Wessex Archaeology

A30 Honiton To Exeter Improvement

Devon 1996-8

Part 1: The sites of Roman date
Volume 1: Text

Ref: 42410.2

June 1999

Prehistoric and Roman Sites in East Devon: The A30 Honiton to Exeter Improvement DBFO, 1996-9

By A.P. Fitzpatrick, C. A. Butterworth and J.C. Grove

Prehistoric and Roman Sites in East Devon: The A30 Honiton to Exeter Improvement DBFO, 1996-9

[Part 2: the sites of Roman date]

by J.C. Grove

with contributions from

P. Andrews, P.S. Bellamy, A. J. Clapham, H. F. Clark, N. Cooke, R Davis, R. Gale, M. Laidlaw, E. Loader, L. Mepham, M. Robinson, R. Scaife, R. Seager Smith and D.F. Williams

Illustrations by K.M. Nichols and R. Goller

Wessex Archaeology Report 16

Wessex Archaeology 1999

Contents

List of figures

List of Tables

List of plates

POMEROY WOOD

Introduction

by J. Grove and A.P. Fitzpatrick

The sites reported here are of Roman date; a military base, and a later roadside civil settlement. The two main excavations - Pomeroy Wood (centred on SY 1325 9930) and Gittisham Forge (centred on SY 1345 9935)- lay either side of the Nag's Head stream, a southward flowing tributary of the River Otter. Gittisham Forge, on the east bank of the stream, lay on a fairly gentle slope at 75-80 m aOD, whereas Pomeroy Wood, on a spur to the west of the stream, encompassed a shallow fall from 86 m aOD to 82.85 m in the west, over a length of 350 m.

The Roman military base at Pomeroy Wood was sited on the highest point of the spur of upper Keuper Marls overlooking the floodplain of the River Otter flood to the north, with commanding views along the valley to the west and east. Before the excavation the appearance of the site had been much altered by the excavation of a cutting for one carriageway of the existing A30 to the north, and the building of an embankment for the London to Exeter railway to the south. This denied the true prospect of the site, which is most noticeable as a promontory on older maps, such as the first edition of the 1" Ordnance Survey map of 1806.

Neither of the sites were known before the road building started and both were identified during the Watching Brief. The sites at Pomeroy Wood were found in August 1997 during the Watching Brief over v-ditching, which cut through a series of linear features extending over 300 m. The site at Gittisham Forge was first identified in the winter of 1996 and the evaluation works on that site are described below in **chapter 00**.

Most of the features first recognised at Pomeroy Wood contained Roman pottery. Following the preparation of a site-specific project design, seven evaluation trenches were excavated subsequently, three of which were 10 x 10 m. These trenches

confirmed the presence of the linear features and also extensive layers containing Roman material.

The area to be excavated and stripped of topsoil was agreed and a revised project design was issued. This specified that, in addition to the full excavation of the area on which the site compound was to be sited, areas distributed over the remainder of the excavation area totalling some 250 square metres should be examined by hand as a Stage 1. Stage 2 was the excavation of the remainder of the area to which a Watching Brief was subsequently appended. In total an area of 5,920 square metres was examined at Pomeroy Wood. Stages 1 and 2 and the excavation at Gittisham Forge took place from November 1997 to May 1998 to ensure that the road building programme was not delayed by the archaeological excavation of these unknown sites.

Standard excavation and recording procedures were followed at both sites, though with a few local variations. At Pomeroy Wood temporary shelters were erected, and areas of the site required pumping to keep them workable. It was also necessary to stock pile the spoil, including that of the topsoil stripping, on site (**Pl. 1**). When the true character of the military base became apparent, the area was extended to the north and the spoil from this side cast on the area already excavated. This stage of recording was undertaken as a Watching Brief (and is illustrated on the front cover). Due to this, most of the buildings in the northern part of the area examined were recorded in two stages and the whole plan of several buildings, for example building 3545 and round-house 3415 (**Pl. 3; 10**) were not visible at any time.

The opportunity was also taken at this stage to increase the sample examined of the primary fills of the defensive ditches by removing the phase 4 deposits and the upper part of those of phase 3 using a mechanical excavator. The lower fills were excavated manually (**Pl. 2**). In view of the archaeological sensitivity of the site, the removal of the spoil heaps raised during the excavation and the topsoil stripping of those areas which had lain beneath them was undertaken under archaeological supervision which allowed the fullest possible extent of the site to be examined within the resources available. These methods cannot lay claim to be archaeologically attractive, still less photogenic, but they were the most effective which could be employed in the circumstances.

The wells on the main site were also excavated by hand to a depth of 1.2 m. The Health and Safety requirements of the DBFO meant that further excavation by hand within the confined space of the wells was not practicable so further excavation was undertaken by reducing the ground surface in 1.2 m levels using a mechanical excavator which resulted in a large a, stepped, trench at the end of the excavation. The series of sections was then excavated by hand. The excavation ceased at the level of the foundation of the road. While unconventional, and in some regards unattractive (**Pl. 8; 18**), this method proved to be effective and produced better results in a safe working environment than would have been obtained from working in a confined space.

Post-medieval and later field drains, modern fence lines and geotechnical pits were recorded but are not described further here.

Results

by J. Grove

Three main phases of occupation activity were recorded at Pomeroy Wood. Phase 2 represents the occupation of the Roman base and phase 3 its abandonment. Phases 4 is subdivided into 4(i) and 4(ii) and represents a later, civil, settlement. Other phases of activity were present but are less well represented. The first of these is of prehistoric date.

Prehistoric (Phase 1)(Fig. 86)

A considerable quantity of flaked stone was recovered, but mainly from contexts of Roman date and few features certainly of prehistoric date were identified. These features do not form a coherent group, and do not represent an occupation site. One gully, 3032 (**Fig. 3, Table 1**) and a pit, 751, can be assigned to the prehistoric period, although it is possible that the Bronze Age pottery within 751 (**Table 2**) may be redeposited as it is adjacent to feature 637 and its fill was very similar to ones within the later grain drier. Gully 3032, 0.35 m deep, 0.8 m wide, was cut by first century

Roman ditches and was aligned north-west/south-east. It contained flint cores and flakes.

Some other poorly dated features may also be prehistoric on origin, most notably ditch 3883 (**Table 1**) which contained flaked stone and the fill was lighter than those of the other Roman ditches. Feature 4398 (**Table 2**) was stratified below early Roman pit 4294, and contained flaked stone in fills which appeared to have accumulated naturally, which may indicate that it was a natural feature i.e. tree-bowl in which the flaked stone was incorporated. The shallow linear features 3206 and 703 (**Table 1**) which were on different alignments to and pre-dated Roman ditches may also be of prehistoric date.

It is clear that there was some activity on the site, probably in the Late Neolithic/Early Bronze Age but is also possible that some of the flaked stone was incorporated in turf brought to the site to provide the turf facing(s) for the earthen rampart of the Roman military base. A bead of Iron Age type and a small quantity of later prehistoric pottery seem likely to arrived at the site during the early Roman occupation.

First Century Roman (Phase 2)(Fig. 75)

The initial period of Roman occupation is a 1st century military base. An area 160 x 15 m contained the southern defences of a military base sited on the highest, eastern, point with traces of some internal buildings and related features, and an outwork or annexe to the west.

The defences

The defensive ditches consisted of two continuous parallel ditches, 748 and 3057, enclosing an area 75 x 10 m. There was no indication of an entrance on the south side of the military base, the ditches were continuous, and no gateway was present. To the north, much of the military base must have been removed during road-widening operations in the 1960s (Belsey 1993, 29)(**Pl. 3**).

Situated 1.5 to 2.5 m apart, the continuous ditches were similar in size (**Table 1**); the outer ditch 3057 (**Fig. 4**) was slightly narrower in parts but both showed depths ranging between 1.45 and 1.9 m (**Pl. 2-5**). All segments excavated exhibited a narrow 'ankle-breaker' or cleaning slot in the base of a steep sided v-shaped ditch (**Fig. 5-7**). A shallow slot 3229, possibly indicating the position of a palisade between the ditches, was recognised in three locations, but only stratigraphically associated at one.

The ditch fills appeared to have originated mostly from the interior of the military base, but in many cases this could not be established definitely. The primary deposits (**Fig. 55**) consisted of silts and occasional stony concentrations within the slot, as well as weathering of the ditch sides. No evidence for erosion from the rampart was noted, and the only traces of the rampart were redeposited material containing early Roman pottery in the ditches and a slight 'terracing' on the south side of structure 3545 in the interior of the base.

An intermittent gully, 3229, was noted in three locations on the berm between the defensive ditches. It varied in depth and width, ranging from 0.12-0.2 m deep and 0.25-0.4 m wide. It is possible that this represents a palisade between the ditches, or if the base was reduced in size, a structural component of an initial rampart.

Buildings within the base

Two buildings were identified within the base, both of which lay within the *intervallum*. No evidence for the *via sagularis* was located.

Building 3545 (**Fig. 8, Table 3**)

Two phases of military activity were evident here. A probable grain drier 4123 (**Fig. 8, Table 4**), has also been attributed tentatively to phase 2.

4725

The first building, 4725, is rectangular and represented by a discontinuous foundation trench of varying depth and width. It was 6 m wide internally, and at least 7 m long

but it had been truncated by the existing A30. The trench was deepest and widest to the north-west (0.53 m deep and 0.50 m wide), as a well-cut slot of rectangular profile. The southern half of the western side is irregular and shallow, terminating to the south and the line continuing as two post-holes. No stakes were noted within this line of trench, unlike the southern side, where stakes and posts set at intervals were visible and did appear to impinge on the base of the trench (**Pl. 6**). The stakes continued into the eastern side, where a shallow recut, perhaps a repair was visible for 2.75 m. The eastern trench was regular, at 0.3 m wide and 0.3-4 m deep. Repair or rebuild of this primary structure was also apparent in post holes set mid-way along each side of the trench.

A number of stake-holes may have formed a partial division across the building close to the south end. Other features within the building which could be associated include a number of post holes, stake holes, a shallow pit, and a shallow hearth 3971 (which was animal disturbed). Part of a repaired Dressel 20 amphora was set within a shallow hollow, 4455. The charred plant remains associated with the building have a high proportion of what may be animal feed.

A gully, 4726, ran parallel to the exterior of the building before cutting the foundation trench. This gully was shallower than the structural features and may be a drainage gully. The function of oval slot 3397 to the south is unknown, appearing to be associated but not apparently structural, unless it was associated with the succeeding interval tower.

Tower 4724

This structure was represented by four substantial square-cut post pits (**Fig. 9**), holding timbers of between 0.2-4 m in width, set up to 0.8 m deep in the pits, the southern two of which were slightly deeper than the northern two. Externally the size of the structure was 6 x 4.25 m, set within the very southern side of the primary structure, obviously respecting the limits of the trench for 4725. All four pits post-dated earlier features relating to 4725. No pits continued to the north, indicating that the four pits represented a coherent structure, their nature suggesting a two-storey build. A shallow cut, 3410 encompassed the width of the structure to the south,

probably indicating where the structure had been terraced into the back of the rampart. The internal features were sealed by spreads of material dating to a later phase of occupation (**Fig. 62**). The post pipes within the pits were well preserved with few silted intrusions, suggesting that the posts were either sawn off at ground level or left *in-situ*; the oak charcoal from 4307 suggesting that it was burnt *in situ*. The south-eastern post 3591 is the exception, as it contained later pottery and a later fragmentary coin adjacent to the post pipe, which had been infilled with large stone slabs.

Grain drier 4123

This lay within the centre of structure 3545 (**Fig. 8**) but was not stratigraphically related to any features in the interior. Fragments of pottery found within 4123 date to the first century AD, but those recovered from the upper layers mostly date to the second, and the early third at the latest. As it is squarely placed within 3545, the feature may have been built during the military occupation but it also appears to have seen use within phase 4(i).

A shallow ridge of natural clay separated two shallow bowls (**Pl. 7**). They would appear to have been contemporary, although differences could be identified within each. The northern bowl, 4520, was of a sub-rectangular shape, the primary cut quite steep-sided and regular. The primary fill at the north end 4518 did not contain any finds but the stones (4516) at the base of the southern end of the bowl formed a relatively flat surface, made up of different stone types, all showing different reactions to heating; shattered and fragile flint, degraded sandstone, and solid but reddened local stone. Reuse, or perhaps a collapsed superstructure, was demonstrated by a remnant clay lining 4240, which overlay the stone concentration in an elongated oval, approximately 1 x 0.5 m, in a flat based bowl 0.3 m deep. The final use of 4520 was indicated by a concentration of almost pure iron slag, 4130, in a shallow scoop at the top of the feature.

The southern bowl 4519 was deepest and widest to the south. A clay lining, 4233 again overlay the primary deposits. This abutted 4521, an area of compact burnt clay and sandstone, tentatively identified as a collapsed arch. Shallow layers to the north of 4521 spread up to the lip of the two bowls. A 0.09 m deep spread of reddened clay lay

over much of the bowl of 4519, and could represent collapse of the clay superstructure. A shallow pit 4522 on the west side contained much charcoal, and was probably an associated rake-pit.

The function of 4123 is thought to be either for crop-drying or smithing, but there is little in the charred plant remains or charcoal to support either interpretation. The presence of oak is consistent with high temperature firing for a smithing furnace, but the lack of slag or hammerscale in primary contexts suggests an agricultural rather than an industrial function. Charred cereal chaff indicates that crop-processing waste was present, but was probably used as tinder.

Building 4731

This building (**Fig. 10, Table 3**) was located at the south-eastern corner of the base. The gully, or foundation trench, described a partial rectangle parallel to the angle of the rampart. As surviving it was 11 x 4.75 m, which terminated at the east but was truncated to the north. There was no evidence for an eastern side to the structure. Well 4152 which is also assigned to the military occupation of the site lies within the area enclosed by the building but it is not thought to be contemporary.

The 0.12 m deep gully 4301 contained deposits of charcoal and clay, but was mainly filled by brown silty clay. Internal to the gully, a series of shallow post holes ran parallel at a distance of 0.4-5 m. Unfortunately a modern fence line ran on the same alignment and it is difficult to establish which, if any, of the post-holes are ancient.

The dating of the building is insecure, the few sherds found ranging from the Bronze Age to the 3rd century AD, although it is overlain by 2nd to 3rd century four-post structure 4302. The shape and location of the building are, however, consistent with a military origin, and the clay from the gully may represent daub.

Gullies 4721 and 4058

A straight, shallow, gully 4721 was aligned east-west at the eastern side of building 3545. It had two post holes at its eastern extent (**Fig. 65**). It contained phase 4(i)

pottery, but its alignment would appear to be better associated with phase 2, possibly at the rear of the rampart. There was no evidence to suggest that it should be linked with building 3545. However, another east-west gully 4058, which was cut by the phase 4i building 4103 lay slightly to the north and east (**Fig. 18**) and it may be that both of these gullies are from buildings contemporary with the base.

Well 3047

This is one of two wells dating to the 1st century (**Fig. 11 and 57, Table 5**) and was situated hard against the rampart stack. Two metres in diameter at the surface, the well tapered to 1 m at its base, over a depth of 3.9 m (**Pl. 8**). The base of the well cut through clay to reach the underlying gravel, presumably to reach the water table. The base fill 4686 contained a complete BB1 jar (**Fig. 56/1**), which could have been a deliberate deposit as it was in good condition. The lower 1.6 m of fills consisted of organic layers of clay and loam, with excellent preservation of environmental material, which showed that the well had been infilled with waste, much of which was horse manure.

The well was lined, being indicated by dark greyish brown silt around the sides that reached to the surface on the northern edge. Two refuse dumps were identified above the organic layers, both containing first century pottery. A capping deposit of red clay sealed the surface of the well but much of this was cut away by the later cess pit 819. The source of the red clay capping material is unknown, but it could be from the excavation of a replacement well; well 4152 which also dates to the 1st century is adjacent.

No first century material was recovered from the fills of the cess pit 819, which is described under phase 4i, but presumably 3047 was still visible as a depression after the base was abandoned in order for the cess pit to be located so precisely.

Well 4152

This well (**Fig. 10; 57, Pl. 18; Table 5**) was sited three metres north of well 3047. It was 2.2 m diameter at the surface, tapered to 1.3 m at the base. No lining was

apparent and its mostly inorganic fills represented dumps of waste material. Irregularities in shape seen during excavation were due to the collapse of the sides of the feature, noted within the fills as deposits of clay. The top of the well was also sealed with a capping of red clay. Much of the datable material from the well can be assigned to the first century. First to second century pottery in the clay capping material suggests a date for the sealing of the well, although it would appear to have been used for refuse for some time prior to this.

Pits (4315, 4498, 3495, 4294, 4457, 4187) (**Table 2**)

Three pits within the base and one between the defensive ditches were in use during this phase. Pit 4315 (**Fig. 12**) is located in the south-west directly behind the rampart. At 1.6 m in diameter, this steeply cut pit was 0.8 m deep and contained a number of well-defined layers of silt and clay. Although none was organic and no lining noted, the morphology of these layers resembles those of a cess-pit or latrine. There is no evidence to suggest that it is part of a corner tower.

An ovoid pit 4498 (**Fig. 2; 58**) was located immediately to the south of building 4731, and contained early pottery and quantities of oak charcoal, perhaps from the same source as that in 4731. A shallower bowl-shaped recut in the east end, 4723, also contained early pottery (**Fig. 59**). The mixed fills accumulated over a period of time, suggesting periodic deposition. The charred plant remains are of crop processing waste, though the presence of barley could suggest a mix of animal feed.

To the west of building 3545, a narrow rectangular pit 3495 (**Fig. 12**) was aligned north-south. The three layers within it were evenly deposited and contained some charcoal, but no *in-situ* heating was noted. Sherds dated to between 50-85AD were recovered from a secondary fill. It is possible that this feature was associated with the interval tower.

Pit 4187 (**Fig. 12**) did not contain any dating evidence, but is included in the phase 2 description due to its location and lack of later ceramic material. The pit was sub-rectangular, steeply cut to a depth of 0.57 m, and contained three fills of silty clay. Its

shape is suggestive of a water-tank, but the possibility that (with pit 4315) it is a pit for an corner tower cannot be excluded.

A deep ovoid pit 4457 (**Fig. 13**) was located between the two defensive ditches at the north of the excavation area. The pottery it contained was not diagnostic but it was stratigraphically earlier than roundhouse 4642, indicating an early Roman date. Its location between the ditches is puzzling, it filled in gradually, and there is no indication of the purpose of the pit.

Two pits were stratigraphically earlier than the phase 4i round-house 4103. Both pits have been attributed to phase 4i, but mention should be made of them at this point. A sub-ovoid, steep-sided pit 4061 (**Fig. 18**) was located below the south-east of the outer gully. It contained little distinctive material within its two silty clay fills, but did contain the remains of spelt wheat and barley, the latter of which may suggest that it dates to phase 2. Pit 4120 (**Fig. 33**), which was considerably larger, located on the south-west of structure 4103, just to the north of phase 4i well 920. Sub-rectangular and steeply cut to an irregular base, the lower fills contained a component of what may be cess, and the many lenses of material indicate that it filled gradually from the south. Feature 4173, a shallow linear feature between 4120 and 920, appears to be earlier. The function of 4120 is possibly as a cess pit or latrine, but its location adjacent to phase 4i well 920 might suggest that it was originally a water tank. No lining for 4120 was noted, perhaps the clay subsoil meant that none was necessary. There is no positive phasing for pit 4120, and could be associated with the military occupation or the succeeding phase 4i civil settlement.

Post holes (3062, 3210, 3425, 3427)

Only four post holes contained material attributable to this phase, two within the base, one outside the defences to the east, and one between the defensive ditches in an area of later activity. The two within the base, 3425 and 3427, were at the south-west corner of the base but they are too shallow to have been an integral part of a corner tower.

A concentration of undated post-holes to the east of building 3545 may relate to a timber structure, although no form or pattern could be determined. Later features overlay some of these.

Outworks

Two features located to the west of the base respect it, and each other; a large defensive ditch 785 (**Fig. 14, Pl. 9**; **Table 1**), and a small enclosure to the west of it comprised of gullies 649/3626/4320.

The defensive ditch, 785 is part of group 4715, and is aligned north-south, parallel to the western defences of the base. It was not seen to join the military base at any point and it was not located in a mechanically excavated trench cut to the east of the base to establish it the ditch enclosed the whole of the base. Ditch 785 was a maximum of 1.6 m deep, was 4 m wide at the surface, and had a fairly flat base 1-1.5 m wide. The outer, west face of the ditch was markedly steeper than the east suggesting that it my have originally had a Punic profile. The ditch is interpreted as either an outwork or an annexe.

Most of the fills of the ditch originated from the east, probably from the razing of a rampart to the east. The ditch was filled to ground level by the time that a narrow width on its eastern side was recut as 3834, suggesting deliberate backfilling. This was reflected in the limited number of contexts that made up the bulk of the fill. Particularly noticeable was a mass of light greenish grey clay silt, 3661 and 3687, which may well represent turves. Ditch 4068, which lies immediately to the east is undated. It is very close to ditch 785, but it may be significant that it curves slightly to the south-east.

Only a single feature, pit 4294, lay within the area defined the outwork or annexe ditch 785. Shallow, with a single fill of coarse silt, the ovoid pit had a steep south edge and a generally concave base. It appeared to have been dug for a specific function, possibly industrial, as it contained slag and fired clay as well as glass, flint, pottery and nails.

A small rectilinear enclosure (**Fig. 15**) to the west of ditch 785 comprised three lengths of shallow gully, forming an enclosure 34 m by at least 10 m, continuing to the north. The western gully 649 was dated by pottery, the eastern gully 3626 the stratigraphically earliest in a sequence of linear features, and the southern gully 4320 describes a corner between the other two lengths. Gully 4320 was the most ephemeral of the three, having a maximum depth of 0.08 m and its east end fading out rather than terminating like those of 3626 and 649. The other excavated sections were 0.2-45 m deep and 0.45-95 m wide, noticeably deeper to the north. None of the dated features within the enclosure were contemporary, although a few were undated. Two possible entrances to the enclosure are located to the south and south-west, represented by gaps in the gully of 6.5 and 4 m respectively.

The abandonment of the base (Phase 3)

Five segments were excavated through each of the inner and outer defensive ditches. Although these showed differences within their sequence of in-filling, a large bulk of material overlying the primary silted fills could be identified within most and this was most noticeable for the inner ditch (**Fig. 60**). This is interpreted as the slighting of the ramparts and the infilling of the defensive ditches. A similar action occurred for the outwork ditch 785 (**Fig. 14 and 61**). The fills varied within each segment excavated, some at a higher level than others, reflecting local conditions of infill but the first metre of deposits can be safely ascribed to the military occupation and no obviously intrusive pottery occurred below the top ditch fills. The inner ditch appeared to have been filled so that it was virtually level but the outer ditch 3057 consistently showed a dip within its upper fills, a linear hollow up to 0.3-4 m below the surface level, which was present into the 2nd century. The charred plant remains from the ditches contained more non-cultivated species than cultivated ones, suggesting the dumping of material. It has not been possible, however, to ascribe a date more precise than the late 1st century for the slighting of the defences.

Two ditches dating to phase 4i, 4720 and 3265m cut the defensive ditches. Ditch 4720 cut through the fills to a depth of 0.8 m, its associated bank to the east sealing the defensive ditch fills on a level plain at a height of 85.90 m aOD.

Romano-British civil occupation (Phase 4i) (Fig. 75)

As well as the ditches that cut across the defences of the base, well stratified occupation levels occurred over the defensive ditches, and some of the post-holes of possible four-post structure (4733) cut through the location of the rampart, indicating that the rampart had been completely levelled. At its earliest, this occupation dates to the 2nd century AD and is part of a settlement, presumably a roadside settlement, of undefined extent. More than one phase of building occurred within this time, but the pottery is not more closely datable.

Buildings **(Table 3)**

The majority of the buildings, all of which date to the 2nd to 3rd centuries, are represented by the concentric ring gullies of round-houses. In addition a single gully, 4722, which had been truncated by the existing A30 was in all probability of the same type. All of the six certain buildings occurred at the eastern end of the site, coincident with a greater depth of ploughsoil. Preservation was also enhanced by the location of some within the defensive ditches of the military base, most notably for buildings 3415 and 4642, where the depth of debris sealing the features was akin to a midden deposit. Building 3415 was the only complete example that could be excavated and provided extensive evidence for domestic activity in the form of hearths, pits, and post-holes. It is likely that posts were set in the inner ring gully, either earth fast or stone packed. It is obviously a standardised construction method, but is a type that does not appear to have been published previously in Devon.

Building 3415 **(Fig. 16-17; 63, Table 6)**

Building 3415 was the only complete roundhouse available for excavation, though it was excavated in two halves (**Pl. 3; 10**). It lay over the infilled defensive ditches, and was possibly slightly earlier than structure 4642 to the north. Its structural components comprised an inner ring gully 4727 and segments of concentric eaves drip gullies, 4728, 4729, 3473; it was not possible to trace these in the north-west quadrant. The entrance to the building was not identified, and must be presumed to be either to the south-south-west or the north-west, as a continuous gully circuit was recorded

elsewhere. The inner gully was the more substantial feature; its true dimensions at 0.4 m wide and 0.17 m deep being distorted when it cut through the softer ditch fills. The diameter of some of the charcoal recovered from the inner gully was large enough to represent timber from structural elements. The outer gully, which described a segmented arc at a distance of 0.15-0.5 m, was 0.2 m wide and 0.15 m deep, though both of these again increased where they the gully cut the fills of the ditch.

Feature 3576 appears as an anomaly within the projected structure of the inner gully, and may again be distorted by the soft and silty fills of the outer defensive ditch, which made differentiation problematic. Identification of smaller features within these silts was impossible to achieve with any confidence. To the north east, shallow gully 4660 may represent a segment of the outer ring gully, being truncated by the construction of roundhouse 4642. The north-south oriented slot 4695 is a later Romano-British feature.

The internal features (**Table 6**) consisted of a number of pits and post-holes, with four possible hearths identified, all would appear to be contemporary with the structure, as no similar features were found on the berm between the defensive ditches to the south. The hearths were grouped to the centre and north-east of the roundhouse. The most substantial hearth-pit, 4138 (**Fig. 17**), was up to 1 m in diameter, and cut to a depth of 0.30 m, reused as a shallower pit 4134 (which yielded a 2nd century radiocarbon date). Hearth 3538 contained a circular arrangement of sub rounded stone, up to 0.13 m in size; a burnt spread, 3560, lay immediately to the east of this feature. A sub-square, steep-sided pit, 4669 (**Fig. 17**), was 0.21 m in depth, and contained layers of charcoal and reddened clay, with a remnant clay lining 4678. A later shallow cut, 4691, central to this pit contained a complete spouted cup, (**Fig. 63/1**) its location suggesting that it had been deposited deliberately.

The post-holes do not appear to be related to the superstructure, unless they were additional internal supports. Unless the material is redeposited or intrusive, a concentration of, and a consistent presence of slag in all but three internal features, may also suggest a specialist use for the structure. The charred plant remains are crop processing waste used for tinder, with oak being the dominant fuel.

Building 4642 (Fig. 16-17; 64, Table 3)

Located immediately to the north of 3415, this round-house was also sited over the infilled defensive ditches. The inner and outer gullies respected each other but were not concentric. Both gullies were truncated to the north by the existing A30 and also showed root and animal disturbance at either end. The inner gully, 4655 was up to 0.4 m wide and 0.2 m deep and contained a high number of stones up to 0.2 m in size, as well as large slag fragments. The outer gully 4643, 0.35 m wide and up to 0.15 m deep, contained much less stone, reinforcing the distinction in function between the construction trench of 4655 and the drip gully of 4643. The outer gully cut through 4660, a gully possibly associated with the outer gully of structure 3415, although no direct physical relationship could be established. No contemporary features were noted in the limited area of the interior that survived. The inner gully 4655 cut through the upper fills of the phase 2 pit 4457 (see above).

Building 4527 (**Fig. 18, Table 3**)

Located within the interior of the military base, and also truncated by the A30, only a limited area of the interior of the building survived. Of double ring construction, the inner gully 4159, 0.35-0.4 m wide, 0.14 m deep, was slightly more substantial than the outer gully, 4161, at 0.3 m wide and deep. The outer gully terminated at its western extent, both gullies being truncated to the east by pit 4370 and structure 4103. Three post holes within the building could be related, but they are not well-dated and there also a number of other post-holes in the vicinity with which they might be associated. Some two metres to the south of the structure, a straight shallow east-west gully 4721 with two post holes at its eastern extent, contained phase 4(i) pottery, thought its alignment appears better associated with phase 2, possibly at the rear of the rampart.

Building 4103 (**Fig. 18; 65, Table 3**)

The adjacent and stratigraphically later building 4103, exhibits a less regular layout, having a very shallow, incomplete, internal gully 4072, the fill of which spread over the interior features. It too had been truncated by the existing A30 (**Pl. 11**). The

western end of this gully was damaged by root and animal disturbance. A recut or realignment appears to have taken place to the south-east as the outer gully 4063 cuts a short stretch of curvilinear gully 4114, giving the appearance of a wide slot. This may be the result of cutting through the softer fills of underlying pit 4061, which was possibly a storage pit for semi-cleaned barley. The ring-gully is sub-ovoid, describing an irregular arc, 0.3-0.6 m wide and up to 0.16 m deep. It was truncated by pit 4370. The building is later than a number of features; gully 4058, pits 4061 and 4120, as well as the adjacent building 4527. The internal features comprised a hearth 4110, three post holes, two stakeholes and an amorphous feature. Two possible post-pads were also noted within the spread of 4071.

Building 3671 **(Fig. 19, Table 3)**

Located beyond the defences of the base, building 3671 appears to be set within the rear of a compound or enclosure. Approximately 60% of the circuit of one ring-gully, 4730, was visible, terminating to the north. The gully was 0.4 m wide and up to 0.2 m in depth. Later features cutting into the area disturbed the south-eastern quadrant, where an outer gully, 3819, was visible, 0.3 m wide and up to 0.2 m deep. The quantity of stone in the top of gully 4730 suggests a structural function and that an outer gully was either eroded or not present. Three post holes on the interior were the only features associated, although patches of red clay and areas of charcoal and burning were in evidence in the vicinity of the south-west arc.

Building 3724 **(Fig. 19, Table 3)**

Parts of another building were located some 2 m to the north of 3671. The external gully of building 3724 was considerably more substantial, at 0.4 m wide and 0.18 m deep, than the inner gully, 0.13-0.2 m wide and 0.04-0.1 m deep. A few sherds of (presumably) redeposited first century pottery were recovered. Internal features possibly associated consisted of two post holes and four stake holes. The charred plant remains again suggest that crop processing waste was used for tinder.

Building 4722 **(Fig. 20, Table 3)**

A length of truncated curvilinear gully that overlay the in-filled defensive ditches would appear to be an element of a further round-house, either a drip gully or a foundation trench

Building 3053 **(Fig. 20, Table 3)**

Also sited over the infilled defensive ditches, building 3053 was initially seen as a sub-circular feature with a north-south gully across its western interior. The main curvilinear gully was up to 1.35 m wide and 0.2 m deep, with broad terminals, whereas the north-south gully was 0.75 m wide and up to 0.18 m deep. No relationship between the two gullies could be determined on excavation. Three post holes were located, two within the northern gully and one on the berm between the two features. The excavated form of this feature, whilst appearing substantial, was of an amorphous irregular form; the broad gullies were dissimilar to other features on site, in that their edges were diffuse both within the fills of the defensive ditches and over the berm. The function of the feature could not be determined precisely, but its mid-Roman date and the similarity in size, and to a lesser extent form, to the round-houses elsewhere on the site suggests that it too may be the much disturbed remains of a round-house.

Four-post structures 4733 and 4302 **(Fig. 21-2, Table 3)**

Both of these proposed structures were located within the main area of second to third century occupation. Neither of them square, 4302 is interpreted as a four-post structure with more confidence that 4733, as the post holes were of a similar size and regular layout, whereas those relating to 4733, while appearing to be associated, and of substantial depth and form, had an asymmetrical arrangement.

Ditches **(Table 1)(Fig. 75)**

North-south aligned ditches were noted for a distance of over 300 m to the west of the military base, although they were grouped more closely within the 120 m nearest to it,

reflecting the density of occupation. Seven north-south ditches were dated to this period. A single east-west ditch 4085 ran for a length of 78 m, and is thought to define the rear of one or more compounds. Some ditches were seen to continue to the south, especially at the south-eastern 'corner' of 4085, although the area available for investigation here was restricted. The line of the outwork or annexe appears to have remained an important boundary, with six linear features on the same alignment to the west of it.

Ditch 3834 (**Fig. 14**) represents a partial recut of the western side of the outwork ditch. It has a steep sided V shape and is contemporary with ovens 988 and 4094. Some 2-3 m further to the west was the broad shallow north-south gully of 4734. It was not possible to establish whether these ditches were contemporary. If the gap was used as a routeway, this would have been made inaccessible by the furnaces, which points to the ditches being successive.

Ditch 4085 does not continue as far to the east as these two ditches, appearing instead to turn to the south or terminate immediately to the west of 4734, where it was itself cut by the butt end of a probable linear feature 4332. If it did indeed turn to the south, this would indicate that further enclosures exist beyond. Either way, it does not form a continuous enclosure facing the road, even if boundaries such as 3256 are aligned perpendicular to it. The west end of the ditch had no discernible relationship to ditch 4710, although 4710 continued to the south beyond 4085, and 4085 continued to the west for some 2 m, where it either terminated or turned to the south.

Two linear features beyond the main excavation area also date to this period, 927 and 103. Ditch 927 was the more substantial of the two, a 0.75 m deep steep sided, v-shape, located immediately to the west of a group of undated features, including an oven or hearth 4044. Gully 103 was aligned south-south-west/north-north-east. If the settlement was defined by an outer ditch, then 927 is the most likely candidate.

Within the interior of the base, the linear features acquire a different aspect. The north-south linear features are absent apart from three shallow gullies, 3181, 3182 and 4189. The first two were closely parallel and only visible for a length of 3.5 m, 4189 was noted for a length of 2.5 m. All were identified between and over the defensive

ditches, where they could have been protected from erosion by later accumulations of material. None were noted to the north of the ditches, and their shallow nature may mean that they have been destroyed. Whether these represent a systematic division imposed on the area of the base alone is not known, but they give an indication of a regular layout that could have been lost elsewhere.

Ditch 4720 (**Fig. 23 and 66**) was cut through the defensive ditches on the south west of the base, terminating just beyond the inner ditch and describing a wide curve to the south. At 0.7 m in depth it was well cut, with an associated bank on the inner east side spread for a distance of 4 m from the ditch edge. Although appearing to be an enclosure ditch, no other ditch was found within the excavated area to the east of comparable date and dimensions.

To the north-east, ditch 3265 cuts through and terminated within the outer defensive ditch at an angle oblique to the modern A30. Up to 1.3 m wide, and 0.45 m deep the ditch contained much domestic debris, including metalwork fragments, and was parallel to a slighter ditch, 3283. It is possible that a right-angled enclosure was present, continuing to the east as undated ditches 3995 or 3997. The similar parallel nature of these compared to ditches 3265 and 3283 would suggest that they are related.

Areas of activity

An area of intense activity in which several episodes can be distinguished (**Fig. 24**) was sited over the defensive ditches in the south-east of the excavated area. The first use occurred with the gullies described above, 3181 and 3182. The main activity after this relates to an area roughly 40 m in length over the defensive ditches, the softer make-up of which was consolidated with stony layer 3200 (**Fig. 75**). This was most apparent in the outer ditch where the stones were up to 0.4 m in size, and in a spread up to 0.2 m deep that varied in compaction and density. It did not present a level surface, except for an area over the inner ditch and the berm, where the layer was shallower, less extensive and resembled a metalled surface; here the stone content comprised smaller stone, and showed evidence of compaction. The origin of the stone is unknown, but the quantity of some of it suggests that it comes from the same

source, perhaps a building. The layer represents the deliberate levelling and consolidation of the area prior to use.

A number of features are thought to be contemporary with this, including a probable grain drier 3145 (**Fig. 25**), a simple bowl and flue, with regular sides and a slightly uneven base. The bowl of 3145 contained a deposit of dense charcoal, the flue a silty loam. Cereal chaff was used as tinder or fuel for the drier. The bowl, 3146, was recut at a later date. An arc of stake-holes could relate to a windbreak to the west of the drier. A right-angled gully 3042 (**Table 3; Pl. 12**), partially enclosed these features. Terminating to the north-east, the gully was well cut to a maximum depth of 0.28 m over both defensive ditches. It contained a variety of ceramic material, and a collection of metalwork. Circular pit 3159 was located centrally to the two arms of the gully; having a flat base and steeply cut sides, it contained a quantity of charcoal below the uppermost debris layer. The charcoal appeared to have been deliberately deposited, as there was no evidence for burning within the pit itself; an association with drier 3145 is probable. The charcoal within 3159 was of fast grown coppiced oak, which suggests an associated activity requiring a good quality high-energy fuel rather than for a domestic hearth. Two post-holes and a small pit, 3209, are also present. This collection of features presents the appearance of a working, as opposed to a living, area.

Some ten metres to the west of grain drier 3145 a small area on the berm between the ditches of the base was intensively used. There was no stony surface, but this did occur within the outer ditch 3342 further to the west. The primary activity of this phase overlay a first century horizon associated with the east-west gully 3229, and comprised four tightly grouped pits (**Table 2**), 3444, 3445, 3441 and 3552, an isolated post-hole 3361 and three stake-holes. The pits contained little datable material; the major fill of the first three was non-structural sub-rounded stone up to 0.2 m in size. These features were sealed by a series of layers and lenses of red to reddish brown clay, of a maximum depth of 0.08 m, which defined a break in activity within this phase recognised elsewhere. Associated with this horizon was a group of post- and stake-holes 2 m in diameter centred on a hearth pit 3338 (**Fig. 26**). A collection of moderate sized stones in the base of the pit showed signs of heating, overlain by

lenses of red clay and charcoal which spread out from the pit to cover the surrounding area.

Hollow 4706

Located in the area between the base and the outwork or annexe was an 8 m wide hollow 4706 (**Fig. 27-8**), scarped some 0.85 m below the surrounding ground level, with a central surface of large flat stone 4719 over an area of some 5 m², and a less coherent surface, possibly comprising displaced elements, to the north. Two inter-cutting curvilinear ditches, 4716 and 4717 (**Table 1**), surrounded the surfaced area. Ditch 4717 terminated to the north within the excavated area, and became shallower immediately to the south of the stone spread, describing an arc around the surface. Ditch 4716 replaced 4717, and encompassed a considerably larger area, continuing north beyond the excavated area. A slot in the base could indicate that it was cleaned out on at least one occasion, but the reason for its irregular shape remains unclear. It would seem probable that the ditches were cut to provide drainage for the surfaced area. Three post holes on the inner edge of 4716 may be the remnants of a fence-line. A number of post holes and shallow gullies were present within the hollow, including one substantial post hole, 933. Three irregular features on the north-west edge of the hollow showed evidence of animal disturbance and could not be related to any distinct purpose.

An industrial function for the hollow seems likely, possibly in association with grain drier 913 (see below). Neither hollow 4706 or grain-drier 913 were well-dated, with some of the Roman pottery within 4706 features probably from later 3rd to 4th century silting/deposition, however, the curvilinear ditch 4716 is cut by well 3791, which is also within this phase, suggesting an earlier phase 4(i) date for the use of the hollow, and by association, of 913.

was

Towards the western end of the excavated area, a group of truncated features occupied an enclosed area some 20 m wide, which yielded high magnetic susceptibility readings. Among a collection of shallow gullies and post-holes, two features were of note, a possible grain dryer 3279 (**Fig. 29**) and oven 1103WB (**Table 4**). Enclosing the area was a curvilinear gully, 4711, terminating within ditch 4710 (**Table 1**). The

gully described an oblique arc to the north-east, possibly to encompass oven 1103WB. The east-west gully 1105WB enclosed oven 1103WB to the north.

Grain drier 3279 was located within an area of shallow truncated features, associated with burnt spreads. Smaller than the other similar features, it was sub-rectangular, with irregular features on the south side; the east end of the feature was lined with a red clay, overlain by a mixed deposit of loam containing clay patches and charcoal. A dense deposit of charcoal lay over this within the east end of the feature, with red clay spreads above this, possibly indicating a re-use of the feature. Pottery within the lower fills of the feature was of 2nd-3rd century dates.

A shallow sub-rectangular cut to the north was found during the Watching Brief (1103WB) and was filled with a brown silty clay loam, containing indications of heating from its components of burnt sandstone, concentrated on the west side, blackened clay and charcoal. It contained 2nd century samian, and probably represents the base of an oven.

A series of short linear features within the area do not appear to be parts of buildings and had no obvious function. An irregular curvilinear gully, 3884, cut across the infilled 4711, possibly continuing to the north-west as 3936. These may relate to phase 4ii occupation of the area, but no definite dating was possible.

Further to the west, a series of shallow linear features were grouped below an irregular metalled surface, 3889. Two gullies, 4708 (**Table 1**) and 4709, were aligned north-south, 4709 curving to join the other to the north. A spread of stone and gravel, 80% up to 0.15 m in size, formed a compacted surface over these gullies for an area of approximately 25 square metres, possibly on a north-east/south-west alignment. A disturbance on the southern edge, 4432, contained irregular large stones within the overlying spread of 4495. This perhaps represented the remains of a ploughed out wall-line, comprised of blocks of volcanic trap and stone.

Grain drier 913 and ovens 988 and 4094 (**Table 4**)

During the excavation, a number of large features with complex fills appeared to have an industrial or agricultural function requiring heat. Little datable or artefactual material was recovered from them (913, 4123 and 637) to indicate the precise nature of this function, but the charred plant remains from 637 appear to indicate a definite agricultural association and none have yielded definite evidence for metalworking. In the absence of other evidence this interpretation has been applied to all these, and other features of similar form. Feature 637 is included within phase 4ii and 4123 within phase 2.

Grain drier 913 (**Fig. 30; Pl. 13**) was located on the west side of working hollow 4706. It consisted of an irregular arrangement of shallow pits directly to the east of a fire-pit 3606. This was the main structural element of the feature, surrounded by subsidiary rake-pits, 3740, 3666, 3618 and 3625. Three pits, 3604, 3622, and 3658 to the east of the main area of activity are thought also to be associated, 3658 having a clay lining.

The fire-pit 3606 was rectangular, 2 x 1.3 m, and cut into the subsoil, which showed signs of heating. A greyish olive compact clay lining 3619 of the base was surrounded by a 'horseshoe' lining (**Fig. 30**), 3662, of over a dozen heat damaged red sandstone blocks and chert pieces set in a reddish brown silty clay. The blocks were of a regular size, 200 x 130 x 120 mm, on either side of the bowl, with heat damaged chert fragments at the west end. The sandstone blocks were packed behind with shattered chert fragments and part of a quern stone. These chert fragments may represent the primary build of the fire pit, with the sandstone blocks a later addition. No re-cut was noted, but the different stone types could indicate rebuilding.

