) both of which were similar to, and possibly derived from, the natural Mercian Mudstone.

Cutting the north-eastern edge of this feature was another irregular subrectangular pit with a flat base (328). Its homogeneous gravelly fill (327) contained pottery dating from the 1st to 4th century.

A thin (*c* 0.13m) layer of friable green grey silty clay (326) sealed the western edge of this pit. This layer was fairly homogeneous, with occasional charcoal flecks and pebbles. It contained several fragments of pottery dating from the 1st to 4th centuries. A poorly defined area of similar homogeneous soil (310 and 325) lay over the western edge of this layer, and pottery recovered from this deposit was also from the 1st to 4th centuries.

In Trench 2 the earliest deposit was a slightly silty clay (229) flecked with charcoal and small lenses of Mercian Mudstone, lying in a shallow depression (231, Fig 4). It contained no artefactual evidence, and it is unclear whether this represents a deliberately cut feature or is merely a hollow in the underlying natural deposits.

To the east of this was a layer of stones set in a silty clay matrix (215, Fig 4). This layer was fairly flat and level, and thickened slightly to the south and west, filling hollows in the underlying natural deposits. It appeared to be a roughly consolidated and levelled dump of rubble, possibly representing a crude yard surface. A substantial volume of pottery was recovered from its surface.

In Trenches 2 and 3 these early deposits were sealed by a layer of grey brown clay (212, 228 and 334) containing occasional charcoal flecks and pebbles, as well as pottery dating from the 1st to 4th centuries.

A small linear feature (227) was cut into this layer to the west of Trench 2 (Fig 4). Its silty clay fill contained a great deal of charcoal and burnt material. Sealing this feature was a thin spread of grey green silty clay (219 and 223). This spread was limited to a small area of Trench 2, and contained no artefactual evidence.

Cutting this layer was a shallow, irregular pit (210, Fig 4). Its earliest fill consisted of grey clay (221), which contained no artefactual evidence. Overlying this fill were a mixture of deposits. To the north was a sandy clay deposit (222), which was largely composed of Mercian Mudstone. To the south lay a compact silty deposit, containing small lenses of burnt clay and a great deal of charcoal (206 and 217). Artefactual evidence in this fill included fragments of ceramic mould, provisionally identified as copper alloy working mould (Fig 8). The concentration of burnt material in this fill suggests that this burning may have occurred *in situ*, although this cannot be confirmed. Lying over these two fills, and partly pushed into them were a collection of stones (216), some of which had traces of burning upon them. This burning had no consistent pattern to it, again suggesting that this burning had not occurred within the confines of the cut (210). The uppermost fill of this cut was a moderately compact grey brown clay (204, 209 and 211). This also contained many charcoal flecks, as well as pottery dating from the 1st to the 4th centuries, and is interpreted as a deliberate backfill of the feature.

A small (*c* 0.50m by 0.25m) sub-oval pit (208) was located to the west of these structures (Fig 4). Filled with a slightly pebbly silty clay (207), it contained pottery of the 1st to 4th centuries. The function of this feature could not be determined.

To the south-west was a substantial ditch (319 and 702), aligned north-west to south-east (Figs 4, 6 and 9). This ditch ran the entire length of Trench 3, and was also recorded in Trench 7. It was approximately 4.00m wide and 1.6m deep. At its base was a waterlogged fill (317) containing frequent fragments of organic material as well as a large piece of preserved oak timber. Environmental analysis of a whole earth sample taken from this ditch yielded a variety of ecofactual evidence. An assemblage of edible seeds represents human waste deposited in the ditch (Appendix 4). This sample also contained eggs of human intestinal parasites (Appendix 5). This fill was partially sealed by a slump of Mercian Mudstone (316). The remaining fills (306, 307, 312, 313, 314, 315, 318 and 338) are interpreted as arising from silting of the ditch as it fell out of use. A large quantity of pottery was recovered from the uppermost fills (307, 312, 313 and 314), suggesting that deliberate dumping also contributed to the formation of the upper fills. This pottery was dated to the 3rd to 4th century, and so these represent some of the latest Roman deposits excavated.

At the southern limit of Trench 3, the base of the ditch dropped abruptly into a sub-circular sump. For reasons of health and safety, this could not be fully excavated. However, in a subsequent visit to the site during the development, it was noted that this sump extends below the depth of the soil stripping.

To the west of the ditch was a layer of reddish brown slightly silty clay (304), mottled throughout with tiny lenses of Mercian Mudstone and containing 3rd to 4th century pottery (Fig 6). This layer was *c* 0.10m thick, and extended from the western edge of the ditch beyond the limits of excavation. This layer was present only to the west of the ditch, and sealed the clay layers (310/325 and 326).

Cutting this layer and the upper fills of the ditch was a shallow (*c* 0.14m deep) linear feature (335, Figs 3 and 6). This feature was on the same alignment as the ditch, and contained many large fragments of Malvernian igneous rock (303), pottery of the 1st to 4th centuries, and a single fragment of ceramic mould.

Phase 3 Post-Roman deposits

All the Roman deposits were sealed by a clearly defined layer (103, 203, 302, 322, 402 and 504). This layer was a grey brown slightly gritty silty clay, occasionally flecked with charcoal and containing small fragments of local acid igneous rock. It varied in thickness between 0.10m and 0.30m and contained small, abraded sherds of Romano-British pottery. It is interpreted as a post-Roman ploughsoil.

Phase 4 Post-medieval deposits

The main deposit of this period was the modern topsoil (100, 201, 300, 400 and 500), which contained frequent fragments of modern flowerpot, clinker, ash and charcoal. It contained a very few very small and abraded sherds of Romano-British pottery and was generally *c* 0.15m in depth. In places, this soil was observed to be sealing a post-medieval subsoil (202, 301 and 401), which was very similar to the topsoil, although slightly paler. This is interpreted as a buried topsoil.

Sealed beneath the topsoil were two ceramic land drains (212 and 234/332) and a modern sewer pipe trench (232). These were all aligned north-west to south-east.

Two parallel slots aligned north to south and packed with angular Malvernian stone fragments were also sealed by the topsoil; one in Trench 2 (224) and the other in Trench 3 (309). The fill (308) of the latter contained no artefactual evidence. However, the fill (218) of the Trench 2 slot contained fragments of brick and tile, dating it to the 17th or 18th century. A quantity of burnt

blue lias and fuel ash slag also originated from this feature.

6 Discussion

Phase 1 Natural deposits

Natural deposits were of two types. Firstly, Mercian Mudstone (Keuper Marl). To the north of the excavated area this was overlain by a very compact layer comprising gravel set in a clay matrix, interpreted as a layer of colluvium derived from the Malvern Hills to the west of the site.

Phase 2 Roman deposits

Roman deposits related to settlement and metalworking were excavated.

Lying at the south-west corner of Trench 3 were three intercutting features (320, 328 and 331). The function of these features is unclear, although an irregular linear cut (331) may represent a drainage feature. The pottery found in the fills of these features (311, 327 and 329) dates from the 1st to the 4th centuries.

Sealing these features were the remains of buried Roman soil horizons or turflines (325 and 326). These were cut to the west by a substantial ditch (319 and 702) aligned north-west to south-east. Due to its size, this is interpreted as a boundary ditch, although it probably also acted as a drainage channel. The earliest fill (317) of this ditch contained much waterlogged environmental material, including a significant assemblage of waterlogged edible seeds, including raspberry, apple and sloe seeds. Associated with these seeds were a quantity of human intestinal parasite eggs. This assemblage represents human waste deposited into the ditch, although further analysis is required to ascertain whether this is representative of large scale sewage disposal or merely an isolated deposit. This ecofactual material provides the first direct evidence of Roman diet and hygiene found to date in the county (Appendix 4).

At the southern limit of Trench 3 the base of the ditch fell away abruptly, forming a sinkhole or sump. The function of this sump is unclear, although it is possible that it may also be associated with sewage disposal. The upper fills of the ditch contained many large fragments of pottery, dating from the 3rd to 4th century. The size of these sherds of pottery suggests that the ditch was in part deliberately backfilled, probably with domestic debris. This may indicate that the settlement had shrunk or was abandoned by the end of the Roman period.

To the west of the ditch, and sealing the Roman ground surfaces (325 and 326) was a layer (304) containing pottery dating from the 3rd to 4th century. The presence of frequent lenses of Mercian Mudstone within this layer suggests that it is derived from natural deposits cast up during the construction of the ditch, possibly forming a bank, although there is no firm archaeological evidence for this. If this interpretation is correct, then this construction of the ditch would appear to post-date the metalworking activity to the east. The lack of metalworking finds, and the pottery within the fills of the ditch corroborate this interpretation.