The neck of the fire pit contained the remains of a collapsed arch, 3640, of dark red clay containing burnt chert and sandstone. Above this, two blocks of chert flanked the neck of the structure to north and south, indicative of rebuild in conjunction with a new clay lining, seen as an olive-grey baked clay, 3657. A difference in the charcoal types was noted, with willow and alder prevalent within 3606 suggesting a wattle superstructure or shelter, in contrast to the prevailing fuel debris within the rake pits.

Analysis of the charred plant remains did not provide any further indication of the function of the structure. No further structural elements were noted, the upper layers and fills of the adjoining rake-pits consisting of spreads of charcoal rich silty clay.

Oven 988 (**Fig. 14; Pl. 14**) was located on the west edge of ditch 3834, either cut by or associated with the recut. A roughly circular feature, the sides undercut to a flat base, which was lined with remnants of orange clay. Rectangular cuts in the sides of the pit below the undercut edge suggest some structure within the furnace relating to its operation. A spread of charcoal, ash and occasional slag within the fills of the recut of 4715, extending from the mouth of the oven, indicated that the feature was located on the edge of the ditch to facilitate cleaning.

Similar to 988, oven 4094 (**Fig. 75**) was located some four metres to the south, on the west edge of the same ditch. It was slightly smaller and contained a remnant clay lining. Its charcoal rich ashy fills had been raked from the mouth of the feature into the recut ditch of 4715. Within the upper fills, a quantity of clay, similar to the lining, was identified as being from a possible collapsed superstructure or deliberate destruction. The fills contained 2nd century samian.

Wells 920, 3791, 1114WB (**Table 5**)

Well 920 (**Fig. 31-2; Pl. 15**) is of a different character to the first century wells, being stone-lined and sited on the line of the now destroyed rampart. The outer shaft tapered from a diameter of 2.6 m to 1.9 at the base, whereas the inner shaft had a diameter of 0.8 m at the top, tapering to 0.6 at the base. The stone lining was not symmetrical, ranging from a standard 0.85 m thickness at the top, gradually becoming more distorted towards the base, where in section one side appeared 0.2 m wider than the other. The blocks making up the dry-stone wall varied from 0.2-0.4 m in size. Those facing the well were neatly coursed and roughly dressed, with the facing stones keyed into the rubble core.

A number of post-holes surrounding the well may relate to the building of it. A possible lining 3379 may have a natural origin through plant growth or leaching. The well appears to have silted gradually, with no indication of capping, though one layer

4621 contained the dump of a spoiled store of crop. The latest identifiable pottery is later 3rd century. Post-medieval material in the upper fill suggests that there was some superstructure which prevented the spreads of 3rd to 4th century material that are present elsewhere on the site from entering the well, with the post-medieval pottery only becoming incorporated when the wellhead was reduced.

Well 3791 (**Fig. 27**) was located on the south east edge of working hollow 4706, and cut through ditch 4716. It was 1.9 m wide at the top and tapered towards the base but the lower, organic, fills voided making careful manual excavation both unsafe and impracticable. The remains of a possible organic lining were noted at the top of the well. The pottery from the upper fills suggests a 2nd to 3rd century date. The upper fills contained deposits similar to the dark spreads overlying the whole of the area of 4706. The insects from the base of the well indicate the existence nearby of a timber building infested by beetles (or debris therefrom), and the grazing of domestic animals.

Well 1114WB was the only well located outside the confines of the military base and outwork. At 1.6 m in diameter it was similar to the others, but its discovery during the Watching Brief and the prevailing weather conditions limited the amount of excavation that could be undertaken. The well was not lined, and pottery from the upper 1.9 m of fill dated to the later Roman period, but the presence of 2nd century samian suggests that it was originally excavated in phase 4i.

Two of the wells that are phased to this period are located in close proximity to the pairs of domestic structures described above.

Pits (**Table 2**)

A cess pit 819 (**Fig. 11; Pl. 16**) was cut through the compact clay capping of 1st century well 3047 to a depth of 1.6 m, and showed evidence of preparation in a layer of gravel deposited over the initial silting/trample base fill. A wicker basket, 1.58 m in diameter, tapering to 1.1 m at the base, was inserted in the pit, and tiles were used to fill the gap between the basket and the edge of the cut. The remains of this light wooden hurdle or wattle structure were 0.01 m thick, noted as a shadowy impression

during excavation. Layers of cess lay within the base of the pit, covered with layers of disuse and deliberate dumping. No early Roman material was recovered from the fills of the cess pit 819, so presumably the feature 3047 was still visible after the abandonment of the base for it to be located so precisely. The final fills contained 3rd to 4th century pottery, possibly indicating that clearing out had removed the earlier evidence for use.

Two pits were stratigraphically earlier than round-house 4103, 4061 and 4120. Both are attributed to phase 4i though it is possible that they belong to the military phase 2. A sub-ovoid, steep-sided pit 4061 (**Fig. 18**) was located below the south-east of the outer gully. It contained little distinctive material within its two silty clay fills, but did contain the remains of spelt wheat and barley. Pit 4120 (**Fig. 33**) was considerably larger, located on the south-west of structure 4103, just to the north of well 920. Sub-rectangular and steeply cut to an irregular base, the lower fills contained a component of what may be cess, and the many lenses of material indicate that it filled gradually from the south. Feature 4173, a shallow linear feature between 4120 and 920, appears to be earlier. The function of 4120 was possibly as a cess pit or latrine, but its location adjacent to 920 might suggest that it was originally a water tank. No lining for 4120 was noted, perhaps the clay subsoil meant that none was necessary. There is no positive phasing for pit 4120.

A large sub-rectangular pit 4083 (**Fig. 34**) was located to the south-west of round-house 3671, having regular vertical sides and a flat base. Its single silty sandy clay fill contained frequent medium to large sub-rounded stone, as well as quantities of pottery, slag, fired clay, nails and charcoal. Directly to the west of the pit, two undated shallow sub-circular pits, 4079 and 4081 (**Fig. 34**), each contained half of a quernstone (**Fig. 45/2**), set horizontally surrounded by packing stones. The querns were obviously re-used, but whether as post-pads (there is no related structure), or for an industrial purpose, as at Woolaston, Gloucestershire (Fulford and Allen 1992, 178-9) where querns were reused for ore-crushing, is unclear.

Two inter-cutting concave pits, 3294 and 3876, were located over the defensive ditches of the base, and over the west end of ditch 3265. They contained a quantity of

pottery, burnt clay and flint, perhaps representing midden material, though the primary function of the pits was again unclear.

The evidence for two or more phases within 4(i)

The number of features inter-cutting within phase 4(i) suggests that the site was continuously occupied during the 2nd and 3rd centuries, with successive replacement of structures noted for two pairs of round-houses, and perhaps emphasised by the pits underlying structure 4103. Well 3791 cut through the infilled working hollow deposits of 4706, which is also dated to this phase. Two phases of activity are also noted in an area enclosed by and to the west of structure 3042, the latter phase appears to be contemporary with the structure and metalled surface/stone concentration of 3200, possibly indicating an expansion away from the road frontage. Pits were cut into the top of ditch 3265 at the east end of the site, and two cuts were noted for the curvilinear gully 4711 to the west.

An anomaly to the general pattern for the site is ditch and bank 4720, which has the appearance of a small enclosure ditch. The date for the ditch lies within phase 4i but it could represent another sub-phase, as no features appear to reflect its location or to be enclosed by it.

Later Romano-British C3-4 occupation (Phase 4ii) (Fig. 75)

The evidence for later occupation of the site was most evident in the extension of features to the west; but the lack of buildings in this phase even though a number of pits and ditches bear testimony to continued use. It is suggested that the area of occupation was now concentrated elsewhere. The quantity of unabraded pottery is similar to that recovered from phase 4(i) features, confirming that it is debris from occupation rather than manuring. Hearths, ovens and grain driers also indicate that occupation continued in the vicinity. More compounds or at least ditches perpendicular to the Roman road were also set during this period.

Grain drier 637

Feature 637 (**Fig. 35-6, Table 4**) is thought to be associated with ditch 4713 (**Table 1**), which forms a rectangular enclosure around three sides, 637 located centrally to it. The main form of the feature is of a sub-ovoid hollow, with a deep pit, 790, cut within it to the north, and a gully running from it also to the north. The deepest part of the hollow was to the south, which exhibited many layers of fire-reddened clay, interleaved with charcoal lenses, all spreading and becoming shallower to the north. Two phases of re-use could be determined, indicated by thick charcoal bands between red clay layers. Pit 790 was located off centre within the north end of the furnace, and was a steeply cut bowl filled with a black charcoal-rich silty clay, possibly acting as a rake-pit for the main furnace. Pit 790 is contemporary with the first period, but may have continued in use throughout the active 'life' of the feature. The same could apply to gully 3946, which was filled with charcoal rich silt loam adjacent to 637, fading to a yellow/brown silty clay to the north. The charred plant remains suggest that 637 was a grain drier.

Three adjacent features may be associated. Pit 749 to the south was filled with a compact red clay (similar to that in 751 which contained Bronze Age pottery) A shallow slot to the south-west, 653, and a post-hole 677 directly to the east of the grain drier were the only other features in the vicinity.

The ditches comprising compound or enclosure 4713 formed a rectangular enclosure around 637, perpendicular to the line of the A30. The ditches were fairly substantial, averaging 1.5 m in width, 0.5-0.65 m deep, enclosing an area 8.5 m wide x 11 m. The centrality of the grain drier 637 in relation to the dated enclosure 4713 is the principle, but inferential, dating evidence for grain drier.

Grain drier 3524

Grain drier 3524 (**Fig. 37, Table 4**) was located within the interior of the former military base, cut through round house 4527, and overlay a number of post holes. The feature was key-hole shaped, the southern end being a square-cut pit lined with sandstone and clay. There was abundant evidence for heating - the sandstone blocks

were degraded, the clay burnt, chert blocks fire-cracked and plentiful charcoal was present in shallow lenses across the length of the feature, dipping into a rake-pit at the north end. A deposit of red clay, possibly representing collapse of the superstructure sealed the upper layers. The shape of the features suggests that it too was associated with crop processing, like 913, 3843 and 637.

Grain drier 3843

Grain drier 3843 (**Fig. 38-9, Pl. 17, Table 4**), at the west end of the site, was partially enclosed by a curvilinear gully 4025. The original feature 4021, was of an hour-glass shape, the northern half of substantial construction. Walls of marl and sandstone blocks faced either side of the bowl, bonded with clay, around a fired clay floor (**Fig. 39**). The raking pit to the south was filled with fired clay fragments, ash and charcoal, primarily oak, which overlay a semi-circular arrangement of small stake-holes, suggesting a wattle construction for part of the primary superstructure.

A rebuild, 3856, occurred directly over 4021, utilising the walls of the first phase of use. The southern pit was extended, and a floor of stone laid within the northern bowl, mainly of marl but including a broken greenstone quern (ON 2319). Layers of ashy silt and charcoal spread across the upper fills of the feature, including a concentrated deposit of ash and charcoal within the feature. The plant assemblage reflected the final stages of crop processing, suggesting a use for the feature as parching a crop.

Ditches and gullies (**Fig. 75, Table 1**)

A sub-rectangular enclosure is suggested by ditch 826, which describing a right angle to the west, which could return into the site as one of a number of ditches (3247,651) or alternatively follow the alignment of the major east-west ditch 4085. It is slighter than ditch 3247, which was located some 80 m to the west, more probably associated with ditch 651, which has a broad, shallow profile. This would result in an enclosure of 30 m width, itself enclosing the rectangular ditch of 4713 A small sub-rectangular pit, 3636 (**Fig. 40**), was lined with red clay and contained layers of ash and charcoal lay to the west of 826.

A shallow ditch 4714, cut through 826, and ran parallel to it for a length of 7 m before terminating. The arrangement of the ditches in this area is the only indication of successive episodes of use during phase 4ii.

Ditch 3247 (**Fig. 67**) was fairly substantial at 1.04 m deep, with a steeply cut v-shaped profile, contained a high proportion of late Roman pottery, as well as quantities of other domestic debris in the form of nails, tile and fired clay. The quantity of these finds suggests settlement nearby, but few features in the immediate vicinity reflect this – a number of shallow gullies, 3268, 3270, 3953 and 3906 indicate some activity, but a coherent structure or function could not be ascertained from their distribution.

A shallow discontinuous rectilinear gully, 4707, enclosed an area at the west end of the excavation area but there were not any features in the interior. Another rectilinear gully, 4712, was of similar dimensions to 4707, and also mirrored it, in that it too was devoid of features. Both these gullies follow the general north-south alignment while further to the west, a shallow north-south gully, 944, overlay an earlier undated ditch of a slightly different alignment.

Other features.

Pit 3146 (**Fig. 25, Table 2**), a recut of grain drier 3145, contained 38 hobnails presumably from a piece of footwear, in its charcoal rich primary fill. The upper fill contained a quantity of stone rubble (including part of a quern, ON 2244), seen as deliberate levelling of the ground, possibly including some structural material relating to the feature.

The base of a hearth, 3014 (**Fig. 41; 68**), survived within the upper fills of the outer defensive ditch of the military bases at the extreme east end of the excavated area. An ovoid hollow was filled with a charcoal flecked silty clay, on top of which were remnants of red puddled clay. A pot (ON 2127, **Fig. 68/1**) was embedded within this clay, damaged but seemingly deliberately set within the clay surface. To the west a shallow pit 3073 contained a quantity of burnt material.

Comment

Although evidence for continued late Romano-British activity was present for the length of the excavation, the nature of the evidence in comparison to that available for the previous phase was considerably altered by the lack of occupation structures. The densest concentration of evidence was to the west of the outwork ditch 4715, but has limited implications as 3rd to 4th century debris was present to the east. Much of the later Roman material, including large quantities of metalwork and pottery, was recovered from dark organic spreads that occurred over the western defensive ditches and the working hollow 4706 (**Fig. 69-70**). There was a mixture of materials and objects within these spreads, with a noticeable concentration of metalwork within the spreads over 4706. These spreads resembled midden deposits rather than occupation horizons, but the unabraded condition of the pottery indicates that it derives occupation debris, which suggests that areas of occupation during the later Roman period were nearby but outside the excavated area, probably fronting the road. A notable presence within the later Roman spreads was of ceramic roofing and flue tiles.

Disuse and abandonment (Phase 5)

Abandonment of the settlement, as far as can be judged from the pottery, occurred within the 4th century AD, but occupation may have continued into the early 5th century. The few features attributable to this phase were not deliberately in-filled and there is no evidence for activity until the Post-medieval period.

Post Medieval and Recent Activity (Phase 6) (Fig. 86)

Field boundaries noted on aerial photographs as extant in 1947 (CPE/UK/1974 11.Apr.47; 1447) were located at the eastern and western ends of the excavation, as 3865, 3893, 3862 (west) and 3231 and 3203 (east) (**Table 1**). The eastern hedgeline is still extant to the south of the present road.

Unphased features (Fig. 86)

A lack of dating or stratigraphic evidence resulted in a number of unphased features. The majorities of these are post-holes, small pits and gullies, but include a few

substantial linear features and a hearth. Features within the western half of the site were heavily truncated, which contributed to the limited dating evidence recovered.

Feature 953 was located in the western extension trench and probably represents the truncated remains of an oven or hearth of Romano-British date. A shallow ovoid pit filled with greyish blue compact clay was recut centrally, filled with reddish blue clay, which was itself cut centrally by a rectilinear slot. The quantity of compact heated clay differentiates the feature from other hearths on site, although its identification as an oven is also not a satisfactory interpretation.

A number of small pits showed a similarity of form, being shallow and concave and filled with a concentration of medium sized stone. 4157, 4474, 4404, 4372 and 4417 and were all located adjacent to the north edge of the excavation, and relate to an undetermined phase of Romano-British occupation. Two major linear features, 4068 and 3892, remain unphased due to a lack of dating evidence. Pit 4486, 1 m in diameter, 0.2 m deep, contained flint scrapers as well as Roman pottery in charcoal flecked silty clay.

THE FINDS

The coins

by N. Cooke

In total, 16 coins were recovered. In general, the coins are in extremely poor condition, with the majority too badly corroded to be legible. Only broad date ranges can, therefore, be ascribed in most cases.

The coins span the 1st to 4th centuries AD. Eight of these can be dated to the 1st to early 3rd centuries AD. Seven are large bronzes, whilst the eighth is a *denarius*. Of the large bronzes, five are too heavily corroded to be further identified; only two, both issued by Marcus Aurelius (no. 13-14) can be more closely dated. Number 13 is an As issued between 161-80, o*bv.*: bust r. curly hair and beard, *rev.*: fig standing r. altar to l.; too worn and corroded to be fully catalogued. Number 14 is also an As, struck between AD 140-161 during the reign of Antoninus Pius whilst Marcus Aurelius was Caesar, o*bv.*: male bust r,, curly hair, AV-; *rev.*: female figure standing. S C on either side, diam. 25 mm, damaged edges to coin. Worn, but not badly corroded. Of the six later coins, all are heavily corroded and illegible. These have been dated to the 3rd and 4th centuries AD on the basis of their size and form.

The level of corrosion of this group of coins as a whole is such that it is impossible to identify the vast majority further than on the basic groupings of dimensions and weight. Most of the coins appear to date to the 1st to early 3rd centuries AD, with a smaller number of later coins. It is impossible to draw conclusions regarding the significance of this given the small number of coins from the site and the difficulties of identification. In the two contexts where more than one coin was recovered-contexts 648 (unphased clearance) and 784 (recut 3834 of ditch 785), the coins show a broad coherence of date; with the coins from 648 dated to 1-3rd and the 4th centuries, and from 784 to the 1-3rd, and the 3-4th centuries respectively.

The metalwork

by Emma Loader

Introduction

The metalwork consists of 651 objects: 628 iron objects, 23 of copper alloy objects and four of lead. Of this total, 12 iron objects are of Post medieval date are not discussed further here. All the objects were X-radiographed and, with the exception of nails and hobnails, individually recorded and described using an Access database; this information forms the archive catalogue. Nails and hobnails have been recorded as context groups. Where possible, artefacts have been dated on the presence of diagnostic features or otherwise on the basis of provenance.

Eighteen copper alloy and 18 iron objects were selected for conservation treatment, ranging from full cleaning and stabilisation to investigative cleaning of small sections, on the basis of provenance and/or intrinsic interest. All conservation work has been carried out by Helen Wilmot at the Wiltshire Conservation Centre in Salisbury. No metallurgical analysis was undertaken.

Objects of copper alloy

The copper alloy objects are discussed under the categories of items of personal adornment or dress, fittings, toilet instruments, and miscellaneous objects. All the objects are common items of the Romano-British period and are frequent finds on settlements of this period (**Table 7**). Although two brooches might be contemporay with the military occupation of the site, no pieces of military equipment were noted.

Dress or adornment

Two brooches were recovered from phase 4ii contexts in which they are likely to be residual, one from layer 975 (cleaning over inner defensive ditch 748) and the other from layer 986 (burnt spread in working hollow 4706). The brooch from layer 975 (**Fig. 42, 2**) is a hinged, T-shaped Colchester derivative and can be compared to an

example from Exeter (Mackreth 1991, fig. 101, 9-10). This brooch type can be dated from the mid-1st century AD continuing into the 2nd century and is thought to be a local development of the Colchester and Polden types (e.g. Butcher forthcoming).

The brooch from layer 986 is also a T-shaped brooch (**Fig. 42, 1**), although only the axis, one arm and approximately half the bow survives. Examples of this brooch and related types are found predominantly in the south-west, with parallels from, for example, Tiverton, Devon (Maxfield 1991, 81-2, fig. 23, 1) and Catsgore (Butcher 1982, fig. 78, 25) and Ilchester in Somerset (Mackreth 1982, fig. 115, 3-5). A small brooch pin fragment was recovered from a phase 4i layer (3384) within structure 3545 (linear 3386).

Five pins were recovered, three complete, one head and one shank. Whether these objects were used as hairpins or to fasten clothing is not known certainly (**Cool 1990**) and these pins could have served either purpose. Two of the pins, from phase 4ii layer 965 (a spread over the defensive ditches) and ditch 3265 (phase 4i) respectively (**Fig. 42, 3, 5**), each consist of a plain spherical head on a circular section shank, set in from the top of the shank. These pins are a well known type (Crummy 1983, type 3/Cool 1990, **group 1B**) and are relatively common in the south-west, having been found at, for example, Exeter (Allason-Jones 1991a, 260, fig. 119, 131), Woodbury (Silvester and Bidwell 1984, 49, fig. 9, 7) and Woodbury Great Close, Devon (Weddell *et al.* 1993, 101, fig. 35, 3). A pin with a slightly flattened, spherical head on a ribbed neck and in poor condition (**Fig. 42, 4**) came from a phase 4ii layer within the outer defensive ditch (3057). There is a comparable example from Exeter (Allason-Jones 1991a, fig. 118, 130). The head of a pin, conical with an incised pattern of two concentric diamonds or squares (**Fig. 42, 6**), came from a phase 4i layer within gully 3042 (segment 3082). An incomplete shank, possibly from a large pin (**Fig. 42, 7**), was recovered from a phase 4i layer in structure 3545 (linear 3386).

A small curving rectangular fragment (**Fig. 42, 8**) was recovered from phase 2 layer 816. This object possibly derives from an armlet or bracelet, as might a highly corroded, curved fragment of copper alloy, recovered from a phase 3 layer within primary cut 785 of the outwork ditch 4715. This object has a square section, and a

groove running the length of the fragment, and is substantial enough to also be from a handle or some other fitting (**Fig. 42, 13**).

Fittings

A small, square headed stud decorated with two parallel raised bands (**Fig. 42, 9**) was recovered from phase 4ii layer 963 (spread over defensive ditches). It is likely that this object was a decorative fitting.

Toilet Instruments

Two toilet instruments were identified. The first, recovered from a phase 4i layer in gully 3042 (segment 3017), is a very fragmented and heavily corroded pair of tweezers. The second object, broken at one end, is possibly the handle of a toilet instrument of uncertain type (**Fig. 42, 10**). The complete end is flat and has two perforations, probably for suspension loops. The shaft is decorated with square and rectangular mouldings. Although the object was recovered from layer 983 (unphased clearance), it is likely to date to the Romano-British period. A similar object, identified as either the handle of a toilet instrument or mirror, is known from Colchester (Crummy 1983, fig. 204, 4648).

Miscellaneous objects

The remaining six objects are all of unknown function. The first object, from an unphased clearance layer, is possibly a mount or decorative fitting (**Fig. 42, 11**). It comprises a poorly cast hollow rectangular base tapering to the top, with a square hole through the centre. The hole shows evidence of wearing on the inside of the object. A similar object was recovered from Wanborough, Wiltshire (Hooley forthcoming, fig. 38, 131). A small, cylindrical fitting with rims at either end and a flat base with a circular indentation (**Fig. 42, 12**) was recovered from phase 4ii layer 3015 (spread over enclosure ditches). Iron corrosion is present on the internal part of the object. It is probable that this object forms the decorative or protective end of a larger iron object. A highly corroded possible decorative terminal, flat object of unknown function and a small fragment of wire were all recovered from phase 4i layers. A square section rod,

possibly decorated, two small circular sectioned fragments (probably both from the same object) and a highly corroded unidentified lump were recovered from phase 4ii layers.

Objects of iron

All the iron objects are heavily corroded. Some artefacts were recovered from the military phases but the majority of the assemblage is characterised by objects that are commonly found on domestic settlements. Eleven categories of object have been defined here, based on function. A breakdown of objects other than nails by phase is given in **Table 8**. Forty-six objects (7% of the total) were too corroded to be identified.

Weapons

Three weapon points were recovered from phase 4 contexts, but it probable that all three derive from the military occupation of the site. One pilum head was recovered from structure 3053 (gully 3070, phase 4i). This object is highly corroded, and has a pyramidal head and a tang rather than a socket (Manning 1985, 159-60)(**Fig. 43, 1**). Two spearheads, one from a phase 4ii layer (961) within working hollow 4706 and one from gully 4212 (phase 4i), in the vicinity of round-house 3415, were also recovered. The first is a small, leaf-shaped, spearhead with the remains of a socket made from rolled-over flanges just visible from the X-ray (**Fig. 43, 2**), which falls Manning's group IB (1985, 162-3, pl. 77, V78) and is dated to the mid-1st century AD. The second spearhead also has a closed socket and a pronounced midrib on both sides and a narrow blade (**Fig. 43, 3**) and is comparable to Manning's group IV A (*op. cit.*, 167, pl. 79, V111), which is also of mid-first century date. It is possible that this type may be a lance head (*ibid.*; Jackson 1990, 55).

An incomplete socket was recovered from a phase 3 (demolition) layer in inner defensive ditch 748, and was identified from the X-ray (**Fig. 43, 12**)[**upside down if ferrule**]. The object could either be the socket of a spearhead or a conical ferrul. Conical ferrules are the commonest form of ferrule and had a number of uses including protecting the butts of spears or staffs, but they are frequently found on

military sites where they were probably spear butts (Manning 1985, 140-1). Two fragmentary sockets and a number of broken and badly corroded points and rods, some of which may well be from projectiles, were also found and are reported below (miscellaneous finds).

A possible fragment from a dagger sheath was recovered from ditch 4720 (phase 4i). This object is very highly corroded, no outer surfaces are visible and the X-ray does not identify any diagnostic features. Both 'ends' of the object are broken and reveal an iron, hollow, rectangular sectioned object that appears to have a copper alloy lining.

The number of weapons recovered is too small to allow much comment, but they find numerous parallels at the slightly earlier south-western sites of Hod Hill (Brailsford 1962; Richmond 1968; Manning 1985) and Waddon Hill (Webster 1979) in Dorset. It is also interesting that the weapons, with the exception of the possible dagger sheath fragment, are projectiles. It has been hinted that the identifiable types of projectiles at Pomeroy Wood may be associated with auxiliaries and specifically cavalry (Manning 1985, 163, 167; Jackson 1990, 19) but the number here is too small to be helpful and, as with types of armour, weaponry does not necessarily allow the type of unit occupying a military base during the first century to be characterised (cf. Maxfield 1986a, 59).

Agricultural tool

An incomplete reaping hook was recovered from ditch 4720 (segment 3315, phase 4i). Both the blade end and the socketed end of the object are broken (**Fig. 43, 4**). This object is comparable to Manning's type 2 reaping hooks (1985, 53, fig. 14). These objects were used throughout the Romano-British period and are common finds on sites of this date.

Knives

Three highly corroded knives were recovered. Two knives have the tang set centrally onto a probable triangular blade and have been identified as Manning's type 16, which is not well dated (116, 1985, fig. 29). Both were recovered from phase 4i

layers-one from ditch 4716 (within working hollow 4706; **Fig. 43, 5**) and the other from round house 3415 (gully 4727; **Fig. 43, 6**). The third knife (**Fig. 43, 7**), recovered from gully 4707 (phase 4ii) has been assigned to Manning's type 23 (*ibid.*, pl. 56, Q69-70) which, when found on Romano-British sites, dates to the 1st century AD.

Leatherworking tools

A small, hand-held awl, comparable to Manning's type 3b (1985, 40, fig. 9), came from a phase 4ii layer within the inner defensive ditch 748. A small punch from ditch 4720 (segment 3315, phase 4i) is rectangular in section at one end, and tapers to a point at the opposite end. This object could have been used either for leather working, or for decorating metalwork.

Domestic equipment

A flesh hook, broken at both ends, was recovered from phase 4ii layer 965 (spread over defensive ditches; **Fig. 43, 8**). This object has a twisted stem, and one hook formed from the tip of the stem. The other hooks are absent, though the X-ray shows evidence that two more teeth may have been welded to the stem. Objects such as these are subject to little change over time, and are therefore difficult to date closely. Manning notes that simple flesh hook are rare in the Roman period, and that it was more common to find these objects combined with ladles as a dual purpose implement (1985, 105).

A very simple curved hook was recovered from defensive ditch segment 958 (phase 4ii). The function of this hook is assumed to be domestic, although the hook is simpler and smaller than meat hooks found on other sites of this period. A comparable hook was recovered from Strageath, Perthshire (Grew and Frere 1989, fig. 87, 178).

A socketed double hook, recovered from well 4152 (phase 2; **Fig. 43, 9**), is comparable to a socketed hook from London (Manning 1985, 104, pl. 49, P31). The example from Pomeroy Wood has two opposing hooks. Hooks of this type could have

had a variety of functions, although it seems probable that this example was used for lifting and lowering buckets into the well.

Possible key

A small flat strip with a loop, formed by curling over the end of the strip, was recovered from phase 4i layer 769 (spread related to structure 3545). The object is broken at one end. Loops such as this are frequently found on lift keys and padlock keys.

Styli

Three styli were recovered; two from well 920 (phase 4i) and one from phase 4ii layer 986 (burnt spread within working hollow 4706). The two styli recovered from the upper fill of the well are incomplete and in both instances only the eraser is present. They are highly corroded and no form can be identified. The third stylus may have a twisted stem and point, though the object is very corroded (**Fig. 43, 10**). Although some importance was attached to the number of styli found at Woodbury Great Close in relation to the small number known from Exeter as suggesting that the former site might have been a *mansio* (Weddell *et al.* 1993, 77), styli are quite common finds in Romano-British 'small towns' and roadside settlements.

Items of dress

A possible incomplete large buckle plate came from phase 4ii layer 733 (spread over defensive ditches). The bar and tongue of the buckle are absent, and both arms of the frame are incomplete.

A total of 221 hobnails was recovered from a range of features across the site. This figure represents 35% of the iron objects recovered. Groups of hobnails recovered together indicate the presence of footwear, though the type of footwear is unknown. The majority of hobnails (71% of the total number recovered) came from layers and features assigned to phase 4ii, and a further 25% from phase 4i (**Table 8**).

A tiny pinhead was recovered from a soil sample taken from a hollow associated with structure 4103 (hearth 4110, phase 4i).

Textile-working equipment

Two needles were recovered from phase 4ii layers-one from layer 961 (within working hollow 4706) and one from layer 965 (spread over defensive ditches). Both have been identified from the X-ray, and appear to be complete (Manning 1985, 35, pl. 15, D16 and D22). The size of the needles indicates that they would have been used for domestic sewing.

Structural fittings

Two double spiked loops were recovered, one from phase 4ii layer 961 (within working hollow 4706) and one from well 3791 (phase 4i). These objects consist of a piece of iron bent to form a loop with two parallel spiked arms and are comparable to modern split pins. They would have been attached to either masonry or wood. A ring could be slipped between the two spikes and once driven into masonry or wood, a secure fastening was made.

A single looped spike, recovered from phase 4i layer 769 (spread related to structure 3545), is highly corroded, and there is a small fragment of ring attached to the loop. It is possible that this object is a double spiked loop, missing one arm, although it is too corroded for a positive identification to be made. As with the double looped spike, the purpose of a looped spike was also to provide a loop in masonry or wood. The double looped spike is more commonly found than the single looped variant, although both types are frequently found on Roman sites.

Two joiners' dogs were recovered, one from ditch 4720 (segment 3315, phase 4i) and one from phase 4i layer 3788 (stone surface within working hollow 4706). Joiners' dogs are used as staples to join timbers together, and vary considerably in size. One staple, with very short arms, came from a phase 4ii layer within external defensive ditch 3057 (segment 958).

A total of 226 nails (36% of the total number of iron objects) were recovered from a variety of features across the site. The majority of the nails were recovered from features located in the eastern area of the site. **Table 9** gives a breakdown of the quantity of nails by phase and by type of nail, as classified by Manning (1985, fig. 32). The largest proportion of the assemblage of nails comprises Manning's type 1 (72% of the total number of nails); this is the most common Roman nail type, and consists of a square-sectioned, tapering shank with a round or square head, which could have been used for all types of carpentry. They are subdivided on the basis of length –type 1a greater than 150 mm, often with a conical or pyramidal head and type 1b less than 150 mm with a flat head. Of the other nail types identified, the type 7 and 9 nails could have been used for upholstery (Manning 1985, 135), as could one example similar to a type 10 nail.

One bolt was recovered from inner defensive ditch 748. This object has a large head and is more comparable to a bolt than a nail. Five T-clamps were recovered and all are comparable to Manning's examples (*op. cit.*, 132, pl. 62, R70-2). Three came from layers within working hollow 4706, one from ditch 4720 (segment 3315, phase 4i) and the fifth from a clearance layer. T-clamps were used for a wide range of structural uses, and occur on many sites of this period. Their dimensions can vary considerably.

Miscellaneous objects

A total of 140 miscellaneous objects (22% of the total of iron objects) was recovered. In many instances, the objects were too corroded or incomplete for their original function to be identified. Many of these miscellaneous objects are common finds on civilian and military sites and they represent the fragments of everyday objects and fittings that have been discarded and their original form is no longer recognisable.

One strip, with two notches along one edge, was recovered from phase 4ii layer 961 (within working hollow 4706). The second strip, in two pieces with a rivet *in situ*, was recovered from ditch 4716 (segment 3694, phase 4i). A second possible fragment of binding was recovered from phase 4ii layer 986 (burnt spread in working hollow 4706). This object consists of a flat strip that divides into two curved arms, one of

which is bent upwards and is highly corroded. It is almost impossible to identify the type objects that these bindings were originally part of, though it is likely that they were either from boxes or structural woodwork.

A small piece of curved iron, probably a fragment from an iron collar, was recovered from ditch 4720 (segment 3315, phase 4i). An object of this type could have one of a number of uses, such as a binding around a handle with a tang, and can be either domestic or structural.

Four fragments of curved strip were recovered, of which three are from unidentifiable objects and have no diagnostic features. One of these objects, measuring 360 mm in length, broken at both end and appears to have a concave profile on the inside of the curve was recovered from round house 3415 (ring gully 4727, phase 4i). The fourth object is incomplete and tapers at one end (**Fig. 43, 11**). The narrowest end is bent over as if to form a small hook, or hinge. The function of this object is unknown.

Two sockets were recovered, one from phase 4ii layer 733 (spread over defensive ditches) and one from round house 3415 (ring gully 4727, phase 4i). One is an incomplete fragment of a socket, and the other is a socket with a ?oval recess cut away on one side.

The 25 flat objects can be divided into bars (two objects), fragments with no form or identifying features (18 objects) and strips (four objects). The flat strips possibly derive from bindings, though no rivet holes were noted.

Twenty-seven points and 25 rods were recovered from features and layers across the site, and are from unidentified objects. It is probable that a large proportion of these objects are nail shanks, minus their heads. However, it would be reasonable to suggest, given the militaristic occupation of the site, that some are possibly the tips or shafts of projectiles but their highly corroded nature makes identification difficult.

Two iron rings were recovered, one from pit 4315 (phase 2) and one from ditch 4085 (segment 4595, phase 4i). Though these objects were recovered from different phases,

they would have served one of many uses, from ring of a snaffle bit or trace fitting to a fastening or tethering ring.

A thin, highly corroded piece of iron bent into an L-shape and of unknown function was recovered from a later Roman slot (4695) associated with the phase 4i round house 3415.

Objects of lead

Four amorphous lumps of lead were found, from phase 4ii layer 961 (within working hollow 4706) and from outwork ditch 4715 (phase 3). No diagnostic features were present on any of these objects and it is likely that they are waste.

Illustrated objects

Copper alloy (**Fig. 42**)

1. ?Brooch. ON 2211, context 986, burnt spread in working hollow 4706, phase 4ii.
2. Brooch. ON 2088, context 975, cleaning over inner defensive ditch 748, phase 4ii.
3. Spherical-headed pin. ON 2112, context 965, spread over defensive ditches, phase 4ii.
4. Pin, flattened spherical head. ON 224, context 3118, outer defensive ditch 3057 (segment 3151), phase 4ii.
5. Spherical-headed pin. ON 2254, context 3170, ditch 3265 (segment 3103), phase 4i.
6. Decorated pinhead. Context 3083 (sample 1223), gully 3042 (segment 3082), phase 4i.
7. Pin shank, very abraded. ON 2152, context 965, spread over defensive ditches, phase 4ii.
8. Strap end/bracelet fragment. ON 2018, context 816, ?colluvial deposit, phase 2.
9. Stud. ON 2035, context 963, spread over defensive ditches, phase 4ii.
10. Toilet instrument. ON 2090, context 983, unphased cleaning layer.
11. ?Fitting. ON 2089, context 973, unphased cleaning layer.
12. Cylindrical fitting. ON 2148, context 3015, spread over enclosure ditches, phase 4ii.
13. Curved rod, possibly bracelet fragment. ON 2044, context 849, ditch 4715 (segment 785), phase 3.

Iron (**Fig. 43**)

1. Pilum, with tanged shaft. ON 2176, context 3059, structure 3053 (gully 3070), phase 4i.
2. Small leaf-shaped spearhead. ON 2337, context 4213, round house 3415 (ring gully 4727), phase 4i.
3. Spearhead. ON 2045, context 961, within working hollow 4706, phase 4ii.

4. Reaping hook. ON 2164, context 3307, ditch 4720 (segment 3315), phase 4i.
5. Knife. ON 2194, context 3693, ditch 4716 (segment 3694), phase 4i.
6. Knife. ON 2253, context 3497, round house 3415 (ring gully 3496), phase 4i.
7. Knife. ON 2280, context 3860, gully 4707 (segment 3861), phase 4ii.
8. Flesh hook. ON 2113, context 965, spread over defensive ditches, phase 4ii.
9. Socketed hook. ON 2412, context 4666, well 4152, phase 2.
10. Stylus. ON 2367, context 986, burnt spread in working hollow 4706, phase 4ii.
11. Curved strip. ON 2338, context 986, burnt spread in working hollow 986, phase 4ii.
12. Ferrule, possibly spear butt. ON 2031, context 827, inner defensive ditch ditch 748 (segment 744), phase 4ii.

The metalworking evidence

by P. Andrews

The excavations produced a significant amount of evidence for ironworking on or in the immediate vicinity of the site. All of this can be assigned to the Romano-British period and all appears to have been associated with iron smithing. No certain evidence for iron smelting was recovered and no evidence for other metalworking activities has been identified.

Approximately 46 kg. of certain or probable smithing slag was collected (no material was discarded) including as many as 25 complete or near-complete smithing hearth bottoms, some hearth lining, and a small quantity of fuel ash slag (formed during high temperature processes, but not necessarily derived from smithing). The hemispherical-shaped hearth bottoms, likely to have formed in the bases of smithing hearths, are of various sizes and range in weight from 121 g. up to 914 g. Total quantities of slag by feature are presented in **Table 10**.

Five contexts produced 2–3 kg. of slag (with a maximum of 2, 654 kg. from context 967) and a further six contexts each produced 1–2 kg. The smithing hearth bottoms usually occurred singly, although six examples came from context 3798 (the fill of well 3791).

Plate hammerscale, almost certainly deriving from iron smithing, was present in some of the 0.5 mm residues from bulk environmental samples, though not in particularly substantial quantities.

Initially, at least three features which it was thought might be associated with ironworking were identified (grain driers 637, 913 and 4123). These are described in detail above, but generally comprised sub-oval hollow(s) containing complex sequences of deposits including layers of burnt clay and charcoal. Two of the features (913 and 4123) had the remains of stone linings which had been heat-affected. However, overall the balance of evidence suggests that none of these features was associated with ironworking and, more specifically, smithing. None produced large amounts of hammerscale which would be expected in the immediate vicinity of any smithing activity, and the small quantities of smithing slag recovered (6 g. from 637, 32 g. from 913, and 1.535 kg. from 4123) all came from the upper fills of these features and therefore post-dated their use. It is suggested elsewhere that these features are more likely to have been grain or crop driers, or served a similar, agricultural function.

The smithing slag occurred in a variety of contexts across the site, with most likely to be residual in later deposits. The majority came from contexts towards the east end of the site in the vicinity of the military base, although contextual details and pottery dating suggest that the iron smithing belonged to the later civil settlement rather than deriving from the military occupation. However, because of the likelihood that much of this material has been redeposited, this cannot be demonstrated with certainty, and evidence for iron smithing would not be unexpected within a military base or annexe (cf. Maxfield 1991, 86-92). In this respect, the relatively small area of the interior of the base exposed should be taken into account, and it is quite probable that further evidence for iron smithing and other metalworking activities, including *in situ* remains of hearths and associated features, once existed outside the area investigated.

Recent fieldwork has identified evidence for Romano-British iron smelting in the Blackdown Hills beginning in the 1st century AD (Griffith and Weddell 1996), and it seems certain that this area represents the source of the iron at Pomeroy Wood which lies less than 10 km to the south-west. That evidence indicates some major smelting

sites represented by substantial slag mounds containing tap slag, furnace bottoms, furnace lining, ore and some possible smithing slag. One site investigated at Upottery, approximately 12 km north-east of Pomeroy Wood, produced pottery dated to the third quarter of the 1st century AD (*c.* AD 50 – 70), contemporary with occupation of the base at Pomeroy Wood and the legionary fortress at Exeter, and suggests an early Roman military involvement in ironworking in this area (Griffith and Weddell 1996, 33).

The flaked stone

by P. Bellamy

Introduction

The assemblage consists of a total of 464 pieces (6,105 g.) of both worked flint and chert, almost all derived from secondary contexts, with only a very small number of pieces (primarily tools) recovered from features of prehistoric date (**Table 11**). The material from the prehistoric features is too small to enable any meaningful characterisation of this part of the assemblage which is treated below as an entity. It has been examined in terms of its condition, composition, technology and distribution in order to characterise its functional and chronological affinities and investigate its depositional patterning.

Raw material

The raw material utilised comprised 84.3% flint and 15.7% chert. The bulk of the flint is dark grey with slight mottling but it also includes a range from dark brown lustrous flint with slight mottling, through mottled grey and brown flint with cherty inclusions and mid grey and white mottled flint to grey opaque flint. Both chalk flint (8.7%) and gravel flint (31.9%) are present, though the proportion of gravel flint may be higher as it is clear from a small number of pieces that worn pebble surfaces and relatively fresh-looking cortex can occur together on the same piece of parent material. The gravel flint is likely to have been procured from the immediate vicinity, perhaps from

the local valley gravels and similar partially eroded flint pebbles are found in the soil on site. Some of the chalk flint has rather eroded cortex and may have been derived from a secondary source, perhaps from the alluvium or from the clay-with-flints, both of which occur in the locality.

The chert is primarily golden brown in colour with a smaller quantity of darker brown banded chert. It was probably derived from the Upper Greensand of the Blackdown facies (**Chapter 00**). Most of the chert on the site appears to have come from pebbles or cobbles, and two pieces of Portland Chert were recovered.

Assemblage description

Flint

The flint assemblage is unpatinated and in a sharp or slightly rolled condition and a small number of pieces had been burnt. It comprises material from all stages of the reduction process from cores to finished tools. Flakes from the initial preparation of cores are perhaps underrepresented and there is a relatively high proportion of tools present.

Nineteen flint cores were recovered. They are all small in size, between 30–73 mm (20–99 g.) with the majority less than 50 mm across and had been abandoned because they had been worked out or, less commonly, because of faults in the raw material. The cores generally show evidence for small squat flake removals, though three cores have a number of small blade-like flake scars. The size and shape of the flake scars does not reflect the bulk of material in the assemblage and undoubtedly reflects the final few removals immediately before abandonment rather than being typical of the removals from an earlier stage in the reduction of the core. There is little sign of any platform preparation. The majority of the cores were multiplatformed with flakes removed from many different directions. Five single platformed cores were also present and these were generally the smallest cores in the assemblage. One core on a thick flake was noted.

There is a general tendency towards long flakes of which a small proportion are roughly parallel sided. They measure between 20–65 mm long and 12–35 mm wide with plain or thermal butts about 7 mm thick. The flakes include core preparation flakes (*c.* 10%), core trimming flakes (*c.* 67%) and other 'waste' flakes. Very few examples have evidence for abrasion or other signs of platform preparation, though the presence of a core rejuvenation tablet and a crested blade indicate a degree of care in the preparation of cores. Both hard and soft hammer flakes are present though the vast majority are indeterminate. Hinge fractures are fairly common, *siret* fractures (Tixier *et al.* 1980, 103) also occur fairly frequently and there are a small number of plunging flakes as well indicating a certain lack of control in the flaking technique or difficulties with the raw material. A single side-blow janus flake was recovered - this may have come from a core on a flake.

Tools and other pieces showing signs of utilisation comprise about 17% of the assemblage (**Table 11**). The majority (69%) of the tools are scrapers and there are only a small number of utilised or retouched flakes present. The scrapers include a range of sizes and forms from very rough rudimentary examples to regular finely retouched scrapers. The most frequently occurring type has a regular convex edge formed by fine semi-abrupt retouch often extending down both sides, a form common in Late Neolithic and Early Bronze Age assemblages. Several examples with straight or more irregular scraping edges are also present. Other tool types present are represented mainly by single examples. The assemblage includes three oblique arrowheads (**Fig. 44, 7-8**) and one barbed-and-tanged arrowhead (Green's Sutton c type (Green 1980)) (**Fig. 44, 6**). One other tool worthy of comment is a broken flake knife on a flake from a polished flint axe. Three of the illustrated tools (**Fig. 44, 3-5**) are from possible prehistoric features; two scrapers are from an unphased pit (4486; **Fig. 44, 1-2**).

Chert

The chert assemblage was relatively small compared with the flint assemblage (**Table 11**). In general it its character and composition was similar to the flint. The flakes were generally larger and thicker than the flint flakes and have a tendency towards

being squatter in plan shape, probably partly a result of the differences in the nature of the raw material.

Distribution

Very little flaked stone was recovered from the prehistoric features and the overall distribution did not appear to centre on them either, suggesting that there was no close spatial relationship between these features and the use (or more properly the discard) of the flaked stone artefacts. The overall distribution of flaked stone was focussed on the area of the military base and to a lesser degree in the area immediately west of the outwork/annexe. Only a single piece was found in the area to the west of ditch 4710. The material tailed off rapidly east of the military base. Overall the density of flaked stone seemed to reflect the density of archaeological features and, therefore, it must remain inconclusive whether this reflects the true pattern of earlier prehistoric activity given that the information from the ploughsoil has been lost. The much lower density of material in the western end of the site may reflect the more truncated nature of the features in this area. It is also possible that at least some of the flaked stone objects were introduced to the site in turves for the earth and timber rampart opf the Roman military base. There was no apparent difference in the spatial distribution of the flint and chert artefacts and the tools also followed the same general distribution pattern with no significant concentrations.

Discussion

There is little evidence to suggest the presence of more than one flaked stone industry from this site, other than the occasional isolated artefact. The character of this long flake industry suggests that it is likely to date to the mid to late third millennium BC. The presence of three oblique arrowheads and a barbed-and-tanged arrowhead also suggests a Late Neolithic to Early Bronze Age date. The site has been largely destroyed by later activity and little stratigraphic or spatial evidence survives to enable the nature of this site to be examined in any detail. The distribution of the flaked stone material indicates an extensive scatter rather than a small tightly-constrained site and no specialised activity areas can be recognised within the distribution pattern. The overall character of the assemblage suggests that there was

some manufacture of flaked stone artefacts on the site, though the initial preparation of the cores may have taken place elsewhere. The nature of the raw material indicated that much of it could have been collected from the vicinity of the site, though the high proportion of flint and the preference for good quality dark grey flint suggests some preferential selection of raw material and may indicate that some of the material was brought in from sources further afield. If material was brought in as prepared nodules/cores, this could explain the underrepresentation of primary core preparation flakes. This model of preferential procurement and utilisation of flint fits the previously observed pattern of flint being the dominant raw material used during the Neolithic in this region (Silvester *et al.*, 1987; Berridge and Simpson 1992). There is some chalk flint present which may have been brought to the site, perhaps from Beer and the two pieces of portland chert point to contacts further afield. The number of tools recovered from the site indicates activity on site other than knapping. Although the number of tools from the site is fairly high, there is a very restricted range of types. Scrapers are the dominant tool and unusually there is a very small number of unspecialised retouched and utilised flakes present. This may indicate some sort of specialised activities being carried on at the site. It is interesting to note that almost all the flints recovered from the features possibly of prehistoric date (**Figure 44**).

Flint scatters of Late Neolithic/Early Bronze Age date are relatively common in Devon (Miles 1976) although little work has been done on the study of the scatters of this date, so there is little published comparative material which may help in the interpretation of the lithics from this site. Excavated assemblages of this date have been relatively small or have occurred as part of a multiperiod assemblage (cf Bulleigh Down (Berridge and Simpson 1992) and Churston (Parker Pearson 1981) where it is not always possible to satisfactorily identify all the Late Neolithic material present. There is some parallels with the material from the late Neolithic settlement at Topsham (Jarvis and Maxfield 1975) though there was a greater tendency towards longer flake production at Pomeroy Wood. The assemblage at Pomeroy Wood fits into the pattern of numerous extensive lithic scatters along the river valleys of east Devon. Unfortunately, it is difficult to be certain what the precise status and function of this site was.

List of illustrated flint (Fig. 44)

1. Scraper. ON 2370, context 4467, pit 4486, unphased.
2. Scraper. ON 2373, context 4467, pit 4486, unphased.
3. Scraper. ON 2008, context 624, unphased spread of material.
4. Scraper. ON 2017, context 624, unphased spread of material.
5. Fabricator. ON 2009, context 624, unphased spread of material.
6. Barbed-and-tanged arrowhead, ON 2000, unstratified.
7. Oblique arrowhead, ON 2170, context 783, ditch 4715 (segment 785), phase 3.
8. Oblique arrowhead, ON 2002, context 610, ditch 651 (segment 611), phase 4ii.

The worked stone

by Emma Loader, with stone identifications by D.F. Williams

The assemblage of worked and utilised stone comprises a total of 76 objects (153 fragments), all of which are Romano-British. The stone was recovered from a variety of features across the site, with just under half (32 objects) deriving from phase 4ii contexts. The assemblage can be divided between portable stone objects and building material and the types of object are summarised by phase in **Table 12**. The highest density of objects is within features and layers associated with working hollow 4706 and the upper fills of the defensive ditches.

David Williams writes: The majority of the stone types identified were almost certainly obtained locally or from the surrounding area. The Exeter lavas and associated intrusions, including material in the Permian breccias, incorporate a wide range of volcanic rocks (Tidmarsh 1932), and are probably the source for many of the querns. The distinctive red-coloured local Permian Sandstone was used for at least some of the whetstones, although one example of Pennant Sandstone, probably from the Clevedon area in Avon, is present. Greensand, probably from the Upper Greensand, was also used for querns; these rocks outcrop around Honiton and also south of Exeter where they cap the Haldon Hills. One example of a sandstone quern may be from the local Triassic series. Apart from the Pennant Sandstone, the only long-distance imports to the site appear to be the lava querns from continental Europe.

Whetstones

The portable stone objects comprise whetstones (17 objects) and quern stones (27 objects; 110 fragments). All the whetstones are made from sandstone and vary from fine-grained to moderately coarse-grained; most are likely to be in the local Permian Sandstone, although one example of Pennant Sandstone was identified (pit 3784, phase 4i). All the whetstones have worn surfaces and range in shape from a small, well-worn, triangular example (**Fig. 45, 1**) to rectangular and irregular flat pieces; most are incomplete.

Querns

Twenty-three identifiable rotary quern stones (52 fragments), plus 58 further fragments almost certainly also deriving from rotary querns were recovered from a variety of features across the side. One complete stone (in two pieces) was recovered, but most querns are incomplete. None of them have any visible tooling marks, and several are quite roughly shaped. With the exception of one, all the stones have vertical sides and near flat surfaces. They range in thickness from 56 mm to 115 mm, and in diameter (where known) from 400 mm to 460 mm. The one exception is a small lower quern stone, with a diameter of 400 mm, whose sides undercut towards the central feeder (**Fig. 45, 4**).

Four lower and five upper quern stones were identified. The rest of the fragments are too small to identify type. Traits of upper quern stones include the presence of a hopper or feed pipe and a slot for the handle. Chronological indicators include the thickness of the upper stones; later stones are generally thinner than early Roman examples. This can, however, be an unreliable dating method as it does not take into account the amount of wear. Early Roman upper rotary querns also generally have round or oval feed pipes with a slot for the handle while later querns have rectangular feed slots.

A complete lower rotary quern stone, with a partial perforation (**Fig. 45, 2**), was found in two halves, the two fragments placed respectively in the bases of adjacent pits 4079

and 4081 (phase 4i). The wear on the surface of this stone indicates a distinction in the density of the stone of which it is made (a coarse sandstone, probably local), with one surface being considerably harder and smoother than the other surface. This quern type is comparable to Romano-British examples from, for example, Hengistbury Head, Dorset (Laws 1987, ill. 120, 2) and Catsgore, Somerset (Leech 1982, figs. 90-1).

One half of an upper rotary quern stone was recovered from a phase 4ii layer in working hollow 4706; this has vertical sides and a flat upper surface with a shallow well around the hopper (**Fig. 45, 3**). This is paralleled by the type R(U)5 querns from Hengistbury Head, which are almost exclusvely Romano-British in date (Laws 1987, ill. 120, 14). This particular type of quern is thicker and heavier than the complete stone described above, though it is of a smaller diameter (300 mm).

A burnt Greensand quern of uncertain type, of which just over half remains, was recovered from floor surface 3856 within grain drier 3843 (phase 4ii). The diameter of this quern is approximately 500 mm, the thickness is 82 mm and it is in a very fragmentary, friable condition.

None of the other identifiable quern stones have measurable dimensions. The remainder of the quern assemblage comprises fragments which have been identified as quern fragments on the basis of stone type and/or the presence of at least one worked surface. This includes 13 fragments of Neidermendig or Mayen lava stone, originating from the Rhine Valley. This particular stone type does not survive well under adverse conditions and, although surfaces were only noted on two fragments, it is likely that all the lava fragments derive from quern stones. Most of these lava fragments came from a single phase 2 context and are likely to represent a single quern stone.

The stone types identified amongst the quern assemblage show an increase in the range of types from just two in phase 2 to five in phase 4ii (**Table 12**). Greensand, for example, only occurs in phase 4ii. Given the demonstrable degree of residuality in phases 4i and 4ii, however, this apparent increase in the range of sources exploited should be treated with caution.

Mortar

One mortar fragment, in Greensand, came from a burnt spread within working hollow 4706 (phase 4ii). The vessel shows much wear on the interior surface.

Building stone

A flat fine grained sandstone fragment, possibly from a tile, was recovered from round house 3671 (spread 3787, phase 4i) and a corner of architectural stone was recovered from the fill of ditch 826 (segment 4086, phase 4ii). Ten fragments of medium-grained, burnt sandstone were recovered from grain drier 637 (phase 4i), all of which were probably part of the superstructure of the oven.

Objects of unknown function

Six objects are of unknown function. This total comprises three small, irregular fragments of sandstone, possibly whetstone fragments, two fragments of metaquartzite, with flat surfaces, and one curiously-shaped piece of glauconitic sandstone, probably from the Upper Greensand, broken and with what appears to be a 'basal wort'.

List of illustrated objects (Fig. 45)

1. Whetstone, ON 2311, context 3956, gully 3957 (adjacent to ditch 4711), phase 4i.
2 Quern, complete, found in two separate halves. Contexts 4079/4081, pits 4080/4082, phase 4i.
3 Quern, partial, ON 2263, context 961, spread over 4706, phase 4ii.
4 Quern, partial, ON 2196, context 3640, superstructure for grain drier 913, phase 4i.

The shale objects

by Emma Loader

Four shale objects and one fragment which may be from a vessel or may be a waste piece, were recovered. With the possible exception of the beads, which could be of jet, the objects almost certainly originate from the Kimmeridge shale beds of Purbeck in Dorset and are in good condition, with only the fragment showing signs of laminating. The shale objects were almost certainly imported as finished objects, rather than being manufactured on the site, and may have been redistributed through the port of Exeter, where an unusual number of shale and jet artefacts have been recorded, possibly a result of coastal trade in these items (Allason-Jones 1991b).

Two cylinder beads, both decorated with incised transverse grooves around the bead, were recovered from two separate layers within cess pit 819 (phase 4ii) (**Fig. 46, 1**). Similar incised cylinder beads (all jet) have been recorded from Colchester (Crummy 1983, fig. 36, 1042, 1183/4) which are probably fragments of larger, 'long cylinder' beads, and another jet example, more deeply scored than that from Pomeroy Wood, is known from Exeter (Allason-Jones 1991b, fig. 125, 4). The main source of jet at this period was the Whitby area, and this source does not seem to have been exploited until the late 3rd and 4th centuries AD (*op. cit.*).

Two joining fragments of a plain armlet, with a circular section, were recovered from structure 3671 (gully segment 3720, phase 4i) (**Fig. 46, 2**). Plain shale armlets are common finds which are not closely datable within the Romano-British period (e.g. Lawson 1976, fig. 4; Mills and Woodward 1993). They are not infrequent finds on Roman sites in Devon (Allason-Jones 1991b, 271-3, fig. 126; Maxfield 1991, 79, fig. 22, 3-4).

A lathe-turned spindlewhorl, biconical in section with a groove around the central perforation, was recovered from ditch 4718 within working hollow 4706 (phase 4i). Spindlewhorls made from Kimmeridge shale are known in Devon from Exeter (Allason-Jones 1991b, 274, fig. 126, 25-6), and the Romano-British villa at Holcombe and the farmstead at Stoke Gariel (Silvester and Bidwell 1984, 49).

A flat fragment of shale with possible cut marks along one edge, perhaps a laminated fragment from a vessel or a waste piece, was recovered from round house 3415 (gully 4660, phase 4i). If this is a waste piece, it does not indicate any significant level of shale-working taking place on the site, and it is likely that the fragment was brought in with other finished objects.

List of illustrated objects (Fig. 46)

1. Cylindrical bead, possibly jet, decorated with four transverse grooves. ON 2398, layer 799, cess pit 819, phase 4ii.
2. Two joining fragments of a plain armlet. ON 2384, context 3721, structure 3671 (gully segment 3720), phase 4i.
3. Biconical spindlewhorl, concentric groove around central perforation. ON 2252, context 3741, ditch 4718 (segment 3743), phase 4i.

The glass

by Lorraine Mepham

A total of 77 fragments of glass was recovered, comprising 57 vessel fragments, three beads (one faience), and a group of 17 tiny shattered fragments, possibly from a fourth bead. With the exception of one Iron Age bead, and four modern fragments (intrusive in phase 4i and 4ii layers), all of the glass is of Romano-British date. The majority of the pieces came from phase 4 contexts, although glass was also recovered from phases 2 and 3 (the total for phase 3 is skewed by the presence of the 17 tiny fragments which almost certainly came from a single vessel or object)(**Table 13**). Of the 53 fragments of Romano-British vessel glass, 18 are completely unidentifiable to form (13 blue-green, three colourless, and two strongly coloured). The remainder are discussed here by vessel form in roughly chronological order.

Pillar-moulded bowl

One cast vessel was identified: a pillar-moulded bowl in blue-green glass (**Fig. 47, 1**). This form is one of the commonest on 1st century AD sites; blue-green examples

continued to be produced until the Flavian period, and are rare finds after this period. This example was residual in a phase 4ii layer.

Strongly coloured monochrome vessels

Strongly coloured glass was used for tablewares in the 1st and early 2nd century AD, occurring most frequently in Claudian to early Flavian contexts. Two tiny fragments of emerald green glass (phase 4ii depression 3785; unphased posthole 786) and one of yellow-brown glass (unphased pottery-rich spread 514) were found at Pomeroy Wood. None of these fragments can be assigned to form; one of the emerald green fragments has been heat-distorted.

Globular jugs

Two joining fragments of pale yellow-brown glass derive from a globular jug with optic-blown ribbing (**Fig. 47, 2**), found in a phase 2 gully (3466). Globular and conical jugs (Isings forms 52 and 55) are the most common forms of jugs on later 1st and earlier 2nd century AD sites. A third fragment, in yellow-green glass with part of a handle attachment (**Fig. 47, 7**), may also derive from a globular jug, as might another featureless fragment in yellow-brown glass, from an unphased cleaning layer.

Colourless bowls, cups and beakers

Colourless glass was used for bowls, cups and beakers of various forms from the 1st century AD onwards. Fragments of four such vessels have been identified.

Two small body fragments have horizontal abraded bands, one of which can be identified as a convex-sided form (**Fig. 47, 3**); the second, from a phase 4ii burnt spread, is too small for the form to be determined. Horizontal bands of abrasion were used to decorate a wide variety of forms from the 1st to the 4th century AD (Price and Cottam 1998, 34). There are several possibilities for the convex-sided form, such as cups (*op. cit.*, fig. 35, 45a, 48) and flasks (*op. cit.*, figs. 82, 83), with an overall date range of mid 2nd to 4th century AD.

A third fragment has a horizontal wheel-cut groove as well as an abraded band (**Fig. 47, 4**). Several cup and beaker forms current in the 1st and 2nd centuries AD were decorated in this way (*op. cit.*, fig. 22-3, 33, 35), including the Hofheim cup with a date range of AD 43 – *c.*AD75 (*op. cit.*, fig. 21), but the techniques were also used on cylindrical bottles at the same period (*op. cit.*, fig. 88).

The fourth vessel is represented by two small body fragments with facet-cut decoration; traces of at least two round or oval facets are visible, as well as one broad cut line (**Fig. 47, 5**). The combination of facets and cut line(s) identify this vessel as an elaborately decorated cup or bowl (Price and Cottam 1998, fig. 47b). Such vessels are not uncommon finds. Their date range is uncertain, and they may have been produced in the 2nd century AD, and were certainly in use in the 3rd and early 4th centuries AD; they appear at Colchester in the mid 3rd century (Cool and Price 1995, fig. 13.5).

Miscellaneous jars, jugs, bottles and flasks

A small fragment of ribbon handle with a single central rib (**Fig. 47, 8**) is not attributable to specific form. Single-ribbed handles are found on both globular and conical jugs, although more common on the latter form (Cool and Price 1995, 120-1).

A rolled-in rim in colourless glass (**Fig. 47, 9**) is from a funnel-mouthed form, either a jar or flask. Funnel-mouthed jars and flasks with rolled-in rims were current during the later 1st and 2nd centuries AD (*op. cit.*, 112, 150), although the use of colourless glass here seems to be unusual.

One further fragment may derive from a bottle. This is a base in green-tinged colourless glass with wheel-cut radial grooves (**Fig. 47, 10**). Such decoration may be found on a number of different forms, and could have been executed at any time after the vessel was blown. One example, from an unknown form, is illustrated from Colchester, although this is in blue-green glass (Cool and Price 1995, fig. 10.2, 1583); the example from Pomeroy Wood is most likely to derive from a cylindrical bottle of 3rd/4th century AD type (eg. Price and Cottam 1998, figs. 84, 94).

Blue-green cylindrical and prismatic bottles

This is the most common form found on the site. A total of 21 fragments, representing a maximum of 17 vessels, have been assigned to this group of forms. Few pieces are closely diagnostic, and most cannot be assigned with certainty to exact form; the 17 vessels comprise five cylindrical, six prismatic and six uncertain forms. There are two bases with moulded concentric circles in relief, probably from square bottles - one has three circles and the second four circles (**Fig. 47, 6**) - and at least one other basal angle from a prismatic form.

Square and cylindrical bottles were commonest in the later 1st and 2nd centuries AD, and frequently dominate glass assemblages of this date; the cylindrical form appears to have gone out of use in the early 2nd century, while the square form continued throughout the 2nd century and possibly into the early 3rd century AD. Other prismatic forms (rectangular, hexagonal, octagonal, triangular) are rarer. At Pomeroy Wood prismatic/cylindrical bottle fragments occur in all Romano-British phases, although the majority were found as residual fragments in phase 4ii contexts.

Beads

Two complete beads and part of a third were recovered. One of the complete beads is an Iron Age type; this is an annular bead in opaque yellow glass (**Fig. 47, 11**). These Iron Age yellow annular beads can be distinguished from post-Roman examples by their colouring (later beads are brighter yellow) and shape (Iron Age examples are characterised by flattened surfaces). The Iron Age annular beads date from at least as early as the 3rd century BC, and were probably distributed from Meare in Somerset in the 3rd and 2nd centuries BC; they continued to be produced until about AD 50 and a few examples are known from Roman contexts (Guido 1978, 73-6).

The second complete bead is a long polygonal form in opaque green glass (**Fig. 47, 12**). Long polygonal beads, invariably green in colour, are found in Britain from the latest pre-conquest Iron Age and throughout the Roman period, although becoming more popular in the later Roman period (*op. cit.*, 96-7).

The third bead is a melon bead in opaque turquoise faience. Melon beads have a chronological range in the 1st and 2nd centuries AD, though they are more common in the 1st century. This example came from an unphased cleaning layer.

In addition, a group of 17 tiny, shattered fragments of blue-green glass from an upper silting layer (phase 3) in inner defensive ditch 748 (segment 744), may represent another bead.

Discussion

Despite the concentration of glass in phase 4i and 4ii contexts (see **Table 13**), it is apparent that much of the identifiable glass derives from vessels current in the later 1st and 2nd centuries AD, and several forms are unlikely to be later than Flavian in date. The presence of the Iron Age annular yellow bead is interesting, but it is possible that this bead arrived at the site with the Roman garrison in the 60s AD, along with the handful of sherds in grog-tempered fabrics which are considered to represent a native Iron Age tradition (Seager Smith below).

From contexts associated with the military occupation of the site (phase 2), the most closely datable form is the ribbed globular/convex jug (**Fig. 47, 2**), a form commonest on later 1st and earlier 2nd century sites. The only other vessels which might be considered likely to derive from this phase are the pillar-moulded bowl, from a phase 4ii layer (**Fig. 47, 1**), the possible Hofheim cup, found in a phase 4i gully (**Fig. 47, 4**), and the two emerald green fragments, one unphased and one residual in a phase 4ii feature (**Fig. 47, 1**). Strongly-coloured monochrome vessels are not common after the Neronian period; a large group of such vessels from Colchester is considered to date from the final years of production of this type of glass, after AD 43 (Cool and Price 1995, fig. 2.10). A small number of monochrome vessels, including emerald green examples, have been found at Exeter, at least one of which is associated with the military occupation (Charlesworth 1979, 222-3, 3-7; Allen 1991, fig. 94, 20). Some of the blue-green cylindrical bottles could also originate from the military phase. The vessels from Pomeroy Wood can be considered typical of the range of tablewares and containers found on other mid to late 1st century AD military sites in Britain. In Devon the most obvious parallels lie at Exeter, and a small but broadly comparable

assemblage came from the military base at Tiverton, although the latter contained no colourless glass (Price 1991).

There are no closely datable forms from contexts associated with the abandonment of the military base (phase 3); the only identifiable piece (from ditch 3151) came from a blue-green cylindrical or prismatic bottle.

All of the other identifiable vessels and objects derived from occupation deposits of 2nd century date or later (phases 4i and 4ii). While the forms from phase 4i, with the exception of the emerald green vessel discussed above, would not be out of place in 2nd century contexts, it is likely that at least some of this material is residual here, and the incidence of residuality increases in phase 4ii contexts, as seen in the occurrence of blue-green prismatic/cylindrical bottles, the pillar-moulded bowl (**Fig. 47, 1**) and the funnel-mouthed jar/flask (**Fig. 47, 9**). Identifiable late Roman forms comprise the possible hemispherical cup (**Fig. 47, 3**), a form in use throughout the 4th century AD, the elaborately decorated facet-cut cup/bowl (**Fig. 47, 5**), and the possible cylindrical bottle represented by the base with radial cut grooves (**Fig. 47, 10**). The latter two forms appear in the mid 3rd century AD at Colchester (Cool and Price 1995, fig. 13.5).

Parallels for all these vessel forms (with the exception of the radially-grooved base) can be found within the much larger assemblages from Exeter (Charlesworth 1979; Allen 1991). A similar emphasis on the blue-green cylindrical/prismatic bottles can be seen in all cases. While much more limited in the range of vessel forms present, the Pomeroy Wood assemblage does contain a small proportion of tableware as well as containers, and it is interesting to note the presence of certain less common pieces such as the early emerald green vessel(s) and the colourless facet-cut cup/bowl, indicating that the residents of the military base and of the later settlement had access to better quality vessels as well as the more utilitarian forms.

early Romano-British (and possible Late Iron Age) date are not included here, but are discussed with the Romano-British assemblage (Seager Smith, below).

Of those sherds tentatively assigned to known prehistoric fabrics, 45 are Bronze Age and eight are Iron Age. The Bronze Age material consists of 38 small, grog-tempered sherds (fabric G4); 6 sherds in a rock-tempered fabric (R1); one moderately fine sandy sherd (fabric Q7). The single rim sherd (fabric R1) is from a vessel with a slight neck constriction (form MBA3). Fabrics G4 and R1 were recorded within the Middle/Late Bronze Age assemblages from Castle Hill and Hayne Lane, while fabric Q7 has been recorded only at Castle Hill, where it has been tentatively dated as Late Bronze Age. Of the 45 Bronze Age sherds, 37 derived from a pit tentatively dated as prehistoric (751), although there is some doubt as to whether the sherds are residual in this context. Other sherds all came from Romano-British contexts.

The Iron Age material consists of seven sherds in a fine sandy fabric (Q2), possibly burnt, and one sherd in a moderately coarse glauconitic sandy fabric (Q12). Fabric Q2 is recorded in the Iron Age assemblages from Blackhorse and Long Range, and fabric Q12 in the small Iron Age group from Langland Lane. All the sherds came from Romano-British contexts.

In addition, 16 tiny sherds (18 g.), all extracted from soil samples, have not been attributed to known fabrics; these comprise 12 grog-tempered and four sandy sherds. The grog-tempered sherds could be of Middle/Late Bronze Age date, but the sandy sherds are chronologically non-distinctive. Again, all these sherds came from Romano-British contexts.

The Romano-British pottery

by Rachael Seager Smith

The pottery assemblage from Pomeroy Wood comprises 17,100 sherds weighing 238,699 g. With the exception of 13 post-medieval sherds (54 g.), all the material is of Roman date and spans the period from the middle of the 1st century AD into the 4th

century AD. Outside Exeter, it is the largest group of Roman pottery yet found in Devon.

In general the condition of the assemblage is poor. All the pottery has suffered severe chemical erosion in the acidic soils of the area. The majority of sherds are very well worn and most have lost their surfaces, although some edge definition survives. Overall, the mean sherd weight is only 14 g., dropping to just 9.7 g. when the inherently 'heavy' sherds, such as the amphora, mortaria and storage jar fabrics, are excluded. The low mean sherd weight and abraded condition suggests that deposits were reworked after the pottery was initially discarded, a view consistent with the large quantity of residual material, especially in phase 4ii.

Methods

The pottery was analysed using the standard Wessex Archaeology guidelines for the analysis of pottery (Morris 1994). The New Forest and Oxfordshire wares were recorded using the standard published corpora (Fulford 1975; Young 1977). Where appropriate, the Exeter type series (Holbrook and Bidwell 1991) was used to record both fabrics and forms but otherwise a site-specific fabric and vessel form series was created. In addition to a group of 'established' wares (distinctive fabric types of known provenance), the sherds were divided into groups on the basis of predominant inclusion type. These groups were further subdivided according to the range and coarseness of the inclusions present, and assigned a unique fabric code. A binocular microscope at x 20 power was available for the examination of fabrics throughout the analysis.

The assemblage was quantified using the number and weight of sherds by fabric type for each context. Pottery fabric totals for each phase are shown in **Table 14**. An estimation of the minimum number of vessels was made for each fabric, using rim forms alone (**Tables 17-26**). For example, single sherds or groups of joining sherds were counted as one but seven sherds of the same form in the same fabric without direct evidence for joining were counted as seven examples of that form. In this report, the proportions and percentages are generally based on sherd count although figures based on weight are provided in brackets. This is to enable comparison with

assemblages from other sites in the district which, where the information is published at least for selected groups, are usually quantified by weight alone or weight and estimated rim equivalents (i.e. Holbrook and Bidwell 1991; 1992; Brown and Holbrook 1989, tab. 1; 1991, tab. 6).

The condition of the assemblage has had a significant effect on the level of detail used in recording. Excluding the samian, surface treatments could be recorded for only 26% of the sherds and decoration on 9%. Discrimination between fabrics was hampered by the absence of surfaces and consequently broad fabric groups based on predominant inclusion types and containing the products of more than one source were used. Problems were also experienced in correlating sherds in poor condition with the published fabric descriptions (Holbrook and Bidwell 1991).. The absence or poor representation of many Exeter fabric types (such as the Sandy Grey wares or the Grey Burnished wares) at this site may, therefore, mearly reflect the condition of the assemblage.

It has also proved impossible to identify vessel forms to the level achieved by Holbrook and Bidwell (1991) who often used decoration to subdivide types. The relatively small sherd size and paucity of total profiles in this assemblage made it difficult to distinguish between, for instance, bowls and dishes with similar rims or forms with flat or chamfered bases. Consequently, for this assemblage, the Holbrook and Bidwell numbers have been used without sub-divisions, and in some cases, the vessel type numbers have been bracketed together to allow the more general description of vessel form. Examples of the Exeter types present at Pomeroy Wood are illustrated by fabric in Fig. **49-52** while the site-specific vessel type series is shown in **Fig. 53-4**.

Imported finewares

Together, the imported finewares represent 3% of the total number of sherds (2% by weight). Samian dominates this assemblage, alone accounting for 2% of the fineware sherds. The other imported fineware fabrics represent just less than 1% of the Romano-British assemblage. Ten ware types were identified, in addition to a group of unassigned colour coated sherds of unknown provenance (fabric Q128).

Samian

by J.M. Mills, with contributions from B. Dickinson

Much of the samian has suffered from erosion by the acidic soils. This has meant that the majority of sherds have little or no slipped surface remaining, which has made precise dating of many sherds difficult, and has reduced the clarity of much of the detail on the decorated vessels, again making precise identification difficult or impossible. The exception to this is the early material from well 3047, which was very well preserved. Although there are some large sherds and three or four vessels of which about 50% survives, much of the material consists of small chips weighing only one or two grammes. Approximately 37% of the assemblage weighs less than 2g per sherd, and 55% weighs less than 5 g. This factor has lead to a high proportion of sherds that could not be assigned a vessel type, or has caused doubt in the identification of vessels in the 18/31 series for example (**Table 16**). The mean sherd weight for the samian assemblage is *c.* 10 g.

The condition of the material has meant that wear caused by usage could not be determined for most of the material, and it is possible that if any unused vessels were present these may not have been detected. The material from well 3047 appears to have been quite heavily used before it was broken and discarded. A total of nine vessels had been drilled for lead rivet repairs. Rivet holes were observed on plain and decorated forms, but only Central Gaulish vessels were repaired.

Only 24 vessels show signs of having been subjected to post-depositional burning. Burnt sherds occur in all phases. A single base from a form 33 cup (context 769) seems to have been chipped neatly around the edge as if to prepare it for a secondary use, perhaps as a lid or small pot.

Just three potters' stamps were recovered (see below), two on Southern Gaulish vessels and one on a Central Gaulish cup. The only legible stamp is that of Niger ii on a form 29 bowl.

The fabrics/production centres

The bulk of the samian is from the main production centres of South and Central Gaul; La Graufesenque and Lezoux respectively. A total of nine vessels from Les Martres-de-Veyre was identified and it should be noted that two of these are the work of Cettus and have a date of *c.* AD 135-60; they are not Hadrianic/Trajanic products. A single vessel has been identified (B. Dickinson pers. comm.) as the product of either the Vichy or Terre-Franche kilns (no. 28), although the mould for that particular vessel was made by Cinnamus of Lezoux. No Eastern Gaulish samian was identified.

Quantities

A total of 405 sherds (4,128 g.) representing a maximum of 356 vessels was recovered during excavation. The quantity of sherds by fabric (production centre) and phase can be seen in **Table 15**.

Samian supply to the site had two main peaks, one in the Neronian/Flavian Period associated with the military base, and another in the mid-2nd century AD. Supply to the site seems to have been continuous from the foundation of the military base, sometime in the 60s AD, until the end of the 2nd century AD.

The range of vessel types and dating

The range of vessel types and the maximum number recovered by fabric type can be seen in **Table 15**. It is possible that some of the small scraps derived from the same vessel but no obvious joins or similarities were observed.

The Southern Gaulish vessels are mainly form 18 or 15/17 platters, decorated bowls (forms 29, 30 and 37), and cups (forms 27 and 33) with two flanged bowls and a single closed vessels represented. Approximately one third of all the Southern Gaulish sherds were decorated. There are none of the classically early (Neronian) plain vessel forms such as Dr 24/25, or Ritterling forms 8, 9, and 12. There is certainly Neronian material within the assemblage and much of the material from Well/latrine 3047 is Neronian or early Flavian in date, including a form 29 bowl with the stamp of Niger ii

which dates to *c.* AD 50-65. The proportion of Neronian to later 1st century AD material is similar to that in the larger Southern Gaulish assemblage from the military base at Tiverton, *c.*16 miles to the north-west (Hartley 1991), and a similar date in the mid AD 60s for the initial occupation of the site is probable.

The ratio of form 29 to 37 is approximately 25:10, whereas at Pompeii (destroyed in AD 79) the proportions were approximately equal. Form 37 is known to have become the most popular decorated bowl by the mid-80s AD. The prevalence of form 29 within this assemblage suggests that there was greater consumption of samian during the first two decades of the occupation than later in the 1st century AD. However, later 1st century AD vessels are present and at least four form 37 bowls date between *c.* AD 80-110.

A scarcity of samian from the end of the 1st century AD until the beginning of the main export period of the Lezoux potteries (*c.* AD 120) is well documented (Marsh 1981) and accounts for the apparent gap in the samian record on many sites at this time. There are, as we have seen, some of the later products of La Graufesenque on the site and also a few vessels from Les Martres-de-Veyre. Given its general rarity during the first two decades of the 2nd century AD, the apparently negligible quantity of samian of this date within the assemblage must not be read as a hiatus in the occupation of the site but rather seen as evidence for continuity of occupation. Having said that, it becomes apparent that identifying a date for the end of the military phase of activity is very difficult, and it may be the case that very shortly after the abandonment of the military base and slighting of the defences, a civilian settlement was established. The fact that there are fewer form 37s than form 29s indicates a decline in samian consumption in the mid-Flavian period suggesting that the military base may have been abandoned and slighted at a similar time to the abandonment of the military base at Tiverton (Hartley 1991) during the 80s AD.

The vast majority of the 2nd century material AD comes from Lezoux. Dating has been especially difficult because of the condition of this material, and much has simply been assigned to the Hadrianic/Antonine period. This includes many of the decorated vessels. The range of forms is fairly standard. It is perhaps surprising that more than 30% of the vessels from Lezoux are decorated bowls and a further three

form 37s fall within this date range (one from ?Vichy or Terre-Franche (no. 28) and two bowls by Cettus of Les Martres-de-Veyre (no. 21 and 41)). The later plain forms are comparatively less well represented; only 12 form 31 or 31Rs were identified compared with 25 18/31 or 18/31R forms. Other forms characteristic of the mid-late Antonine period are present, but are not found in great numbers, and include Ludovici Tg, Walters 79, form 38 and mortaria form 45. The Ludovici dish, however, is an early type dating to *c.* AD 155-170. The latest form 37 bowls are dated to *c.* AD 160-90 and include bowls by Catussa, Casurius (2), Doeccus, Paternus, and Severus vi. These latest vessels suggest that samian consumption continued until the end of the 2nd century AD although probably not into the 3rd century as some Eastern Gaulish vessels would be expected in the assemblage if this were the case. Eastern Gaulish samian is also very rare in Exeter, and generally in the south-west (Holbrook and Bidwell 1991, 2), reflecting its location on the extreme western limits of area receiving Eastern Gaulish samian.

The fairly high proportion of form 37 bowls within the 2nd century AD material and the presence of at least one form 45 mortaria indicate that this remained a relatively high status settlement even after the withdrawal of the army.

Conclusions

The samian evidence suggests that samian supply was continuous from the late Neronian period until the end of the 2nd century AD although perhaps at a reduced level during the end of the Flavian period until the Hadrianic or early Antonine period. The military base at Pomeroy Wood seems likely to have been occupied for a similar period to the short-lived military base at Tiverton (Maxfield 1991), and it is possible that the two military bases were part of the same military campaign. A date in the 60s AD for the establishment of the military base is likely and a date somewhere in the 80s AD is probable for its abandonment, although a clear date for the cessation of military activity is not apparent.

Catalogue of Decorated Sherds

Phase 2

1. Dr.29, SG; **Fig. 48, 1**
Tiny body sherd with fragment of zone of leaf tips. Late Neronian or early Flavian. 4306, posthole 4305, structure 3545.

2. Dr.29, SG; **Fig. 48, 2**
Small well-preserved sherd with scrolled festoon between bead rows, *c.* AD 60-80. 980, well 3047.

3. Dr.29, SG; **Fig. 48, 3**
Two sherds most probably from the same vessel, ornamented with winding vegetative scrolls with chevrons between. Well preserved. Neronian/early Flavian. 3086, well 3047.

4. Dr.29, SG; **Fig. 48, 4**
Three small sherds probably from the same vessel. They may also belong to the same vessel as 3 above although there are no joins and ornamental similarities are confined to similarities between the scroll on two of the sherds. All sherds have a cordon with well-spaced bead row either side. The beads appear to be joined. Well preserved. Neronian/early Flavian. 3086 and 3087, well 3047 and 3122, segment 3151 of the outer defensive ditch 3057 (phase 3).

5. Dr.29, SG *Identified and discussed by Brenda Dickinson*; **Fig. 48, 5**
Form 29 stamped O[FNIG]RI. Niger seems not to have made his own moulds, but tended to patronise a particular mould-maker or group of mould-makers, whose style is quite different from this vessel. The use of crossed tendrils is paralleled in a pit group *c.* AD 50-65. His stamp is usually on form 29 and all the examples are pre-Flavian in style, though a few have been noted in early-Flavian contexts. The site evidence includes Usk and the military base at Strutts Park, Derby established in the pre-Flavian period, *c.* AD 50-65. 4683, well 3047.

6. Dr.29, SG; **Fig. 48, 6**
Small body sherd with large, many petalled rosette. Pre-Flavian. 4326, pit 4315.

Phase 3:
7. Dr.37, CG
Body sherd with legs and torso of warrior O.167 and legs of a second figure to the right. Potter not identified. Hadrianic or early Antonine. 964, segment 958 of the outer defensive ditch 3057.

8. Dr.29, SG *Identified and discussed by Brenda Dickinson*; **Fig. 48, 7**
The rosette and four-petalled motifs are on a bowl from Mainz with an almost identical upper zone and an internal stamp of Aquitanus (Knorr 1919, Taf. 9L). They are also on another of his bowls, from Lake Farm Wimborne, Dorset, with a different scheme of decoration. The rosette also appears on bowls stamped by Ardacus, according to Knorr (*ibid.*, Taf.10, 9), *c.* AD 50-65. 3171, segment 817 of the outer defensive ditch 3057.

9. Dr.37, SG; **Fig. 48, 8**
Rim sherd and another body sherd which do not join, but which have the same ovolo and are from the same bowl. The sherds are very worn, and little slip remains. The ovolo is trident-tongued and has no bead row below, only a little of a vegetative motif and a ?twist remain of the main decoration, *c.* AD 80-110. 3378, segment 3342 of the outer defensive ditch 3057.

10. Dr.37, SG; **Fig. 48, 9**
Fragment of ovolo with rosette tongue, *c.* AD 70-85. 780, segment 785 of the outwork ditch 4715.

11. Dr.29, SG; **Fig. 48, 10**
Body sherd with small bead row and part of scrolled design below. No slip remaining. Neronian. 780, segment 785 of the outwork ditch 4715.

12. Dr.29, SG; **Fig. 48, 11**
Small sherd with fragment of scrolled design. No slip remaining Neronian. 780, segment 785 of the outwork ditch 4715.

13. Dr.29, SG; **Fig. 48, 12**
Small sherd with fragment of vegetative decoration below bead row. No slip remaining. Neronian. 780, segment 785 of the outwork ditch 4715.

Phase 4i:
14. Dr.29, SG; **Fig. 48, 13**
Small body sherd with fragment of spiral motif with central rosette. Neronian or early Flavian. 4647, segment 4646 of gully 4643, structure 4642.

15. Dr.37, CG
Small eroded body sherd with scrap of ovolo B143/144 and bead row below, *c.* AD 140-180. 3672, gully 3750 of roundhouse structure 3671.

16. Dr.37, CG
Body sherd almost certainly from a Cinnamus bowl with ovolo fragment only. Below in a double-bordered festoon is cockerel O.2347 with, to left, a vertical bead row and philosopher O.905, *c.* AD 135-165. Structure 3053.

17. Dr.37, CG
Abraded body sherd with front legs of stag O.1720 only. Antonine. Structure 3053.

18. Dr.37, CG *Identified and discussed by Brenda Dickinson*; **Fig. 48, 14**
Two body sherds, possibly from the same bowl, perhaps by Martio i of Lezoux who used the hare and the small four-petalled rosette (Rogers C23) next to the candelabrum. The hare is on a bowl in the Mussée Bargoin, Clermont-Ferrand, and the rosette is on a bowl from Nijmegen. Both have the mould signature Martio retr. below the decoration. This is the potter whose signatures are usually attributed to Martialis (S&S, pl. 96), but the final letter is consistent with the formation of an O with a stylus. Unfortunately there are no parallels for the zone of rosettes, *c.* AD 125-145. 3108, structure 3053.

19. Dr.37, CG
Base and lower part of decoration from a bowl in the style of Cinnamus. The extant decoration comprises a winding scroll and fragment of a central leaf, see S&S pl.162, 61 and 62 for similar scrolls. To the right is a vertical bead row with ?rosette terminal; trophy Rogers Q27 with Cinammus' lozenge Rogers U36 below; and the lower part of figure O.711 which can be seen on bowls with Cinammus label stamps from London (S&S pl.160, 35) and Exeter (Dannell 1991, fig. 18, 118), *c.* AD 135-70. 784, segment 3834 of the outwork ditch 4715.

20. Dr.37, CG
Body sherd in poor condition. The ovolo with ?bead row below is not identifiable. The only identifiable element of the decoration is double-bordered medallion containing lion to left (either D. 753=O.1421 or D756=O1422) with a bird looking right below. Mid-late Antonine. 851, segment 3834 of the outwork ditch 4715.