A linear feature (335) containing many large fragments of Malvernian stone (303) lay on the same alignment as the ditch. It is interpreted as consolidation for a fence or palisade, and it notable that this feature reiterated the boundary marked by the ditch.

The earliest deposit in Trench 2 was a shallow pit (231). There was no artefactual evidence associated with this feature, but it is considered to be a Roman deposit since no evidence for any pre-Roman activity was encountered during the excavation.

East of this feature was a layer (215) that is interpreted as a crude surface. A substantial volume of pottery recovered from its surface suggested that it fell out of use at some time between the middle of the 1st century and the end of the 2nd century.

Sealing these deposit was a layer (212 and 228) that was also identified in Trench 3

(334) where it was cut by the ditch (319). This layer was not observed to the west of the ditch, and may represent occupation debris.

A small linear feature (227) cutting into this layer may be associated with metalworking, since its fill (226) contained a great deal of charcoal and burnt clay material. Analysis of whole earth samples taken from this pit may help to clarify this.

This feature was sealed by a thin spread of silty clay, which appeared very similar to the buried turflines in Trench 3. It may represent a deliberately dumped layer, possibly of turf, intended to raise or consolidate the ground surface.

Cutting through this spread and truncating the linear feature (227) beneath it was an irregular feature (210) containing charcoal and burnt clay as well as mould, and possibly crucible fragments. This material is clearly associated with metalworking, and may have been burnt *in situ*, although it cannot be definitively identified as a furnace. Although dating evidence from this pit is limited, a date of the mid 1st to 2nd century is suggested (Appendix 2).

Industrial features of this type are usually located on the periphery of settlement sites, and so, although structural evidence for buildings were not encountered during excavation, there may well be such evidence in the vicinity.

Phase 3 Post-Roman deposits

Sealing all the Roman deposits was a ubiquitous deposit (103, 203, 302, 401 and 504). The homogeneous nature of this layer characterises it as a ploughsoil, an interpretation that is bolstered by the presence of ridge and furrow earthworks in the adjacent field to the north (HWCM 16504).

It is also notable that the ploughsoil contained only a very few fragments of Roman pottery and no medieval pottery whatsoever. This deposit seals features dated to the 3rd to 4th centuries, and so must post-date them. This implies that the ploughsoil is of a date somewhere between the 4th and 19th centuries. It is unlikely to be of a later date than the 12th century, however. By this time, a resurgence of use of ceramic vessels was underway after a period of reliance upon wooden and leather vessels.

The area of the site was a part of Malvern Chase throughout the medieval period, and may have remained so until the 17th century. No medieval settlement remains have been discovered in this area, and if it had been under agricultural use during the medieval period, then the practice of manure spreading would have introduced pottery fragments into the ploughsoil. The absence of such pottery suggests that this deposit dates from the 4th to the 12th centuries.

This deposit is significant since it masks the presence of the Roman deposits and artefacts on this site, and may well mask other similar evidence in the vicinity.

It was noted during excavation that the inclusions within this deposit varied depending upon the underlying deposits, so that, for example, above the possible metalworking structure (210), there were frequent charcoal flecks within the ploughsoil. This variation is assumed to arise from the disturbance that the post-Roman agricultural regime caused to earlier deposits.

Phase 4 Post-medieval deposits

The main deposit of this period was the modern topsoil (100, 201, 300, 400 and 500). It is notable that this modern topsoil contained very few Romano-British pottery fragments. This is probably because modern disturbance was not deep enough to penetrate the sealing layer of post-Roman ploughsoil. It did, however, contain frequent fragments of modern ceramic flowerpot, attesting to the areas former usage as the High School Agricultural Science plot. In places this topsoil sealed a very similar subsoil, interpreted as a buried topsoil. This may represent an earlier topsoil sealed by deposits dumped during landscaping work associated

with the construction of the school buildings to the east of the excavated area.

Other post-medieval deposits were associated with drainage. Two parallel slots aligned north to south and packed with angular stone fragments are interpreted as crude land drains. Artefactual evidence from the easternmost of these slots dates them to the 17th or 18th century. A quantity of burnt blue lias and fuel ash slag was also found in this drain, probably indicating small-scale manufacture of lime for building purposes.

7 Assessment of significance

Deposits relating to Romano-British settlement and metalworking were located within the development area. Although these deposits have been destroyed, there is a high potential that similar deposits survive in the immediate vicinity. During the development, the boundary ditch partly excavated during the project was observed to continue to both the north-west and the south-east; that is, into the playing field to the south, the Royal Signals Research Establishment to the west, and the field directly to the north (HWCM 16504). Since the majority of the deposits recorded during the salvage excavations lay to the east of this ditch, it may be assumed that similar significant deposits lie within the extents of this boundary.

In order to assess the significance of both the excavated deposits and those likely to survive in the vicinity, it is useful to use the *Secretary of State's criteria for scheduling ancient monuments* (Appendix 6).

Rarity

Sites associated with metalworking activity are unusual in the late prehistoric and Roman periods. The products of industrial production sites such as this can be used to trace the patterns of trade of the finished product, as well as the sources of raw materials, their processing and the technology utilised in their production. The Chase High School site is particularly rare in that the metalworking evidence may well be *in situ*, providing a rare opportunity to study the technology and manufacturing practises utilised during the early Roman period.

The environmental evidence recovered represents the first direct dietary evidence for the Roman period from the county, and is highly significant to the study of Roman diet and hygiene.

Documentation

The excavated site (HWCM 15577) is documented in this report.

Other sites in the area associated with the Roman Malvernian pottery industry are also documented (HWCM 1315; Waters 1976; HWCM 4072; Jackson 1991 and Dalwood 1992a; HWCM 4585; Waters 1969 and HWCM 11392; Waters 1970). Additionally the pottery produced has been widely reported in excavation reports since the industry was first recognised by Peacock in the 1960's (Peacock 1968).

Group Value

The group value of the site is high. It represents the remains of Roman rural settlement associated with metalworking, probably copper alloy. Although no other evidence for industrial copper alloy production has been excavated in the area, the association of this industrial production with the nationally important Malvernian pottery industry increases its importance. The Malvernian industry produced pottery dated to the prehistoric, Roman and medieval periods, and these products are found on sites throughout the Midlands and as far afield as Scotland (Webster 1977).

Known sites in the Malvern area dating to the Roman period include this site (HWCM 15577), three possible kiln sites (HWCM 1510, HWCM 6004 and HWCM 9317), a waster dump (HWCM 11392), and three occupation sites (HWCM 1315, HWCM 4072 and HWCM 4585) with assemblages of pottery and dumps of charcoal suggesting nearby kilns. Finds scatters at two sites (HWCM 4073 and HWCM 7061) are of an

indeterminate nature. This pottery industry is of considerable national importance due to its scale and longevity. However, to date little is known of the production sites or any associated settlement sites. The significance of such sites has been highlighted by the Society for the Promotion of Roman Studies (1985, 8-9), who identify as an area of general priority, sites "associated with the manufacture and distribution of ceramics, such as pottery, tile and brick". They also state that "it is desirable to strip adjacent areas (to kilns) to find potters' houses, workshops etc and gain a better understanding of the industry as a whole." In addition, sites associated with "the extraction and manufacture of metals" (1985, 9) are identified as an area of general priority, and rural settlements "associated with industrial activities" (1985, 12) as an area of high absolute priority.

The importance of this site and the pottery production sites in the Malvern area is also increased by their relationship with the iron industry in Worcester and Ariconium and with the salt industry in Droitwich. As a group these three industries and the sites related to them form a regional industrial framework which is of national importance to our understanding of the economy during the Roman period.

Survival/Condition

The salvage excavation suggests that any similar deposits within the vicinity of the development area will survive in a good condition.

The building of the school and the recent development have destroyed a large area of potentially significant deposits, and the significance of remaining deposits is consequently increased.

The area has suffered some post-Roman ploughing, and the presence of ridge and furrow earthworks in the field directly to the north of the excavated area (HWCM 16504) suggest that any Roman deposits in this field will survive in good condition. Although there are no similar earthworks extant on the land to the south and west of the development area, these areas nevertheless appear not to have undergone any major post-medieval disturbance.

The survival of pottery was good, and a significant assemblage was recovered. Measurement of the soil pH showed that the soil is generally neutral, although this may be in part due to liming of the site during its use as the School Agricultural Science plot.

Environmental and ecofactual evidence survived well, and a highly significant assemblage representing human waste was recovered. This assemblage represents the first evidence of human diet and hygiene in the Roman period found in the county to date.