21. Dr.37, CG (Les Martres-de-Veyre)
Abraded rim sherd with ovolo (Rogers B80) used by Cettus of Les Martres-de-Veyre, *c.* AD 135-60. 101, ditch 103

22. Dr.37, CG
Fragment from lower part of decoration, badly eroded. Decoration seems to comprise winding scrolls and a fragment of a large natural-style leaf although the leaf itself is not identifiable. Hadrianic or Antonine. 3183, gully 3181 in the occupation area 4732.

23. Dr.37, CG
Three sherds from the same vessel, two of which are discoloured by burning. The ovolo has a cabled tongue with a rosette terminal, but is not identifiable. Below the bead row the design comprises medallions with bird (O.2295A) between. Mid-Antonine. 3307, segment 3315 of ditch 4720.

24. Dr.37, CG *Identified and discussed by Brenda Dickinson*; **Fig. 48, 15**
Body sherd from lowest part of a bowl by Paternus iv. Paternus, whose signature sometimes appears on moulds, used the leaves (Rogers U161), a trifid and figure of Victory or a dancer (O.819A); all are on a bowl in his style from Lincoln. Another bowl attributable to him, from Watercrook, has the leaves (Wild 1979, fig. 121, 79), *c.* AD 130-55. 3213, ditch 3265.

25. Dr.37, CG
Two body sherd with fragments of ovolo, from the same bowl. Possibly a Cinnamus bowl but the ovolos are too poorly preserved to be certain. Mid-Antonine. 3213, ditch 3265.

26. Dr.29, SG; **Fig. 48, 16**
Body sherd from carination and below. The decoration comprises straight gadroons with fine wavy lines between. The same gadroon with wavy lines between are on bowl from Le Graufsenque stamped by Germainus i, *c.* AD 60-75. 3191, posthole 3192 in occupation area 4732.

27. Dr.37, SG; **Fig. 48, 17**
Worn body sherd with vertical ?bead row and vertical rows of large rosettes either side. Details not identifiable, *c.* AD 75-90. 3191, posthole 3192 in occupation area 4732.

28. Dr.37, CG (Vichy or Terre-Franche)
Eroded body sherd from a bowl in a strong orange fabric, made at Vichy or Terre-Franche. Probably made in a Cinnamus mould, the surviving decoration comprises a fragment of ovolo B231 with bead row below and nude man O. 684A. Antonine. 832, hearth 3279.

29. Dr.37, CG
Body sherd drilled to take lead rivets. Lower part of decoration comprising caryatid O.1206 between bead rows ending with beaded rings, and panther O.1518 to the right. The panther was used by Criciro v and for his use of caryatid (on different stand) and vertical beads with beaded rings see signed bowls from London and Corbridge, Northumberland respectively (S&S pl.117, 6 and 4), *c.* AD 135-165. 4264, pit 4265.

30. Dr.37, CG; **Fig. 48, 18**
Burnt body sherd with ovolo B208 with bead row below. The decorative detail comprises ?simple festoons and vertical bead rows surmounted by astragali with a vertical wavy line between the bead rows, a similar grouping of motifs can be seen on a bowl by Casurius from London (S&S, pl.135, 32), *c.* AD 160-90. 4264, pit 4265.

31. Dr.37, SG; **Fig. 48, 19**
Worn body sherd with bead row and heart-shaped leaf only visible. No surviving slip. Early Flavian. 734, spread within structure 3545.

32. Dr.37, CG (Les Martres-de-Veyre)
Worn body sherd with a fragment of decoration only. Probably the Rosette Potter, *c.* AD 100-120. 769, spread within structure 3545.

33. Dr.37, CG
Over 50% of bowl decorated with a freestyle design comprising horse and rider (O.245) and bear to right (O.1588) alternating in upper part of decorated zone with corn stook (Rogers N15) between each figure. A stag and another unidentified beast occupy the lower part of the pot. Ovolo Rogers B143. Cinnamus style, *c.* AD 145-75. 769, spread within structure 3545.

34. Dr.37, CG
Possibly same vessel as 7 above. Body sherd with fragment of legs of warrior O.167. Hadrianic or early Antonine. 3345, segment 3342 of the outer defensive ditch 3057.

35. Dr.37, CG
Body sherd from lower part of decoration from a bowl almost certainly by Doeccus who used the man with cloak (O.638), naked leaping figure (O.687), kilted figure (O.177A) and kneeling figure (O.204); see S&S pls. 148, 25; 148, 13; 147, 6; and 148, 19 respectively. He also used the hollow, eight-petalled

rosette (Rogers C170), almost always within panels, but it occurs at the bottom of a bead row on a form 30 mould from Lezoux (see also S&S, pl. 151, 55), *c.* AD 160-195. 3575, segment 958 of the outer defensive ditch 3057.

Phase 4ii:

36. Dr.37, CG
Burnt body sherd with ovolo B106 and row of small beads below and double-bordered medallion containing sea horse O32. Paternus, *c.* AD 160-95. 683, segment 686 of ditch 655.

37. Dr.37, CG
Rim sherd with small rosette-tongued ovolo and bead rim below, *c.* AD 125-145. 3013, hearth 3014.

38. Dr.37, CG
Small fragment with ovolo B144; Cerialis-Cinnamus group, *c.* AD 135-165. 765, segment 817 of the outer defensive ditch 3057.

39. Dr.37, CG
Part of bowl base with fragment of Diana O.106, caryatid O.1205 or 1206 and a double-bordered medallion containing a seated figure. These motifs were used by many of the mid-late Antonine potters, *c.* AD 150-90. Layers 823 and 868.

40. Dr.37, CG
Body sherd with backward facing bird in small festoon. Probably Antonine. 961, layer overlying working hollow 4706.

41. Dr.37, CG (Les Martres-de-Veyre)
Body sherd with vertical bead row and leaf (Rogers J57) used by Cettus of Les Martres. There may also be fragments of three of his small leaves (J.144) to the right of the bead row, *c.* AD 135-160. 965, spread over the south-western area of the defensive ditches.

42. Dr.37, CG *Identified and discussed by Brenda Dickinson*; **Fig. 48, 20**
A total of 11 sherds from a bowl of Catussa of Lezoux. The decoration is of repeating panels as follows-dolphin (O2392) in simple festoon with urn below; caryatid (O.1206); seahorse (O.33) in double bordered medallion, with an astragalus on each side above and a large ring on each side below; caryatid; etc. The urn and unusually large ring are on a bowl from Lezoux with the mould signature of Cantomallus. Evidence from a bowl assigned to him found in York suggests that he may also have used the same rosette. There may be part of a mould signature Ca.... below the urn/caryatid (B. Hartley pers. comm.), *c.* AD 160-90. 967, spread over the south-western area of the defensive ditches.

43. Dr.37, CG
Joining rim and body sherd with very pitted surface. The ovolo with bead row below is not identified. The only identifiable element of the freestyle design is the stag O.1781. Antonine. 985, spread over the south-western area of the defensive ditches.

44. Dr.37, CG
Rim fragment with ovolo B153 with small bead row below. This ovolo is on a stamped bowl of Severus vi from Ilkley, Yorkshire (S&S pl.128, 2). A sherd from phase 4i, 853 may also belong to this vessel. AD 160+. 986, layer overlying working hollow 4706.

45. Dr.37, CG
Badly eroded body sherd with feet of running animals suggesting freestyle decoration. Antonine. 3020, segment 3019 of the inner defensive ditch 748.

46. Dr.37, CG
Lower part of decoration from panelled bowl with seahorse (O.33) and fragment of festoon or medallion above; nude man with drape (O.638) with leaf (Rogers H167) behind; and lower part of Victory (O.819A). The panels are bordered by bead rows. The nude man and seahorse appear on a similar bowl by Casurius from York (S&S, pl.133, 20); whilst the nude man, Victory and leaf can be seen together on a bowl from Corbridge (S&S pl.135, 34), *c.* AD 160-90. 4427, spread over the western part of the defensive ditches.

Unphased:
47. Dr.37, SG *Identified and discussed by Brenda Dickinson*; **Fig. 48, 21**
Small body sherd with bead rows and leaf cluster. The use of the leaf cluster suspended from the top border is typical of L.Tr- Masculus (Knorr 1952, Taf., 37A) but perhaps also used by some of his contemporaries, *c.* AD 85-110. 973, clearance.

48. Dr.37, SG; **Fig. 48, 22**
Body sherd with satyr within panel, *c.* AD 90-110. 973, clearance.

49. Dr.29, SG; **Fig. 48, 23**
Body sherd with S-shaped gadroons below cordon, *c.* AD 70-85. 993, animal disturbance.

50. Dr.30, SG; **Fig. 48, 24**
Body sherd showing cherub (?O.436) within double-bordered medallion, *c.* AD 70-85. 3002, clearance.

51. Dr.37, CG (Les Martre-de-Veyre)
Body sherd with rosette-tongued ovolo with fragment of scarf dancer (O.361A), *c.* AD 100-120. 3002, clearance.

52. Dr.37, CG
Body sherd with fragment of ovolo B102. Advocisus, *c.* AD 160-90. 3002, clearance.

53. Dr.37, CG
Rim sherd with ovolo B143/144 with bead row below, *c.* AD 140-180. 3002, clearance.

54. Dr.37, CG
Body sherd with fragment of a panel containing eagle O.2167. Probably Cinnamus or an associate, *c.* AD 140-70. 3174, gully 3175.

55. Dr.29, SG; **Fig. 48, 25**
Part of scroll design from above carination. Neronian or early Flavian. Watching brief, findspot 119.

The Samian Potter's Stamps, identified by Brenda Dickinson

1. Dr.18 or Dr.15/17, SG
Incomplete stamp, probably CE[or GE[. Not identifiable. Neronian or early Flavian. 980, well 3047 (phase 2).

2. Dr.29, SG, **Fig. 48, 5**
Form 29 stamped O[FNIG]RI: Niger ii of La Graufsenque, Die 2a, (Hermet 1934, pl 112, 113). As usual with this stamp of Niger, the middle is blurred where the die has gone down into the base and up again, *c.* AD 50-65. 4683, well 3047 (phase 2).

3. Dr.33, CG
Incomplete stamp AC[. Hadrianic or Antonine. 4427, layer overlying the defensive ditches (phase 4ii.

Other imports

Pompeian Red Ware

Three sherds of Pompeian Red Ware were recovered, two plain bodies from the military (phase 2) post hole 3591, part of structure 4724 within structure 3545 and a

low footring base sherd from a slighting (phase 3) deposit (780) in the primary cut 785 of the outwork ditch 4715.

All three sherds are very abraded and it is not certain whether they belong to Peacock's fabric 2 or 3 (1977, 153-154). The fabric 2 sherds probably originated in the Mediterranean and date from *c.* AD 10-79 on British sites. The fabric 3 sherds, which did not appear in Britain until after the conquest and remained current until *c.* AD 90, are from the Auvergne region of central France (*ibid.*, 159). Both fabrics were present at Exeter, with the fabric 3 sherds being much more common (Rigby 1991, 80, tab. 9; Holbrook and Bidwell 1992, tab. 4).

Terra Nigra

Only five sherds of Gallo-Belgic *Terra Nigra* were recognised although three *Terra Nigra* type fabrics from other sources are also present. Two of these occurred at Exeter, where one (Holbrook and Bidwell 1991, 79, fabric 372) was believed to be a fairly local product, the other (*ibid.*, 80, fabric 375) probably a Continental import. The fourth (fabric M107) represented only by body and base sherds, is highly micaceous and is also likely to be from a fairly local source.

Rim forms include *Cam.* 16 platters, dated to between *c.* AD 45-85, one of the most common and latest forms to occur in Britain and the only form to occur on military sites established after AD 70 in the north (Rigby 1977). The small jar or beaker (**Fig. 58, 17**), found in layer 769 (phase 4i), can be broadly paralleled at Exeter (Rigby 1991, 79, fig. 22, 16-17) in contexts dated to *c.* AD 90-100 although these were of a different fabric.

Lyons ware

Only two, extremely abraded sherds of Lyons ware (Tomber and Dore 1998, 59) were recognised. One, from the phase 2 pit 3495 may be derived from a beaker with applied scale decoration (cf. Greene 1978, fig. 3, 23). Another plain body sherd was found in an area of animal disturbance (992). The date range of Lyon ware in Britain is generally considered to be *c.* AD 40 – 70 and it was totally absent by AD 80 (Tyers

1996, 150).

North Gaulish colour-coated ware

Three sherds of this fabric (Anderson 1980, 28, fabric 1), alternatively known as Argonne colour-coated ware (Tomber and Dore 1998, 47), were identified in phase 4i deposits. A small beaker base was found within structure 3545 (**Fig. 58, 1**) and two sherds, including a beaker rim (**Fig. 0, 0**) were found respectively in segments 3103 and 3233 of ditch 3265. The date range for the import of these vessels is *c.* AD 80-135, although production for a local market probably continued well into the 2nd century AD.

Rhenish wares

This term refers to two distinct fabric groups, one made in Central Gaul and the other at Trier. The Central Gaulish type, now often known as Central Gaulish black slipped ware (Tomber and Dore 1998, 50) was produced at Lezoux and at a variety of lesser workshops in the region from *c.* AD 150 – 200 continuing into the 3rd century (Tyers 1996, 138). The Trier fabric or *Moselkeramik* black slipped ware (Tomber and Dore 1998, 60) dates from *c.* AD 180 – 250 (Tyers 1996, 138). Both fabrics were found at Pomeroy Wood but, in contrast to the situation at Exeter (Holbrook and Bidwell 1991, 81, tab. 10; 1992, tab. 4), the Central Gaulish fabric is more common.

Most sherds of both fabrics derived from beakers but only one form could be definitively identified (**Fig. 0, 0**). Rim base and body sherds almost certainly from the same Central Gaulish vessel were found in the phase 4ii layer 733 overlying the defensive ditches of the base. These sherds are from a beaker with a high rounded shoulder, upright neck and a slightly everted rim and a solid, slightly splayed pedestal base (Symonds 1990, beaker form 1, group 9, fig. 9, 173-193). Body sherds indicate the presence of indented and fluted beakers from Trier and globular and indented beaker forms from Central Gaul.

Cologne colour coated ware

Fifteen sherds of Cologne colour coated ware (Tomber and Dore 1998, 57), alternatively known as Lower Rhineland fabric 1 (Anderson 1980, 14), were identified. All the sherds derive from beaker forms. Eight were found in phase 4i contexts (segment 852 of linear 4734 and postholes 3932 and 3489 within structure 3545), including the only rim (**Fig. 0, 0**), from well 920. The other seven sherds were all found in phase 4ii contexts within the outer defensive ditch 3057. A beaker base and a body sherd with roughcast decoration were found in segment 817 and a plain body in segment 3151. The date range of these vessels is *c.* AD 150/60 – 250.

Unassigned colour-coated finewares

This group comprises eight small sherds (29 g.) of fine colour coated ware of unknown provenance. One sherd with roughcast decoration was found in well 4152 while a roughcast beaker base was from segment 3233 of ditch 3265 (both phase 4i). Other beaker bases were found in layers 815 and 3015 and three sherds, including one with rouletted decoration were found in hearth 3014 (phase 4ii). Another tiny plain body sherd was recovered from pit 505 (unphased).

These sherds probably derive from more than one source, but the quality of workmanship suggests that all are likely to be imports. All were from beaker forms and they are probably of 1st to 2nd century AD date.

<u>British Finewares</u>

The British finewares can be broken down into two groups, a range of unassigned wares, probably of local origin and dating from the 2nd century AD onwards, and products of the main Late Roman fineware producing industries located in the Nene Valley, New Forest and Oxfordshire regions.

Five fabrics probably of local origin were identified:

Fabric M103 Oxidised finewares. Fine-grained oxidised, slightly micaceous fabric with rare quartz, red/black ferrous particles up to 0.5 mm across and soft, rounded fine-grained speckled inclusions, silver or pink in colour and up to 1 mm across. Occasional presence of other rock fragments, probably derived from the Trapp deposits of the Permian lava. Wheelmade.

Fabric Q112 Very hard sandy fabric with moderate sub-angular quartz and rare red/black ferrous particles (both <0.5 mm) in a smooth matrix. There seems to be deliberate variation in firing conditions to produce some vessels with deep red exterior surfaces and buff interiors while others have been fired in a non-oxidising atmosphere, giving dark grey surfaces and a red/brown core. Wheelmade.

Fabric Q118 Local colour-coated ware. Hard, fine-grained, oxidised ware with moderate black ferrous particles <0.5 mm across and rare white mica, <0.125 mm across. Ferrous particles often result in a slightly speckled appearance. Wheelmade. Wishy-washy colour-coat, usually dark or reddish brown on exterior surfaces.

Fabric Q124 Local, stoneware-type colour coat. Hard, fine to medium grained fabric, orange brown or pink in colour with a red-brown, chocolate or black colour-coat, sometimes lustrous. Inclusions consist of rare to sparse rounded quartz, rare red iron oxides and soft, white, non-calcareous particles, all <0.5 mm across. Wheelmade.

Fabric Q126 Very hard fired sandy colour-coated ware. Fine sandy fabric with a close, almost vitrified texture. Rare quartz <1 mm across, and red/black iron particles <0.5 mm. Wheelmade. The burnished surfaces give a rather soapy feel to the sherds. Not very carefully made.

All of these fabrics occurred in only very small quantities (**Table 14**). The oxidised finewares (M103) contain a similar range of inclusions and are presumably related to the Type A South-western grey storage jar and Gritty grey ware fabrics which are more fully discussed below. Only one vessel form was recognised, a very abraded sherd from a narrow-mouthed jar or beaker (Type R129) found in segment 3315 of linear 4720 (phase 4i).

No rims were found among the sherds of the hard sandy fineware fabric (Q112). Five sherds, probably from the same vessel with the characteristic red exterior surface, were found in gully segments 3055 and 3068 of structure 3042 (phase 4i). The other plain sherds were from pit 4083, well 4152, stone spread 4719 within working hollow 4706 and in the topsoil (648) over cess pit 819, all phase 4i contexts.

The local colour-coated ware (fabric Q118) appears to be of 2nd to 3rd century AD date although no precise parallels for this fabric have been identified. One body sherd, from segment 3926 of curvilinear gully 4711 (phase 4i), is decorated with incised grooves and a panel of barbotine dots, a style of decoration more usually found on the 'poppy-head' beakers of the 2nd century AD. All the sherds were derived from beaker forms. Two examples of a small globular-bodied form (**Fig. 58, 8**, type R116) were found in layer 3384 (phase 4i) within structure 3545 and layer 4427 overlying the defensive ditches (phase 4ii). This form is paralleled at Woodbury Great Close (Holbrook 1993, fig. 34, 20) and among the micaceous grey wares at Exeter (Holbrook and Bidwell 1991, fig. 63, 4.1) dated to *c.* AD 160-80. The other small jar or beaker form made in this fabric (**Fig. 54**, type R144) is probably copied from imported cornice rim beakers. In addition, a small, complete spouted cup (**Fig. 58, 18**, type R119) had probably been deliberately deposited in a small recut (4691) within pit 4669, one of the internal features of round house 3415 (phase 4i). No trace of a handle is apparent on this example. These vessels have been variously interpreted as children's or invalid feeding cups or lamp fillers but may have been used for a variety of other purposes involving the pouring of small quantities of liquids, from libations to salad dressing or precious perfumed oils. They occur in a wide variety of fabrics and are generally of late 1st or 2nd century AD date, although later examples are also known (i.e. Seager Smith 1993, 52)

All the sherds of the local stoneware (fabric Q124) were found in the phase 4ii layers (733, 814, 815, 965 and 967), overlying the defensive ditches. At least four sherds are from the same bag-shaped beaker with barbotine decoration (type R151). The form probably copies beakers made in the New Forest industry (Fulford 1975, 56, type 44) and does not appear in the repertoire of the Oxfordshire potters. This fabric also occurred at Ilchester (Leach 1982, 139, fabric Cciv), Catsgore (Leech 1982, fig. 100, 74) and Exeter (Holbrook and Bidwell 1991, fig. 23, 24-27), first appearing during the late 1st or 2nd century AD but, at Ilchester at least, it reaches its maximum occurrence in the 4th century AD (Leach 1982, 139). No parallels have been found for the beaker or small flagon base with white painted decoration (**Fig. 61, 9**) made in the very hard, sandy colour-coated ware (fabric Q126) found in layer 961 within working hollow

4706. However, given their position within the stratigraphic sequence, and the date of associated material, both these fabrics probably belong within the 4th century AD.

The Nene Valley was never a major supplier of fineware to Exeter (Holbrook and Bidwell 1991, tab. 10) although significantly more sherds from this source were found on the sites excavated between 1980 and 1990 (Holbrook and Bidwell 1992, tab. 4). Nene Valley wares are represented by only six sherds at Pomeroy Wood, all from brown colour-coated beakers, all from phase 4i contexts. A base sherd was found in recut 3834 of the outwork ditch 4715, four plain sherds from heath 4134 within roundhouse 3415 and a rouletted sherd from layer 3521. None of these sherds are intrinsically datable but as Nene Valley ware did not reach Exeter until the early 3rd century AD (Holbrook and Bidwell 1991, 81), it is unlikely that these sherds are any earlier.

From the last quarter of the 3rd century AD, or perhaps a little earlier, the New Forest began to supply finewares to the residents of the Pomeroy Wood settlement. As at other sites in Devon (Holbrook 1993, 96), it seems that the Oxfordshire potters did not infiltrate the fineware market in this region until the last decade or so of the 3rd century AD. A total of 65 vessels was recognised from rim sherds alone (**Table 17**) and together the New Forest and Oxfordshire fineware fabrics (Young 1977, 123) represent 2% of the overall assemblage (both number and weight). They occur in the ratio of approximately two New Forest to one Oxfordshire sherd. At Exeter these fabrics occurred in roughly equal quantities (Holbrook and Bidwell 1991, 82, tab. 10; Holbrook and Bidwell 1992, tab. 4) but it must be remembered that here the colour-coated mortaria sherds from both centres are included with the finewares. Trade in the Oxfordshire wares must have been by road while the New Forest wares could have been transported by river and coastal waters, perhaps more cheaply.

Although the range of New Forest types present at Pomeroy Wood is wider than at Exeter (Holbrook and Bidwell 1991, tab. 12; Holbrook and Bidwell 1992, tab. 4), a more restricted selection of Oxfordshire forms was present. No late (commencing after *c.* AD 325) Oxfordshire forms were recognised and only one New Forest form, the carinated bowl with stamped decoration (Fulford 1975, type 73) need necessarily belong to the second half of the 4th century. Late Oxfordshire forms were also scarce

at Exeter (Holbrook and Bidwell 1991, tab. 11). One uncommon New Forest colour-coated ware type is worthy of noted – an indented beaker with applied scale decoration between the indents (Fulford 1975, type 28; **Fig. 59, 10**), found in the bank material of 4720 (phase 4i). A similar vessel is known from Hembury (Liddell 1931, pl. VIII, 8). Although the barbotine decorated indented beakers are dated to *c.* AD 320-40 by their presence at the Lower Sloden kilns (Fulford 1975, 52), a reappraisal of the Sloden material has suggested an earlier starting date for production at this site, perhaps *c.* AD 250/260-270 (Seager Smith and Swan in prep.). This type of applied scale decoration also occurs on early New Forest beakers dated to *c.* AD 260-330 (Fulford 1975, 58, type 47) and therefore a late 2nd or early 3rd century AD date would seems more appropriate for this vessel.

Forty (627 g.) of the New Forest and Oxfordshire ware sherds were found in phase 4i deposits (**Table 14**). This represents 13% of all the sherds from these sources (15% by weight). Most sherds of these fabrics were derived from the phase 4ii fills within working hollow 4706. Significant quantities (34 sherds, 366 g.) were also found in the layers over the defensive ditches but none of the other phase 4ii features contained more than six sherds. Sherds from the phase 4i features were mostly derived from the upper fills.

Amphorae *with identifications by D.F. Williams*

No complete amphora was found and only a small number of rim, handle and spike fragments were recovered. The total of 755 pieces, 59,157 g., accounts for 4% of the sherds and 25% of the weight of the whole assemblage. The majority were featureless body sherds. The weights of the different amphora fabrics are shown in **Table 14**.

Class 10 (Dressel 2-4)

The only featured sherds found amongst this material were three small pieces from a bifid rod handle found in a slighting deposit (780) in primary cut 785 of the outwork ditch 4715. The form was made in many areas including Italy, Spain, France and the Aegean, and it predominantly carried wine. The Class 10 amphorae date from the later 1st century BC to the mid 2nd century AD although seem to have been in decline by

the later 1st century AD (Peacock and Williams 1986, 106). The bifid handle sherds, and five body sherds found during the watching brief, are probably of Italian origin. The three other body sherds from slighting deposits (959 and 966) within segment 958 of the outer defensive ditch 3057 are in an unusual, highly micaceous fabric but are similar enough to suggest that they derive from the same vessel, probably of this form.

?Dressel 5

Part of a bifid handle attached to the body and two other body sherds of the same fabric were found in a slighting deposit (780) in primary cut 785 of the outwork ditch 4715. Although the rim is missing, the bifid handle indicates that the sherds belong to a koan-type amphora while the steep angle of the summit of the handle suggests that this may be a Dressel 5 form (cf. Sciallano and Sibella, 1991). These amphorae were made during the 1st century AD in the eastern Mediterranean region.

?Class 15 (Haltern 70)

Part of a solid spike found in pit 3073 (phase 4ii) probably belongs to a Class 15 or an associated form. These vessels date from the 1st to early 2nd century AD (Sciallano and Sibella, 1991; **Davies *et. al.* 1994, fig. 4**). Although probably residual in this context, the spike suggests the presence of greater quantities of Class 15 amphora within the assemblage. The fabric of Class 15 amphorae is very similar to that of the much more common Class 25 vessels, and although the 15s have a more cylindrical profile and tend to be thinner walled, the two types can be easily confused. These vessels carried *defrutum*, a sweet liquid made by boiling down grape musts (Peacock and Williams 1986, 116).

Class 25 (Dressel 20)

These vessels were made on the banks of the River Guadalquivir and its tributaries in the southern Spanish province of *Baetica*. They carried olive oil, and had an average capacity of 66 litres (Sealey 1985). The Class 25 vessels were the most common amphora form imported into Roman Britain from the late pre-Roman Iron Age until at

least the late 3rd century AD (Peacock and Williams 1986, 136). Although earlier (*c.* AD 50-170) and later (*c.* mid 2nd century AD onwards) fabrics can be identified (Symonds and Tomber 1992, 94-5), no attempt has been made to distinguish them here, given the poor condition of the assemblage. Consequently, only the more diagnostic sherds, the rims and stamped fragments, can be more precisely dated.

Estimated weight equivalents (the total weight of sherds present divided by the average weight of a complete vessel – for Class 25s, an average of 28.42 kg. (Peacock and Williams 1986, tab. 1)-indicate the presence of just less than two vessels at Pomeroy Wood. However, the assemblage includes rims from at least five different amphorae. A comparison with Martin-Kilcher's (1987) typological scheme for the Class 25 rims derived from well-dated contexts at Augst, suggests a date range covering the period from the first half of the 2nd century to the 3rd century AD for these rims (**Table 18**). The importance of Class 25 sherds in phase 2 deposits (**Table 14**) suggests that even though no early rims were found, these vessels were reaching the site during the military period.

Probable stamps were noted on two handle fragments. One, from round house 4527 (context 4158, outer gully 4159; phase 4i), was probably stamped close to the upper attachment but is so abraded that the stamp is illegible. The other, from a slighting deposit (964) in segment 916 of the inner defensive ditch 748, has a much worn stamp in cartouch towards the summit of the handle. The last letter appears to be either a ...F or a ...P.

Class 27 (Pélichet 47/Gauloise 4)

No rims were present but base, handle and body sherds probably belonging to the flat-bottomed wine amphora from southern Gaul were identified. The type had a long life from about the middle of the 1st century to the 3rd, possibly early 4th centuries AD (Laubenheimer 1985).

Although some of the sherds were found residually, the currency of the early amphora types (the Class 10/Dressel 2-4, ?Dressel 5 and ?Class 15/Haltern 70) was probably exclusive to the military occupation at this site. The Class 25/Dressel 20 vessels were

by far the most common amphora type throughout the Roman period (*c.* 93% of the sherds or almost 96% of the weight) and carried olive oil. The Class 27/Gauloise 4, which also carried wine, represent 5% of the sherds (2% of the weight). These two amphora types also dominated the assemblage from Exeter (60% and 14% of the weight respectively-Holbrook and Bidwell 1991, tab. 14; Williams 1992, tab. 5) although a wide range of other early types, including the southern Spanish *Cam.* 185A, 186A and C forms, Dressel 2-4, Rhodian, Richborough 527 and carrot amphora, were also identified. Evidence from Pomeroy Wood and Tiverton where, in addition to Class 25/Dreseel 20 vessels, only two other amphora types were identified (Holbrook 1991, tab. 7), indicates that relatively few of these types were redistributed to military bases in the hinterland, if Exeter was the principle point of supply. It is also interesting to note that no late amphora types were found at Pomeroy Wood, even though the North African, hollow-foot and Palestinian types are all known at Exeter (Holbrook and Bidwell 1991, tab. 14; Williams 1992, tab. 5).

There is some evidence to suggest that some of the Class 25/Dressel 20 vessels may have reached the site empty, secondarily traded as large containers rather than for their original contents. Five groups of sherds were repaired and probably reused for a variety of other purposes. At least ten, and possibly 13, of the sherds found in a shallow depression (4455 – phase 2) which formed part of structure 3545, were from the same vessel. Two of the group of joining sherds had had small, circular perforations drilled through the vessel wall after firing. These indicate an attempt at repair, perhaps with a metal staple or plug (although no evidence of this survives), a cord or leather thong. That amphorae were repaired with metal is indicated by another sherd, from a layer (965, phase 4ii) overlying the defensive ditches, which has a partially surviving lead plug within a circular, post-firing perforation. It is unlikely that vessels repaired in this way could ever be expected to hold liquids again.

Other evidence for alteration and/or adaptation of these vessels come from the handle sherd with the illegible stamp noted above, which has a *c.* 5 mm deep cut mark on its outer surface, suggesting that an attempt was made to cut or saw the handle off, before it was simply broken. Similarly, sherds in segment 817 of the outer defensive ditch 3057 (742 – phase 4ii), which derive from the central part a vessel, just beneath and preserving the lower handle attachment, show that the neck was deliberately trimmed

and the handle knocked off close to the body. Two sherds from a slighting deposit (3667) in primary cut 785 of the outwork ditch 4715 also show deliberate trimming at the base of the neck. The removal of the neck and handles of amphorae, presumably to allow the re-use of the body, is not uncommon on military sites.

Mortaria

A total of 109 mortarium sherds, 3,959 g., was recovered, with a little over half of these being from the later Roman phases 4i and 4ii. Although mortaria were never a common element within the Pomeroy Wood assemblage, up until the later 3rd or 4th centuryAD Continental imports predominated, with a small range of local products. Subsequently, supply (such as it was) switched to the products of the Oxfordshire and New Forest centres. The Oxfordshire red/brown colour-coated mortaria have been included here rather than with the finewares, as vessel function (food preparation) distinguishes them from the serving vessels more commonly made in these wares.

In addition to the Oxfordshire white wares, white slipped red wares and red/brown colour-coated wares (Young 1977, 56, 117 and 123) and New Forest Parchment wares (Fulford 1975, 26, fabric 2a), nine other fabric were identified. Rims from 18 vessels were present, the forms shown in **Table 19**.

Fabric FC1	Imported, probably from Spain (Hartley 1991, 189; Tomber and Dore 1998, 81). Hard, grey-white fabric with abundant quartz <0.5 mm; other inclusions comprise white mica, red and black ferrous particles and clay pellets. Fine quartz trituration grits. Neronian-Flavian.
Fabric R100	Made in Central France, probably the Massif Central (Hartley 1991, 190, fabrics FC6-11; Tomber and Dore 1998, 68). Hard, buff fabric with moderate igneous rock fragments <1.5 mm across, golden mica, feldspar and occasional ?manganese fragments. Igneous rock trituration grits, often extending onto flange, *c.* AD 50-80/85
Fabric I100	Group of fabrics made at a variety of centres in North Gaul (Hartley 1991, 189, fabrics FC2-5; Tomber and Dore 1998, 75). Pale yellowish brown to orange-red with pink or cream surfaces. Size, proportions and quantity of inclusions vary but generally consist of red and black ferrous particles, quartz sand and limestone fragments. Crushed flint or chert trituration grits, *c.* AD 50-150 but may have continued into the 3rd century AD.
Fabric Q113	Probably from the Rhineland (cf. Hartley 1991, 190, fabrics FC12-17; Davies and

Seager Smith, 1993, 220, fabric 42 R). Very hard and off-white with sparse to moderate quartz, sparse soft black non-magnetic inclusions and rare red ferrous particles, all <1 mm. Traces of a pale yellow slip. Transparent quartz trituration grits. 1st to 3rd centuries AD.

Fabric Q120 Probably from the Rhineland (cf. Hartley 1991, 190, fabrics FC12-17; Davies and Seager Smith, 1993, 220, fabric 42 H). Hard, bright orange fabric with a deep red wash on exterior. Rare red iron particles<0.5 mm, and scattered quartz in a matrix with sparse sparkling flecks too small to identify. Large (<5 mm) angular white quartz/quartzite trituration grits, *c.* AD 150-250.

Fabric Q106 The Rhineland or possibly Britain (Davies and Seager Smith 1993, 219, fabric 42L). Hard, off-white to light orange with co mmon quartz, rare to sparse iron oxides (both < 0.25 mm) and hard, white non-calcareous particles (<1 mm). Crushed flint trituration grits. Later 2nd or earlier 3rd centuries AD.

Fabric M108 British, perhaps South Wales. Soft, powdery fine-textured micaceous fabric. Generally orange with a dull grey core and sometimes traces of a thick white slip on the exterior surface. Other inclusions consist of red/brown ferrous particles up to 1 mm across, and rare scattered quartz. Large angular white trituration grits. Late 1st to 2nd century AD.

Fabric Q125 Probably local. Hard, medium-grained fabric with moderate to co mmon quartz up to 1 mm across. Trituration grits of large, soft, well-worn, dull reddish-brown grits up to 5 mm across. The only examples were dark grey with creamy brown surfaces but these may have been burnt.

Fabric Q127 Probably local; coarse sandy fabric. Dark brown-orange surfaces with a grey core. Contains abundant well-sorted quartz <0.5 mm, red/black ferrous particles and very rare hard, dark brown angular grains <0.75 mm.

The typically Claudian wall-sided mortarium forms are completely absent from this assemblage but the Spanish mortaria and those produced in the Massif Central were certainly present during the military period at this site. The Spanish mortaria are a characteristic feature of 1st century AD assemblages from the south-west, having been found at Carvossa and Nanstallon in Cornwall, Exeter, North Tawton and Tiverton in Devon and Sea Mills in North Somerset (Hartley 1991, 194) as well as at Dorchester (Davies and Seager Smith 1993, 219, 42M). No kilns are known but the source area is suggested by its distribution in Britain and its association with Spanish finewares of the same date at Exeter (Hartley 1991, 194). Two joining rims (**Fig. 55, 17**) were found in the possible lining (980) of well 3047 (phase 2) while the third was found residually in layer 965 overlying the defensive ditches (phase 4ii). Joining rim sherds of a vessel from the Massif Central were found in posthole 3427 (**Fig. 0, 0**) and

a base sherd from a slighting deposit (960) in segment 958 of the outer defensive ditch 3057.

The North Gaulish fabrics are particularly susceptible to soil conditions and not only lose their surfaces but laminate and fragment into small blocky pieces making form recognition problematic. A distinctive range of vessel types (ie. Bushe-Fox 26-30, Hartley group I and II (Gillam 238), Gillam 255 and some Gillam 272) were made at a variety of centres, including kilns at Noyon, from *c.* AD 50-150 although these is increasing evidence that production may have continued into the 3rd century AD (Hartley 1991, 204). Only one form was recognised made up from 13 sherds found in posthole 3123 of structure 3053, phase 4i), a variant of Gillam 255 (1957, 206, fig.26) which can be paralleled at Greyhound Yard, Dorchester by vessels dated to *c.* AD 160-230 (Davies and Seager Smith 1993, 222, types 317 and 318) and at Exeter (Hartley 1991, types TC 46-49). Although none of the North Gaulish mortaria were found in phase 2 deposits, it is probable that at least some of the products from this region relate to the military activity at this site. This is suggested by the 20 very abraded sherds (197 g.) all from the same vessel and probably derived from somewhere near the spout, found in a slighting deposit (960) in segment 958 of the outer defensive ditch 3057.

During the late 1st and 2nd centuries AD, North Gaul probably became the predominant source of supply with the addition of a few vessels from the Rhineland probably arriving from the mid 2nd century AD onwards. No rims are present among the material from the Rhineland although base sherds from at least four vessels were found.

Mortaria were produced in Exeter during the fortress period and between *c.* AD 70-120 (Holbrook and Bidwell 1991, 144, app. 1), with a revival in perhaps the second half of the 3rd and 4th century AD (Hartley 1992, 65). A wide range of fabrics was made (Hartley 1991, FB7-22, 24, 26-31, 35-6) but the only certain example found outside the city was from Tiverton (Holbrook 1991, 74, no. 106). Fabrics Q125 and Q127 are likely to be local products and may well be from Exeter although no precise parallels have been found. All four sherds of these fabric types were rims (types R140 and R147). None were from well-sealed contexts (layer 769 within structure 3545

(4i), layer 961 within working hollow 4706 (4ii) and layers 735 (6) and 965 (4ii) overlying the defensive ditches) and therefore their date range remains uncertain.

All the sherds probably from South Wales (Fabric M108) are of the same form (type R125) and it is possible that they derive from a single vessel. Mortaria were produced in South Wales during the late 1st and 2nd centuries AD and are unlikely to have been common in Devon, only one vessel, probably from Caerleon, being identified in the much larger assemblage from Exeter (Hartley 1991, 215).

Just over one-third of the mortarium sherds were from the Oxfordshire and New Forest regions. Sherds from Oxfordshire red/brown colour-coated vessels were by far the most common, the other fabrics being represented only by negligible quantities (**Table 14**). Only three forms were identified, the Oxfordshire white ware type M17, date to *c.* AD 240-300 (Young 1977, 72), and red/brown colour-coated types C97 and C100 dated to *c.* AD 240-400 and AD 300-400 respectively (Young 1977, 173-4). Like the finewares from these sources, mortarium sherds were especially common in segments 4335 and 4595 of ditch 4085, layers in working hollow 4706 and in the layers overlying the defensive ditches.

Oxidised Coarsewares

A total of 583 sherds, 5,176 g., of oxidised coarseware fabrics was recovered. This group of fabrics seem to have been especially vulnerable to abrasion in the harsh soil conditions, but it is probable that the majority were comparatively well-made and provided slightly better quality wares intermediate between the coarsewares and the true fineware range. Almost all the sherds within this group are wheelmade. Rims from only 15 different vessels were identified; the vessel forms are shown in **Table 20**.

Two of the fabrics (**Table 14**) have been identified at Exeter (Holbrook and Bidwell 1991, fabrics 406 and 435). Small quantities of New Forest parchment (Fulford 1975, 26, fabric 2a) and Oxfordshire white slipped (Young 1977, 117) wares were also identified. However, the very poor condition of the oxidised coarseware sherds has made precise fabric identification and attribution to specific sources problematic.

Consequently, three of the ten fabrics identified are 'catch-all' groups encompassing the products of several different centres and perhaps a wide date range.

Fabric M100	'Catch-all' group for fine, micaceous slightly sandy fabrics.
Fabric Q102	'Catch-all' group for fine sandy wares, white, buff and orange.
Fabric Q109	Soft fine sandy wares. Sparse to moderate quartz and rare black or dark grey inclusions <0.25 mm. Traces on white slip on exterior.
Fabric Q110	'Catch-all' group for coarse sandy wares.
Fabric Q119	Hard, slightly sandy fabric. Fine-grained matrix containing very fine sand < 0.125 mm and larger inclusions of sparse, soft red or dark brown particles <1 mm, and rare soft white non-calcareous particles <0.5 mm. Interior is generally pale grey while the exterior is orange. White-slip on exterior.
Fabric Q117	North Gaulish wares. Hard, slightly sandy fabrics with variable quantities of red and black iron particles <1 mm across, limestone <1 mm across and quartz < 0.5 mm across. Colour varies from a uniform greenish-cream for the most iron-rich examples to reddish-orange with cream surfaces for the sandier sherds.

Fabric 406, a fine white flagon fabric, may be another product of the Exeter fortress ware industry and while fabric 435, also fine but generally pink in colour, may itself contain the products of more than one source, it too is probably of relatively local origin (Holbrook and Bidwell 1991, 141). Although most sherds of the fine white flagon fabric were found in phase 2 contexts (**Table 14**), 15 of these belong to the lower part of a single vessel found in pit 4315. The other two sherds, both very abraded, from phase 2 were found in pit 3495.

Only two sherds of the fine pink flagon fabric were found in phase 2, in segment 958 of the outer defensive ditch 3057. Most were from a slighting deposits in primary cut 785 of the outwork ditch 4715 and it is probable that the majority are from a single vessel. Two small rim sherds from a ring-necked flagon, were found in layer 780, while seven body sherds from layer 3687 joined 138 sherds from layer 3692. All the sherds are very abraded so no attempt was made to reconstruct the vessel. A later 1st to early 2nd century AD date would be appropriate.

A third fabric may also be attributable to an Exeter source. The hard, slightly sandy fabric (Q119) may be encompassed by Exeter fortress ware 'D' (Holbrook and Bidwell 1991, 153) but no vessel forms were present to aid identification. Although

only present in small quantities most of these sherds were found in phases 2 and 3, so a military connection and 1st century AD date would be appropriate.

The fabrics of the North Gaulish wares correlate with the mortaria produced in northern France from the mid 1st to 3rd centuries AD (Davies and Seager Smith 1993, 281; Davies et al 1994), here recorded as fabric I100. Only three featured sherds were identified, a flagon rim (type R148), found in a slighting deposit in segment 916 of the inner defensive ditch, a strap handle (feature 840, phase 2) and a base from layer 967 overlying the defensive ditches (phase 4ii). The handle and base as well as most of the body sherds probably derive from flagon forms.

One form, a disc-mouthed flagon (type R109) from segment 852 of ditch 4734 (phase 4I), is the only form in the soft, fine sandy ware fabric. The 'catch-all' fabric groups were mostly found scattered, generally in ones or twos, in features belonging to each of the Roman phases with no particular concentrations in any one feature or part of the site being apparent. The butt beaker rim (type R145), found in a slighting deposit in primary cut 785 of the outwork ditch 4715 (**Fig. 57, 8**), is similar in form and probably in fabric to one from Topsham (Bidwell 1975, fig. 11, 20). Bidwell (*ibid.*, 236) notes that these vessels occur only rarely in military and immediately post-military contexts at Exeter but are unlikely to be continental imports. The small globular-bodied beaker form (type R116) was also made in the local colour-coated ware fabric (Q118), suggesting that this micaceous fabric may also be of local origin, and is probably of 2nd to 3rd century AD date. The virtually flat discs (type 146), made in coarse sandy fabrics, may be lids for amphorae or other forms but, as they cannot be correlated with any particular amphora type, they have been included in this group. A large flat-bottomed base in a coarse sandy fabric, found in a slighting deposit (966) in segment 958 of the outer defensive ditch, might be from a *Cam.* 139 flagon.

The presence of New Forest parchment ware represents a very westerly occurrence of this fabric (Fulford 1975, fig. 52) which does not appear to have been identified at Exeter. The candlestick, found in layer 961 (phase 4ii) within working hollow 4706 (**Fig. 61, 7**), although never a common form, had a long date range *c.* AD 270-380 (Fulford 1975, 74). These sherds offer the only ceramic evidence for any form of

lighting in the Pomeroy Wood assemblage. The internally flanged bowl, sherds of which were found in cess pit 819, was much more common and was made throughout the life of the New Forest industry (Fulford 1975, 72).

Grey coarsewares

The assemblage was overwhelmingly dominated by the grey coarsewares which comprise 86% of the Roman sherds (68% of the weight). For ease of discussion the fabrics have been divided into six main groups: miscellaneous wares, micaceous greywares, sandy grey wares, south-western grey storage jar fabrics, gritty grey wares and Black Burnished wares. Twenty-five fabrics were identified, including seven that can be directly paralleled at Exeter. The Exeter fabrics, as well as the South-western grey storage jars and Gritty grey wares, were recorded using the Exeter vessel type series (Holbrook and Bidwell 1991), with any additional forms not represented at Exeter being included in the site-specific type series where necessary. The Exeter forms present at Pomeroy Wood are illustrated by fabric type in **Figures 49-52** and listed in **Appendix 1**. The remaining fabrics could not be paralleled elsewhere in the vicinity, and were recorded using the site-specific type series (**Fig. 53-4; Appendix 2**). The vessel forms present are shown in **Tables 21-6**.

Miscellaneous wares

Four fabrics were present in this group:

Exeter fortress ware 'B' (Holbrook and Bidwell 1991, 149, fabric 190).

Gabbroic wares (Holbrook and Bidwell 1991, 183, fabric 2).

Fabric G100 'Catch-all' group for a range of grog-tempered fabrics. Other inclusions may include quartz, iron oxides, fine white mica and soft, rounded fine-grained speckled inclusions, silver or pink in colour also present in fabrics Q103, Q123 and M103.

South Devon wares (Holbrook and Bidwell 1991, 177, fabric 5).

Exeter fortress wares of all types were very poorly represented at Pomeroy Wood with only one sherd (from the unphased gully 3936) of the 'B' ware being positively identified. This is even fewer than at Greyhound Yard, Dorchester (Davies and Seager Smith 1993, 282). The distribution of these wares is apparently restricted to sites with

a military interest (Holbrook and Bidwell 1991, 16) and therefore they could be expected in much larger quantities at Pomeroy Wood. At Tiverton, for instance, these wares were only slightly less common than in Exeter itself (Holbrook 1991, 69). While it is possible that their recognition has been hampered by the very poor condition of the assemblage, it seems unlikely that the distinctive hardness and texture of the 'B' wares especially, should have completely destroyed. While at least some of these wares may have been included in the sandy greyware fabric groups, it is perhaps more likely that their virtual absence is related to the general paucity of pottery from military contexts at this site.

One gabbroic ware sherd is known from Tiverton (Holbrook 1991, fig. 17, 1) and small quantities have been found in Exeter, restricted to 1st and 2nd century AD contexts (Holbrook and Bidwell 1991, 183-4). The body and base sherds from a small jar form found in a slighting deposit in segment 4582 of the inner defensive ditch 748 are therefore probably contemporary with the deposit, while the rim (**Fig. 0, 0**) although intrinsically of similar date, occurred residually in layer 3320 (phase 4i).

Although only present here in small quantities (**Tables 14** and **21**), grog-tempered wares apparently do not occur on other Roman sites in Devon. It is however possible that the use of this temper type represents a continuation of the pre-Roman Iron Age ceramic tradition of the area, at least one grog-tempered sherd of Late Iron Age date being found at Blackhorse (**chapter 00**). Only the bead rim jar (**Fig. 56, 4**), from well 4152, is datable. The form was made in many fabrics in the south-west from at least the middle of the 1st century BC, if not before, and lasted well into the 1st century AD but is unlikely to outlast the first quarter of the 2nd century at the very latest. The stratigraphic position of this vessel suggests that it was deposited during the military occupation of the site and this may have the time at which the other vessels in this fabric arrived.

The South Devon wares appear to have reached the site during the later 2nd and early 3rd centuries AD, at a time comparable to their introduction at Exeter (Holbrook and Bidwell 1991, 178). Although never an important part of the pottery supply to Pomeroy Wood, the significance of these wares rose to nearly 4% of the later 3rd and 4th century AD (phase 4ii) coarseware sherds (5% of their weight), compared with

less than 1% of both the number and weight of the coarsewares in phase 4i. A total of 39 vessels were recognised (**Table 22**), 34 of these being found in phase 4ii contexts. Nearly 47% (120 sherds) of the South Devon wares were found in the layers infilling working hollow 4706.

Micaceous greywares

Exeter micaceous grey ware (Holbrook and Bidwell 1991, 163, fabric 125).

Fabric M104 Fine, with common mica. Moderately hard with common white mica and rare ferrous particles and quartz, all <0.5 mm across. Dark grey surfaces, with buff margins and a grey core. Wheelmade.

Fabric M105 Coarse with mica and shiny black grains. Common to abundant quartz, shiny black non-magnetic particles both up to 0.75 mm across, and fine white mica. Generally unoxidised. Wheelmade.

Fabric M106 Soft, highly micaceous fabric. Very fine-grained (<0.125 mm) with abundant mica; no other visible inclusions. Wheelmade.

These wares formed only a minor component of the pottery supply at all times during the lifespan of the settlement. The Exeter micaceous greywares are very poorly represented (**Table 14**) although this may be due to problems of recognition stemming from the condition of the assemblage. All the phase 2 sherds are from a single small beaker of a type paralleled at Exeter and dated *c.* AD 160-180 (Holbrook and Bidwell 1991, fig. 63, 4.1). This vessel was found on the edge of one of the bowls (4520) of grain drier 4123, situated within structure 3545, although it may originally have been deposited, perhaps in a small ephemeral cut, after the feature had gone out of use. The distinctive features of all the other micaceous wares from Pomeroy Wood is the presence of common visible mica plates within the fabric, a feature not apparent in the Exeter micaceous grey ware series (*op. cit.*, 163). Nineteen vessels were recognised, mostly smallish jars (**Table 21**). The distribution of the micaceous grey wares (which represent 3.5% of the coarseware sherds in phase 2, and nearly 2% in phase 4i but only negligible amounts in phase 4ii contexts), suggests that they are all of later 1st to later 2nd or early 3rd century AD date, contemporary with the Exeter micaceous greywares (*op. cit.*, 163-5).

Sandy greywares

The difficulties of recognising specific fabric types among sandy grey coarsewares are well known and at this site exacerbated by the condition of the material. Two broad fabric groups that contain the products of several centres spanning a wide date range, were recognised, together with seven more distinctive fabric types.

Exeter sandy grey ware (Holbrook and Bidwell 1991, 154, fabric 151).

Fabric Q100 'Catch-all' group for coarse (grain size over *c.* 0.5 mm) sandy grey wares.

Fabric Q101 'Catch-all' group for fine (grain size less than *c.* 0.5 mm) sandy grey wares.

Fabric Q104 Fine sandy ware with dark grey/black slightly micaceous surfaces and a red or brown core.

Fabric Q105 Very coarse, quartz grits. Moderate large (<2 mm across) rounded translucent quartz inclusions in a fine (0.25 mm or less across) sandy matrix. The large quartz protrude through the surfaces. Can be grey or red/brown in colour, generally with darker surfaces.

Fabric Q107 Hard, dark blue-grey ware. Closely textured with abundant quartz (<0.5 mm across) and rare to sparse black ferrous inclusions, giving a speckled appearance, sometimes with fine black streaks on the surface.

Fabric Q108 Fine, smooth fabric with rare rounded quartz (<0.75 mm across). Dark grey/black slightly micaceous surfaces with a red or brown core.

Fabric Q111 Coarse sand with shiny black grains. Hard to very hard gritty fabric, dark grey-brown in colour. The proportions of inclusions vary even with a single vessel but consist of common or very common subrounded quartz, often white or translucent in colour and hard shiny black angular inclusions, both up to 1 mm across, in a fine, slightly micaceous matrix.

Fabric Q115 Fine, smooth, slightly micaceous sandy fabric with rare to sparse ferrous particles and scattered quartz up to 0.5 mm across. Colour varies from orange to dark brown or grey, occasionally with a strange yellow tint. No surfaces survive.

A full range of bowl, straight-sided bowl/dish and jar forms is present, together with lids, flagons and jugs (**Table 21**). Although all traces of manufacturing technology have often been obliterated by the condition of the sherds, the majority of vessels are probably wheelmade, but a few handmade examples were also noted. Both sherds of Exeter sandy grey ware (**Fig. 58, 20**) had the distinctive combed decoration typical of

a small group of vessels introduced to Exeter during the late 1st or early 2nd century AD, which may even be imports from South Wales (Holbrook and Bidwell 1991, 155). It is probable that many other sherds of this fabric type have been included among the coarse and fine sandy ware 'catch-all' groups, the 'micaceous surfaces but no visible mica plates' typical of the Exeter fabric (*op. cit.*, 154) having been destroyed by the acidic soils. Sherds of other Exeter fabrics, such as the hand-made grey burnished ware (*op. cit.*, 163) and Fortress wares 'A' and 'B' (*op. cit.*, 145 and 149) may also be included in these groups. The sources of the other fabrics are unknown.

Together the sandy grey wares represent 30% of all the coarseware sherds (20% of the weight) and clearly formed a significant component of the ceramic assemblage at all times. In contrast, these wares represented only 9% of the weight of quantified sherds from Exeter (*op. cit.*, M1:17-20). However a steady decline in their importance through time is apparent (**Fig. 63**). Given the quantity of residual material present in phase 4ii, as indicated by the more closely datable imported finewares for instance (**Table 14**), the sandy grey wares may have been of even less significance by the later 3rd and 4th centuries AD. This decline may be linked to the rise of the South-east Dorset Black Burnished ware industry supplying superior quality cooking wares (Farrar 1973, 71) although it could also be related to the chronology. Production of the Exeter sandy grey wares for instance, probably ceased during the second half of the 2nd century AD (Holbrook and Bidwell 1991, 155). However, the sandy grey ware fabrics present at Hayes Farm, Clyst Honiton (Holbrook 1989, 16, tab. 1), occupied from the first half of the 2nd century AD into the later 3rd or 4th century AD, suggest that production did continue in this region. The sources of these wares, which fall outside the range of the Exeter fabric series, are not known but Holbrook (*ibid.*, 16) notes that all the forms present are known in greyware fabrics in other assemblages from south Somerset and east Devon, and therefore they are likely to be of relatively local origin. It is probably that greywares were made on the Brue and Axe levels (Holbrook and Bidwell 1991, 19), for instance.

South-western grey storage jars and Gritty grey wares

These wares represent the products of a series of interrelated industries producing coarseware vessels for local markets in Somerset and east Devon between the 2nd and the 4th centuries AD. Although considerable variation exists, two related fabric types were identified at Pomeroy Wood.

South-western grey storage jars:

Fabric Q103 Type A. Coarse, often slightly micaceous fabric with variable quantities of quartz, red/black ferrous particles, soft, rounded, fine-grained speckled inclusions generally silvery-grey or pink (if oxidised) in colour and often rather flaky in appearance. Other hard brown rock fragments probably derive from the Permian lava or Trapp deposits. Inclusions may be up to 5 mm across. Rather lumpy texture. Colour ranges from bright orange to buff, and brown through to light or dark grey.

Fabric Q121 Type B. Coarse and generally micaceous with a lumpy texture. The inclusions consist of rounded white or translucent quartz <2 mm across, often protruding through the surface, white mica flecks <0.125 mm across, red and black ferrous particles and other rock fragments. Colour varies from bright orange to buff to brown to very dark grey.

Gritty grey wares:

Fabric Q123 Type A. Finer version of South-western grey storage jar fabric (Fabric Q103).

Fabric Q122 Type B. Finer version of. South-western grey storage jar fabric (Fabric Q121).

Although very similar in the hand-specimen, examination under the x20 microscope revealed distinctive inclusions characteristic of each type; soft, flaky, silver or pink, rather speckled inclusions in the Type A wares and white mica flakes and large rounded, white or translucent quartz in the Type B wares. The mica present in the Type B fabrics is not mentioned in the published descriptions of the south-western storage jar or gritty grey ware fabric (Holbrook and Bidwell 1991, 171, fabric 101 and 175, fabric 107; Bidwell, 1981, 68, fabric 105; Holbrook 1993, 97) and the affinities of this group have yet to be established. It is probable that the Type A fabric equates with the Norton Fitzwarren ware (Holbrook and Bidwell 1991, 175, fabric 107), although this is far from the closest source. The fabric accounted for 1.4% of the coarsewares at Woodbury (Silvester and Bidwell 1984, 41) but was present only in very small quantities at Exeter (Holbrook and Bidwell 1991, 175). The range of inclusions similar to those in the Type A wares were also noted in the oxidised

fineware fabric M103, while the presence of the mortarium or mortarium-style bowl rim (type R155) may indicate mortarium production around Norton Fitzwarren too. The production of storage jars, and possibly finewares and mortaria forms in association with each other is known to have occurred at Woodbury Great Close (Holbrook 1993, 97). Both the mortarium-style bowl (type R155) and the beaker (type R116) in the oxidised fineware fabric M103 can both be broadly paralleled at this site (*ibid.*, fig. 34, 20, 22). While it is possible that at least some of Pomeroy Wood vessels could derive from this source, comparison of actual sherds from each of the source areas and perhaps petrological analysis would be needed to confirm this.

Production of the Exeter gritty grey ware fabric began during the early 2nd century AD and continued into the late 3rd or early 4th century AD (Holbrook and Bidwell 1991, 171). The south-western grey storage jars were present at Exeter from the late Antonine period into the 4th century AD (*ibid.*, 175). The concept of the ceramic storage jar may also have been new at this time as very large jar forms are absent from 1st and 2nd century assemblages in the area, implying the use of non-ceramic storage containers. The small quantities of these fabrics present in the earlier phases are probably intrusive, caused by the reworking or disturbance of the earlier deposits during the 2nd – 3rd centuries AD or later Roman periods.

Although the Type A wares are more numerous, 9% of the coarseware sherds (18% by weight), compared with 6% (9% by weight) for the Type B fabrics (**Table 14**), approximately equal numbers of vessels were recognised in both fabrics (**Table 23**). The widest range of vessel forms was present during the later 3rd and 4th centuries AD (phase 4ii). The majority are copied from Black Burnished ware types while the similarities between the large gritty grey wares jars (Holbrook and Bidwell 1991, types 12 and 13) and the south-western grey storage jar types further reinforces the link between these two fabric groups. One interesting feature of all the storage jars from this site is the relative thinness of the base compared to the vessel walls, which must have resulted in a point of weakness, especially if the vessels were ever moved when full.

Black Burnished wares

As at most sites in the south-west (except those in Cornwall), the Black Burnished wares are the principal coarsewares at this site, forming 51% of the coarseware sherds (48% by weight) or 44% (32% by weight) of the entire assemblage.

All the major fabrics were present, the South-east Dorset (Wareham/Poole Harbour) Black Burnished ware (Holbrook and Bidwell 1991, 106, fabric 31), the South-western Black Burnished ware (*ibid.*, 114, fabric 40) and the fine south-western Black Burnished ware (*ibid.*, 135, fabric 60). The vessel forms present in each of these fabrics are shown by phase in **Tables 24-6**, although for quantification purposes (except in **Table 14**), the South-western Black Burnished ware and the fine south-western fabric have been combined.

In addition, a few sherds of a very coarse, often oxidised, Black Burnished ware fabric (Q116) containing sparse but highly visible shale fragments, were also present. This fabric has been recognised in Dorchester, Dorset (Davies and Seager Smith 1993, 249, fabric 31; Seager Smith 1997, M11, fabric Q107) and is probably a very late product, perhaps even representing the degeneration of the Wareham/Poole Harbour industry during the 4th century AD. Most of these sherds derived from two vessels, a handled jar (type R115, **Fig. 60, 2**) and a flanged rim jar (Holbrook and Bidwell 1991, fig. 29, 28.1), both found in ditch 3247 (phase 4ii). Although shown separately in **Table 14**, this fabric is otherwise included with the South-east Dorset Black Burnished wares.

The proportions of the South-east Dorset and the South-western Black Burnished wares, together with the sandy grey wares, are shown in **Fig. 63**. The composition of the coarseware assemblage is interesting, not only for the quantity of sandy grey wares present (discussed above), but for the overwhelming dominance of the South-east Dorset Black Burnished wares and the corresponding scarcity of the South-western fabric types (**Fig. 64**). In contrast, the South-western Black Burnished wares were by far and away the commonest coarseware at Exeter, never representing less than 20% of the 1st to late 2nd century AD groups (Holbrook and Bidwell 1991, mf. 1:17-20). In one large mid-2nd century AD group, these wares accounted for 61% of the overall weight (*ibid.*, fig. 5, M1:18, group 7). At Tiverton, the South-western Black Burnished wares represented over half of the coarsewares (Holbrook 1991, 69, tab. 7).

The overall proportions of the Black Burnished wares at Pomeroy Wood are better paralleled in the assemblages from Otterton Point (Brown and Holbrook 1989, tab. 1) and at Woodbury (Silvester and Bidwell 1984, tab. 1, group 3). However, at both these sites, the relative scarcity of the South-western fabrics can be explained by chronology; production of these fabrics had more or less ended by the middle of the 3rd century AD (Holbrook and Bidwell 1991, 93-4) while the assemblages from Otterton Point and Woodbury were predominantly of 3rd and mid 3rd to 4th century AD date respectively. Obviously, chronology cannot be held responsible for the paucity of the South-western fabrics in phases 2, 3 and 4i at Pomeroy Wood (**Fig. 63**).

At Pomeroy Wood, there is some sign of the increased popularity of the South-western fabrics during the later 1st century AD (phase 3; **Fig. 63**). At Exeter, this has been linked to a new reliance on local suppliers after an immediate decline in coastal trade, caused by the departure of the army, reduced the availability of the South-east Dorset Black Burnished wares (Holbrook and Bidwell 1991, 19). However, the reasons for the general paucity of South-western Black Burnished wares at Pomeroy Wood are unclear. It could be that even at this early period, at least some South-east Black Burnished wares, and maybe other types of pottery too, were being transported along the Dorchester to Exeter road. Certainly by the mid 3rd century AD there is evidence to suggest that South-east Dorset Black Burnished wares were being transported across Somerset by road. These wares occur in significant quantities on sites on or near the road from Dorchester to Ilchester (Margary route 51) and beyond to the mouth of the river Parret, perhaps for shipment to Wales and the north, but are relatively scarce away from this route (Holbrook and Bidwell 1991, 23). Alternatively, there could be a much simpler explanation. Given the relatively small proportion of the site investigated, it could be that our sample (although large – especially for Devon) is unrepresentative, and that, for whatever reason, these wares were perhaps used and discarded more commonly in another part of the site. Certainly, features that can be dated to the 1st and 2nd centuries AD within the excavated area are relatively few in number compared with those of later periods.

The continued dominance of the South-east Dorset Black Burnished ware in the later

Roman period suggests that the Pomeroy Wood settlement continued to enjoy a relatively high status well into the later 3rd and 4th centuries. At this time, Exeter was the major market for South-east Dorset Black Burnished ware in Devon, although it still formed a significant component of the ceramic assemblages from the more Romanised sites such as Otterton Point, Seaton, Woodbury, Holcombe and Membury Crib House (Holbrook and Bidwell 1991, 23). However, it was generally scarce at the lower status, rural enclosures in Devon such as Hayes Farm, Clyst Honiton (Holbrook 1989, tab. 1) and Rewe (Holbrook and Bidwell 1991, tab. 6), where the South Devon wares and sandy grey wares predominated.

An analysis of the types of coarseware vessels present by phase has been attempted (**Fig. 65**). Jars overwhelmingly dominate the assemblages of every fabric type (**Tables 20-6**) and period. The straight-sided bowls and dishes gradually become more common through time, reflecting the genesis of the Black Burnished ware series of 'casserole'-type vessels (i.e. Holbrook and Bidwell 1991, South-east Dorset BB1 types 38-63) and their imitation in other fabrics. Perhaps naturally, as coarsewares are inherently biased towards food preparation and storage roles, none of the other vessel types, which may have functioned in food serving roles, ever formed more than minor components of the coarseware assemblage. Of course, the range of bowl and beaker types would be widened by the inclusion of the fine tablewares in the imported and British fineware fabrics. Flagons seem to be very poorly represented in all periods, but this can be explained by the small number of rims from these vessels present, a far greater range of flagons being represented only by featureless body and base sherds. However, this analysis has also served to emphasise the discrepancies in the amount of material from each phase.

Discussion

The proportions (based on the number of sherds) of the various fabric groups present in each phase are shown in **Fig. 64**.

Phase 2

Unfortunately, relatively little of the pottery recovered from Pomeroy Wood was

stratified in features associated with the military base. Only 9% (of both the number and weight) of the overall assemblage was found in phase 2 contexts. The mean sherd weight of this material is 15 g., just slightly above average for the assemblage as a whole. Consequently the determination of the military period at this site largely depends on a consideration of the samian.

All but two of the samian sherds from this phase are from Southern Gaul and are predominantly of Neronian or Neronian to early Flavian date. Most of this material was found in well 3047. Material from this feature included a form 29 bowl stamped by Niger ii (no. 5; **Fig. 48, 5**), for which a date of AD 50-65 has been suggested. Although it is known that Niger patronised a particular mould-maker or group of mould-makers, the style of this vessel is quite different from these. At least seven stamps of Niger ii are known at Exeter (Dickinson 1991, no. 61, 62/3, 141, 172-4; 1992, no. 41), and one from Tiverton (Hartley 1991, 62, no. 29). A date in the mid-AD 60s for the foundation of the military base would best fit the samian evidence, and is comparable with the establishment of the military base at Tiverton (Maxfield 1991). The two Central Gaulish sherds are Hadrianic or Antonine in date and are probably intrusive.

The assemblage of other imported finewares is too small to offer much support or otherwise to the samian dating, although neither the Pompeian red ware or the Lyons ware would be out of place at this time. The Terra Nigra sherds occurred most frequently in phase 2, and rims from *Cam.* 16 platters, which date from *c.* AD 45-85, were found in pits 3495 and 4498.

The other coarse pottery provides little assistance in determining the date of the foundation of the fortress but certain features are worthy of note. The early Spanish colour-coated wares present at Exeter (Holbrook and Bidwell 1991, 72), did not reach this site although a rim from a Spanish mortarium (**Fig. 55, 17**, type 130), dated *c.* AD 50-85, was found in well 3047. A similar date is likely for the mortarium from the Massif Central (Hartley 1991, 195, type TC8) found in posthole 3427. The presence of the early amphora types (Class 10/Dressel 2-4, ?Dressel 5 and ?Class 15/Haltern 70) suggests that wine and *defrutum*, in addition to olive oil carried in the ubiquitous Class 25/Dreseel 20 vessels, were available to the garrison(s) of the military base. The

reliance on the sandy grey coarsewares and, to a lesser extent, the South-east Dorset Black Burnished wares (**Fig. 63-4**) is also an interesting feature of the military assemblage at this site. It is not paralleled in the early (pre-*c.* AD 75) groups at Exeter (Holbrook and Bidwell 1991, mf.1:18, groups 1-3) or at Tiverton (Holbrook 1991, tab. 7), where the South-western Black Burnished wares predominate. Upright-necked jars and bead rim bowls are the dominant vessel forms at this time. A single sherd of briquetage in the Hobarrow Bay fabric, from pit 4457, indicates that salt from the Purbeck Coast was being used at this site during the military period.

Phase 3

The date at which the military base was abandoned and the defences slighted is even less clear from the ceramic evidence. Only 4% (5% by weight) of the overall assemblage was found in the phase 3 slighting deposits. The mean sherd weight of this material is 15 g., equal to that from military deposits and slightly above average for the assemblage as a whole.

Only 31 sherds of samian were present, representing a maximum of 25 vessels. The date range of this material is very mixed, but mostly belongs within the later 1st century AD. Sherds from at least one Southern Gaulish form 37 bowl, dated to *c.* AD 80-100, were found in segment 3342 the outer defensive ditch (no. 9; **Fig. 48, 8**). The four latest sherds, are of Hadrianic to Antonine date but as they are all very small (less than 2 g.) it is probable that they were derived from above. Residual material is suggested by the form 29 sherd (no. 8) dated to *c.* AD 50-65 from segment 817 of the outer defensive ditch 3057. On balance, a date somewhere in the AD 80s for the abandonment and slighting of the military base is suggested by the samian, also comparable with that of the military base at Tiverton (Hartley 1991, 66).

Only three other fineware sherds were found in deposits belonging to this phase, all *Terra Nigra* or *Terra Nigra* type wares. Two sherds from a *Cam.* 16 platter were found in the possible redeposited bank material (4145) in segment 4078 of the inner military base ditch 748. In this phase, the sandy grey wares show a slight decline in popularity with a corresponding increase in the quantity of the South-east Dorset Black Burnished ware (**Fig. 63-4**). The slightly increased proportion of the South-

western Black Burnished wares at this time has already been discussed above. The importance of the oxidised coarseware present in this phase (**Fig. 63**) has been over-emphasised by the numerous sherds of a single, highly fragmented vessel found in segment 785 of the outwork ditch.

Phase 4i

Greater quantities of material were recovered from the 2nd to 3rd century AD settlement deposits, 31% of the total number of sherds (24% by weight). However, the condition of much of this material was poor, reflected by its mean sherd weight (11 g.), well below average for the assemblage as a whole.

Ceramically, these is little or no evidence for a break in the occupation at this site during the late 1st to mid 2nd century AD and it is probable that a civilian settlement was established at, or very soon after, the abandonment of the military base. The precise dating of the 2nd century AD samian was hampered by the poor condition of the material, and much of it has simply been assigned to the Hadrianic/Antonine period. None of the samian extended into the 3rd century AD. At least 87 samian vessels were recognised, approximately one-third of which were decorated forms. This may imply that the settlement was of relatively high status, a view borne out the other imported finewares current at this time, the North Gaulish colour-coated ware, the Rhenish wares and the Cologne colour coated wares. Surprisingly, the quantities of these 2nd to early 3rd century AD finewares at Pomeroy Wood are not significantly lower than from Exeter (Holbrook and Bidwell 1991, 81, tab. 10; 1992, 54, tab. 4).

By this time the South-east Dorset Black Burnished wares dominate the assemblage (**Fig. 63-4**). The 2nd to 3rd centuries AD also saw the advent of the South Devon wares, Gritty grey wares and the South-western grey storage jar fabrics in this area. The gritty grey wares seem to have been immediately assimilated into the range of coarseware types used at Pomeroy Wood (**Fig. 63**), and may have been at least partially responsible for the decreased importance of the sandy grey and South-western Black Burnished wares observable in this phase. The slightly later date range of the storage jars, generally later Antonine to the 4th century AD at Exeter (Holbrook and Bidwell 1991, 175), might account for the lesser quantity of these vessels in this

phase. The vessel forms characteristic of this phase show a dramatic increase in the range and frequency of the straight-sided bowl/dish forms, coupled with the development of more everted rim jars.

Phase 4ii

By far the largest quantity of material was recovered from this phase, 48% of the total number of sherds present (55% by weight). Mean sherd weight for this group was higher (16 g.) than for the assemblage as a whole. In general this material was in slightly better condition, with marginally less surface abrasion, probably because it has not been as extensively reworked and disturbed by later occupation as that from the earlier phases. Most of the material assigned to this phase was from the layers infilling working hollow 4706 and overlying the defensive ditches. It is probable that this material is derived from midden deposits, spread after the abandonment of the settlement. A comparable deposit, also containing late 3rd to early 4th century AD pottery, is also known at Woodbury Great Close (Holbrook 1993, 92).

Although predominantly of later 3rd and 4th century AD date, the phase 4ii deposits also contained a considerable quantity of residual material. All the samian and other imported finewares in this phase are residual, but interestingly all the latest plain samian forms occur here, although the late decorated wares do not. The continued importance of the Class 25 and 27 (Dressel 20 and Pelichet 47/Gauloise 4) amphorae in these deposits is indicative of their long life expectancy and the quantity of residual material present. The many-handled beaker (**Fig. 62, 35**) in fine South-western Black Burnished ware may be another example of the small range of unusual forms that continued to be made in these fabrics into the 4th century AD but otherwise all the South-western Black Burnished wares are probably residual at this time.

The late 3rd to 4th century AD material from this phase is characterised by the overwhelming dominance of the South-east Dorset Black Burnished wares, the presence of South Devon ware, and the New Forest and Oxfordshire finewares. The vessel forms are dominated by everted rim jars and the straight-sided bowl and dish forms, especially the conical flanged bowls/dishes and 'dog-dishes'.

Detailed comparisons between the Pomeroy Wood pottery assemblage and those from other sites in the area have proved problematic. Clearly the only collection of even broadly comparable size is that from Exeter (Bidwell 1979; Holbrook and Bidwell 1991; 1992). No quantified data was presented for the assemblages from the Honeyditches villa at Seaton (Bidwell 1981) or from Holcombe (Pollard 1974) although these assemblages too span the period from the 1st to the 4th century AD. Aside from Exeter, the only other military assemblage from Devon to be quantified is that from Tiverton (Holbrook 1991, tab. 7). Most of the other military sites are only known from aerial reconnaissance (Griffith 1984) or very limited investigations and therefore few published, quantified groups are available for comparison. The situation in Dorset is little better; all the principle sites that have been published appeared some time ago without the benefit of quantification. It is only possible to say that the Pomeroy Wood assemblage is slightly later than those from Hod Hill (Richmond 1968) and Waddon Hill (Webster 1979). Returning to Devon, very little material was recovered from the military contexts at Woodbury (Holbrook 1993, 93) and quantified data is not available for the predominantly 1st century AD material from Topsham settlement (Jarvis and Maxfield 1975). Data from three small late Roman groups is available however, from Woodbury (Silvester and Bidwell 1984, tab. 1 group 3) Hayes Farm, Clyst Honiton (Holbrook 1989, tab. 1) and Rewe (Holbrook and Bidwell 1991, 23).

Consequently, the overall profile of the Pomeroy Wood assemblage can only be compared with that from Exeter, it being the only one for which quantified data is available that spans the entire Roman period. The Exeter data has been drawn from the selected quantified groups (Holbrook and Bidwell 1991, M1:17-20); the Pomeroy Wood figures exclude the amphorae and mortaria because they were not included in the quantification at Exeter.

Significant differences between the assemblages are apparent (**Fig. 66**) although the conclusions that can be drawn from them are currently limited by the absence of other comparable assemblages. Perhaps the most striking differences occur in the proportions of the coarseware fabrics, only the South Devon wares being anything like equal at the two sites. Although the relative proportions of the storage jars present are likely to be correct (only 11 vessels were recognised in the quantified groups from

Exeter compared with 47 at Pomeroy Wood), quantification by weight means that these fabrics may be over-represented in the assemblages as a whole. Although not as common as on sites such as Ilchester (Leach 1982, tab. 5-6) further east, samian and the other imported finewares were more readily available in Exeter, where a far wider range of types was also recognised (Holbrook and Bidwell 1991, 72-87), than at Pomeroy Wood. This is perhaps not unexpected given the location of these south-western sites on the extreme limits or even just outside, most of the known early Roman distribution zones. In fact, imported finewares were probably only present in Roman Devon at all as a direct result of the demand from, and the enhanced buying-power of, the large garrison (perhaps as many as 10,000 men – Holbrook and Bidwell 1991, 16) stationed at Exeter. During the late Roman period, however, the Oxfordshire and New Forest finewares occur with far greater frequency at Pomeroy Wood than they did in Exeter. It should also been noted that many of the amphora types present in Exeter at all periods did not reach Pomeroy Wood.

The differing assemblage profiles might suggest that at all times during the Roman period, the residents of Pomeroy Wood were not dependent on Exeter as a redistributive centre, but may have had access to trading networks, of which the pottery supply is merely the most visible, in their own right. The location of this site alongside the Roman road is obviously of crucial importance here. It has been suggested above that the South-east Dorset Black Burnished wares may have been travelling to Exeter along that route. These is also evidence to suggest that during the late Roman period, the occupants of rural sites like Hayes Farm, Clyst Honiton and Rewe may have by-passed the pottery markets in Exeter, and traded directly with itinerant potters and peddlers, perhaps without recourse to the monetary economy (Holbrook 1989, 16; Holbrook and Bidwell 1991, 23). It may be possible that similar factors of cheapness, and the possibility of exchange by socially embedded means, may have been in part responsible for the increased importance of South-western Black Burnished wares after the departure of the legion and the subsequent rise of other local pottery industries during early 2nd century AD. The extent to which these ideas are applicable to the wider Exeter region await the recovery of new and similarly large assemblages and the reappraisal of those already excavated.

List of illustrated feature groups

(Context numbers given in brackets)

Fig.55
Phase 2
Well 3047
1. Exeter type 49, South-western Black Burnished ware. (4686).
2. Samian form 18, Southern Gaul. (4686 and 4686).
3. Samian form 15/17, Southern Gaul. (4681 and 4690).
4. Samian form 15/17, Southern Gaul. (4681).
5. Samian form 27, Southern Gaul. (4681).
6. Samian form 18, Southern Gaul. (4690 and 4692).
7. Type R121, coarse sandy grey ware. (3087).
8. Type R121, coarse sandy grey ware. (3087).
9. Type R121, coarse sandy grey ware. (3087).
10. Type R121, coarse sandy grey ware. (3087).
11. Type R127, coarse sandy grey ware. (3087).
12. Type R128, coarse sandy grey ware. (3087).
13. Type R128, coarse sandy grey ware. (3087).
14. Type R126, coarse sandy grey ware. (3087).
15. Type R121, coarse sandy grey ware. (3086).
16. Samian form 29, Southern Gaul. (980).
17. Type R130, Spanish fabric. (980).
18. Type R129, hard, dark blue-grey ware. (980).

Fig. 56
Segment 3019 of the inner defensive ditch 748
1. Exeter type 3, South-east Dorset Black Burnished ware. (3024).
2. Exeter type 11-17, South-east Dorset Black Burnished ware. (3024).
3. Exeter type 6, fine South-western Black Burnished ware. (3024).

Well 4152
4. Type 114, grog-tempered ware. (4664).

Pit 4498
5. Exeter type 11-17, South-east Dorset Black Burnished ware. (4544).
6. *Cam.* 16 platter (type R123), *Terra Nigra* type (Holbrook and Bidwell 1991, fabric 372. (4544).

Pit 4723 (recut of 4498)
7. Exeter type 11-17, South-east Dorset Black Burnished ware. (4542).

Fig. 57
Phase 3
Segments 958 and 3151 of the outer defensive ditch 3057
1. Type R154, coarse sandy grey ware. (960).
2. Exeter type 7, South Devon ware. (966).
3. Exeter type 11-17, South-east Dorset Black Burnished ware. (966).
4. Exeter type 11-17, South-east Dorset Black Burnished ware. (3149).
5. Exeter type 16-17, South-western Black Burnished ware. (966).
6. Exeter type 33, South-western Black Burnished ware. (966).
7. Exeter type 48, South-western Black Burnished ware. (3120).

Primary cut 785 of the outwork ditch 4715

8. Type R145, fine sandy oxidised ware. (780).
9. Exeter type 16-17, South-western Black Burnished ware. (3687).
10. Exeter type 42, South-western Black Burnished ware. (783).
11. Exeter type 36, South-east Dorset Black Burnished ware. (780).

Fig. 58
Phase 4i
Layers over structure 3545
1. Beaker base, North Gaul fabric 1. (3384).
2. Samian form 33, Central Gaul (Lezoux). (769).
3. Type R120, coarse sandy grey ware. (3384).
4. Exeter type 1, Type A South-western grey storage jar fabric. (769).
5. Type 146, coarse sandy oxidised fabric. (769).
6. Type 147, coarse sandy mortaria fabric. (769).
7. Type R111, fine, smooth sandy grey ware with micaceous surfaces. (3384).
8. Type R116, local colour-coated ware. (3384).
9. Exeter type 10, Type B gritty grey ware. (3384).
10. Exeter type 29, Type A gritty grey ware. (3384).
11. Type R137, South-east Dorset Black Burnished ware. (769).
12. Exeter type 11-17, South-east Dorset Black Burnished ware. (3384).
13. Exeter type 11-17, South-east Dorset Black Burnished ware. (3384).
14. Exeter type 18-21, South-western Black Burnished ware. (3384).
15. Exeter type 39, South-western Black Burnished ware. (3384).
16. Exeter type 92, South-western Black Burnished ware. (3384).
17. Exeter type 16, Terra Nigra type (Holbrook and Bidwell 1991, fabric 375). (769).

Structure 3415
18. Type R119, local colour-coated ware. Pit 4691, (4680).
19. Type R104, South-east Dorset Black Burnished ware. Segment 4140 of gully 4727 (4141).
20. Exeter type 41, Exeter sandy grey ware. Segment 3496 of gully 4727 (3497).

Structure 4642
21. Type R146, coarse sandy oxidised fabric. Inner ring gully 4655.
22. Exeter type 10, Type B gritty grey ware. Segment 4646 of the outer ring gully (4647).
23. Exeter type 16, Type A gritty grey ware. Segment 4646 of the outer ring gully (4647).
24. Exeter type 18-22, South-western Black Burnished ware. Segment 4646 of the outer ring gully (4647).
25. Exeter type 11-17, fine, South-western Black Burnished ware. Segment 4646 of the outer ring gully (4647).

Fig. 59
Ring ditch 4063 of roundhouse 4103
1. Exeter type 12, Type B Gritty grey ware. (4062).
2. Exeter type 3, Type A South-western grey storage jar fabric. (4062).
3. Exeter type 3, Type A South-western grey storage jar fabric. (4062).

Segment 3315 of ditch and bank 4720
4. Fulford type 44, New Forest colour-coated ware. (3307).
5. Exeter type 29, Type A gritty grey ware. (3307).
6. Exeter type 20, South-east Dorset Black Burnished ware. (3307).
7. Exeter type 43, South-east Dorset Black Burnished ware. (3307).
8. Exeter type 43, South-east Dorset Black Burnished ware. (3307).
9. Exeter type 56-59, South-east Dorset Black Burnished ware. (3307).
10. Fulford type 28, New Forest colour-coated ware. (3306).

Fig. 60
Phase 4ii
Ditch 3247
1. Exeter type 3, Type A South-western grey storage jar fabric. (3249).
2. Type R115, very coarse South-east Dorset Black Burnished ware. (3249).

3. Exeter type 4, South Devon ware. (3249).
4. Exeter type 17, South Devon ware. (3249).
5. Exeter type 4, South Devon ware. (3249).
6. Exeter type 45, South-east Dorset Black Burnished ware. (3249).

Hearth 3014

7. Exeter type 3, Type A South-western grey storage jar fabric. (3010).
8. Type R105, coarse sandy fabric with shiny black grains. (3013).
9. Exeter type 29, Type A gritty grey wares. (3012).

Fig. 61

Layers within Working hollow 4706

1. Fulford type 63, New Forest red slipped ware. (961).
2. Fulford type 67, New Forest red slipped ware. (961).
3. Fulford type 67, New Forest red slipped ware. (961).
4. Fulford type 73, New Forest red slipped ware. (986).
5. Fulford type 67, New Forest red slipped ware. (986).
6. Fulford type 96, New Forest parchment ware. (961).
7. Fulford type 96, New Forest parchment ware. (961).
8. Young type C51, Oxfordshire red colour-coated ware. (986).
9. Beaker base, very hard-fired sandy colour coated ware. (961).
10. Exeter type 1, Type B gritty grey wares. (961).
11. Exeter type 3, Type B south-western grey storage jar fabric. (961).
12. Exeter type 11, Type B gritty grey wares. (961).
13. Type R143, Type B gritty grey wares. (961).
14. Exeter type 1, Type B gritty grey wares. (986).
15. Exeter type 29, Type B gritty grey wares. (961).
16. Exeter type 31, Type B gritty grey wares. (986).
17. Exeter type 20, Type A gritty grey wares. (961).
18. Exeter type 29, Type A gritty grey wares. (961).
19. Type R140, ?local sandy mortarium fabric. (961).
20. Exeter type 4, South Devon ware. (986).
21. Exeter type 15, South Devon ware. (986).
22. Exeter type 1, South Devon ware. (986).
23. Exeter type 20, South-east Dorset Black Burnished ware. (961).
24. Exeter type 20, South-east Dorset Black Burnished ware. (961).
25. Exeter type 20, South-east Dorset Black Burnished ware. (961).

Fig. 62

26. Exeter type 20, South-east Dorset Black Burnished ware. (3680).
27. Exeter type 20, South-east Dorset Black Burnished ware. (3680).
28. Exeter type 45, South-east Dorset Black Burnished ware. (961).
29. Exeter type 45, South-east Dorset Black Burnished ware. (961).
30. Exeter type 45, South-east Dorset Black Burnished ware. (3680).
31. Exeter type 56-59, South-east Dorset Black Burnished ware. (961).
32. Exeter type 56-59, South-east Dorset Black Burnished ware. (961).
33. Exeter type 56-59, South-east Dorset Black Burnished ware. (3680).
34. Type R122, South-east Dorset Black Burnished ware. (961).
35. Type R142, fine south-western Black Burnished ware. (961).
36. Graffiti on the shoulder of a South-east Dorset Black Burnished ware jar form. (961).

The graffito

By R.S.O. Tomlin

Two sherds from the shoulder of a Black Burnished Ware 1 jar, with VII^[**symbol needed**] scratched after firing, perhaps *VII Ia[nuari]*, '7' and '(property) of Ianuarius (**Fig. 62, 36; 67**). *Veia[...]* might be read, as part of the rare name *Veiatus*, but a line has been scratched underneath VII, which is on a slightly different alignment from that of IA[...], and the forward slope of II differs from that of I, which is vertical. Therefore since Ianuarius is such a common name, we prefer to read VII as a numeral.

The ceramic building material

by M. Laidlaw

A total of 65,745 g. of Romano-British ceramic building material was recovered, consisting of a minimum of 812 fragments (the very small fragments retrieved from sieving have not been quantified).

The assemblage has been divided into diagnostic forms and grouped by broad fabric types. The forms defined comprise *tegula*, *imbrex*, flue tile, undiagnostic tile and undiagnostic brick/tile. A large proportion of the material comprises featureless, often abraded, fragments. No detailed fabric analysis was undertaken but macroscopically six fabric groups could be identified. These range in coarseness from a soft, fine sandy, orange fabric (fabric 1), a moderately hard, darker orange fabric (2) and a very hard, reddish fabric (3) to a coarse, sandy, orange fabric (4). Fabric 5 contains frequent grog inclusions in a fine, sandy, orange matrix and fabric 6 has a distinctive hard, fine, matrix, purple in colour, with abundant quartz inclusions. **Table 27** presents the correlation of fabric and form.