Fragility/Vulnerability

The deposits revealed by the salvage excavation were preserved below 0.20 to 0.30m of post-Roman ploughsoil. Any surviving Roman deposits in the vicinity of the development area are likely to be sealed by a similar depth of ploughsoil. Thus, any activity which would involve wholesale stripping of the soil, levelling down of the area or causing disturbance below the depth of the ploughsoil would damage or destroy such deposits.

Potential

The excavated deposits show that any similar surviving deposits in the vicinity will have a high research potential.

The association of settlement remains with small-scale metalworking provides a rare opportunity to study the technology and working practises of early Roman metalworking. The other artefactual evidence will provide information regarding the type, date and nature of the settlement, its relations with the nationally important Malvernian pottery industry and its development, organization, economy, and trade links through time. Allied ecofactual evidence will provide information highlighting the way of life, diet and health of the settlement's

occupants.

In summary the importance of the excavated deposits, and also those deposits likely to survive within the immediate vicinity, lies in their relation to Romano-British rural settlement associated with metalworking, and the relationship of that settlement to other major Roman industries in the region. Such deposits have the potential to considerably further our knowledge of the economy and settlement pattern relating to these nationally important industries and as such have considerable significance.

8 Conclusions

The excavation revealed evidence of Roman settlement associated with metalworking, with deposits representing occupation layers, a crude yard surface, a substantial boundary ditch and a pit containing evidence of metalworking activity. The survival of these deposits was good, despite having undergone some truncation due to post-Roman ploughing.

The assemblage of Romano-British pottery recovered largely comprised locally produced domestic wares, especially Severn Valley ware, although wares from elsewhere in England and a small quantity of imported Samian ware from Roman Gaul were also present. Additionally, fragments of ceramic mould probably representing copper alloy working debris were excavated. The majority of these fragments were recovered from the fills of a feature that may represent the remains of a metalworking hearth. Evidence for late prehistoric and Roman metalworking are rare, and the combination of artefactual and structural evidence make the Chase High School site especially rare.

Environmental evidence was limited, apart from waterlogged deposits from within the boundary ditch. These contained a variety of plant remains including edible fruit stones and seeds from plants of the local environment which suggested that the soils were damp and nitrogen rich. Associated with these plant remains were the eggs of human intestinal parasites, and together with the fruit stones these represent human waste, although it not clear whether this results from a single deposit or from continued sewage disposal.

The pottery suggests that the settlement was occupied from the late 1st to the late 3rd century AD and was contemporary with that period of the Malvernian pottery industry. It is not possible, from existing knowledge, to ascertain the relationship of the settlement to that industry and other settlements associated with that industry. However, social and economic links between such settlements must have existed, and these relationships allow closer definition of individual industries as well as their part within a nationally significant regional industrial economy.

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12 Abbreviations

Numbers prefixed with 'HWCM' are the primary reference numbers used by the Hereford and Worcester County Sites and Monuments Record.

HWCC - Hereford and Worcester County Council

Appendix 1 The archive

The archive consists of:

97	Context records AS1
14	Fieldwork progress records AS2
9	Photographic records AS3
23	Sample records AS17
4	Matrix sheets AS7
44	Context finds sheets AS8
22	Scale drawings
3	Boxes of finds

All primary records and finds are kept at:

County Archaeological Service
Hereford and Worcester County Council
Tetbury Drive
Warndon
Worcester WR4 9LS

Tel Worcester (0905) 58608

A security copy of the archive has been placed at:

Hereford and Worcester County Museum
Hartlebury Castle
Hartlebury
Near Kidderminster
Worcestershire DY11 7XZ

Tel Hartlebury (0299) 250416

Appendix 2

Finds assessment, Derek Hurst MA AIFA, Finds Officer

1 Introduction

Archaeological salvage recording was carried out at Chase High School, Malvern, during December 1992 to January 1993. This work was undertaken on a site of known archaeological interest (HWCM 15577), where finds of Roman pottery had been reported during a previous phase of construction work.

A rapid assessment of the finds was undertaken.

2 Discussion of finds (for quantification see Appendix 3)

Pottery

Most of the pottery was of Roman date. It included a very high proportion of Severn Valley wares (about 90%), which is typical of Roman pottery assemblages in this region. This type of pottery is typically table ware, and kitchen wares (Webster 1976). A range of forms was represented, including jars, tankards, and bowls (Fig 7). Since the 1960s it has been known that Severn Valley wares were made locally, but the location of the kiln structures, except in the case of a tile kiln at Leigh Seinton (Waters 1963), has not yet been discovered.

Other types of pottery included Roman Malvernian cooking pot, and storage wares, which were also made locally (Peacock 1968).

There was very little non-local pottery. Even relatively common regional pottery such as black burnished ware (BB1) was rare, presumably because of competition from the local Malvernian wares. Another regional industry was represented by *mortaria* from Mancetter near Nuneaton. Imported wares were also rare, and only a small amount of Samian ware (high quality table wares) from Roman Gaul was present.

The Roman pottery assemblage was most likely domestic in character, as it contained a range of different types and forms which were functionally typical of this type of use. The date range was from the early Roman period, until the 3rd-4th century, but there was a predominance of earlier material.

It was notable that there was no medieval pottery, despite the proximity of ridge and furrow located adjacent the site. The post-medieval pottery was mainly 19th-20th century, except for a small amount of 17th-18th century material.

Other ceramic

There was a quantity of mould (Fig 8), and possible crucible, from a series of contexts (204, 205, 206, 209, 210, 211 and 305), most of which were parts of a hearth. This is provisionally identified as copper alloy working debris. The mould fragments were generally small, and had been used to produce a circular object by the 'lost wax' (*cire perdue*) method. No fragments of metal were identified, either separately, or coating the ceramics used in casting.

The mould/crucible were made in a clay fabric that differed markedly from the fabrics used for potting locally. These were technically highly specialised objects, as has been demonstrated at other sites (eg Beckford, see below).

The limited amount of associated dating evidence suggested that this activity was of early Roman date (mid 1st to 2nd century AD).

Metalworking evidence is rare for this period, and few sites associated with such remains are known in the county. A major site of Iron Age to Roman date at Beckford produced finds of this type (Hurst 1984). For instance the virtually complete mould of a 'horn cap' was recovered (Hurst and Wills 1987), which was produced using the same technique as was being used at Chase High School.

There were examples of ceramic objects from 3rd-4th century contexts (Fig 8). These included a flat ceramic plate, as identified at other sites (Hurst and Woodiwiss 1992, 64), though the function of these objects has not been determined.

Stone
A single flint scraper was the only worked stone. This scraper is a stray find, and the white cortex and dark translucent nature of the flint suggests that the raw material source is not local. This type of flint was imported into the region during the Mesolithic and Neolithic periods (Dalwood 1992b).

A quantity of burnt limestone mainly came from 17th-18th century deposits (218). It is likely that this derived from small-scale manufacture of lime for building purposes. Pieces of fuel ash slag and coal, possibly related to this, were also recovered from post-medieval contexts.

Metalwork
All the metalwork was from post-medieval contexts, except for an unidentifiable fragment from context 211.

Glass
All the glass was modern, except possibly for a lump of waste material. This, however, was from a contaminated Roman context (210).

Environmental
Only a small amount of bone was recovered, and all this was burnt suggesting that ground conditions were not favourable to bone preservation.

Other
There were pieces of fuel ash slag and coal from post-medieval contexts (see above).

Overview
The evidence points to early Roman settlement activity associated with small-scale metalworking. Most of the mould/crucible fragments were associated with quantities of charcoal, and areas of fire-scorched clay, within a shallow pit. The artefactual and structural evidence may be related, and so this feature is most likely to be the remains of a metalworking hearth (see structural report).

An association with industrial activity suggests that the site may be located on the edge of a settlement area. Some evidence for this may be a ditch (319) just to the west of the hearth structure (210) which could be part of an enclosure. The absence of metalworking finds, and the dating evidence for fills of this ditch (319), both suggest that this feature might post-date the metal working activity (210). Its upper fills contain the latest pottery from the site (3rd to 4th century). There is a decline in the quantity of ceramics in the later period, and so it is possible that the settlement was less prosperous or had shrunk by the end of the Roman period.

No evidence of Saxon or medieval activity was noted from the artefactual assemblage. The area of the site was part of Malvern Chase throughout the medieval period, until disafforestation in the 17th century. Following this change in status there are indications that a new period of industrial activity may have occurred on or near the site. This comprised the burning of blue lias limestone for the production, most likely, of mortar and plaster for building. This could signify the erection of a building in the vicinity in the 17th-18th century.

3 Brief analysis of potential significance

Though the results of the rapid assessment are necessarily provisional, it is clear that the this site has considerable potential archaeological significance. In particular the Roman deposits are of importance for the reasons discussed below.

Finds of artefacts associated with metalworking activity are unusual in the late prehistoric and Roman periods. As with other industrial production it is possible to trace patterns of trade and exchange using the evidence from such centres. Metallurgical analysis of the metals being used provides information about the sources and processing

of raw materials, and so indicate levels of technological expertise. The type of objects made in metal were highly selective, as they were generally objects of high value. Though ceramically the Chase site seems poorly endowed, the presence of metalworking may serve to indicate wealth was used for other purposes.

The Chase High School site is particularly significant because the metalworking debris was potentially *in situ* within a hearth being used for the casting of metal objects. There is, therefore, the rare opportunity to study the technology and working practises of early Roman metalworking, since both the artefactual and structural evidence have survived.

The identification of iron working at other sites recently (Jackson 1992) has served to demonstrate how widespread this was in the Roman period. Though working in copper alloy has been less well represented, it is possible that these two activities are not unrelated, and that many settlements in the county were characterised by industrial metalworking in the Roman period.

Appendix 3

Chase High School (HWCM 15577)

Quantification of the finds (hand retrieved finds only)

Pottery (sherd count)	
Roman	698
Post-medieval	100
Other ceramic	
Crucible/mould	29
Tile	22
Brick	24
Fired clay	1
Ceramic objects	3
Metalwork	
Iron	4
Stone	19
Flint	1
Glass	6
Bone	4
Fuel ash slag	3
Coal/charcoal	11

Appendix 4

Assessment of plant remains, Clare de Rouffignac, MA GIBiol AIFA, Environmental Archaeologist

1 Summary

Eight environmental samples were assessed for plant remains. The samples examined for the assessment were collected from pits, layers and a ditch. The samples from the pits and layers contained a few fragments of charcoal, and no charred seeds or chaff. The sample from the ditch fill was found to contain a variety of stones from edible fruits, and some plants of the local environment which suggested the soils were damp and nitrogen rich. The fruit stones represent human waste deposited in the ditch, but it is not known if this is an isolated deposit, or the ditch was used for sewage disposal. Further analysis would enable the full extent of the range and importance of the seeds to be determined.

2 Introduction

There have been no structured environmental sampling programmes on sites with evidence of Roman industry in the Malvern area. The excavations at Madresfield, (HWCM 4072) produced some charred cereal seeds and weed seeds, but there was no evidence for on-site crop processing taking place (de Rouffignac 1991a).

The site at Chase High School was seen as an opportunity to examine samples from a possible industrial site.

3 Aims

It was hoped that plant remains would be recovered in sufficient quantity to enable:

a) identification of charred cereal remains, particularly relating to fuel for the kilns;

b) identification of any other food plants;

c) identification of a possible function for the some of the archaeological features.

4 Method

Eight samples from pits, layers and a ditch were selected by the excavator for assessment. The samples were between two and five litres in size. The samples were sieved, floated and sorted by the author. The mesh size used was 500μm for the flots. The flots were scanned to recover seeds and other plant remains. The sorted plant remains were then examined under a low power EMT-1 light microscope to enable identification.

The seeds were identified as far as possible using the County Archaeological Service comparative collection, a seed identification manual (Berggren 1981) and an illustrated site report (Griffin 1988). Habitat descriptions were obtained from Clapham *et al* (1989).

5 Results

Sample 4; 209 possible hearth evidence

Only charcoal fragments were recovered; no seeds or chaff were identified.

Sample 7; 220 fill of pit 210

No charred seeds or chaff were recovered from the sample; the charred remains consisted of small charcoal fragments.

Sample 9; 312 upper fill of ditch

The charred remains consisted only of charcoal fragments; no seeds or chaff were recovered.

Sample 15; 317 lowest fill of ditch 319

The sample was waterlogged, and contained many fragments of twigs and stems, as well as a number of seeds. The species of seeds and the habitats of the plants noted from the samples are given in Table 1. No

quantifications are given for the seeds as the numbers were large, and this report represents an assessment rather than an analysis of the waterlogged material. The species represented included both seeds of edible plants, and seeds of plants of the local environment.

The edible fruits included *Pyrus/Malus* sp (apple/pear), *Rubus fruticosus* agg (bramble), *Rubus* cf *idaeus* (raspberry), *Fragaria vesca* (wild strawberry), and *Prunus spinosa* (sloe). The *P spinosa* seeds were identified by measurement and comparison with other measurements of *Prunus* spp and modern fruitstones. The measurements of the fruitstones from the sample, and comparisons with modern *P spinosa* seeds from Kempsey, Worcester, are given in Figure 9. The *P spinosa* seeds from the sample are seen to cluster at the lower end of the size range.

Seeds of *Sambucus nigra* (elder) were also noted, which could have come from fruit which was eaten, or possibly from plants growing around the ditch. *S nigra* thrives particularly well in soils where nitrate levels are high.

Another edible species was *Pisum* sp (pea); these seeds were identified by examination of the shape and size of the hilum scar. There were also tissue fragments, probably from various vegetables and fruits.

Other plants included *Thalictrum flavum* (common meadow rue), *Chenopodium album* (fat hen), *Eleocharis palustris* (spikerush), *Carex* spp (sedges) and *Ranunculus* spp (buttercups).

Sample 17; 325 possible buried turf line

The sample contained some modern roots, but no charred plant remains were recovered apart from three charcoal fragments.

Sample 18; 326 possible buried turf line

Charcoal fragments were noted in the sample, but no other charred remains were recovered.

Sample 19; 329 upper fill of linear feature 331

Modern roots were present, together with several modern seeds and two charcoal fragments.

Sample 20; 226 material from possible hearth

This sample was heavily contaminated with modern roots. The charred remains were limited to a few charcoal fragments, with no seeds or chaff noted.

6 Discussion

The charred plant remains recovered from the samples consisted only of charcoal. The amount of charcoal which was recovered was very small and this may indicate that the main industrial area is not situated in the area of the salvage recording trenches. No seeds or chaff were identified from any of the samples. The lack of charred seeds or chaff also suggests that the site was not used for crop processing or domestic activities. Chaff can be used for tinder as it burns very readily (Lisa Moffett pers comm), but there is no evidence for this from the samples collected from the industrial area.

The waterlogged plant remains from the lowest fill of the ditch (317) are, however, of great significance. The assemblage of edible seeds represents human waste deposited in the ditch. Whether this is an isolated deposit, or that the ditch was used for disposal of sewage on a larger scale is difficult to interpret, as the upper fills of the ditch were not waterlogged, and there was no preservation of seeds.

The seeds were all of edible fruits and vegetables which would have been growing in the vicinity of the site, including wild strawberry, bramble, elderberry and sloe. The size of the peas compared to modern seeds suggests that they were probably from cultivated plants.

The presence of the other species including

rushes and sedges suggests a damp, even periodically wet environment in and around the ditch. Seeds of the nitrophilous species *Chenopodium album* (fat hen) were also noted. This species grows well where there are high nitrogen levels; these would have resulted from the deposition of sewage in the ditch.

There are few other sites in the county from which Roman waterlogged plant remains have been recovered. A Roman well from the Bay's Meadow excavation in Droitwich produced waterlogged plant remains including many weed seeds (Greig 1991).

7 Assessment of significance

The evidence from the waterlogged seeds from the salvage recording at Chase High School represents the first direct dietary evidence for the Roman period from the county. Further examination of the material is required to enable quantification of the edible seeds, and to produce a full species list of the plants of the local environment. These local plants may also represent an opportunity for comparison with the assemblage from the well at Bay's Meadow.

8 Conclusions

The charred plant remains from the salvage recording trenches are of little significance, as no seeds or chaff have been identified. However, the trenches may not have been situated in the area of most intense activity, and charred chaff and seeds may be preserved elsewhere in the vicinity.

The waterlogged plant remains are of considerable significance as these represent the first direct evidence of human diet for the Roman period from the county.