By far the most common form identified was flat tile fragments, particularly in fabric 1. A moderate quantity of *tegula* fragments are also recorded in fabric 1 and the slightly harder fabric 2. Only small quantities (<5 fragments) are recorded for the other fabrics. The *tegula* fragments are all flanged, four are cut away and one fragment has the trace of a nail hole. Sixteen fragments are derived from *imbrices* and occur mainly in fabric 1. By contrast 15 of the 18 flue tile fragments, all of which have traces of keying for plaster, are in fabric 2. A total of 47 fragments were

recorded as unspecified brick/tile fragments and *tegula* fragments and occur most frequently in fabric 3.

The bulk of the ceramic building material recovered was dispersed in small quantities across a large number of features. Larger groups were recovered from the dumped layer 965 (*c.* 16.5 kg.) and from the fill of latrine 819 (*c.* 10 kg.) in which they had apparently been used as packing. Smaller concentrations (1-3 kg.) were noted from phase 4ii spreads 733, 961, 967, 986 and 3116, from the top fill of ditch 3057 and from unphased cleaning layers 983 and 3002.

The fired clay and ceramic objects

by M. Laidlaw

Two ceramic objects and a large quantity of fired clay fragments (46,614 g.) were recovered. The ceramic objects comprise one complete and two partial spindlewhorls, all made from Romano-British pottery sherds. The complete example is in a Class 25 Dressel 20 amphora fabric (phase 4i layer in ditch 3265); the partial whorls are in, respectively, sandy grey ware fabric Q100 (phase 4i layer in structure 3265) and gritty grey ware fabric Q122 (phase 4ii occupation debris over defensive ditches).

The bulk of the fired clay fragments are small, featureless and often abraded. In some cases it was difficult to classify the small fragments and these may in fact be abraded ceramic building material, particularly the fine sandy fabric 1 (see above).

All of this material is assumed to be of structural origin, from upstanding structures or from pit/hearth linings; no objects such as loomweights or spindlewhorls were recognised. A small proportion of fragments (102 fragments) have traces of surviving surfaces, and 26 fragments bear wattle or possibly finger impressions. A significant proportion has a powdery, porous texture consistent with subjection to high temperatures, although whether through accidental burning or from incorporation in a hearth or oven is uncertain. Moderately large quantities (>1 kg.) were collected from phase 4ii spreads 961, 965, 986 and from grain driers 3279 and 913.

Wooden object

by Emma Loader and A.P. Fitzpatrick

One wooden object was recovered from well 4152 (phase 2). This comprises part of a thin circular disc of **ash**, approximately 160 mm in diameter, tangentially cut, with two small circular perforations near to the edge, approximately 100 mm apart. It is likely that there were originally another two holes, probably symmetrically arranged, in the now missing areas of the edge of the disc, which is the base of a composite wooden vessel.

The holes in the base would have been for sewing the base to the sides of the vessel, as is known from bentwood boxes, and other types of vessels (Earwood 1993, 43, 57). The size of the base is comparable with those of tankards, the metal handles from which have been recorded in a number of 1st century Roman military contexts (Corcoran 1952; McGregor 1976, 147-9, 166-8, map19; Jackson 1990, 44-6; Earwood 1993, 73-5), though this method of attaching the base has not been observed amongst the small number of near complete tankards, where the bases are inserted into internal grooves (Corcoran 1952, 96-8).

Illustrated object (Fig. 46)

Wooden vessel base. ON 2377, context 4652, well 4152, phase 2.

THE ENVIRONMENTAL ANALYSES

Environmental evidence from wells 3047 and 3791

Two wells had preserved organic remains within their fills, 3047 associated with the military occupation, and 3791 from the 2nd-3rd century civil settlement.

Well 3047 lay within the interior of the base (above; **Fig. 11; Pl. 8**). Insect, plant and pollen remains were preserved in the lower fills, below a clay capping. Charred plant reamins and charcoal were also recovered. All the evidnece from these two wells is presented below.

Insect remains from well 3047

by Mark Robinson

Introduction

The organic sediments were observed to contain Diptera (fly) puparia and the assessment of the macroscopic plant remains from these deposits had already shown much waterlogged animal bedding-type material, with cereal remains and bracken. It was therefore decided to analyse samples from the well for insects to help elucidate the origin of the material.

Methods and results

Five samples of organic sediment, each of 1 litre, had been floated onto a 0.25mm sieve for the analysis of macroscopic plant remains. The organic material so recovered was also sorted for insect remains. The samples formed a stratigraphic sequence (**Table 28**)

The insect fragments, which were mostly Coleoptera and Diptera, were identified with reference to the specimens of the Hope Entomological Collections at the University Museum of Natural History, Oxford. The results have been recorded for Coleoptera (**Table 29**) and for other insects (**Table 30**). Nomenclature for Coleoptera follows Kloet

and Hincks (1977) and for Diptera follows Kloet and Hincks (1976). The results are expressed as the minimum number of individuals necessary to give the number of fragments of each species in each sample. Concentrations of Coleoptera were relatively low but sufficiently high numbers for useful interpretation have been obtained by combining the results from the five samples. These results have been displayed by species groups as a percentage of the total number of terrestrial individuals (**Fig. 68**) largely following Robinson (1991, 278-81). The synanthropic species of Species Group 9, however, have been divided into Species Group 9a, general synanthropic species such as *Typhaea stercorea* and Species Group 9b, serious pests of stored grain, for example *Oryzaephilus surinamensis*.

Interpretation

The most numerous insect remains from the well were puparia of Diptera, particularly Sphaeroceridae. The larvae of these flies feed on decaying organic material. Over a quarter of the Coleoptera fall into Species Group 7, beetles of foul organic material. Insects likely to have lived in the well were almost entirely absent, there was only a single aquatic insect, the water beetle *Helophorus aquaticus* or *grandis*. Numbers of Coleoptera which do not belong to decomposer communities were also relatively low.

Many Sphaeroceridae feed on dung but unfortunately it was not possible to identify the puparia to species. More precise information on the nature of the organic material is given by the fly puparia that could be fully identified. The most numerous of these belonged to *Musca domestica* (house fly), whose larvae occur in a wide range of decaying plant and animal remains. *Stomoxys calcitrans* (stable fly) was also identified. It is more fastidious, being particularly common in old straw which has been enriched with animal urine and faeces (Colyer and Hammond 1951, 252; Edwards *et al.* 1939, 116-17; Pont 1973, 263-3; Smart 1948, 58-61). *M. domestica* often occurs alongside *S. calcitrans*. The adult *S. calcitrans* is a blood-sucking fly and can be a nuisance biting both humans and stock.

The most abundant Coleoptera from the well were *Cercyon analis* and *Megasternum obscurum*, both members of Species Group 7, which occur in a wide range of dung and foul organic material habitats including stable manure (Kenward 1982; Koch 1989,

143-4). Most of the other members of Species Group 7 from the samples, comprising other species of *Cercyon*, *Cryptopleurum minutum* and *Anotylus sculpturatus* gp., also commonly occur in stable manure and dung heaps. Another of the beetles, *Xylodromus concinnus*, commonly occurs in habitats such as old hay and straw, in granary refuse and in stable debris, although not in such wet, foul material as the members of Species Group 7. Taken in combination with the botanical evidence, the entomological results strongly suggest that decaying stable manure was the major component of the fill to the well.

There was also a significant component of grain beetles in the samples. Four species of serious pests of stored grain comprised 9% of the terrestrial Coleoptera (**Fig. 68**, Species Group 9b):

Cryptolestes ferrugineus	*Palorus ratzeburgi*
Oryzaephilus surinamensis	*Sitophilus granarius*

All these species were probably Roman introductions. *S. granarius* is the only one of them which can readily attack intact grain in good condition, but once the surface has been nibbled, it is then rendered liable to attack by the other species. Damp conditions which cause fungal growth can render grain liable to attack by *O. surinamensis* and once infestation has begun, sufficient warmth and moisture is released by the metabolism of the beetles to enable the spoilage of further grain and for the infestation to become self-sustaining. There are three possible explanations for the occurrence of these beetles in the well. It is possible that there was a granary adjacent to the well and the beetles crawled from it to the well. Grain spoilt by a serious infestation with these beetles could have been disposed of into the well. Finally, and most likely, infested grain could have been amongst the fodder fed to the domestic animals responsible for the stable manure. Grain beetles from fodder are characteristic components of stable manure biota (Hall and Kenward 1998).

An example was found of *Bruchus rufimanus* (bean beetle), which attacks *Vicia faba* (field / broad bean). It is often a pest of stored beans but infestation only occurs when the parent plants are flowering, so cannot spread amongst dried beans (Metcalf *et al.*

1962). Its presence suggests that beans as well as cereals were fed to the animals which generated the manure.

One element of the insect death assemblage that is usually found in stable manure was missing. Synanthropic beetles, which commonly occur inside buildings, were almost completely absent apart from the specialised pests of stored grain. There is usually a significant component of beetles which attack structural timbers (Species Group 10) especially *Anobium punctatum* (woodworm beetle) and general synanthropic beetles (Species Group 9a), particularly *Ptinus fur* and often *Tipnus unicolor*. Only a single individual of Species Group 9a was found, *Typhaea stercorea*, a fungal feeder which is often associated with old hay and straw. Members of the Lathridiidae (Species Group 8), for example species of Corticariinae, comprised 5% of the terrestrial Coleoptera (**Fig. 68**). They are also fungal feeders that likewise are favoured by old damp hay and straw. However, they do not necessarily occur indoors. It is possible that domestic animals were kept on the site in a yard where litter was put down, with only stone walls to provide shelter. It is also possible that the stable manure was from a new timber building which had not had sufficient time for an indoor fauna to develop in it.

Scarabaeoid dung beetles (Species Group 2) were, at 9% of the terrestrial Coleoptera, relatively abundant. Although some of them, for example *Aphodius* cf. *sphacelatus*, are attracted to manure heaps, their usual habitat is individual animal droppings on the ground. Other species that were preserved, for example *Geotrupes* sp., stock tunnels beneath droppings with dung and never occur in stable manure. It is likely that there was some pastureland in the vicinity of the well from which these beetles had been derived rather than that they were amongst the organic refuse which had been dumped in the well. Other beetles that were probably derived from the surrounds to the well included some carabids, for example *Bembidion properans* and *Pterostichus melanarius*, which occur in a wide range of terrestrial habitats, and the elaterid beetle *Agrypnus murinus*, whose larvae feed on the roots of grassland herbs. The clover and vetch-feeding weevils of Species Group 3, including *Apion craccae* and *Sitona lepidus*, comprised 6% of the terrestrial Coleoptera. They flourish in hay meadows and it is possible that there was some ungrazed grassland nearby. However, they could also have been introduced in cut hay used as fodder.

The insect assemblages from the five samples were not uniformly similar. Samples 1785 and 1802 gave the strongest evidence for stable manure, with the highest concentrations of muscid fly puparia and grain beetles. Samples 1787 and 1784 had rather higher numbers of Coleoptera likely to have entered the well through natural agencies. These differences were probably reflections of episodes of dispersal of stable refuse, set against a background of insects from the surrounding landscape falling into the well.

Discussion

The insect evidence has helped to characterise much of the organic material in the well as stable manure although, rather surprisingly, the insects gave no evidence for the presence of timber buildings on the site. It is likely that grain infested with grain beetles had been fed to the domestic animals, four species being identified. Exotic pests of stored grain were spread rapidly throughout England with the Roman conquest. *Sitophilus granarius* was recorded from late 1st century AD sediments in the bottom of the ditch of the legionary fortress at Exeter (Straker *et al.* 1984). All four species recorded from Pomeroy Wood Fort were part of a severe infestation of a late 1st century AD granary in the fortress at York (Kenward and Williams 1979). Early records of exotic grain beetles from Roman Britain tend to be from military sites and towns, rather than rural settlements. It is possible that fully cleaned grain, which would be much more vulnerable to attack, was only stored in quantity on such sites (Robinson, unpublished). Hulled wheat, for example, was perhaps stored in spikelet form on rural settlements until it was needed for use. It is very likely that horses were kept on the site and the range of remains from the samples would be consistent with stable waste of horses given grain amongst their fodder. The well itself was perhaps situated close to where the animals grazed and were housed.

Waterlogged plant remains in well 3047

by Alan J. Clapham

Introduction

The waterlogged plant samples were prepared by laboratory floatation with the flots retained on a 0.25 mm mesh and residues on a 0.5 mm mesh. The resulting concentrate was stored in glass jars containing Industrial Methylated Spirits (IMS). All samples were subsequently reprocessed in the George Pitt-Rivers Laboratory due to some of the material not disaggregating. To achieve complete disaggregation the samples were soaked in a super-concentrated solution of Sodium hexametaphosphate for up to three hours. The samples were then sieved through a stack of sieves with mesh sizes, 2 mm, 1 mm, 0.5 mm and 0.3 mm and sorted immersed in IMS using a low-powered stereo-microscope. All critical taxa were identified using the modern seed reference collection housed in the George Pitt-Rivers Laboratory, Department of Archaeology, University of Cambridge. All nomenclature follows that of Stace, 1997. Five samples were analysed (**Table 28**).

The majority of the plant remains in these samples were preserved by waterlogging, although some charred remains were recovered. The samples were, in general, very rich with a total of 149 categories of biological material were recovered, the majority being of plant origin (**Table 31**). It was originally intended to analyse all of the samples but due to the exceptional richness of the material two of the contexts were sub-sampled (4692 and 4690) and 100 ml analysed. Some bone and fish vertebrae were also recovered.

Results

The plant remains were very well preserved and in most cases species identifications were possible. One of the striking features of these samples was the presence of large quantities of uncharred cereal chaff remains which appears to be unprecedented on sites in the British Isles. In general, the samples contained taxa of similar habitats,

although in differing proportions. The richest sample, with 101 categories, was from context 4683 (this was also the richest in terms of total number of remains).

The cereal remains

The samples were dominated by the remains of wheat cereal chaff (**Table 31**). The wheat identified from this feature are emmer (*Triticum dicoccum*) and spelt (*Triticum spelta*), although the most dominant was that of indeterminate wheat. A single charred grain of emmer wheat was recovered from context 4683 this was sprouted suggesting that it represents spoilt grain. Emmer wheat was poorly represented by finds of spikelet forks and glume bases. Spelt wheat was the dominant identifiable wheat and was represented by spikelet forks, glume bases and a single charred rachis fragment, the majority of the spelt remains were recovered from contexts 4683 and 4692 (**Table 31**).

Other cereals represented by the plant macrofossil remains include hulled barley (*Hordeum vulgare*) which was identified by the presence of rachis fragments and in two contexts (4686 and 4692) by the finds of caryopses. Cereal grains were rarely found in these contexts which is usual for waterlogged material, although possible cereal caryopses represented by the testas were identified from context 4683. Charred cereal processing debris was very rare suggesting that although the remains may represent crop processing waste, there may have been another use for the cereal chaff before being discarded.

Other plant species

The contexts also contained other plant remains, which can be classified as wild species, in the majority of cases these were the dominant plant remains in the samples. The wild plant species represented a wide range of habitats.

Arable Habitats

The majority of the wild species (a total of 47 taxa) were those which are associated with arable habitats and therefore were probably deposited along with the cereal

remains. The species represented in the samples can be seen in Table one. The commonest arable weeds were fathen (*Chenopodium album*), sheep's sorrel (*Rumex acetosella*), docks (*Rumex* sp.), parsley-piert (*Aphanes arvensis*), black nightshade (*Solanum nigrum*), and hempnettle (*Galeopsis speciosa/tetrahit*). The majority of the arable weed seeds can be classified as being small and therefore tend to be removed at the fine sieving stage of crop processing. However, the presence of larger seeds (such as corncockle, *Agrostemma githago*) and other plant disseminules, such as the pod fragments of wild radish (*Raphanus raphanistrum*) suggests that other stages such as that of coarse sieving are also present.

Grassland habitats

This habitat type is the second most common with a total of 29 taxa. The most dominant species were tormentil (*Potentilla erecta*), clover (*Trifolium* sp.) which in all cases was represented by the presence of petals and calices, self-heal (*Prunella vulgaris*), yellow rattle (*Rhinanthus* sp.), black knapweed (*Centaurea nigra*), field wood-rush (*Luzula campestris*), oval sedge (*Carex ovalis*) and the grass genera of fescue (*Festuca* sp.), meadow grass (*Poa* spp.) and the bents (*Agrostis* spp.). Although the majority of the species that are interpreted as representing a grassland habitat can be found growing in a wide variety of grassland types. some of the species are more specific in their habitat requirements. Tormentil, for example, is used to indicate more acidic conditions, as is *Carex pilulifera*, the pill sedge. A more damp grassland is represented by the presence of the sedge species such as *Carex cf hirta*, (hairy sedge) and *Carex cf flacca* (glaucous sedge), although this latter sedge is usually found on base-rich soils. Indications of the presence of a shorter grassland are given by the presence of sheep's sorrel (although this is usually interpreted as being a arable weed it can also be found in short acid grassland), daisy (*Bellis perennis*) and field wood-rush. Therefore a mosaic of grassland habitats probably was present around the site.

Wetland habitats

This habitat was represented by a total of 26 taxa. The commonest taxa were lesser spearwort (*Ranunculus flammula*), greater chickweed (*Stellaria neglecta*), bog stitchwort (*Stellaria uliginosa*), clustered dock (*Rumex conglomeratus*), meadowsweet

(*Filipendula ulmaria*), fool's water-cress (*Apium nodiflorum*), rushes (*Juncus* spp.), common spike-rush (*Eleocharis palustris*), greater tussock sedge (*Carex paniculata*) and sedges (*Carex* spp.). Most of the species can be found in situations where the watertable is at or close to the surface, or in some cases at the edge of ponds and rivers e.g. lesser spearwort, fool's water-cress and greater pond sedge (*Carex riparia*). Some species such as greater tussock sedge, and dioecious sedge (*Carex dioica*) prefer a base-rich substrate. Some species can survive on bare muddy areas such as blinks (*Montia fontana* ssp. *chondrosperma* and *M. fontana* ssp. *amporitana*).

This wetland habitat may well be a part of the grassland one, whereby the species representing this type of habitat become more dominant as the grassland reaches the watercourse.

Woodland/scrub habitats

This habitat type was the most poorly represented in the contexts (**Table 31**) and in most cases the habitat was represented by single finds. These included hazel (*Corylus avellana*), hairy St-John's-wort (*Hypericum hirsutum*), elder (*Sambucus nigra*) and nipplewort (*Lapsana communis*). The low occurrence of these taxa suggests that they could have been deposited naturally. The hazel nutshell was charred and may represent the gathering of a wild food source.

Heathland habitats

Six taxa of heathland species were found within the plant macrofossil assemblages, the most dominant was that of bracken pinnules (*Pteridium aquilinum*), other species represented included leaves of cross-leaved heath (*Erica tetralix*) and shoots, leaves and branches of ling (*Calluna vulgaris*). Caryopses of the heath grass (*Danthonia decumbens*) were also found (**Table 31**).

Miscellaneous

The miscellaneous section of **Table 31** can be of some use. The category Polygonaceae indet. can in reality be assigned to the arable weed habitat, whilst the Rosaceae thorns could be part of the woodland/scrub habitat type and the finds of the *Vicia/Lathyrus/Lotus* pod fragments and the Fabaceae tendril could belong to the grassland category.

The presence of coriander (*Coriandrum sativum*) and fennel (*Foeniculum vulgare*) may represent the remains of food flavourings.

Interpretation

The plant remains found in the well represent the backfilling of it. As very few of the cereal remains are charred, they were had not been used as tinder for starting fires (one of the inerpretations given to charred cereal chaff fragments). Instead the presence of the uncharred cereal remains and the products of both coarse and fine sievings (determined by the size of the weed seeds), and the presence of indicators of grassland, all suggest that the plant remains represent the remains of animal fodder. This fodder was composed of the crop processing waste and hay gathered from a mosaic of local grasslands. The presence of some species which indicate short grassland can be used to suggest that there may have been some defined areas of grazing were used.

The presence of the large quantities of bracken pinnules suggests that they were used for bedding and the mixing of this with the fodder suggests that the material from these contexts represents spoiled animal bedding. This material, once cleaned from the area where the animals were kept, was then dumped in the well. This is consistent with the evidence of the insects.

Charred plant remains from well 3047

by Alan J. Clapham

Sample 1230 from context 3087 (**Table 38**) is also from the backfilling of well 3047. Cereal remains were common as were non-cultivated plant species. The commonest remains were those of spelt wheat, with glume bases being dominant. Other finds of spelt included a spikelet fork. *Triticum* sp. was represented by grain and glume bases and barley by grain and rachis fragments. An awn fragment of barley was also identified. Cereal grain fragments and cereal coleoptiles were also found. Other cultivated plant species found were cotyledons of pea.

Non-cultivated species present in the sample include bracken (*Pteridium aquilinum*), buttercup (*Ranunculus* subgenus *Ranunculus*), hazel nutshell, blinks (*Montia fontana* ssp. *chondrosperma*), sheep's sorrel, dock, wild radish, cross-leaved heath (*Erica tetralix*) leaves, a cinquefoil (*Potentilla* sp.), clover, medick, self-heal (*Prunella vulgaris*), ribwort plantain, soft rush (*Juncus effusus*), sedge, false oat-grass, oat awn fragments and heath grass. Other non-cultivated plant remains identified were small-seeded grasses, culm nodes and grass stem fragments.

The charred plant assemblage from this context corresponds well with the waterlogged remains which indicate that crop processing waste and perhaps a hay crop were used as animal feed. The remains are likely to represent the burnt spent bedding (as indicated by the presence of bracken and the cross-leaved heath) which has been dumped into the well to prevent its reuse.

Pollen from well 3047

by Robert G. Scaife

Introduction

A number of contexts were assessed for pollen preservation and environmental reconstruction, including cess-pit 819, the material in the outwork or annexe which was considered to be turf (1457) and well 3047. Of these only the samples from well 3047 merited analysis.

Methods

Standard procedures were used for the extraction of the pollen and spores contained in the sediments (Moore and Webb 1978) (Moore *et al.* 1992). Pollen was identified and counted using an Olympus biological research microscope at magnifications of x 400 and x1000 in plain light and phase contrast. Pollen (sum) counts of between 600 and 700 grains of dry land taxa (tdlp) per level were made plus sedges and spores. Absolute pollen frequencies were calculated using the addition of a known number of exotic markers (Stockmarr 2971; *Lycopodium* spores tablets) to a known volume of sample (2 ml.). Data are presented in diagram form with pollen calculated as a percentage of the sum of total dry land pollen and marsh and spores as a percentage of this sum plus the relevant sub-group. Calculation and plotting of the pollen diagram was by Tilia and Tilia Graph in the Department of Geography, University of Southampton. Pollen taxonomy follows, in general, that of Moore and Webb (1978) modified according to Stace (1992) suggested modifications for pollen by Bennett *et al.* (1984).

Results (**Fig. 69**)

Absolute pollen frequencies ranged from 91,000 grains/ ml at 50 cm to 1.16 million grains/ml at 35 cm. Pollen preservation was excellent and the relatively high APF values allowed pollen counts to be readily achieved. A total of 76 pollen and pore taxa was recorded. In addition, the ova of intestinal parasites *Trichuris* (whip worm)

and *Ascaris* (round worm) were also counted/recorded in the lower fills (especially at 95cm).

Overall, trees and shrub pollen are present only in very small numbers whilst herbs are markedly dominant. A variety of spores of ferns and intestinal parasite ova were also recorded in the sequence. Pollen zonation has not been carried out since the changes which are present are not marked. However, there is some stratigraphical variation which may relate to changes in the local ecology or may be due to different phases of sediment filling. These tentative divisions are characterised from the base of the profile upwards as follows.

Unit 1 - 110-80 cm. (contexts 4685, 4684, 4683). Contains greater numbers of *Pteridium aquilinum* (bracken), *Lactucae* (dandelion types), Cereal types and intestinal parasite ova of *Trichuris* (whip worm)· and *Ascaris* (round/maws worm). *Poaceae* are dominant (to 80%). A single peak of *Cyperaceae* (sedges to 85%). There are slightly higher values of trees-*Quercus* (oak), *Alnus* (alder) and *Corylus avellana* (hazel) than in levels above 80 cm.

Unit 2 – 80-50 cm (Contexts 4683,4681). *Poaceae* are dominant (*c.* 70%) with a substantial peak of *Plantago lanceolata* at 75cm to 28%. There are fewer cereal grains but increases in *Filipendula* and an overall increase in the diversity of herb taxa.

Unit 3 - 50cm - 15cm (Contexts 4692, 4690). These upper levels are characterised by expansions of *Lactucae* (10%), Cereal type (5%) while *Poaceae* remains dominant (95%) throughout. There is also an increase in spores including *Sphagnum*, *Pteridium aquilinum* and *Dryopteris* type. APF values are high at 95cm (to >1 million grains/ml).

The first two units span a number of contexts (4685-4682). However, there appears to be little correspondence with these contexts and changes in the pollen assemblages. However, the third unit (50-15 cm) may be associated with the change from context 4681 to 4092 and 4690.

Tree and shrub pollen: Overall quantities of tree and shrub pollen are extremely small with a maximum of 5% at 95 cm. Those taxa which are present comprise largely sporadic occurrences of *Betula* (birch), *Pinus* (pine), *Quercus* (oak), *Alnus* (alder), and *Corylus avellana* type (hazel but which may also include sweet gale in certain ecological conditions). These are all wind pollinated (anemophilous) and are usually represented in much greater numbers if any substantial local growth occurred. Also present are individual occurrences of *Fraxinus* (ash), *Fagus* (beech), *Rhamnus catharticus* (alder buckthom) *Rubus* type (brambles) and *Sorbus* type (whitebeam and hawthorn) and possibly *Euonymus* (spindle). These are, in contrast, usually more poorly represented in pollen spectra and may imply some local growth.

Herbs: Herbs are totally dominant with *Poaceae* (grasses) the most important pollen taxon (to 83%). In addition there are diverse assemblages of weeds which are typical of archaeological assemblage/human activity. The taphonomy of these pollen and spores may, however, be complicated (see below). The pollen spectra contain both pastoral and arable indicators. The former obviously is dominated by grasses but with other taxa also including *Medicago* type, *Trifolium* type, *Rumex* spp., *Plantago lanceolata* (ribwort plantain), *Ranunculus* type (buttercups), possibly *Lactucae* (dandelion types) and sporadic occurrences of other herbs not definable to species or even generic level.

Arable indicators include cereal pollen (to 8%) mainly at the base of the profile (unit 1) and top of unit 3 along with segetal herbs: *Polygonum aviculare* type (knotweed), *Persicaria maculosa* type (redshank), *Fallopia convolvulus* (black bindweed) and possibly other less taxonomically definable taxa (e.g. Asteraceae types such as *Anthemis*). Some other taxa are also indicative of disturbed ground and include *Plantago* major type, *Spergula* (spurrey), *Artemisia* (mugworts), Chenopodiaceae (goosefoots and oraches) and *cf. Papaver* (poppy).

Marsh: Only at 85 cm is there any significant evidence for wetland plants. Here, Cyperaceae (sedges) reach 20% of tdlp + marsh types. Otherwise, there is a small but consistent presence of sedges throughout. There is a single record of *Typha latifolia* at the base of the sequence.

Spores: There is a consistent but small presence of a variety of fern types. These include *Equisetum* (horsetails), *Pteridium aquilinum* (bracken), especially in unit 1. *Dryopteris* type (monolete 'typical' ferns such as male fern) and *Polypodium vulgare* (common polpody).

Discussion

The taphonomy of pollen in features such as wells is complex, and there have been few studies with which to compare the data obtained from well 3047 although the potential for preservation of environmental remains in wells has been recognised. Dimbleby (1985, 42; **1989**, 75-8) demonstrated that pollen can be preserved in deep wells such as the Bronze Age Wilsford Shaft, Wiltshire, and pollen has been receovered from wells of Roman date at Farmoor, Oxfordshire **(Dimbley 1979, 82-3)** and Portchester Castle, Hampshire (1976). These sites have all produced pollen assemblages of a similar character to that obtained here; that is, a paucity of tree and shrub pollen and a marked dominance and diversity of herbs. Multidisciplinary data has also been obtained from a Roman well in York (Kenward *et al.* 1986, 241-67), and although pollen was not examined at this site, the heterogeneity of the organic remains in the fills is of note and is comparable with remains at Pomeroy Wood in containing faecal material, intestinal parasites, and cereal remains.

As noted, the taphonomy of pollen in such archaeological ditch, pit or well contexts is complex, with contained pollen and spores possibly coming from a variety of sources. Pollen derived from 'normal' airborne means or insect vectors is likely to derive from areas close to the site. However, given the archaeological nature of this feature such contexts are highly likely to contain pollen from secondary sources. These sources can be very varied and include human and animal faeces, offal, domestic waste including floor coverings and food remains. All of these may contain considerable quantities of pollen which can strongly influence and bias pollen assemblages (Greig 1981; 1982; Scaife 1983). This may be the case here where crop processing debris (Robinson and Hubbard 1979) and faeces can contain substantial quantities of cereal pollen and associated arable weeds. These taphonomic factors are clearly in evidence in the pollen obtained here and with plant macrofossils and insects to which the pollen can be strongly correlated. Robinson has demonstrated

from the insects in well 3047 the presence of animal bedding including cereal remains, old straw, stable manure and the possibility of grain infested with grain beetle having been fed to animals which contributed to the manure. This material which was subsequently dumped into the well, will have contained many of the pollen taxa recorded here.

The presence of such secondary/derived pollen complicates the interpretation since the possibility of the overriding dominance of this element may have masked 'naturally' derived pollen from which interpretations of the local environment can be made.

Grassland/pastoral habitats

The waterlogged plant remains show this group as being second to arable in terms of the plant macrofossils recovered. The pollen, however, suggests the dominance of pasture elements. Pollen of *Poaceae* is dominant with Ranunculaceae/*Ranunculus,* Caryophyllaceae (*Dianthus/Silene*), Fabaceae (medicks and clovers), *Rumex* spp. (docks), *Plantago lanceolata* (ribwort plantain), *Scabiosa* (scabious), Lactucae (dandelion types) and possibly herbs of wet pasture/marsh such as *Filipendula* (meadow sweet), *Succisa* (devil's-bit scabious) and Cyperaceae (sedges). These data suggest that the habitat surrounding the well was dominant tall pasture. Robinson has similarly also suggested local pasture land from the insect assemblages which include vetch feeding weevils. However, as with the insects, it should be considered that cut hay or fodder may have been dumped in the well which contained very substantial numbers of secondary pollen. Whatever the case is correct, local pasture is evidenced.

Cereals and cultivation

Cereal pollen and associated segetals are well represented in the basal zone 1 and upper zone 3. Weeds of arable and disturbed ground are similarly found and include Polygonaceae spp. (*Persicaria maculosa* type, *Polygonum aviculare* type and *Fallopia convolvulus* and possibly some *Rumex* spp.-docks), *Urtica* type (nettle/pellitory), *Plantago major, Plantago coronopus* (hoary plantain),

Chenopodiaceae (goosefoots and oraches), Brassicaceae (charlocks), and *Spergula* type (spurrey). Cereals are predominantly *Triticum* and/or *Hordeum* (wheat and barley) with a tentative identification of *Secale cereale* (oat).

As with pastoral taxa, several interpretations can be considered. First, the pollen may derive directly from local cultivation. Second, that the pollen may derive from animal fodder, stable bedding and manure. Third, pollen may derive from crop processing waste, the pollen incorporated in the cereal spike being disseminated with threshing and winnowing. Fourth, pollen from human domestic waste, including food, and cess where pollen ingested travels freely through the gut (Greig 1981; 1982; Scaife 1986; 1995). There is substantiating macrofossil and beetle evidence for old stable straw, animal dung and cereal processing waste, all of which could contribute pollen. This is clearly so in contexts 4684 and 4692 where pollen units 1 and 3 have more cereal pollen and in the former, intestinal parasite ovum (*Trichuris* and *Ascaris*). This correlates with the interpretation of the insects as showing that these contexts contained manure. *Pteridium aquilinum* (bracken) is also more important in unit 1 and may also come from floor covering/stabling. In conclusion, it seems probable that the bulk of cereal pollen and segetal weeds are derived from these secondary sources rather than directly from local cultivation. However, evidence of cereal cultivation is still present and must suggest local agriculture even though the crop remains arrived in an indirect fashion.

Because of the overwhelming possibility that most of the pollen has been introduced into these contexts via secondary routes, it is clear that pollen from the surrounding environment will be proportionally under-represented and skewed in favour of the secondary material. This is especially pertinent to the tree and woodland elements since pollen percentages are here calculated as a percentage of the total pollen resulting in the extremely high percentages of *Poaceae* (grasses) suppressing the percentage values of all other 'within sum' taxa. Thus, the albeit small percentages of tree and shrub taxa may be indicative of the local and regional tree growth with *Qeuercus* (oak) and *Corylus avellana* (hazel) as the principal background elements and also occasional, local *Fraxinus* (ash) and *Fagus* (beech). The extent and importance of such woodland remains unclear due to the taphonomic and

interpretative complexity of this site. To establish the general vegetation habitat, pollen analysis of a nearby wetland site with peat is required.

Waterlogged wood and charcoal from well 3047

by Rowena Gale

Bracken, grass and other organic remains including a single fragment of charred alder (*Alnus*) roundwood (lining context 980), were preserved in the waterlogged base of the well (**Table 58**). A minimum diameter of 30 mm was estimated for the roundwood, with at least 10 moderately wide growth rings. Alder wood is extremely durable when wet and has traditionally been used for revetting river banks etc. (Edlin 1949). A huge amount of charcoal (sample 1230) was preserved in the backfill of the well, probably from the disposal of refuse and some fragments were haphazardly embedded in a hard matrix.

Most of the charcoal consisted of fragmented roundwood, mainly oak (*Quercus*) (e.g. diameter 8 mm, 7 growth rings) and hazel (*Corylus*) (e.g. diameter 10 mm, 4 growth rings), but also fast-grown ash (*Fraxinus*) (e.g. diameter 10 mm, 2 growth rings) and alder (*Alnus*). Birch (*Betula*), hawthorn type (*Pomoideae*) and a small amount of oak (*Quercus*) heartwood were also present. The diameters of two pieces of fast-grown oak (*Quercus*) and alder (*Alnus*) roundwood from context 4544 measured 20 mm (3 growth rings) and 10 mm (3 growth rings), respectively.

Insect remains from well 3791

by Mark Robinson

Introduction

Three samples of organic sediment from well 3791, each of 1 litre, had been floated onto a 0.25 mm sieve for the assessment of macroscopic plant remains and in view of the results from well 3047 it was decided to investigate the insect remains from 3791 to confirm the origin of the material.

Results

The same methods were employed as for the anslysis of well 3047 but well-preserved insect remains were only found in sample 1707 (**Table 32-4**) Although the sample was small, the concentration of Coleoptera was sufficiently high for a useful interpretation to be made. These results have been displayed by species groups as a percentage of the total number of terrestrial individuals (**Fig. 70**) largely following Robinson (1991, 278-81). The synanthropic species of Species Group 9 have, however, again been divided into Species Group 9a, general synanthropic species such as *Ptinus fur* and Species Group 9b, serious pests of stored grain (not present).

Interpretation

The most numerous insect remains from the well were Coleoptera, some of which probably fell into the well, others of which were perhaps amongst refuse dumped in the well. There was only a single water beetle, *Helophorus* cf. *brevipalpis* which as likely flew into the well as lived in it. However, there were also four pupae of *Psychoda* cf. *alternata* (trickling filter fly). The larvae of *Psychoda* feed on decaying matter, usually in water, and the common name of *P. alternata* has arisen because it is often abundant in sewage filter beds. The larvae of this species also occur in rotting seaweed, disused farm feeding troughs, washings from animal cages and kitchen sink U-traps (Smith

1989, 37). They tend to favour dark habitats. The occurrence of the pupae suggests either the water in the well was foul or foul washings were poured into it. Such conditions would certainly be appropriate to the organic content of context 4478.

Amongst the Coleoptera, the most numerous species was *Anobium punctatum* (woodworm beetle). It was the only member of Species Group 10, beetles which attack structural timbers, and comprised 17% of the terrestrial Coleoptera (**Fig. 70**). It does also occur in dry, seasoned dead branches on trees, but such a habitat is rare in nature. In contrast, structural timbers provide the ideal habitat for *A. punctatum* to flourish in abundance. Either the well was situated close to a severely infested building or, more likely, sweepings from a timber building were thrown into it. General synanthropic beetles (Species Group 9a), such as might live in a building, were represented by *Ptinus fur* but were not particularly abundant. Beetles from the family Lathridiidae, such as *Lathridius minutus* gp. (Species Group 8) comprised 9% of the terrestrial Coleoptera (**Fig. 70**). They are fungal feeders which are favoured by old damp hay and straw including thatch. They were sufficiently abundant to suggest a significant presence of their habitats and it is possible that they too had been amongst refuse thrown in the well.

Members of Species Group 7, such as *Megasternum obscurum* and *Anotylus sculpturatus* gp., which occur in a wide range of dung and foul organic material habitats, comprised 8% of the terrestrial Coleoptera. This value is typical of a rural archaeological deposit, especially if domestic animals were present (below) and does not imply any high concentrations of decaying organic material or the proximity of a manure heap. There were few fly puparia likely to have been derived from such material; for example there was only a single puparium of *Musca domestica* (house fly). The suggestion that animal bedding or stable manure was dumped in the well cannot be sustained from the entomological evidence.

Many of the Coleoptera seem to have been derived from the surrounding landscape and to have entered the well by natural agencies. Chafer and elaterid beetles with larvae that feed on the roots of grassland herbs, including *Athous hirtus*, comprised almost 6% of the terrestrial Coleoptera. The scarabaeoid dung beetles of Species Group 2 were, at over 11% of the terrestrial Coleoptera, sufficiently abundant to suggest a concentration of domestic animals grazing grassland in the vicinity of the wells. *Aphodius rufus* was

the most numerous, but other species of *Aphodius*, *Geotrupes* sp., *Colobopterus erraticus* and *Onthophagus* sp. were also present. Although the Chrysomelidae and Curculionidae which make up Species Group 5, Coleoptera which feed on marsh and aquatic plants, were abundant, several examples of the nitidulid beetle *Kateretes rufilabris* were found. It feeds on the pollen of *Juncus* spp. (rushes) and *Carex* spp. (sedges), which were perhaps growing in wetter areas of the pasture.

Some of the carabid beetles, for example *Agonum dorsale* and *Harpalus rufipes*, are favoured by sparsely vegetated weedy ground and arable fields. These beetles (Species Group 6a) were most likely to have been living in weedy areas in the settlement. There were a few phytophagous beetles characteristic of such vegetation including *Brachypterus* sp., which feed on *Urtica* spp. (nettles) and *Chaetocnema concinna*, which feeds on *Polygonum* spp. and *Rumex* spp. (knotgrass, docks etc).

Discussion

The entomological evidence from well 3791 emphasised two aspects of the environment of the civil settlement. The well was probably close to a timber building infested with woodworm and there was probably pastureland grazed by domestic animals nearby. However, in contrast to well 3047 in the earlier military base, there were no exotic pests of stored grain, which were likely to have been amongst fodder for domestic animals and there was no strong evidence from the insects for stable manure. Indeed the results from well 3791 are entirely typical of low-status Roman rural settlements.

Charred plant remains from well 3791

by Alan J. Clapham

Sample 1370/context 3798 (**Table 46**) was dominated by the cereal element; an emmer rachis fragment along with *Triticum* sp. grains and glume bases were recorded. Fragments of cereal grain and coleoptiles were also found. The only other find was that of oat/brome grass. It can be suggested that this assemblage represents

a 'background flora' of the activities occurring on-site such as crop processing, the waste of which was probably used as tinder.

The charcoal in well 3791

by Rowena Gale

A lower fill (3798, **Table 59**) produced a large quantity of charcoal (sample 1370) which mostly contained oak (*Quercus*), probably from a widish branch/trunk including heartwood, birch (*Betula*), alder (*Alnus*), hazel (*Corylus*), holly (*Ilex*), willow/poplar (*Salix/Populus*), and gorse/broom (*Ulex/Cytisus*). It should be noted that hearth bottoms from smithing were also found in the well.

The charred plant remains

by Alan J. Clapham

Introduction

A total of 97 samples were analysed and are detailed in **Table 35**. In general, the charred plant remains were well preserved throughout the different phases of the site, allowing identification to species. The cereal chaff remains were exceptionally well preserved.

Phase 2

Fifteen samples from this phase were analysed (**Tables 36-8**).

Outer defensive ditch 748/3019

Five samples from this ditch were analysed (**Table 36**).

Sample 1205/context 3025 contained small quantities of cereal remains; single finds of a spelt wheat grain and a *Triticum* sp. glume base were identified along with seven fragments of cereal grain. The only non-cultivated remains present were single finds of a rootlet of false oat-grass.

Sample 1204/context 3024 was the clayey silty fifth layer from the top, adjacent to the north side of ditch 748. This was the uppermost context examined. This context consisted of very few charred plant remains. The possible finds of two caryopses of a millet (*Panicum* sp.), were found along with fragments of indeterminate cereal grains, these were the only cultivated crop finds. Other finds in the context include hazel (*Corylus avellana*) nutshell, fat hen (*Chenopodium album*), and two rootlets of false oat-grass (*Arrhenatherum elatius*).

The presence of the possible millet caryopses can be considered unusual as there are no native members of the genus Panicum in Britain. It can therefore be assumed that they arrived along with the Roman garrison.

Sample 1206/context 3026 is the rubbly, poorly consolidated seventh layer of the ditch. This context also contained very few charred plant remains, although more crop categories were recovered. These included, indeterminate wheat (*Triticum* sp.) glume bases, fragments of cereal grains and pea (*Pisum sativum*). Non-cultivated species were also rare and included finds of fat hen, ribwort plantain (*Plantago lanceolata*) and a rootlet of false oat-grass. Dock (*Rumex* sp.) nutlets were also found in this context. Due to the small number of charred plant remains present within this context it is difficult to determine the activities represented by them, only to say that their presence reflects a background flora of the site, which has been redeposited in the ditch.

Sample 1207/context 3027 is the eighth layer from the ditch top which is comprised of mixed, natural clay. A small number of charred plant remains were recovered from this context including *Triticum* sp. glume bases and fragments of cereal grain. Non-cultivated species identified include; fat hen, ribwort plantain and false oat-grass rootlets which were the commonest find. This context can also be interpreted as the redeposition of some part of the activities carried on site.

Sample 1208/context 3028 is the primary fill of ditch 748. This context proved to be the richest context from this phase of the ditch. Crops were represented by finds of chaff fragments (spikelet forks and glume bases) of two species of glume wheat, emmer (*Triticum dicoccum*) and spelt (*Triticum spelta*), hulled barley (*Hordeum vulgare*) was represented by rachis fragments and grain. Fragments of cereal grains were also recorded.