Table 1: Plant remains recovered from fill of ditch (317)

Caprifoliceae
Sambucus nigra - elder - nitrophilous shrub of waste and disturbed ground

Chenopodiaceae
Chenopodium album - fat hen - nitrophilous weed of disturbed and cultivated ground

Cyperaceae
Carex spp - sedges - plants of damp and wet habitats

Juncaceae
Eleocharis palustris - common spikerush - wet habitats and on pond and stream banks

Leguminosae
Pisum sativum - pea - commonly cultivated vegetable

Ranunculaceae
Thalictrum flavum - common meadow rue - commonly found in damp fields and by streams
Ranunculus repens/acris/bulbosus - buttercup - common plant of damp and wet meadows

Rosaceae
Prunus spinosa - sloe - shrubby tree with edible fruit, commonly found in hedges and woods
Rubus idaeus - raspberry - wild plant found in hedges and scrub; now cultivated for its fruit
Rubus fruticosus agg - blackberry - plant of scrub and woodlands with edible fruit
Fragaria vesca - wild strawberry - commonly found in hedges and woodlands; edible fruit
Pyrus/Malus sp - pear/apple - shrubby trees with edible fruit; now cultivated with many varieties

Appendix 5

Assessment of the parasite remains, Clare de Rouffignac, MA GIBiol AIFA, Environmental Archaeologist

1 Summary

A single environmental sample was assessed for parasite remains. The sample examined for the assessment was collected from the basal ditch fill which contained waterlogged fruit stones. The fruit stones were thought to represent human waste deposited in the ditch, and the presence of parasite eggs of both Trichuris and Ascaris confirms this.

2 Introduction

There is much evidence for human intestinal parasites from archaeological excavations (Jones 1982). The evidence comes mainly from cesspits, drains and latrines, where quantification of parasite eggs can allow studies of past living conditions and standards of hygiene. Parasite infestations are still the most prevalent infections of man today, (Bundy 1986, 709), being found where conditions of poor sanitation and hygiene prevail.

Ascaris lumbricoides (round worm) and *Trichuris trichiura* (whip worm) are the two main species of intestinal worm which have been identified from archaeological sites in Britain (Jones 1986, 138). The adult worms of both species lay their eggs in the gut and these pass out of the host's body in the faeces. *Ascaris* has a complex larval life cycle after reingestion, whilst *Trichuris* returns directly to the intestine (Wilson 1979, 18–20).

Cities with evidence of parasite infestations in the medieval population include Southampton (Pike 1975), York (Hall *et al* 1983) and Winchester (Pike and Biddle 1966).

Considerable work has been carried out on samples from London which were found to contain parasite remains. Samples from sites in Southwark were found to have variable levels of parasite eggs of *Trichuris* and *Ascaris* (de Rouffignac 1985). More recent work has involved a survey of samples from Saxon deposits in London, revealing widespread infestations of parasitic worms (de Rouffignac 1991b). Further work on medieval parasite remains was carried out on samples from the Royal Mint excavations (de Rouffignac 1991c).

Somewhat less work has been carried out on samples from Roman deposits apart from scanning of material to determine the presence or absence of parasite remains. Some samples of Roman date were examined from the Copthall excavations, with low concentrations of parasite eggs present (des Moulins 1990, 103 and 111).

Not all Roman samples were found to contain low concentrations of eggs. A study into the effects of dessication on parasite eggs was undertaken on samples from a Roman well reused as a cesspit at the Monument/Fish Street excavations. The concentrations of parasite eggs of *Trichuris* and *Ascaris* were found to be over 30,000opg. The results of the study showed that drying of previously wet or waterlogged samples with high numbers of parasite eggs will lead to destruction of many eggs present. Drying of the soil leads to cracking of the eggs, thus encouraging bacterial breakdown of the normally tough outer casing of the eggs. There is a lack of intact eggs in samples where drying has occurred and in extremely dry conditions the eggs may disappear completely (de Rouffignac 1987).

A similar situation has been encountered in the south-western United States, where coprolite analysis has failed to produce any eggs particularly of *Trichuris* sp. This is has been suggested to have been due to the lack of three factors; high rainfall and humidity, dense shade and moisture-retaining soil (Horne 1985, 302).

3 Aims

It was hoped that examination of the sample (15) for parasite remains would:

a) allow quantification of eggs to give infestation levels;

b) enable determination of function of the ditch fill.

4 Method

A sub-sample of 2.0g was taken from a larger sample (15) from the excavation of the lowest ditch fill (317). As the possibility of the preservation of parasite was unexpected, the subsample was collected from fine material less than 500μm in size after the main sample had been sieved. As a result of this it is possible that the numbers of parasite eggs are reduced as some may have been washed away.

The sub-sample was disaggregated in 10.0ml of distilled water, and left to soak for two days. Aliquots of 0.125ml were placed on a microscope slide and protected with a coverslip. The slide was then examined under a high-power light microscope. Two slides were scanned from the sample for the purposes of assessment. The whole area of the coverslip was scanned at 100x magnification. When parasite eggs were visible, the magnification was increased to 400x to enable clear examination of each egg. The species, numbers and condition of the eggs were noted on the recording sheet modified by the author from that developed by the Environmental Archaeology Unit at the University of York.

The condition of the eggs were noted as follows (after Jones 1985):

Trichuris

a complete, with both polar plugs intact
b one polar plug intact
c no polar plugs present
d damaged with crumpling
e fragments

Ascaris

a complete and fertile
b complete and infertile
c damaged and fertile
d damaged and infertile
e fragments

The number of parasite eggs per gramme of soil (ova per gramme of soil – opg) was calculated for each sample.

The concentrations of eggs were divided arbitrarily into bands of very low (>300opg), low (300-500opg), moderate (500-1,000opg) and high (>1,000opg) egg counts. These were decided upon using data from previously examined samples from sites excavated in London and data accumulated by Jones (1985, 112).

5 Analysis and discussion

A total of 320opg of both *Trichuris* and *Ascaris* were noted from the sample. The *Ascaris* eggs were mainly complete, and the *Trichuris* eggs were in less good condition. The presence of low numbers of parasite eggs does indicate some infestation with intestinal worms, but whether this represents a low level of infestation or some dilution of the human waste is open to speculation.

This is the first instance in the county where parasite eggs have been recovered from Roman deposits. Unfortunately no further samples are available from the ditch fill to enable more studies of the material.

6 Assessment of significance

The parasite eggs are of significance as they represent the first find of such material in the county. The parasite eggs also complement the waterlogged seeds and add a new dimension to the study of Roman diet and hygiene.

7 Conclusions

The discovery of both *Ascaris* and *Trichuris* from the ditch fill is significant in that this

represents the first instance of Roman parasite eggs from the county. The quantity of eggs was not large, but together with the waterlogged fruitstones, indicates the certain presence of human waste in the ditch fill.

Appendix 6

Secretary of State's criteria for scheduling Ancient Monuments - Extract from *Archaeology and Planning* DoE Planning policy guidance 16, November 1990

The following criteria (which are not in any order of ranking), are used for assessing the national importance of an ancient monument and considering whether scheduling is appropriate. The criteria should not however be regarded as definitive; rather they are indicators which contribute to a wider judgement based on the individual circumstances of a case.

i *Period*: all types of monuments that characterise a category or period should be considered for preservation.

ii *Rarity*: there are some monument categories which in certain periods are so scarce that all surviving examples which still retain some archaeological potential should be preserved. In general, however, a selection must be made which portrays the typical and commonplace as well as the rare. This process should take account of all aspects of the distribution of a particular class of monument, both in a national and a regional context.

iii *Documentation*: the significance of a monument may be enhanced by the existence of records of previous investigation or, in the case of more recent monuments, by the supporting evidence of contemporary written records.

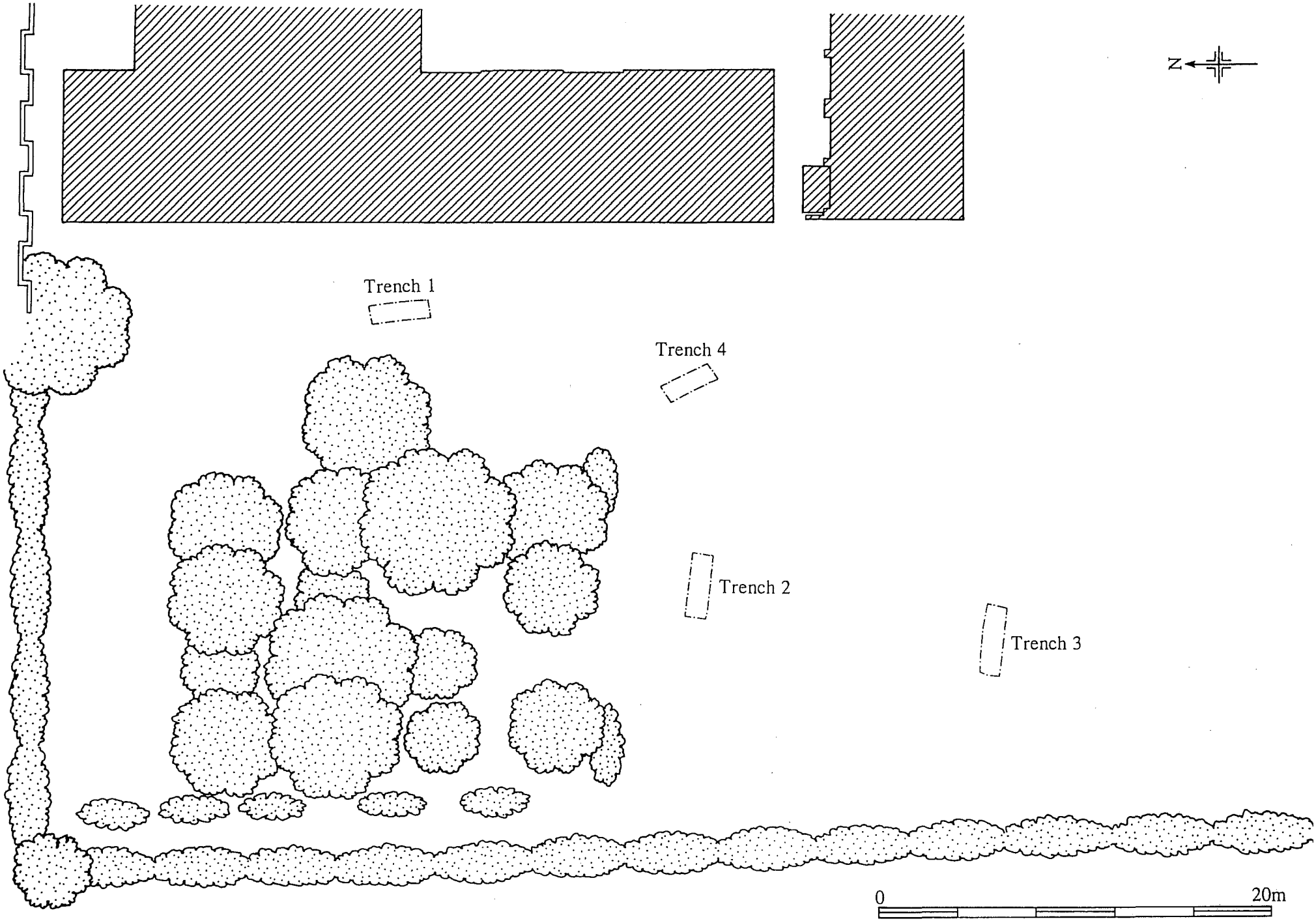
iv *Group value*: the value of a single monument (such as a field system) may be greatly enhanced by its association with related contemporary monuments (such as a settlement and cemetery) or with monuments of different periods. In some cases, it is preferable to protect the complete group of monuments, including associated and adjacent land, rather than to protect isolated monuments within the group.

v *Survival/Condition*: the survival of a monument's archaeological potential both above and below ground is a particularly important consideration and should be assessed in relation to its present condition and surviving features.

vi *Fragility/Vulnerability*: highly important archaeological evidence from some field monuments can be destroyed by a single ploughing or unsympathetic treatment; vulnerable monuments of this nature would particularly benefit from the statutory protection which scheduling confers. There are also existing standing structures of particular form or complexity whose value can again be severely reduced by neglect or careless treatment and which are similarly well suited by scheduled monument protection, even if these structures are already listed buildings.

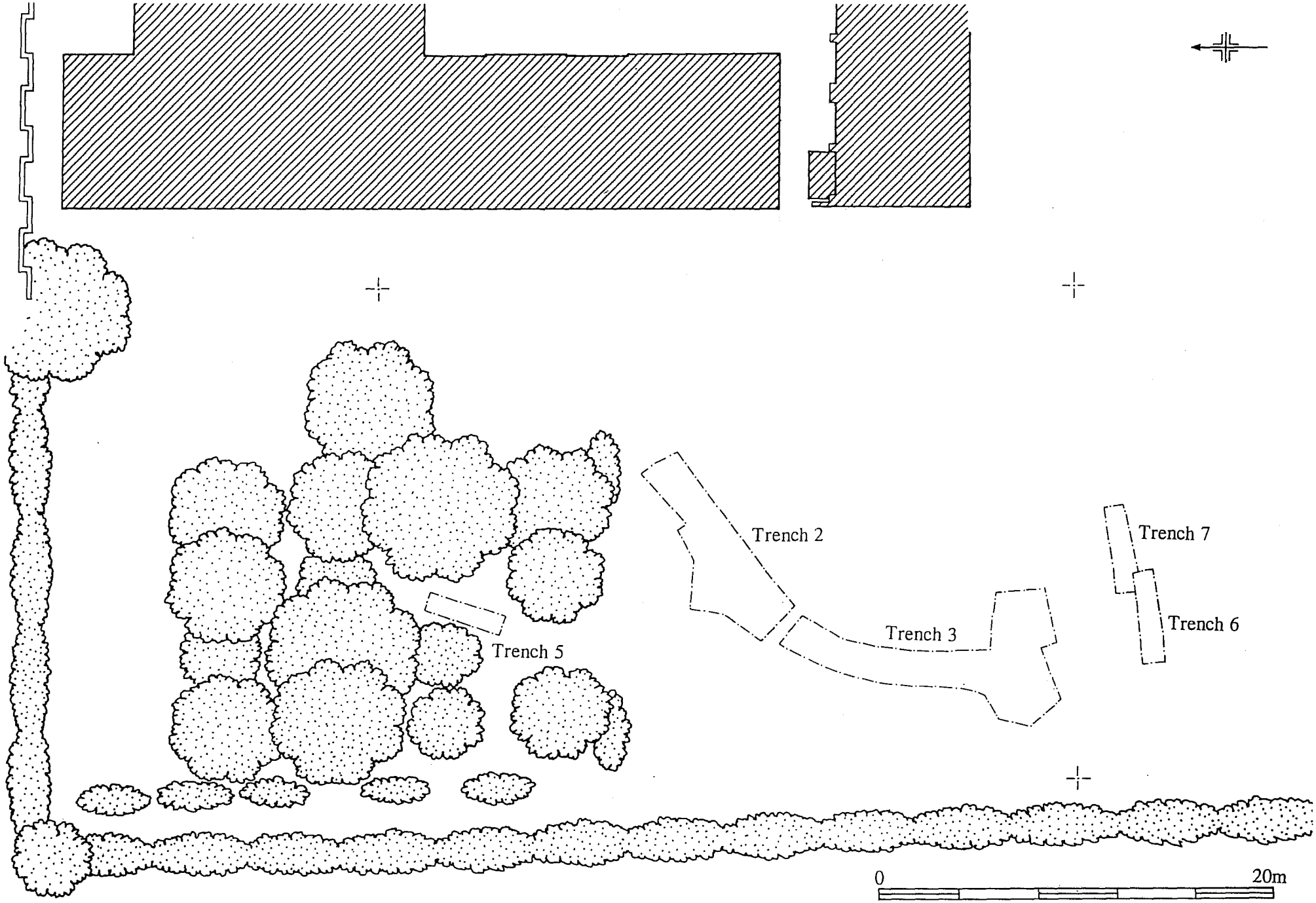
vii *Diversity*: some monuments may be selected for scheduling because they possess a combination of high quality features, others because of a single important attribute.

viii *Potential*: on occasion, the nature of the evidence cannot be specified precisely but it may still be possible to document reasons anticipating its existence and importance and so to demonstrate the justification for scheduling. This is usually confined to sites rather than upstanding monuments.