Non-cultivated species were also better represented. The commonest find was that of false oat-grass rootlets, with culm nodes, grass stem fragments and fat hen also being common. Sheep's sorrel (*Rumex acetosella*), redshank (*Persicaria maculosa*), dock, hazel, clover (*Trifolium* sp.) and small-seeded grasses were also present. This charred

plant assemblage appears to represent crop processing activities which have been dumped or redeposited into the ditch.

Defensive ditch 3057/3151

Two contexts from defensive ditch 3057/3151 were analysed for charred plant macrofossils; the results are presented in **Table 36**.

Sample 1334/context 3150 is the bottom layer of the ditch and was composed of a mix of clays and silts relating to the primary fill of the ditch 3057 and has been interpreted as being redeposited natural material. This context contained very little in the way of charred plant remains, with both crop and non-cultivated plants being poorly represented. A single find of a spelt wheat glume base and two of *Triticum* sp. glume base along with fragments of cereal grain were the only crop representatives.

Non-cultivated species were represented by ling leaves (*Calluna vulgaris*), scentless mayweed (*Tripleurospermum inodorum*), false oat grass rootlets and small seeded grasses and culm nodes. This assemblage can be interpreted as the redeposition of a 'background flora' representative of activities taking place at other parts of the site.

Sample 1389/context 3246 is a well defined layer at the extreme base of ditch 3057 and contained very few charred plant remains. No crop remains were recovered from the sample. Non-cultivated species included a single find of a pearlwort (*Sagina* sp.) and two finds of sheep's sorrel and false oat-grass rootlets. Again, this assemblage can be said to represent a 'background flora' element.

Building 3545

A total of seven samples from a variety of features located within building 3545 were analysed (**Table 37**).

Sample 1754/context 4597 represents the upper fill of a north/south running secondary slot 4598 on the east side of building 3545. This context was rich in crop remains but

contained few non-cultivated species. The dominant crop was that of spelt grain, with sprouted grains being more common than unsprouted, spelt glume bases were also recovered. Fragments of *Triticum* sp. were very common, glume bases, rachis fragments and detached embryos were also found including large a quantity of cereal grain fragments. Oats (*Avena* sp.) was also a common find; cereal coleoptiles (sprouts) were also identified. The only non-cultivated plant species to be recovered was that of vetch/vetchling (*Vicia/Lathyrus* sp.).

The domination of this context by cereal remains, suggests that this slot may have been part of a building used for storage. The lack of glume bases and large seeded weed species suggests that the grain was stored as clean grain rather than as spikelets. Although the presence of a large number of sprouted spelt grains suggests that the crop was spoiled and perhaps stored for some other use other than human consumption e.g. animal feed. Another possibility is that it may represent the malting of spelt for brewing, such as that recorded at Catsgore by Hillman (1977). The presence of oats, which from its size alone suggests that it may well be a cultivated variety, does suggest that the crop was stored for animal feed. Also the presence of the oats which has a similar size grain to that of wheat, suggests that although the crop was stored as clean grain, hand cleaning had not taken place.

Sample 1377/context 3489 represents the fill of post hole 3488 in the southern part of 3545. This context again contained representatives of crop plants but non-cultivated species were much more common. Emmer wheat was indicated by the presence of glume bases, whilst spelt was represented by spikelet forks and glume bases, *Triticum* sp. glume bases were also present. No cereal grains were recovered from this context. The dominant remain was that of cereal grain fragments. Non-cultivated species included finds of vetch/vetchling, medick (*Medicago* sp.), indeterminate Apiaceae (carrot family), ribwort plantain, and oats/brome grass caryopses.

The lack of grain in this context and the presence of chaff and weed seeds suggests that this assemblage represents a crop processing activity.

Sample 1501/context 3588 represents the fill of the south-eastern post hole (3591) of the interval tower. This assemblage comprised both cultivated and non-cultivated elements. The cultivated element was again dominated by cereal chaff remains, which included glume bases of emmer, spelt and *Triticum* sp., the latter being the most common, after spelt. Spelt rachis fragments were also identified. Cereal grain fragments were also found as was a single cereal basal rachis fragment. Non-cultivated species were represented by medick, field wood-ruch (*Luzula campestris*), sedge (*Carex* sp.), false oat-grass and oats/brome grass caryopses. Other finds included large- and small-seeded grasses, culm nodes and grass stem fragments. The lack of cereal remains suggests the presence of crop processing waste.

Sample 1602/context 4308 represents the fill of the north-western post hole of the tower (4307). Both cultivated and non-cultivated plant species were present in this assemblage. The cultivated element consisted of grains of spelt wheat with the corresponding glume bases and rachis fragments, no spelt spikelet forks were recovered. The other cereal remains consisted of *Triticum* sp. wheat grains, glume bases and embryos. Cereal coleoptiles were also identified and are most likely to be wheat. Fragments of cereal grain were the commonest find. Uncultivated species identified included hazel nutshell, dock, medick and oats/brome grass caryopses. Awn fragments of oats were also identified. Other finds included indeterminate grass caryopses and culm nodes.

This assemblage, with the small numbers of grain present, along with the larger quantities of chaff fragments most likely represents crop processing waste.

Sample 1631/context 4202 is from the post pipe of the northpeastern post (4366) of the interval tower. This is by far the richest context in terms of charred plant remains from this group of features and the charcoal, all oak, suggests that the post may have been burnt *in situ*. Cereal remains dominate the context with few uncultivated species being present. The main species of wheat present was that of spelt, most of which was sprouted and glume bases were identified. *Triticum* sp. grains were very common, spikelet forks, glume bases and rachis fragments were also recorded. Fragments of cereal grain were the most dominant category with thousands of fragments being

recorded. The non-cultivated element of the assemblage consisted of hazel nutshell, fat hen, dock and oats/brome grass caryopses. Small-seeded grasses and grass stem fragments were also identified.

The dominance of the cereal element suggests that the assemblage may represent the storage of spelt grain, which was semi-cleaned, with the larger seeded weeds being left, which would have been removed just prior to use by hand cleaning. As the dominant cereal remain was of sprouted spelt grain, it is possible that the stored crop could have been spoiled.

Sample 1507/context 3971 was a hearth layer within building 3545. The cultivated part of the charred plant assemblage was comprised of emmer glume bases, spelt grain (dominated by sprouted grain), glume bases and rachis fragments. *Triticum* sp. grain fragments were the dominant wheat category, along with spikelet forks, glume bases and rachis fragments. The cultivated element was dominated by thousands of cereal grain fragments. Cereal coleoptiles were also recorded. The non-cultivated element consisted of hazel nutshell, fat hen, dock, clover, common spike-rush (*Eleocharis palustris*), false oat-grass rootlets and oats/brome grass caryopses (the commonest find). Small-seeded grasses were also recorded.

The similarity in composition between this and the previous context (4202) suggests that they could be related and that the assemblages represent the dumping of spoiled stored semi-clean spikelets of spelt wheat.

Sample 1589/context 4250 represents the fill of post hole 4249 within building 3545. The dominant element of the charred plant assemblage was cultivated remains, which were represented by spelt wheat glume bases and rachis fragments, as well as *Triticum* sp. spikelet forks and glume bases. Barley was represented by single finds of a rachis fragment and grain. Fragments of cereal grain were the commonest find. The non-cultivated plant species identified included dock, oats/brome grass (the most common find) and oat awn fragments. Grass stem fragments were also found.

The assemblage represents crop-processing waste, which may have been the remains of the crop stored within the building associated with this post hole.

Grain drier 4123

Two contexts were examined from 4123; the results are presented in **Table 45.** Sample 1572/context 4126 represents the upper layer in the southern end of feature 4123. Spelt spikelet forks, glume bases (more numerous) and rachis fragments, along with *Triticum* sp. spikelet forks and glume bases were identified. Fragments of indeterminate cereal grains were also recovered, with cereal coleoptiles. Other remains included hazl nutshell, dock, vetch/vetchling, black medick (*Medicago lupulina*), ribwort plantain and oat/brome grass caryopses. The profusion of cereal chaff especially glume bases in this assemblage plus the weed seeds, suggests that crop processing waste was used to fire the furnace, perhaps as tinder.

Sample 1580/context 4129 represents the upper layer of the northern end of feature 4123. Plant remains include grain of spelt wheat, along with glume bases of spelt and *Triticum* sp. *Triticum* sp. rachis fragments were also recovered along with a detached embryo. Fragments of cereal grain and a coleptile were also identified. Other finds included hazel nutshell, dock, and oat/brome grass caryopses. Awn fragments of oats were also found. It can be suggested that the charred plant assemblage is similar to that of the context above and therefore served a similar purpose.

Pit 4498

Sample 1731/context 4547 represents the charcoal rich fill of pit 4498. The results are presented in **Table 38**. Wheat species were represented in the recovered charred plant remains in the form of spelt glume bases and rachis fragments and bread wheat (*Triticum aestivum*) grain. *Triticum* sp. grain was also recovered. The commonest cereal remain was that of hulled barley grain. Fragments of cereal grain were also found. Non-cultivated plants found included black bindweed (*Fallopia convolvulus*), vetch/vetchling, sedge and oats/brome grass. Fragments of oat awns and grass stems were also found.

This assemblage is consistent with the deposition of crop-processing waste, although the presence of the barley grain could suggest a storage function of a mix of crop processing waste and barley for animal feed.

Gully 4301/4731

Sample 1583/context 4241 from gully 4301 consisted of a silty clay fill, with the results presented in **Table 38**. The charred plant remains were sparse in this context, and consisted of spelt spikelet forks, *Triticum* sp. glume bases and cereal grain fragments. A non-cultivated element comprised, fat hen, and smooth tare (*Vicia tetrasperma*). It can be suggested that this assemblage represents the reworking of charred plant material.

Phase 3

Phase three represents the disuse/slighting of the military base. Ten contexts from this phase were analysed for charred plant remains. The results are presented in **tables 39-40**.

Outer defensive ditch 3057/3151

Sample 1330/context 3120 represents a layer in ditch 3057/3151 and as previously shown in other contexts, few charred plant remains are present. Cultivated species were represented by possible spelt wheat grain and a single *Triticum* sp. glume base. Fragments of cereal grain were the commonest find. Non-cultivated species present were single finds of clover and oat/brome grass. Culm nodes and grass stem fragments were also found. The context can be interpreted as the dumping or reworking of charred plant material.

Sample 1332/context 3122 represents the third layer from the bottom of ditch section 3151. Charred remains are again scarce, but more common than the upper two contexts. Eight grains of possible spelt wheat along with a spikelet fork and two

glume bases of spelt were identified. *Triticum* sp. grain fragments and a glume base were also recovered. Cereal grain fragments were the dominant cereal remain. Non-cultivated species were represented by a hazel nutshell fragment, two rootlets of false oat-grass and two fragments of oats/brome grass.

Sample 1333/context 3149 consisted of a mixed rich organic deposit with abundant charcoal representing the second layer from bottom of the ditch. This sample was by far the richest of the three context analysed from this ditch profile. Crop remains were represented by both grain and chaff remains. The dominant wheat was emmer, which consisted of finds of grain, some of which were sprouted, emmer glume bases were also identified. *Triticum* sp. grains, spikelet forks, glume bases and rachis fragments were also found. Fragments of cereal grain were the commonest find. No other crop remains were recovered. Non-cultivated species were rare, with finds of hazel, wild radish (*Raphanus raphanistrum*) and oats/brome grass (*Avena/Bromus* sp.) being the only finds.

This plant assemblage could possibly represent the dumping of spoiled grain as suggested by the presence of sprouted grain. The lack of weed species, especially small seeded species and the presence of the capsule of wild radish and oats/brome grass which are of a similar size to wheat grains, suggests that this material was dumped prior to hand-picking.

Outer defensive ditch 3057/958

Sample 1228/context 960 is the silty loam fill of the south-western ditch segment 958 of ditch 3057 containing dense concentrations of charcoal. With regards to the presence of charred plant remains, this context is the richest of all the ditch contexts analysed for phase 3. Cereal remains present include possible emmer wheat grains, along with spelt glume bases, *Triticum* sp. glume bases were also identified. Barley was represented by both grains and rachis fragments with cereal grain fragments also being present. Non-cultivated species identified included; chickweed (*Stellaria media*), dock, Brassica sp. (cabbage family), vetch/vetchling, ribwort plantain, a bedstraw (*Galium* sp.), nipplewort, false oat-grass, awn fragments of oats and heath

grass (*Danthonia decumbens*). A small-seeded grass was also recovered along with grass stem fragments.

Although a greater number of plant remains were recovered from this context and are most likely to represent crop-processing waste (from fine sieving), it is most likely that the material was dumped into the ditch from a hearth cleaning where the waste was used as a tinder.

Inner defensive ditch 748/3019

Sample 1202/context 3022 represents the third layer down the ditch 748 and is comprised of a reddish clay. This context contained very few plant remains. No cereal or other cultivated plant species were recovered from the context, only non-cultivated species being present. Finds of sheep's sorrel, nipplewort (*Lapsana communis*), false oat-grass rootlets and oats/brome grass were identified. The lack of plant remains within the context suggests that the charred remains represent the reworking of previously deposited material.

Sample 1202/context 3023 represents the fourth layer down in ditch 748 and is comprised of a mixed red and grey, very clayey silt. Again, cereal remains were poorly represented, consisting only of a single find of a cereal basal rachis fragment. Non-cultivated plant species were also rare and comprised of single finds of hazel nutshell, clover, indeterminate Apiaceae, false oat-grass rootlet and a large-seeded grass. The lack of plant remains suggests that the assemblage is reworked.

Inner defensive ditch 748/916

Sample 1089/context 984 is the subsidence fill of the ditch 748 in the south west section 916. This context is richer in charred plant remains than the previous ones, but still quite poor. The cultivated element consisted of finds of spelt wheat as indicated by grain, spikelet forks and glume bases. Bread wheat grain was also found. *Triticum* sp. grain and glume bases were recovered, as was a single rachis fragment of barley. The dominant find was that of fragments of cereal grains, cereal coleoptiles were also

found. Non-cultivated species were rare in occurrence, with hazel nutshell, pale pericaria (*Persicaria lapathifolia*), dock, false oat-grass and oat/brome grass being identified.

Although this context was richer in plant remains than the other contexts so far discussed in this phase, the material was either dumped or reworked.

Inner defensive ditch 748/3257

Sample 1421/context 3241 is a sandy clayey loam fill of the south east section (3257) of ditch 748 and contained very few charred plant remains. Cultivated species were represented by *Triticum* sp. glume bases, whilst non-cultivated species such as hazel nutshell, false oat-grass and a small-seeded grass were the only finds. As for the above contexts, a similar interpretation of reworking can be given to this context.

In general, the charred plant assemblages from the defensive ditches are very poor in the number of remains and probably represent the reworking of material. It is not possible, in most cases, to interpret these assemblages apart from context 960 which may represent crop processing waste. The reworking of previously charred material is not impossible as this phase represents the backfilling of the site.

Outwork/annexe ditch 4715/785

Sample 1380/context 780 is a layer within the outwork or annexe ditch 785 (4715). Charred plant remains were recovered from this context from both cultivated and non-cultivated elements. The cultivated element was represented by finds of emmer wheat grains, spikelet forks and glume bases and make up the dominant wheat find. Spelt was represented by a single find of a glume base. *Triticum* sp. was present as grain fragments, glume bases and detached embryos. Barley was represented by rachis fragments. A cultivated oat was found. Cereal grain fragments were the commonest find. Non-cultivated species identified included buttercup, hazel nutshell, pale persicaria, dock, wild radish, meadowsweet (*Filipendula ulmaria*), vetch/vetchling, a

rye grass (*Lolium* sp.), false oat-grass, oats/brome grass and a fragment of an oat awn. Small-seeded grasses were also recovered.

This charred plant assemblage represents the dumping of crop processing waste, although the large number of emmer wheat grains found within the sample suggest that a semi-cleaned stored crop was dumped into the ditch. Whether this was because the crop was spoiled or accidentally burnt whilst being further processed is difficult to determine.

Sample 1388/context 3835 is another fill of the outwork ditch 785. The quantity of charred plant material is considerably less than that of the previous context. Identified cereal remains include emmer what grain and glume bases along with *Triticum* sp. spikelet forks and glume bases. The presence of barley was shown by the identification of rachis fragments. Fragments of cereal grain and cereal coleoptiles were also recovered. Few non-cultivated plant species were recovered from this context but included, orache (*Atriplex* sp.), bedstraw and oats/brome grass. Other charred plant remains found were culm nodes and grass stem fragments.

The charred plant assemblage in this context can be interpreted as being crop-processing waste or reworked material which has been dumped/redeposited in the ditch. The presence of emmer wheat in these two contexts suggests that they belong to an earlier phase than 4(i).

Overall, the charred plant assemblages from all of the contexts analysed from phase three correspond to a phase of dumping/backfilling. The plant remains from the well context 3087 suggest that animal bedding had been burnt and dumped in well 3047. This charred plant assemblage corresponds very well with the waterlogged plant assemblage.

Phase 4(i)

This sub-phase relates to the 2nd-3rd century occupation. Forty-three samples were **(Tables 41-8).**

Building 3415

A total of eleven contexts from various features associated with round-house 3415 were analysed for charred plant remains, the results are presented in **Tables 41-2.**

Outer ring gully 3509

Sample 1329/context 3510 is a dark brown silty clay fill of the outer ring of round-house 3415. Charred plant remains were recovered and cereal remains dominated the assemblage. Emmer wheat was represented by glume bases, whilst the pesence of spelt was marked by grain, spikelet forks and glume base remains. *Triticum* sp. grain, spikelet forks and glume bases were also present. Cereal grain fragments were present. Uncultivated species included; knotgrass (*Polygonum aviculare*), dock, tufted vetch and oat/brome grass. The charred plant assemblage represents the dumping of crop processing waste and probably reflects the activity occurring in the area at the time of occupation.

Inner ring-gully segment 3550

Sample 1385/context 3551 represents the backfill of gully 3550 of round-house 3415. Charred plant remains were not very common in this context but both cultivated and non-cultivated species were present.

Three types of wheat were present, emmer and bread wheat were represented by grains, whilst spelt by glume bases and rachis fragments. *Triticum* sp. grain, spikelet forks and glume bases was also **pesentas**? were fragments of cereal grain. Non-cultivated species included; hazel nutshell, dock, vetch/vetchling, clover, cleavers and oat/brome grass. Small-seeded grasses were also present. The assemblage is one of

crop processing waste which has been used as tinder and has then been redeposited into the gully.

Inner ring gully segment 4693

Sample 1809/context 4694 is the fill of ring gully 4693 for the building 3415 also contained charred plant remains. Emmer and spelt wheat were represented by glume base remains. *Triticum* sp. grain and glume bases were also present, as were cereal grain fragments. Other plant remains were scarce and included hazel nutshell fragments and oat/brome grass caryopses. Fish vertebrae were also recovered. Again, the assemblage may be a 'background flora' or reflect the reworking of material from an area adjacent to the feature.

Inner ring gully segment 4660

Sample 1780/context 4661 is the fill of the outer ring gully for building 3415. Charred plant remains were scarce, although two species of wheat were identified, emmer and spelt the former was identified by classic 'teardrop' grains, whilst spelt was identified by the presence of grain and glume bases. *Triticum* sp. was also present in the form of grain and glume bases. A single grain of hulled barley was identified. Cereal grain fragments were also present. Other species identified included; hazel nutshell, dock, false oat-grass and oat/brome grass. A grass culm node was also found.

The charred plant assemblage associated with this context is representative of a 'background flora' of charred material which has been washed/dumped into the gully and probably is indicative of crop processing activity occurring elsewhere on the site.

Hearth 4134 in building 3415

Sample 1550/context 4135 is the charcoal and fired clay fill of hearth 4134. The charred plant remain assemblage recovered from this context consisted of two elements. The cultivated element produced a least two types of wheat, with emmer being represented by grain and glume bases as was spelt, although spikelet forks of

this wheat were also found. *Triticum* sp. was present in the form of grain, sprouted grain, spikelet forks, glume bases and rachis fragments. Hulled barley grains were also identified. The most common component was that of cereal grain fragments. The uncultivated element consisted of hazel nutshell, pale persicaria, black bindweed, sheep's sorrel, wild radish, sloe (*Prunus spinosa*), vetch/vetchling, a rye grass and oat/brome grass. Awn fragments of oats, culm nodes and grass stem fragments were also found.

The presence of such a rich sample within a hearth suggests that the assemblage consisted of crop processing waste which had been used as a fuel. The presence of sprouted grain could possibly suggest food preparation, but with the presence of wheat chaff fragments and weed seeds dominating it can be suggested that perhaps if it was not crop processing waste being burnt, it could have been a spoiled, semi-clean stored crop of spelt wheat that was being used as tinder. The presence of sloe stone fragments, like the hazel nutshell, may indicate the use of a wild food source, although it is more likely to have arrived with the wood used for fuel.

Hearth 3538

Sample 1373/context 3539 represents the fill of hearth 3538 which occupies the central area of round-house 3415. Unlike the previous hearth, 4134, this context revealed very few charred plant remains. Four *Triticum* sp. glume bases and seven fragments of cereal grain fragments were the only indicators of cultivated plants in the context. Other species present included oat/brome grass. The paucity of charred plant remains in this sample suggests that crop processing waste was not being used a tinder and that the assemblage is a reflection of a 'background flora'.

Pit 4669 within building 3415

Sample 1798/context 4678 represents a mixed deposit at the base of pit 4669 internal to round-house 3415. Few plant remains were present within this context. Eight spikelets and three glume bases od spelt wheat were identified as were glume bases and a rachis fragment of *Triticum* sp. Barley grain was also recorded. Cereal grain

fragments were the dominant find. Other species recovered included fat hen, *cf* herb robert (*cf Geranium robertianum*) and oat/brome grass. A fragment of an oat awn along with indeterminate grasses were also found. The paucity of the charred plant remains in this context, which probably belongs to the 'background flora' make it impossible to determine the function of this feature.

Posthole 3457 within building 3415

Sample 1397/context 3458 represents the fill of a small posthole 3457 with packing stones. As can be expected from this type of context, few charred plant remains were recovered from this feature. A fragment of *Triticum* sp. grain and glume base along with three fragments of cereal grain were identified. Other species recorded included a single nutlet of dock. This assemblage reflects a 'background flora'.

Posthole 4214 within building 3415

Sample 1559/context 4215 is the fill of a small posthole 4214 found in the interior of round-house 3415 and contained little in the way of charred plant remains. Emmer and spelt wheat grains were identified along with spelt glume bases. *Triticum* sp. grain and glume bases were also present. The commonest find was that of cereal grain fragments. Other species recovered included hazel nutshell, dock, cinquefoil, ribwort plantain and oat/brome grass. The assemblage appears to reflect a background flora.

Stakehole 4136 within building 3415

Sample 1551/context 4137 is the fill of stakehole 4136. Very few plant remains were recovered from this context. Wheat species were represented by finds of spelt glume bases along with *Triticum* sp. grain, spikelet forks and glume bases. The commonest find was of fragments of cereal grain. Other species identified included pale persicaria,vetch/vetchling and oat/brome grass. A 'background flora' or the reworking of crop processing waste is the likely origin of this assemblage.

Stakehole 3482 within building 3415

Sample 1310/context 3483 is the fill of stakehole 3482 associated with round-house 3415. As can be expected from such a context, charred plant remains were relatively rare, although some species were present, these included; emmer glume bases, *Triticum* sp. glume bases and embryos and fragments of cereal grain. Hazel nutshell, sheep's sorrel, dock, vetch/vetchling, ribwort plantain and broad-leaved cotton grass (*Eriophorum latifolium*) and oat/brome grass were identified. Grass stem fragments were also found. The plant assemblage probably reflects the activities taking place within the round-house area, which may have become trapped against the stake and were preserved when the stake was burnt. The presence of cotton grass may suggest that this species was used as a roofing material (i.e as part of a turf) or as a floor covering.

Overall, the charred plant assemblages from the features associated with the round-house 3415 contain very few charred plant remains. The wheats, emmer and spelt are represented along with hulled barley. No other crop types were identified. The majority of the contexts contain what can be termed a 'background flora' and therefore no function for most of the features can be determined.

The richest sample was that from hearth 4134, where the charred plant assemblage may represent the use of crop processing waste as a fuel. The presence of some grain of emmer and spelt wheat along with barley may be thought to be food processing/cooking but the presence of arable weeds does suggest that the former interpretation is the likely scenario.

Slot 4695

Sample 1810/context 4696 is the single fill of a slot feature 4695 between features 4642 and 3415. Charred plant remains were sparse and included sprouted grain of spelt wheat along with glume bases and rachis fragments of *Triticum* sp. Cereal grain fragments and coleoptiles were also recovered. Bog stitchwort (*Stellaria uliginosa*)

and vetch/vetchling were the other species identified from this context. A 'background flora' is interpreted for this assemblage.

Building 4642 - curvilinear gully 4655 **(Tables 41-42)**

Sample 1766/context 4648 is a fill of the curvilinear gully 4655. Plant remains from this context were recovered but in the main the cereal categories dominated. Spelt wheat spikelet forks and glume bases were present, as were those of *Triticum* sp., although *Triticum* sp. grain and rachis fragments were also present. Cereal grain fragments and coleoptiles were also recorded, Other species were rare and only oat/brome grass caryopses were recorded. The plant assemblage appears to reflect a cleaned crop product, with only the larger weeds and glume bases being present. The presence of this assemblage in this context may be due to reworking or the use of the crop processing waste as tinder and then being dumped into gully.

Building 4527 **(Tables 41-2)**

Sample 1567/context 4158 is the fill of ring gully 4159, few plant remains were recovered from the context. The only cereal remains recovered were fragments of cereal grains. Other species recovered include yellow rattle (*Rhinanthus* sp.), indeterminate Asteraceae (daisy family) and a large-seeded grass. A 'background flora' is interpreted for this assemblage.

Building 4103 **(Table 43)**

Sample 1539/context 4062 is the fill of the curvilinear ring ditch 4063. Charred plant remains were rare in this sample consisting of fragments of cereal grain and hazel nutshell. The paucity of charred plant remains suggests that this assemblage is consistent with a 'background flora'.

Sample 1563/context 4109 is the fill of a hearth in feature 4103. Again, charred plant remains were rare. Spelt wheat was represented by finds of grain and glume bases as was *Triticum* sp., although detached embryos were also recovered. Cereal grain

fragments and a cereal coleoptile were also found. Fragments of hazel nutshell were the only other charred component of this charred plant assemblage which is consistent with a 'background flora'

Overall, the plant assemblages from these two contexts reflect the type of charred plant remains that can be expected to be present on any site and comprise what can be termed a 'background flora' and is not indicative of any precise economic activity.

Building 3671 (**Table 44**)

Sample 1302/context 3721 is a fill from ring ditch segment 3720 which is part of the ring ditch group 3671, charcoal was common in this fill. Charred plant remains, especially of cereals were common in this context. Spelt wheat was represented by spikelet forks, glume bases and rachis fragments, grain and sprouted grain of *Triticum* sp. was also present. Grains of cultivated oat were also found along with cereal grain fragments and coleoptiles. Other species present include, bracken, hazel nutshell, pale persicaria and black bindweed. Ling leaves were also present along with oat awn fragments and grass stem fragments.

This assemblage, dominated by the cereal chaff remains may indicate the dumping of crop processing waste; the presence of bracken and ling remains associated with the rest of the assemblage may suggest the dumping of soiled animal bedding. Due to the small amount of the latter species, the former interpretation appears to be more likely with the waste being dumped after use as tinder. The bracken and ling may well be part of a 'background flora' or used as fuel as well.

Building 3724

Sample 1290/context 3763 is the fill of ring ditch segment 3764 within round-house 3724. Charred plant remains were recovered from the context and were dominated by cereal remains. Spelt grain, sprouted grain, spikelet forks, glume bases and rachis fragments were identified, as was grain of bread wheat and *Triticum* sp. Glume bases and spikelet forks of *Triticum* sp. were also found. A large number of cultivated oats

were also found, along with fragments of cereal grains, which were the commonest find. Other species identified from the sample include hazel nutshell, pale persicaria and rootlets of false oat-grass. Fragments of oat awns and a floret fragment were also found.

The lack of weed seeds in this sample and the preponderance of cereal remains suggests that the assemblage represents the dumping of crop processing waste from the final hand cleaning. The presence of oats may suggest that the assemblage represents the dumping of a stored crop which was stored in a very clean state which has become charred in the process of releasing the grain from the glumes via parching.

Although, the small quantity of grain in the context may suggest that the assemblage is in fact crop processing waste that has been used as tinder and then dumped after the cleaning out of a hearth.

Sample 1294/context 3771 is the fill of ring ditch segment 3772 within ring ditch 3724. Again, cereal remains dominated the charred plant remains. Wheat chaff remains dominated the assemblage including glume bases of emmer, spelt and *Triticum* sp., spikelet forks of spelt and *Triticum* sp. and garin and rachis fragments of *Triticum* sp. Oats were also identified along with fragments of cereal grain. Hazel nutshell, wild radish and oats/brome grass were also present. The plant assemblage present in this context is consistent with the final stages of crop processing (i.e. parching and hand-cleaning) and it is most likely to have been used as tinder and then dumped in the ring ditch.

Round-house 3053

Sample 1197/context 3072 is the base fill of gully 3071 which is a component of round-house 3053. Charred plant remains were recovered from this context, the majority being of cultivated species. Spelt wheat was represented by finds of glume bases and rachis fragment, whilst *Triticum* sp. spikelet forks and glume bases were also recorded as were cereal grain fragments and pea. Uncultivated species found included hazel nutshell, pearlwort, dock, vetch/vetchling and hairy tare (*Vicia*

hirsuta). Oat/brome grass and fragments of oat awn were also identifed. The only other plant remain was of a grass culm node. The charred plant assemblage identified from this context represents crop-processing waste and probably reflects the activities occurring within the ring ditch area.

Ditch 4085

Sample 1663/context 4405 is the main fill of segment 4406 of the east-west running ditch 4085. There were few charred plant remains recovered from this context, but cereal remains were the commonest find. Emmer wheat was identified by the presence of glume bases as was spelt, although this wheat species was also identified by grain and rachis fragment finds. *Triticum* sp. glume bases were also present as were cereal grain fragments. The only uncultivated species to be found were the caryopses of oat/brome grass and grass culm nodes. Due to the small number of remains recovered, it is not possible to interpret this context , although it is most likely that the material has been reworked/redeposited from elsewhere on the site.

Sample 1745/context 4591 is a stony layer and very few charred plant remains were recovered from this context and included fragments of cereal grain and tufted vetch (*Vicia cracca*). Due to the paucity of charred plant remains, it is not possible to interpret the function of the context, although the assemblage is most likely to have been redeposited in the ditch from elsewhere on the site and therefore form part of the 'background flora'.

Ditch 4720

Sample 1232/context 3405 is a dark layer in the west side of ditch terminal 3407 and contained a charred plant assemblage dominated by cereal remains. Spelt wheat was represented by the presence of grain, glume bases and rachis fragments, along with *Triticum* sp. spikelet forks and glume bases. The dominant remain was that of cereal grain fragments. Other species present in the context included hazel nutshell, vetch/vetchling and oat/brome grass. The assemblage appears to represent a semi-cleaned storage product of spelt wheat. The wheat being stored in spikelets and the

presence of the oat/brome grass caryopses, suggests that the crop was processed to the hand-cleaning stage before storage. This final hand-cleaning and freeing the grain from the enclosing glumes would have occurred at a later time, when the crop was required for consumption.

The presence of this assemblage in a ditch terminal suggests that the stored crop product had been dumped. Whether this was due to an accident in the parching stage (in order to help loosen the glumes) or because the crop was spoiled is difficult to determine, although the lack of sprouted grain suggests that the former had occurred.

A piece of amorphous plant material was also recovered, this could either be a piece of charred dung or bread; it was not possible to determine which was the more likely.

Ditch 3265

Sample 1224/context 3102 is the upper fill of a ditch 3265 running east-west at the east end of the site. This upper fill contained a large amount of burnt material, slag and pottery. Charred plant remains were recovered from this context. The majority of the plant remains were of cereals, especially wheats. The commonest identifiable wheat was spelt, with grain, sprouted grain, spikelet forks, glume bases (dominant chaff remain) and rachis fragments being identified. *Triticum* sp. was also represented by grain, spikelet forks and glume bases. In contrast, few uncultivated plant species were recovered, those identified include; dock and oat/brome grass. Oat awn fragments were also found. The charred plant assemblage is representative of crop-processing waste and it is most likely to have been dumped into the ditch.

Sample 1235/context 3104 is an upper fill ditch 3265. The charred plant assemblage from this context was dominated by cereal chaff fragments. Glume bases of emmer, spelt and *Triticum* sp. were identified with those of spelt and *Triticum* sp. dominating. Rachis fragments of spelt and spikelet forks of *Triticum* sp. were also found. Coleoptiles and cereal grain fragments were also found. Other species identified from this context include hazel nutshell, dock, ling leaves and oat/brome grass.

The dominance of the plant assemblage by cereal chaff suggests that the assemblage indicates the presence of a product of the later stages of crop processing, such as parching. This, after being used as tinder, has been dumped into the ditch. The assemblage is unlikely to represent a storage product of a crop, as grains are not present in the assemblage.

Building 3042 **(Table 45)**

Sample 1152/context 3044 is the primary fill of gully 3043 which is associated with building 3042. Charred plant remains were present in this context and consisted of spelt grain, spikelet forks, glume bases and rachis fragments along with *Triticum* sp. grain fragments and glume bases. Oats were also present as were fragments of cereal grain. The only other find was hazel nutshell. This sample with the presence of grains of spelt wheat and associated chaff and the lack of weed species may suggest that this assemblage is of stored clean spelt spikelets and that building 3042 may have been used as a storage facility. Another possibility is that the assemblage represents the final stages of crop processing, the waste of which has been used as tinder and then dumped into the gully after use.

Grain drier 3145

Sample 1247/context 3147 is the fill of the fill of oven/kiln 3145. Cereal chaff remains were prevalent in the context, with glume bases and rachis fragments of spelt wheat being found along with *Triticum* sp. grain and glume bases. Cereal grain fragments were also found. Other species identified include; redshank, pale persicaria, wild radish, false oat-grass and oat/brome grass. Fragments of oat awns and small-seeded grasses were also found. The charred plant assemblage from this context suggests that waste from the final stages of crop processing was used as fuel for this oven/kiln.

Pit 3159

Sample 1277,context 3157 is the middle sealed fill of pit 3159 and has been considered to be a secondary deposit. The plant remains from this context are rare and include *Triticum* sp. grain, oats and cereal grain fragments. Other remains include bracken pinnules, hazel nutshell and sedges. As this is considered to be a secondary deposit, it can be suggested that this assemblage has been dumped from elsewhere on the site, the presence of the bracken may suggest bedding, but the rest of the assemblage proposes that this may in fact be part of the 'background flora'.

Working hollow 4706

Sample 1075/context 932 is the fill of a large post hole 933 which is part of the working hollow 4706 which is filled with spreads of black material concealing a number of features, this feature is adjacent to oven 913. Context 932 contained very few charred plant macrofossils. Those that were present include a spelt glume base, *Triticum* sp. glume base, five fragments of cereal grain, one seed of holly (*Ilex aquifolium*) and a small-seeded grass. Due to the paucity of the plant remains it is not possible to deduce the nature or function of this working hollow.

Grain drier? 3279

Sample 1452/context 3288 is the fill of probable grain drier 3279, the results of the analysis is shown in **Table 15**. No charred plant remains were recovered from this sample, only charcoal.

Ditch 4711

Sample 1490/context 3925 is the fill of the north-south orientated shallow ditch 3926. Charred remains of spelt glume bases, *Triticum* sp. spikelet forks and glume bases were identified along with cultivated oat grains and cereal grain fragments. The only other remain to be identified was that of hazel nutshell. The remains although scarce

reflect a 'background flora' of the activity occurring on the site and may represent the dumping of crop processing waste after use as tinder.

Grain drier 913

Sample 1125/context 3621 is a layer within pit 3625 which is a component of feature 913. Charred plant remains were recovered but were very scarce. Glume bases of spelt and *Triticum* sp. were identified, along with fragments of cereal grain, as was field wood-rush. The lack of plant remains suggest that the charred plant assemblage is part of the 'background flora'.

Sample 1112/context 3608 is a layer in pit 3606 situated at the west end of feature 913. Yet, again plant remains were scarce with only spelt glume bases and *Triticum* sp. grain fragments being recorded, this again suggests that the charred plant assemblage is part of the 'background flora'.

Sample 1119/context 3615 is part of the structure of feature 913. Again, the charred plant remains were rare, with, spelt and *Triticum* sp. glume bases and six fragments of cereal grain being identified. The only other find was that of hazel nutshell fragments, again representing a 'background flora'. In general, it is not possible from the contexts analysed to deduce a function for 913.

Well 920 **(Table 46)**

Sample 1761/context 3379 is a layer of very dark material located against the facing stones of well 920. Charred plant remains were recovered from the context but were few and far between. Spelt wheat was represented by glume base finds and *Triticum* sp. by grain, glume bases and detached embryos. A cultivated oat was also identified. A cotyledon of celtic/field bean was also identified. Other species recorded include; hazel nutshell, vetch/vetchling, common spike-rush and a false oat-grass rootlet. This assemblage can be said to reflect the 'background flora' and is most likely to have been derived from other fills from within the well.

Sample 1813/context 4621 is the deepest fill excavated from well 920. The charred plant remains are not rich but include spelt wheat grain, sprouted grain and glume bases, *Triticum* sp. glume bases and cereal grain fragments. Hazel nutshell is present as is vetch/vetchling. Fragments of oat awns, small-seeded grasses and culm nodes were also found. The presence of the sprouted grains of spelt wheat suggests that the charred plant assemblage represents the dumping of a spoiled stored crop which has been stored semi-clean.

Overall, the well contexts reflect a 'background flora' which may have been derived from other well fills, The lower most context, 4621 may represent the dumping of a spoiled stored crop.

Cess pit 819

Four contexts were examined from cess pit 819. Three were from the fills of the feature and a fourth was from the construction of 819. The results of the analyses can be seen in **Table 46.**

Sample 1080/context 970 is a dark clay fill of 819 situated towards the top of the feature. Charred plant remains were preserved and the assemblage consisted of the following categories; emmer grain, spelt grain, sprouted grain, spikelet forks and glume bases, *Triticum* sp. grain,spikelet forks, glume bases and detached embryos, hulled barley grain, oats (the commonest identifiable remain), cereal grain fragments and coleoptiles which were also common. Other non-cultivated plant remains included hazel, dock, possible wood sorrel (*cf Oxalis acetosella*), a thistle and heath grass. The presence of cereal chaff does suggest that a crop processing waste product is present in this context, but the presence of the cereal coleoptiles (sprouts) and the sprouted grain, may suggest the dumping of a spoiled stored crop. If this is the case, then the crop was stored in a fairly clean state. The presence of oats, which may have been cultivated with the spelt but is most likely to have been a weed, suggests that the crop was stored at the hand-cleaning stage.

Sample 1082/context 972 consists of a silty material from the bottom layers of 819. The charred plant assemblage consists of *Triticum* sp. grain and sprouted grain along with spikelet forks and glume bases. Cereal grain fragments were also recovered. Peas were also identified. Non-cultivated remains include hazel nutshell, vetch/vetchling, hemlock, common spike-rush and oat/brome grass. Small-seeded grasses and oat awn fragments were also found. The assemblage appears to represent the remains of crop processing which have either been dumped or redeposited into this feature.

Sample 1084/context 978 is the primary fill of 819 and is considered to be cess rich, although the charred plant remains in the deposit are few and include *Triticum* sp. glume bases and cereal grain fragments along with oat/brome grass caryopses. The lack of charred plant remains in this primary fill cannot be unexpected, as it would normally have been waterlogged. The charred plant assemblage in this context can be interpreted as being reworked from the upper layers, which probably represent a later phase of dumping after the cess pit fell into disuse.

Sample 1133/context 3049 is a silty grey fill relating to the construction of cess pit 819. The charred plant remains include emmer grain, sprouted grain and glume bases, *Triticum* sp. grain fragments, spikelet forks and glume bases, hulled barley grain along with cereal grain fragments and cereal coleoptiles. Hazel nutshell, dock, clover, medick, yellow rattle, ribwort plantain, broad-leaved cotton grass, a rye grass and oat/brome grass were also identified. Small-seeded grasses and culm nodes were found. The presence of both sprouted and unsprouted emmer grain, along with the chaff fragments, suggests that this assemblage may represent the dumping of a spoiled stored crop of emmer. It was stored at a quite late stage of processing, most likely to be prior to the second series of sieving.

Overall, the contexts from the cess pit reflect a secondary use of the feature, perhaps for the dumping of debris from domestic fires, the presence of the small number of charred remains in the primary fill suggests some reworking of the upper deposits.

Pit 4120 **(Table 47)**

Sample 1701/context 4466 is a lower fill of pit 4120. The charred plant remains were sparse within this context and consisted of two fragments of cereal grain. It is not possible to interpret the function of this feature due to the lack of plant remains present.

Pit 4061

Sample 1538/context 4060 is the base fill of pit 4061 below building 4103. This context is richer in plant remains than the previous context and consists of finds of glume bases of spelt wheat as well as those of *Triticum* sp. The commonest cereal remain was that of hulled barley. Cereal grain fragments and cereal coleptiles were also recovered. Non-cultivated plant species present in this context include, lesser spearwort (*Ranunculus flammula*), fat hen, dock, wild radish, vetch/vetchling, ribwort plantain, knapweed (*Centaurea nigra*). possible hawkweed oxtongue (*cf Picris hieraciodes*), field wood-rush, false oat-grass and oats/brome grass. Small-seeded grasses, culm nodes ansd grass stem fragments were also recorded. The presence of barley and the weed species suggests that the feature could have functioned as a storage pit at some stage, if so, the crop was stored semi-cleaned.

Layers over building 3545

Sample 1274/context 3388 consisted of a mixed soil and crushed mortar with some ash. Charred plant remains were recovered from the context, the majority being of cultivated plants. Spelt wheat was identified by the presence of glume bases and rachis fragments. *Triticum* sp. was represented by grain and glume bases. Fragments of cereal grain were also found along with cereal coleoptiles. Uncultivated plant species were rare but hazel nutshell, dock and oat/brome grass were recorded. Grass stem fragments were also found. This sample represents crop-processing waste.

Outer defensive ditch 3057 **(Table 48)**

Sample 1331/context 3121 represents the fourth layer from the bottom of ditch section 3151. Charred plant remains were scarce with single finds of spelt wheat and *Triticum* sp. glume bases being recovered. Cereal grain fragments were also present. The only non-cultivated species to be identified was that of oats/brome grass. This context contains a 'background flora' and may be indicative of the reworking of material.

Summary of phase 4(i)

In general, the plant assemblages from the features consisted of similar kinds of plant remains. Few grains of cereals were recovered, the majority of the cereals being represented by chaff fragments, such as spikelet forks, glume bases and rachis fragments. The commonest cereal remain was that of fragments of indeterminate cereal grains.