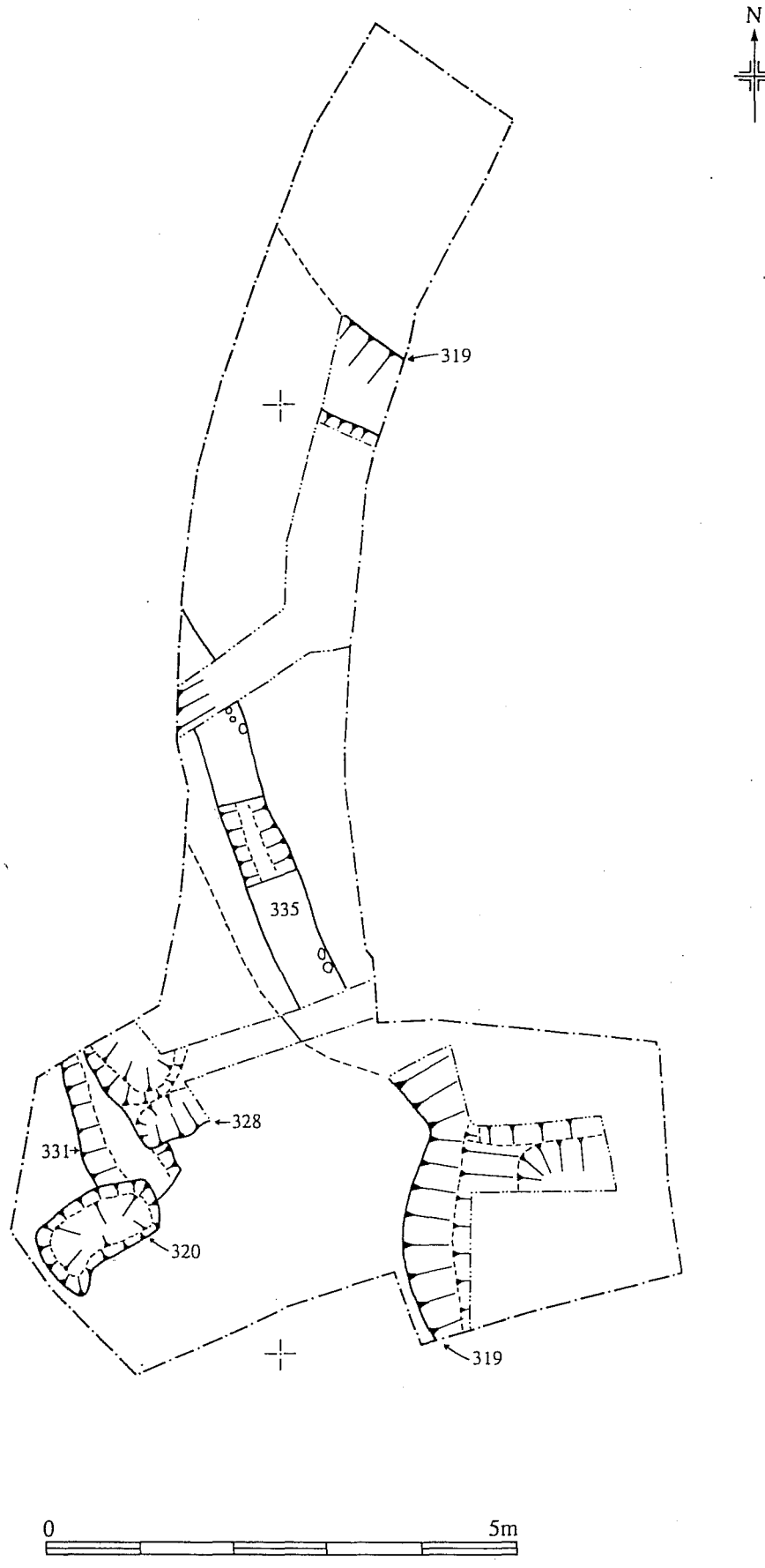
LOCATION OF EVALUATION TRENCHES

Fig 2

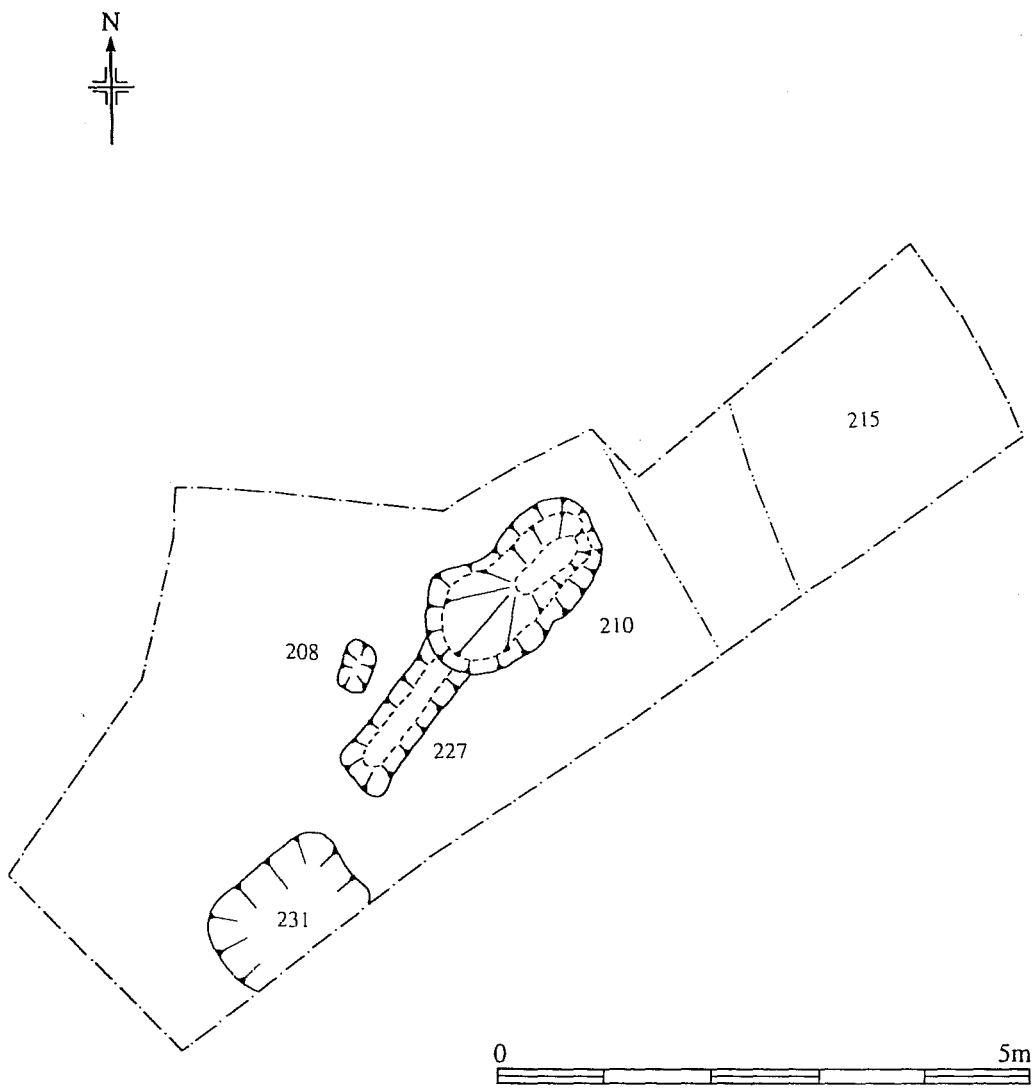


LOCATION OF EXCAVATED TRENCHES

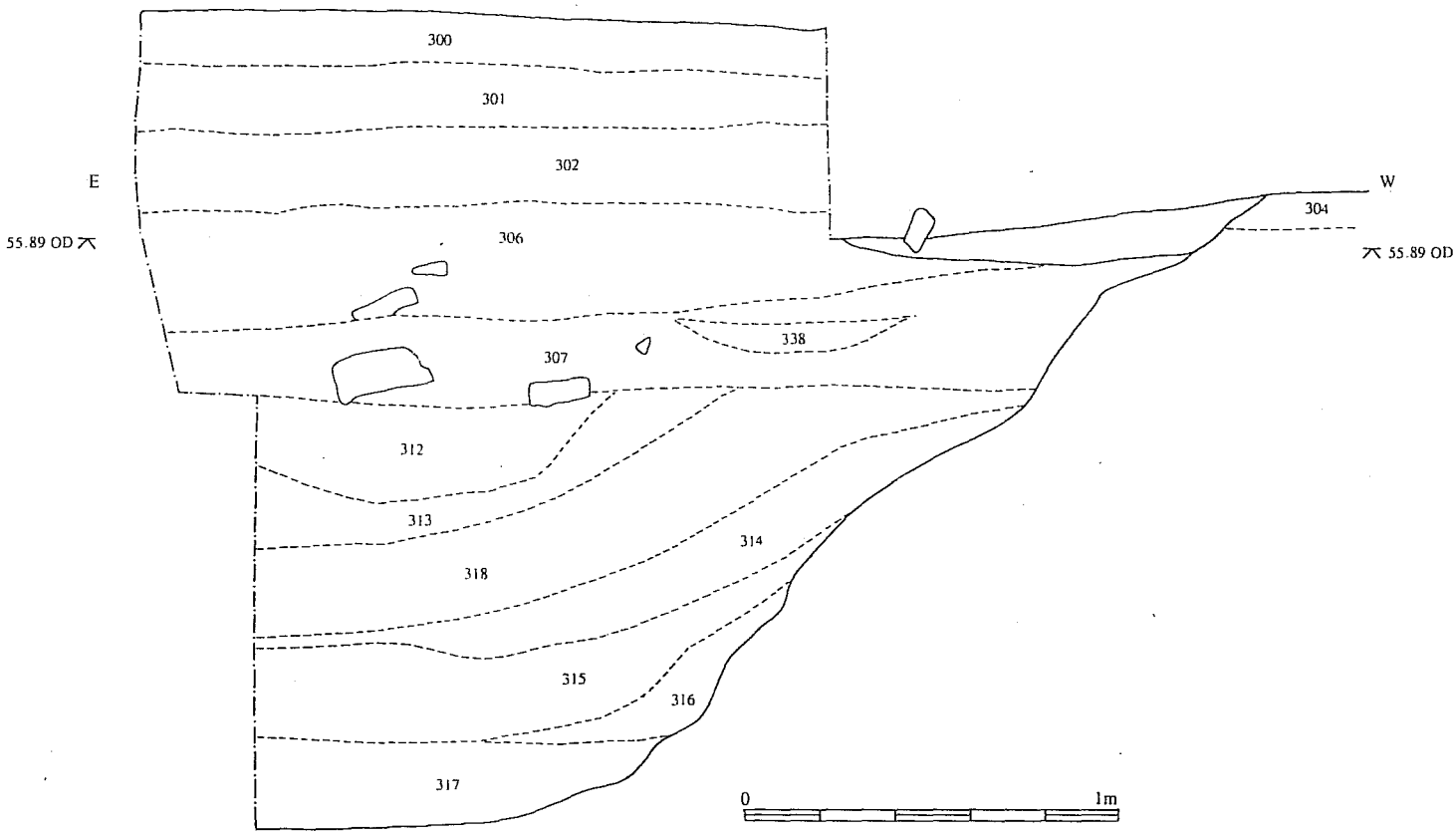
Fig 3



ROMAN FEATURES: TRENCH 3



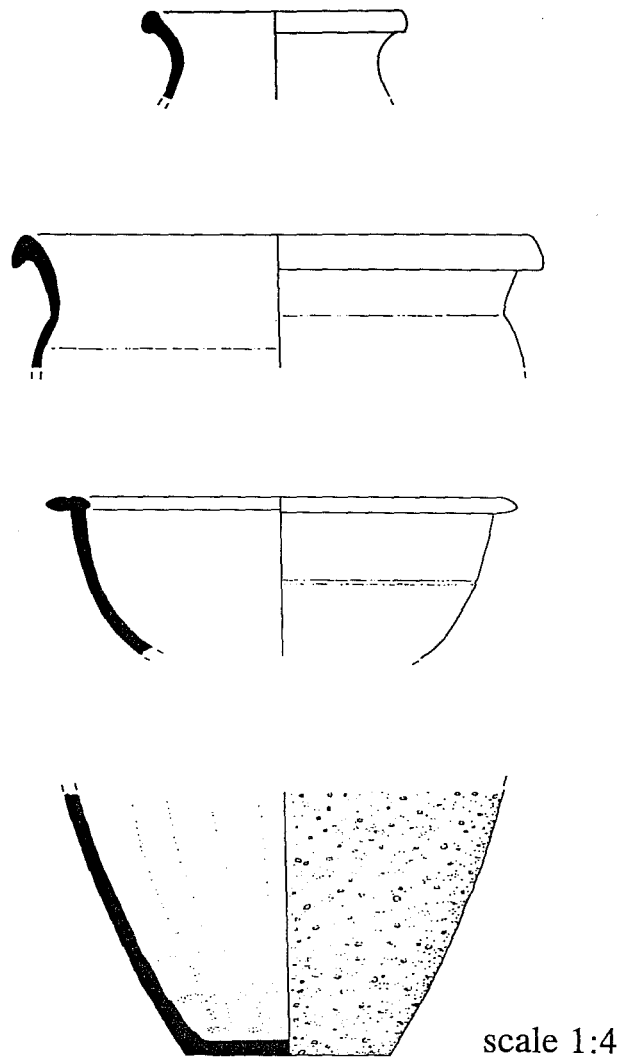
ROMAN FEATURES: TRENCH 2



HWCM 15577:

NORTH FACING COMPOSITE SECTION THROUGH DITCH 319

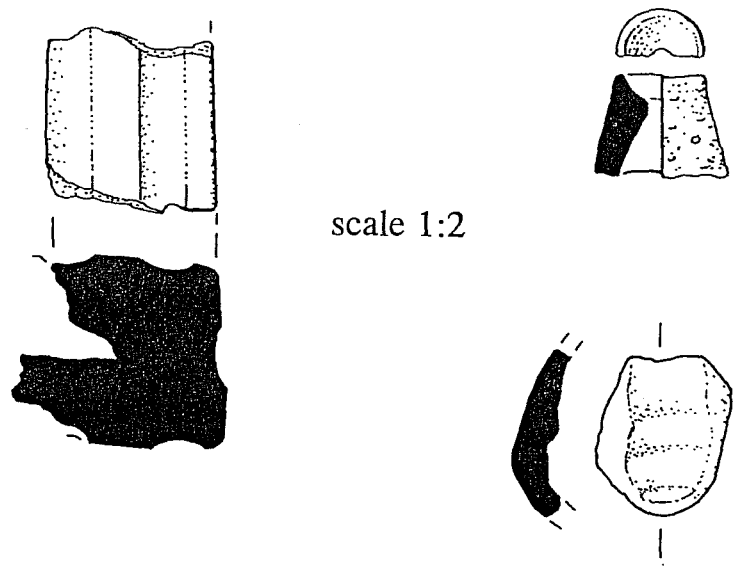
Fig 7



scale 1:4

ROMAN POTTERY

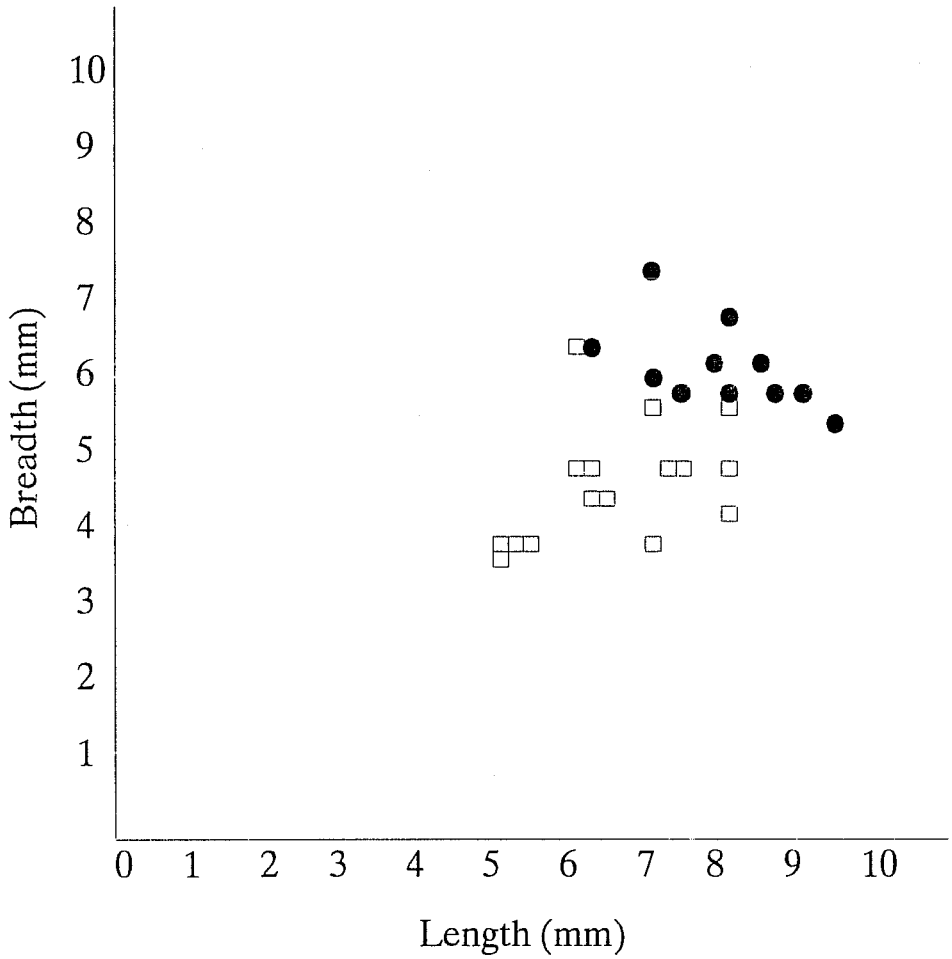
Fig 8



scale 1:2

CERAMIC OBJECT (left) AND MOULD FRAGMENTS

Comparison of fruitstones from (317) with modern fruitstones from Kempsey



Key

□ Fruitstones from 317

● Fruitstones from Kempsey