The dominant cereal of this sub-phase was spelt wheat, although emmer, bread wheat and barley were present in small quantities. Because of this dominance, it might be safe to assume that the majority of the *Triticum* sp. remains were of spelt wheat. A cultivated oat was also present.

There was a lack of weed seeds and those present were as large as the cereal grains themselves (at least in one dimension). This suggests that the majority of the plant assemblages from the features represent the final stages of crop processing such as hand-sorting and parching prior to pounding. As this was the dominant crop-processing stage present on the site, it can be suggested that the crops were stored at this stage and that the earlier processing stages had either been carried out on some other part of the site or had been carried out prior to being brought onto site. This latter scenario is the most likely as this site is a Roman fortress, whose commanders would have acquired grain and other foodstuffs from the local population. Other crops present but in small quantities were peas and field bean.

If the interpretation of the assemblage in context 625 is correct and it represents the drying of a damp crop, then similar species and chaff remains would be expected to be found in this context, this is the case and a good correlation is achieved between the two contexts. It may be that the feature was too hot and charred the crop, which was then raked out, although not completely as some was still left in context 625.

Sample 1043/context 685 is the primary fill of the enclosing ditch 655, charred plant remains were present but in small numbers. Spelt was represented by glume bases and grain; spikelet forks and glume bases of *Triticum* sp. were also found. Fragments of cereal grains were also found. Other species present include dock and thistle (*Cirsium* sp.). This assemblage could be interpreted as being part of the 'background flora' of the site.

Grain drier 3843 (**Table 50**)

Sample 1410/context 3851 is the ash deposit in the rake out hollow of feature 3843. No charred plant remains were recovered.

Sample 1530/context 4018 is the primary fill of 3843. The charred plant assemblage recovered from this context consisted of spelt grain, spikelet forks, glume bases and rachis fragments along with *Triticum* sp. sprouted grain and spikelet forks, cultivated oats and cereal grain fragments. Non-cultivated species included; hazel nutshell, sheep's sorrel, dock, ribwort plantain, cleavers and sedge.

The assemblage would appear to represent the final stages of crop processing, with the large number of glume present. Although the sample was split, if the remains are recalculated, it is possible that this assemblage does represent a final stage of processing, with the presence of weed seeds being reduced to a minimum. It is possible to say that perhaps one of the functions of this feature was to parch the spikelets of spelt wheat in order to loosen the enclosing glumes around the grain. The presence of the plant assemblage in this context suggests that at some time an accident

had occurred and the spikelets being parched were burnt and then raked out of this feature.

Gully 4025

Sample 1498/context 3966 is the charcoal rich fill layer of gully 3965 which is part of gully 4025. Although, the context was charcoal rich, the charred plant remains were rare, these included, *Triticum* sp. grain, cereal grain fragments and hazel nutshell. This assemblage can be interpreted as being a 'background flora'.

Ditch 826

Sample 1366/context 3814 is the lower fill of segment 824, in which charcoal was commonly recorded. The charred plant assemblage consisted of grains of emmer and spelt wheat along with spikelet forks, glume bases and rachis fragments of the latter species, glume bases being the most abundant. *Triticum* sp. grain, spikelet forks and glume bases were also identified. Oats and fragments of cereal grain were also present as were cotyledons of field bean. Other remains identified include hazel nutshell, fat hen, knotgrass, sheep's sorrel, vetch/vetchling and clover. Small-seeded grasses, culm nodes and grass stem fragments were also recovered.

The large numbers of glume bases of spelt and *Triticum* sp., linked with the other chaff remains, suggests that this assemblage is one of the later stages of crop processing, i.e. parching. This is also supported by the general lack of weed seeds in the assemblage which would have been eliminated earlier in the processing. The presence of the grain, in such low numbers compared to the chaff fragments suggests that they were accidentally charred at parching. The crop appears to have been stored at a late stage of processing, whereby most of the weed seeds and other matter had been discarded. The crop waste may then have been used as tinder and then dumped in the ditch at a later stage.

Sample 1678/context 4207 is the upper fill of segment 4086, part of ditch 826 group. The charred plant assemblage in this context consisted of spelt grain and glume bases,

Triticum sp. grain and glume bases, oats, fragments of cereal grain and coleoptiles. Non-cultivated species present include; hazel nutshell, clover, heath grass and false oat-grass rootlets. Small-seeded grasses and culm nodes were also recorded. A similar interpretation can be applied to this plant assemblage as the previous context 3814.

Ditch 4714

Sample 1351/context 3731 is the fill of ditch segment 3732. Spelt grain, sprouted grain, spikelet forks, glume bases and rachis fragments were all recorded from this context, with the glume bases being dominant. Spikelet forks, glume bases and detached embryos of *Triticum* sp. were also ecovered, along with oats, fragments of cereal grain and coleoptiles. Other plant remains present included, hazel nutshell, hemlock (*Conium maculatum*) and oats/brome grass. This assemblage again appears to consist of the waste products of the final stages of crop processing, which have been deposited into the gully of the round-house.

Ditch 3247

Sample 1482/context 3249 is the uppermost fill of a north/south linear 'V'-shaped ditch, containing charcoal and artefacts. The charred assemblage from this context comprised spelt grain, glume bases and rachis fragments, *Triticum* sp. spikelet forks, glume bases, cereal grain fragments and cereal coleoptiles. Other plants identified include dock and oat/brome caryopses. This assemblage, which is rich in chaff, could represent the final stages of processing, with some of the grain not being picked out. It is possible that the assemblage represents the dumping of a stored product which had in some way been burnt or spoiled. The lack of weed seeds suggests that the crop was stored as clean spikelets.

Pit 3146 **(Table 51)**

Sample 1286/context 3143 is the primary silty loam fill of pit 3146. The charred plant asemblage from this context consists of spelt glume bases, *Triticum* sp. grain and

glume bases and hazel nutshell. The assemblage from this context may be interpreted as being a 'background flora'.

Hearth 3014

Sample 1109/context 3012 is the main layer/fill of hearth feature 3014, which appears to be located in a natural scoop. Charred plant remains were found in the context and were few in number, the results are shown in **Table 15**. Chaff fragments were the main element, including glume bases and rachis fragments of spelt wheat and glume bases of *Triticum* sp. Cereal grain fragments were also found. The only other remain was that of oat/brome grass. This assemblage can be said to represent a 'background flora' and is most likely to be the product of crop processing waste being used as a fuel.

Hearth 3085

Sample 1221/context 3084 is a burnt deposit within a shallow, circular hearth 3085 containing burnt clay and charcoal. The charred plant remains from this context consisted of spelt spikelet forks, glume bases and rachis fragments along with *Triticum* sp. grain, spikelet forks and glume bases. Other remains included cereal grain fragments and oat/brome grass caryopses. This assemblage appears to represent the final stages of crop processing, whereby the grain is released from the glumes. The broken spikelet forks and glumes are then separated from the grain via sieving. The retained grain is then processed and consumed. The remainder is then used as tinder.

Pit 3073

Sample 1238/context 3074 is the fill of pit 3073, showing no signs of *in situ* burning. The charred plant assemblage contains spelt grain, glume bases and rachis fragments along with *Triticum* sp. glume bases, oats and fragments of cereal grain. Other species found within the context include vetch/vetchling and clover.

This assemblage appears to have been dumped within this feature, the charring not taking place *in situ* and therefore the grains and chaff must have been burnt elsewhere. With the presence of the grain, it is possible that the assemblage represents a charred storge product of virtually clean spikelets of spelt wheat, perhaps at the parching stage of processing. Due to the fact that this may be a secondary deposit, it is possible that two elements are present, one which is the grain which has already been processed and the second representing the crop processing waste.

Defensive ditch 748/3019 **(Table 48)**

Sample 1200/context 3020 is the top-most fill of ditch segment 748 being a poorly sorted spread/layer which is part of a homogeneous occupation spread across the site. Charred plant remains were recovered from the context consisting of both cultivated and non-cultivated species. Spelt wheat was represented by the presence of glume bases. *Triticum* sp. grain, spikelet forks, glume bases and rachis fragments were identified. Cultivated oat was also recovered. The most prominent remain was that of fragments of cereal grain. Other crops identified from the context included pea. Uncultivated species identified from the context include hazel nutshell, dock, vetch/vetchling, cleavers (*Galium aparine*), oat awn fragments and grass stem fragments were also recovered.

The charred plant assemblage identified in this context represents crop processing waste and it is likely to have been dumped in the ditch after being used as tinder. If this context does belong to a spread which covers the whole occupation area, it could represent a destruction layer or the spreading of material to level out the site.

Sample 1201/context 3021 represents the second layer down in the ditch segment 3019 and consists of a light brown clayey silt. Again both cultivated and uncultivated elements are represented in the context. Emmer wheat is represented by glume bases, whilst spelt wheat is marked by the presence of grain, spikelet forks, glume bases and a rachis fragments. *Triticum* sp. is indicated by the presence of glume bases. Fragments of cereal grains were also recovered. The non-cultivated species present include dock, and oats/brome grass. A fragment of an oat awn and large- and small-

seeded grasses and indeterminate grasses along with a culm node were also recorded. This context can be interpreted as the reworking of charred material or the dumping of a semi-clean stored crop of spelt wheat.

Defensive ditch 3057/3151

Four contexts from ditch 3057/3151 were examined for charred plant macrofossils. Sample 1326/context 3116 is the second layer in ditch segment 3151 and consisted of an artefact rich layer with a high charcoal content. Plant remains were also present and contained both cultivated and uncultivated plant species. The wheats were represented by emmer glume bases, spelt grain, spikelet forks and glume bases and *Triticum* sp. by grain, spikelet forks and glume bases. Cereal grain fragments were also recorded. Uncultivated species recorded included hazel nutshell, vetch/vetchling, sedge and oat/brome grass. It is likely that this charred plant assemblage represents the dumping of crop processing waste into the ditch after use as tinder.

Sample 1327/context 3117 is the layer below context 3116 and is described as a well consolidated layer. Charred plant remains were recovered from this context and consisted mainly of cultivated species which included, spelt glume bases, *Triticum* sp. grain, spikelet forks and glume bases. Cereal grain fragments were also recorded. Uncultivated species identified include dock and oat/brome grass. Oat awn fragments were also found. Again, this charred plant assemblage consists of crop processing waste which has been redeposited or dumped into the ditch.

Sample 1328/context 3118, a layer occurring abutting the southern bank of ditch segment 3151 in the south-east corner of the slot, contained charred plant remains. Spelt wheat was represented by the presence of glume bases and *Triticum* sp. by grain fragments, spikelet forks and glume bases. Hulled barley was also identified along with a cultivated oats. Cereal grain fragments were also found. Uncultivated species included buttercup, hazel nutshell and dock. This charred plant assemblage represents the reworking/deposition of charred crop processing waste after use as a tinder.

Sample 1329/context 3119 consisted of a poorly sorted layer occurring in the eastern end of the ditch segment 3151. Cereals were represented by spelt wheat grain and glume bases and *Triticum* sp. by glume bases. Cereal grain fragments were also recorded. Uncultivated species identified included hazel nutshell, fat hen, dock, clover and oat/brome grass. As with all the other charred plant assemblages from the two defensive ditches, the assemblages reflect either the dumping of burnt crop processing material or the reworking of material in the ditches.

In general, the two main wheat species were recorded from the ditch samples, emmer and spelt, barley was also recorded. The only other crop species to be identified from these contexts was that of pea. The uncultivated species identified from the contexts are usually found as weeds of crops and it can be therefore assumed that the two elements are related. The interpretation that fits all the contexts analysed from the ditches is that the charred plant assemblages indicate crop processing waste which after being used as tinder has been dumped into the ditches.

Unphased

Two contexts were analysed for charred plant macrofossils. The results are presented in **Table 52.**

Beam slot 3789

Sample 1341/context 3084 is a fill of a possible beam slot 3789. The assemblage from this context is quite spartan but contained spelt glume bases, *Triticum* sp. grain, spikelet forks, glume bases and rachis fragments, a barley rachis fragment and cereal grain fragments. Other remains include hazel, dock, vetch/vetchling, clover and false oat-grass rootlets. This assemblage can be interpreted as a 'background flora' which has been deposited/reworked into the gully.

Burnt Feature 3566

Sample 1402/context 3565 is a very compact layer of charcoal, clay and slag in feature 3566. No charred plant remains were recovered from this context.

Discussion

A total of 95 phased and two unphased contexts produced a total of 96 plant categories, of which 28 were cultivated and 68 were non-cultivated. Phase 4(i) produced the highest number of categories (71) with phases 2, 4(ii) and 3 being the next richest in descending order. **Table 53** shows the presence/absence of categories for each phase.

The cultivated species

Wheat types were the dominant cereals and of these spelt wheat was the most common in most of the phases, being represented by grain, spikelet forks and glume bases in phases 2, 3, 4(i) and 4(ii), along with sprouted grain and rachis fragments in 2, 4(i) and 4(ii). Bread wheat grain was found in phases 2, 3 and 4(i). Emmer wheat grain was found in phases 3, 4(i) and 4(ii), sprouted grain in 3 and 4(i), spikelet forks in 2, 3 and 4(i), glume bases in 2, 3, 4(i) and 4(ii), whilst rachis fragments were only found in 4(i). Indeterminate wheat (*Triticum* sp.) was represented by grain, spikelet forks, glume bases, rachis fragments and embryos in all four major phases, with sprouted grain being found in 4(i) and 4(ii). Hulled barley was represented by grain in phases 2, 3, 4(i) and 4(ii), by rachis fragments in 2 and 3 and by an awn fragment in 2. Other cereal remains included possible cultivated oats which were recovered from phases 2, 3, 4(i) and 4(ii). Other cultivated species recovered from the contexts included flax from phase 3, peas from phases 2, 3, 4(i) and 4(ii), and Celtic field bean from phases 4 (i) and 4(ii).

Overall, it appears that the dominant crops present on the site were cereals; of those which could be identified to species, spelt wheat was the major crop followed by emmer wheat. Hulled barley was rarely recorded throughout all of the contexts

analysed. The possible cultivated oats was better represented than barley, flax and peas and beans throughout the occupation of the site.

Non-cultivated species

There were fourteen common categories with hazel, fat hen, sheep's sorrel, dock, wild radish, vetch/vetchling, clover, ribwort plantain, false oat-grass, oats/brome grass, oat awn fragments, small-seeded grasses, culm nodes and grass stem fragments being found in the major phases.

The majority of the non-cultivated categories can usually be found growing in arable/disturbed environments, suggesting that they are associated with the cereal remains (**Table 54**). The majority of the seeds of the weed species have a similar size (at least in one dimension) to the crops which suggests that the assemblages represent the final stages of crop processing, with the cereals being stored as semi-cleaned spikelets. It is most likely that the crops were grown locally and processed off-site until the later stages of crop processing, then brought onto site to be stored, the final stages of cleaning taking place piecemeal. There are some categories which are unlikely to be part of the crop-processing assemblage and are most likely to have arrived in the context via different pathways. This suggests that some mixing may have occurred in the contexts and therefore represents more than a single event. The presence of hazel nutshell throughout the occupation of the site may suggest that this species continued to be used as a wild food resource.

Although there is variation in the species present in each of the phases, in general terms they represent similar types of habitat. This suggests that there has been little change in the species cultivated in the area, and possibly no expansion of cultivated areas through time, as there are no indicators of different soil types being used as there was for the prehistoric sites examined in the course of the project.

Habitats represented by the charred plant assemblages

Table 54, shows the presence/absence of non-cultivated species and the habitats in which they can be found, though as **Tables 36-52** illustrate, the weed species are recorded in low numbers. Five types of habitat appear to be represented by the weed seeds; arable, grassland, wetland, woodland/scrub and heathland. It is possible that some of the species designated to certain habitats can also occur in others, but what is consdidered to be the most likely source of each species has been chosen in each case. The arable habitat is the most common with 21 taxa. The second commonest was grassland, followed by wetland, woodland/scrub and heathland respectively. Phase 4(i) contained the highest total number of taxa, followed by 2, 4(ii) and 3 in descending order.

The arable habitat

Although not all of the taxa were found in all phases, and this may be due to taphonomic processes, it can be seen from **Table 54** that there appears to be little change through time. Most of the species recovered are general indicators of arable habitats, with none showing any preferences for different soil conditions or any other environmental variable.

The majority of the 21 representing arable habitats have what can be considered large seeds. During crop processing these seeds would be retained with the cereal crop and only removed at the final stages of processing, usually just before preparation for consumption. This suggests that the crops were stored either as semi-cleaned spikelets or as near-clean spikelets. It is most likely that the majority of the processing was carried out off-site.

Some of the seeds from this habitat can be considered to be small-seeded, e.g. pearlwort, sheep's sorrel and scentless mayweed. However, these seeds may have been part of larger body, i.e. pealwort may have originally been present as capsules, sheep's sorrel may have been enclosed within its perianth and scentless mayweed may

have been part of a seed head, which would have rendered them to be of a similar size to the crop being processed. It is only on the process of charring that these larger bodies were destroyed leaving the smaller seeds intact.

Grassland habitats

Eighteen taxa of grassland habitats were recorded (**Table 54**) and although not all of the taxa occur in all the phases, little or no change in the habitat conditions indicated. In general, the species present indicate a rough grassland, which could have been present bordering the fields and in the area surrounding the sites. The association of this habitat type with the cereal crops can be explained by the fact that they may have been incorporated from harvesting the crop at the edge of cultivation or from a secondary source such as hay, which has become mixed at the time of deposition. It is difficult to interpret which is more likely as both could be present. It may be safe to assume that this habitat type was incorporated at the time of harvest, as most species present can tolerate some disturbance, and can be found growing at the edge of cultivated land today, especially if protected by hedges.

Wetland habitats

Nine taxa representing wetland habitats were recovered, mainly from phases 2, 4(i) and 4(ii) (**Table 54**). The majority of the species grow in a wide variety of habitats. Species such as meadowsweet, hemlock and common spike-rush are often found in ditches or close to areas of standing water, whilst lesser spearwort, bog stitchwort, soft rush and sedges can be found at the water's edge. It is possibile that these species represent a part of the flora growing in and at the edge of the ditches on the site. Another possibility is that the crops may have been grown in areas where the water table was high, perhaps near to the River Otter and the Nags Head stream, creating waterlogged conditions and the wetland species may have been incorporated at harvest.

The presence of blinks suggests that some areas had muddy bare patches, which could coincide with the tops of ditches or arable fields. One species, broad-leaved cotton

grass, is usually associated with marshy areas and may be part of the heathland/moorland component of the assemblages.

Woodland/scrub habitat

Six taxa were recovered from the charred plant assemblages. Only hazel occurred in all the phases and this may represent a continuing use of a wild food resource. It is most likely that the other species (**Table 54**), became part of the assemblage via the fuel sources used on site when the hearths, ovens and grain driers were cleaned out and crop processing waste may have been used as a tinder in the same fires. The presence of wood sorrel and herb-robert is less easily explained but may be due to accidental contamination on site.

Heathland habitats

The bracken, cross-leaved heath and ling may represent the remains of bedding, flooring or roofing. Another possible, though remote, soure is that they were part of turves that were used as a roofing material or to face the ramparts of the military base, or were burnt as fuel. Heath grass can also be found in arable fields but due to the small number found, it is most likely to have been derived from its primary habitat.

The heathland habitat may have been present in the locality or further afield, e.g. the upland heathlands to the south. It is not possible to determine its most likely location, although it can be expected to be in the vicinity of the site.

In general, the habitats represented by the non-cultivated species are arable, grassland, wetland, woodland/scrub and heathland. The arable component can be expected to be local in origin and the general size of the seeds suggests that the crop was stored at a late stage of crop processing. The presence of the wetland component may represent a ditch flora or wet field edges. The woodland/scrub component is most likely to have been derived from local fuel sources and hazel nutshell suggests the continuing use of a wild food resource. The heathland component is more difficult to place; while it is most likely to be close to the site, it could derive from a relative distance.

A comparison of the assemblages in defensive ditches 748 and 3057

Ditch 748 - the inner ditch

Eleven contexts were analysed for charred plant remains, five from phase 2, four from phase 3 and two from phase 4(ii) (**Table 55**). The number of categories per phase was similar, with phase 2 and 4(ii) producing 25 categories each and phase 3, 22 categories. The relationship between the non-cultivated and cultivated species was similar through all the phases (**Table 53**), while **Table 55** shows their presence/absence by phase.

The cultivated species: cereal remains were found in all phases of ditch 748. The dominant wheat was that of spelt, with grains and glume bases being found in all three phases, spikelet forks being found in 3 and 4(ii) and rachis fragments being found only in phase 4(ii). Emmer wheat was found in phases 2 and 4(ii), although no grains were recovered. Bread wheat was only recovered from phase 3. Other cultivated species recovered were peas in phases 2 and 4(ii) and flax in phase 3.

Non-cultivated species: twenty-four non-cultivated plant species were found. The only common species found in all phases were hazel, dock and small-seeded grass (**Table 55**). In general, the non-cultivated species are all representative of arable/disturbed conditions, which suggests that they are most likely associated with the cereal remains. The majority of the weed species have seeds which, in at least one dimension, are the same size as the cereal grains, which suggests that the assemblage represents the final stages of crop processing and were stored as semi-clean spikelets.

In conclusion, there appears to be few differences between the phases of occupation of the site. The real lack of variation in the assemblages between the phases suggests that there was no real change in the economy of the area during the occupation of the site. The presence of the charred plant remains within the ditch contexts is either due to

deliberate dumping (and the continued dumping of material through time) into the ditch or the redeposition of material either by wind or run-off.

Ditch 3057 - the outer ditch

Eleven contexts were examined from sections in ditch 3057, two from phase 2, four from phase 3, one from phase 4(i) and four from phase 4(ii). The number of categories per phase varied, with four from phase 4(i), ten from phase 2, twenty from phase4(ii) and thirty from phase 3. **Table 56** shows the presence/absence of categories for each phase.

The cultivated species: cereal remains were found in all four phases represented by the charred plant remains. Emmer wheat was found in phase 3, with grain, sprouted grain and glume bases being recovered, and in phase 4(ii) with glume bases. Spelt wheat was found in all four phases, being represented by grain and spikelet forks in phases 3 and 4(ii) and glume bases in phases 2, 3, 4(i) and 4(ii). Indeterminate wheat was found in all four phases, being represented by grain and spikelet forks in phases 3 and 4(ii) and glume bases in phases 2, 3, 4(i) and 4(ii). Rachis fragments were only found in phase 2. Other cereals present in the samples included hulled barley grain, which was found in phases 3 and 4(ii) and rachis fragments in phase 3. A possible cultivated oats was only found in phase 4(ii). Cereal grain fragments were found in all of the phases analysed from the ditch sections. No other crops were recovered from these ditch contexts.

Non-cultivated species: none of these categories were found in all phases. All of the other species, with the exception of ling and sedges, are all species of cultivated/disturbed ground and are most likely to be associated with the crops.

The ling leaves and sedge nutlets suggests that a moorland/heathland habitat was exploited, perhaps to provide bedding for animals; another possibility is that some of the crops were grown close to the heathland edge and became incorporated with the crop at harvest. If there is a separate origin for the heathland plants it can be assumed

that there has been some mixing of the assemblage, whether this occurred pre- or post-deposition is difficult to determine.

Like the inner ditch, most of the assemblages represent the final stages of crop processing with the cereals being stored as semi-cleaned spikelets. The lack of variation in terms of habitats represented and cereals grown between phases again suggests that the cereals were grown by the local population and then brought onto site in a semi-cleaned state. The earlier stages of crop processing was most likely to have been carried out off-site perhaps close to where they were cultivated. The lack of variation also suggests that this practice continued throughout the occupation of the site.

A wider context

The charred plant assemblages are dominated by cereal remains, of which the commonest is of spelt grain and chaff, with emmer and oats also being present. Other crops include barley, which is not present in large quantities, flax, peas and beans. The weed assemblages are dominated by species which are associated with arable conditions.

The assemblages from Pomeroy Wood compare favourably with other analyses in the area. The settlement at Clyst Honiton produced cereal, chaff, and grassland weeds, with spelt being the dominant cereal. As at Pomeroy Wood, there was a small amount of barley, and oats were common (Pearson 1989) and a similar flora was recovered at Woodbury (Straker and Weddell 1993). Again, spelt wheat was the commonest cereal along with some emmer. Barley was again present but in small numbers.

The charred plant assemblages at Pomeroy Wood are typical of the Romano-British period, with spelt and barley being the main crops, with some emmer and bread wheat (Greig 1991). Although flax was present it was not recorded in large quantities, as were peas and beans, suggesting that these crops were not as important as the cereals. The lack of non-arable weeds makes it difficult to determine what types of habitat

were exploited in the region around the site. It is possible, however, to say that the crops were grown locally and that grassland and scrub, and perhaps some heathland were present in the vicinity.

The archaeobotanical evidence for the Roman military diet has been examined at series of sites in Britain, including forts such as South Shields, Tyne and Wear (van der Veen 1988) and warehouses at Coney Street, York (Williams 1979). The majority of the cereal remains from these analyses are spelt wheat with bread wheat and a little barley (Greig 1991). Spelt wheat, mainly represented by chaff, predominated in the defensive ditch of the legionary fortress at Exeter (Straker *et al.* 1984). Comparison of the waterlogged remains from Exeter with the charred remains from Pomeroy Wood is complicated due to the different modes of preservation which involve different taphonomic processes, but it is possible to see that spelt was found at both sites.

Roman forts from different parts of the country reveal a similar picture. At South Shields (van der Veen 1988), the majority of the remains were found between the walls of the granary floor, and were dominated by spelt wheat with some bread wheat and barley. Comparison with Pomeroy Wood is again complicated by the different types of context analysed at each site; at Pomeroy most samples came from ditches, post-holes, pits, ovens and grain drying features. None were definitely from granaries or other types of store, though it can be surmised from the charred plant assemblages that storage did take place, with the final stages of processing taking place on-site, with spelt wheat the dominant crop.

At Elginhaugh, Lothian a Flavian auxiliary fort was almost entirely excavated (Clapham in Hanson in prep.). The main cereal recovered was barley. with some spelt wheat also being present. The predominance of barley is unusual and may be explained in two ways. The first being that the dominance of barley is due to the local environment, with conditions being more suitable to the growing of barley rather than wheat. The second is that the greater amounts of barley may suggest another function for the cereal, such as animal feed rather than for human consumption.

The second explanation may be the more likely, as Dickson (1989) has noted that spelt occurred everywhere in Scotland, emmer was also present and barley and the other cereals were a minor element. This conclusion may be supported by the forthcoming publication on the Scottish Roman diet (Dickson forthcoming).

One aspect of Roman military life in Britain is constantly debated, whether the occupants of the military sites imported all the materials (including food) required to build and maintain the installations, or whether local resources were used. The evidence for the use of local food production, especially of spelt wheat has been provided by van der Veen (1988) who suggests that the spelt wheat at South Shields was grown locally, whilst in all probability (due to the less abundant remains) bread wheat was imported onto the site, though whether this was from other parts of the British Isles or from continental Europe is not stated. It has ben suggested that the bread wheat found on Roman bases in The Netherlands was imported to those sites (Greig 1991). The assemblage from Pomeroy Wood also suggests that the major cereals were grown locally. The lack of small weed seeds, which is usually taken to indicate local production, can be explained by the fact that these stages of crop processing were carried out off-site and only semi-cleaned spikelets were brought onto site. These would then be stored and the final stages of processing carried out piecemeal. Some species though, for example the millet caryopses from the outer defensive ditch, and perhaps the waterlogged coriander from well 3047, were introduced to the siet.

Conclusion

The major crops at Pomeroy Wood were spelt wheat with some emmer and bread wheat also present. Barley was recorded in small quantities but does not seem to have been an important crop. Other crops such as flax, peas and beans were also recorded in small numbers. A possible cultivated oats was also recorded. The dominance of the assemblages by cereal chaff remains and the presence of mainly large seeded weed species suggests that most of the cereals were stored as semi-cleaned spikelets which were only fully cleaned by hand-picking just prior to consumption. It is most likely,

due to the paucity of the weed seeds that most of the crop processing was carried out off-site, with the semi-cleaned spikelets being brought onto site and stored.

The charcoal

by Rowena Gale

Introduction

Charcoal occurred in a wide range of contexts from phases 2, 3, 4(i) and 4(ii). In common with most other plant remains (charred cereal grains, chaff, weed seeds, waterlogged macrofossils, and pollen) charcoal at Pomeroy Wood was well preserved and usually very abundant. Phase 2 encompassed the Roman military occupation of the site and phases 3– 4(ii) the subsequent use of the area for an extensive settlement. The charcoal residues, mainly from domestic and industrial fuel, provided evidence of the woodland environment of east Devon during the Roman and post-Roman periods. Features from which charcoal was studied were specifically selected to indicate the use and possible management of woodland resources. A total of 90 samples were examined (**Table 57**).

Materials and Methods

Most samples included relatively large amounts of charcoal (i.e. >50 fragments measuring >2mm square in cross-section). The charcoal was generally well preserved and firm. Some particularly large samples were subsampled as follows: 50% subsample - 1508, 1731, 4301, 1228, 1270, 4593, 1197, 1809, 1490, 1264, 1370, 1287, 1160, 3675, 1096, 1678, 1410, 1530, 1238, 1286 and 1402; 25% subsample - 1230, 1482 and 1277. Measurements of roundwood diameters were recorded where possible; it should be noted that when living these dimensions would have been up to 40% wider.

Results

The results of the analysis are shown with contextual details in **Tables 58-60** and the taxa identified are listed below:

Aceraceae. *Acer* sp., maple

Aquifoliaceae. *Ilex* sp., holly

Betulaceae. *Alnus* sp., alder; Betula sp., birch

Caprifoliaceae. *Sambucus* sp., elder

Corylaceae. *Corylus* sp., hazel

Fagaceae. *Quercus* sp., oak

Leguminosae. *Ulex* sp., gorse or *Cytisus* sp., broom (these genera are anatomically similar).

Oleaceae. *Fraxinus* sp., ash

Rosaceae.

Pomoideae which includes *Crataegus*, hawthorn; *Malus*, apple; *Pyrus*, pear; *Sorbus*, rowan, service tree and whitebeam. These genera are anatomically similar.

Prunoideae. *Prunus spinosa*, blackthorn

Salicaceae which includes *Salix* sp., willow, and *Populus* sp., poplar. These genera are anatomically similar.

Ulmaceae. *Ulmus* sp., elm

Phase 2 (**Table 58**)

Inner defensive ditch 748

The sample (sample 1208), from the primary fill of ditch 3019 in the southern section of the circuit, included oak (*Quercus*) heartwood and narrow roundwood (diameter 5mm), ash (*Fraxinus*) sapwood, hazel (*Corylus*), birch (*Betula*), and willow/poplar (*Salix/Populus*). Oak sapwood and heartwood, hazel and willow/poplar were also identified from the secondary fill of the western section 744, and, in addition, gorse/ broom (*Ulex/ Cytisus*) and the hawthorn group (*Pomoideae*).

Building 3545

Charcoal was examined from postholes and slots to identify structural components but, since most proved to consist of multiple species, it was more likely to have been hearth debris (see below). This suggestion was endorsed by the frequent inclusion of other waste materials such as pottery, burnt clay, and charred cereal grains and chaff.

A sample from the upper fill of a north-south slot, possibly a realignment of the east wall of building 3545 (context 4597, sample 1754) included oak (*Quercus*) heartwood and narrow roundwood, birch (*Betula*), hazel (*Corylus*), hawthorn type (*Pomoideae*), and some unidentified bark.

The sample from the fill of posthole 3488 (sample 1377), on the southern boundary of the building, contained mostly oak (*Quercus*) sapwood and heartwood but also birch (*Betula*), hazel (*Corylus*), ash (*Fraxinus*) sapwood, alder (*Alnus*), blackthorn *(P. spinosa*), and gorse/broom (*Ulex/ Cytisus*).

Feature 3972 within building 3545 (sample 1508) contained a large amount of charcoal most of which was too fragmented to identify. The charcoal examined mainly consisted of oak (*Quercus*) sapwood and birch (*Betula*) roundwood. The diameter of the birch was estimated at 20mm and most pieces included 3 wide growth rings. Ash (*Fraxinus*), sapwood and heartwood, hazel (*Corylus*), hawthorn type (*Pomoideae*), and willow/ poplar (*Salix/Populus*) were also identified. Handpicked charcoal (context 3383) from the upper fill of posthole 3591 in building 3545, consisted of thick (unidentified) bark, probably from a fairly mature tree.

Sited in the south-east corner of the building, posthole 3591 formed part of the later interval tower and contained a post-pipe, packing stones and pad. Charcoal occurred throughout the fill, both above and below the packing stones. The sample (1501) included oak (*Quercus*) sapwood and heartwood, alder (*Alnus*), willow/poplar (*Salix/ Populus*), blackthorn (*P. spinosa*), birch (*Betula*), and hawthorn type (*Pomoideae*). And in addition, three pieces of ash (*Fraxinus*) roundwood with diameters from 15

mm – 20 mm; 3 wide growth rings were present in two pieces, while the third included 7 rings.

Posthole (4307) on the west also formed part of the interval tower contained a mass of what appeared, on excavation, to be charred degraded material from the post. Subsequent examination of this material suggested fuel debris as more likely. The taxa identified included oak (*Quercus*) roundwood, sapwood and heartwood, ash (*Fraxinus*), birch (*Betula*), and alder (*Alnus*).

A large volume of charcoal (sample 1631) also occurred in the upper fill of posthole 4366 of the interval tower consisted of oak (*Quercus*) sapwood, with some pieces measuring up to 20 mm in width, and probably from a fairly wide, fast-grown pole/s. It is feasible that this represents the burnt remains of a post, perhaps from one of the main structural components of the building. The wood appeared to have been in good structural condition prior to burning, i.e. no evidence of insect or fungal attack. This could suggest that the structure/building had been destroyed by fire while still relatively intact. Sound structural timbers would probably have been re-used rather than burnt unless the intent was to destroy them.

Grain drier 4123

Charcoal from the upper (phase 4(i)) ash layer in feature 4123 probably resulted from the last phase of its use. The form was of a double bowled furnace and slag occurred in the upper fills of the northern bowl. Heat-shattered stones testified to high temperature firings. Associated charcoal (sample 1572), indicated that fuel consisted almost entirely of oak (*Quercus*) roundwood, sapwood and heartwood, with small quantities of birch (*Betula*) and hazel (*Corylus*). The use of oak would be consistent with high temperature firing, particularly if charcoal was used.

Handpicked pieces of charcoal (sample 1580) lying over the layer of slag, were thought to have been remnants of roof collapse, since the deposit also contained a quantity of clay. The charcoal was comparatively sparse and included small fragments of oak (*Quercus*) sapwood and heartwood, and gorse/broom (*Ulex/ Cytisus*). Evidence

of this origin was inconclusive since these taxa could also be anticipated in fuel deposits.

Gully 4301/4731

Charcoal (sample 1592) from what may have been a drainage channel for a building, was interpreted on excavation as the possible remains of burnt timbers within the structural slot or gully. The identification of the charcoal as oak (*Quercus*) sapwood and heartwood tended to support this suggestion. The proximity of this context to pit 4498 and the similarity of this charcoal to that from the pit suggests a common association or origin for these charcoal residues.

Pit 4498

The pit was sited within the south-east corner of the military base and was thought to have been a possible midden. The large volume of charcoal (sample 1731) consisted entirely of oak (*Quercus*) sapwood. A piece of handpicked charcoal (context 4544), was also oak. When compared with charcoal from most other contexts on the site (which included multiple taxa) it seems likely that this charcoal derived either from some activity for which oak was specially selected, or from a single structural component (e.g. a post, see Gully 4301).

Phase 3 (Table 58)

This phase saw the deliberate levelling of the military base.

Inner defensive ditch 748

Charcoal from two sections of the ditch was examined. Charcoal from feature 916 (sample 1089) on the south-west corner of the ditch consisted of oak (*Quercus*) roundwood (e.g. diameter 15 mm, 6 growth rings), sapwood and heartwood, also hazel (*Corylus*), blackthorn (*P. spinosa*), birch (*Betula*) and holly (*Ilex*). A smaller sample

(sample 1421) from section 3019 in the south-east corner of the ditch, consisted of oak (*Quercus*) sapwood and heartwood, and blackthorn (*P. spinosa*).

Outer defensive ditch 3057

Charcoal was particularly abundant in the two western sections of the outer defensive ditch and included a high proportion of roundwood. Backfilling probably incorporated any handy material, including discarded fuel debris. It is possible that the charcoal represents the remains of hurdles etc. used in or near the ramparts, perhaps as part of the superstructures associated with the walkway or towers although the principle timbers and planking would undoubtely have been much more substantial. Four sections were sampled at intervals from west to east.

A high proportion of fragmented roundwood was recorded from samples from context 960 (sample 1228) and context 3378 (sample 1270). These included hazel (*Corylus*) (e.g. diameter 10 mm, 3 growth rings), oak (*Quercus*) (e.g. diameter 10 mm, 2 growth rings), blackthorn (*P. spinosa*), ash (*Fraxinus*) and birch (*Betula*) (**Table 58**).

Oak (*Quercus*), sapwood and heartwood, and hazel (*Corylus*) were identified from the upper fill of section 3151 (sample 1332) and from the south-east corner, section 817 (sample 1433); and, in addition, ash (*Fraxinus*) sapwood in section 3151, and hawthorn type (*Pomoideae*) and possibly blackthorn (*P. spinosa*) from 817.

Outwork/annexe ditch 4715

The outwork/annexe ditch to the west of the base was infilled during this phase. The fill of ditch 785, contained pottery and charcoal. The charcoal consisted of oak (*Quercus*) sapwood and heartwood, alder (*Alnus*) roundwood, ash (*Fraxinus*) sapwood, maple (*Acer*), birch (*Betula*) and blackthorn (*P. spinosa*). It is possible that some or all of this discarded fuel may have resulted from smithing waste.

Phase 4(i) (**Table 59**)

Round-house 3415

Round-house 3415 was built over the infilled defensive ditches and while charcoal was recovered from the drip gully and several internal features including hearths, some of it may be redeposited.

The outer ring 3509 of the round-house acted as the eaves drip gully. It was also a useful receptor for the disposal of domestic waste, as indicated by deposits of charcoal (sample 1339), probably from fuel debris. Charcoal mostly consisted of oak (*Quercus*), sapwood and heartwood, but also hazel (*Corylus*), ash (*Fraxinus*), blackthorn (*P. spinosa*), hawthorn type (*Pomoideae*), alder (*Alnus*), willow/poplar (*Salix/Populus*), holly (*Ilex*), and possibly birch (*Betula*).

Hand-picked charcoal from the inner gully 3550, which formed a slot to secure structural components, included 3 large wedges of alder (*Alnus*) roundwood. Although incomplete, it was evident that the roundwood (possibly from a single piece) measured at least 60 mm in diameter (with 14+ growth rings), and would probably have been 100+ mm when freshly felled - sizeable enough to have provided hefty poles for structural elements.

The upper fill of hearth 4134 (context 4135) sited inside the round-house, contained large fragments of charcoal predominantly oak (*Quercus*), sapwood and heartwood, but also hazel (*Corylus*), birch (*Betula*), blackthorn (*P. spinosa*), holly (*Ilex*), and gorse/ broom (*Ulex/Cytisus*). With the exception of hazel and holly, charcoal residues (sample 1152) from the lower fill of the hearth, were more or less similar. Fuel evidently consisted of oak (*Quercus*), probably from roundwood or billets wide enough to have developed heartwood. This was supplemented by wood from numerous other species.

Charcoal was identified from several postholes within the building. Oak (*Quercus*) was dominant in all contexts. In addition to oak the following taxa were identified. In

posthole 3486: hazel (*Corylus*), and ash (*Fraxinus*). In posthole 4208: blackthorn (*P. spinosa*), hazel (*Corylus*), alder (*Alnus*), maple (*Acer*), and gorse/broom (*Ulex/ Cytisus*). In posthole 4214: birch (*Betula*) and hazel (*Corylus*). The similarity of this material to fuel residues from the hearth 4134 suggests a common origin.

Charcoal from the fill of the north-west inner ring gully segment consisted mostly of oak (*Quercus*) sapwood and heartwood; other taxa included hazel (*Corylus*), alder (*Alnus*), birch (*Betula*), willow/ poplar (*Salix/ Populus*), hawthorn type (*Pomoideae*), ash (*Fraxinus*), holly (*Ilex*), and gorse/broom (*Ulex/Cytisus*).

The fill of a slot 4695, sited between round-houses 4642 and 3415 contained pottery, slag and charcoal. Taxa identified included oak (*Quercus*) sapwood and heartwood, birch (*Betula*), alder (*Alnus*), ash (*Fraxinus*), willow/poplar (*Salix/ Populus*), gorse/ broom (*Ulex/Cytisus*), and hawthorn type (*Pomoideae*).

Round-house 4642

Charcoal was examined from the fills of gullies 4646 and 4658. The charcoal was similar in character to that from the adjacent round-house group and, by implication, it seems reasonable to attribute these deposits to local (?domestic) fuel refuse. Oak (*Quercus*) sapwood and heartwood (predominantly), hazel (*Corylus*) and ash (*Fraxinus*) were common to both contexts. In addition, fill of 4646 included blackthorn (*P. spinosa*), and hawthorn type (*Pomoideae*); and fill of 4658 included alder (*Alnus*).

Building 4103

The charcoal residues from the fill of a curvilinear ring ditch 4063 – sample 1539; and from the fill of hearth 4109 – sample 1563, probably from spent fuel, were very comparable to those from other round-houses (e.g. round-houses 3415 and 4642). Oak (*Quercus*) predominantly, but also willow/ poplar (*Salix/Populus*) and hazel (*Corylus*) were common to both samples. In addition, birch (*Betula*) and ash (*Fraxinus*) were

identified in ring ditch 4063 and maple (*Acer*), hawthorn type (*Pomoideae*), and blackthorn (*P. spinosa*) in hearth 4109.

Charcoal rich deposits were found in the base fill of pit 4061 within building 4103. Numerous taxa were identified from the charcoal including oak (*Quercus*), sapwood and heartwood, birch (*Betula*) roundwood (e.g. diameter 40 mm, 8+ growth rings), hazel (*Corylus*), maple (*Acer*), willow/poplar (*Salix/Populus*), holly (*Ilex*), and hawthorn type (*Pomoideae*).

Building 3671

Charcoal from the fill of gully segment 3720 (sample 1302), consisted mostly of oak (*Quercus*) roundwood (e.g. diameter 7 mm, 4 growth rings), sapwood and heartwood but also some alder (*Alnus*) and hazel (*Corylus*). Large pit 3670, lying immediately outside the gully, contained a single fill. The function of the pit is unknown but a dense patch of charcoal (sample 1156) within the fill consisted mainly of fragments of narrow roundwood, measuring up to 15 mm in diameter and identified as oak (*Quercus*), gorse/broom (*Ulex/Cytisus*) and willow/poplar (*Salix/Populus*).

Building 3724

The fill of gully segment 3764 contained oak (*Quercus*) sapwood, hazel (*Corylus*), ash (*Fraxinus*), willow/poplar (*Salix/Populus*), and elder (*Sambucus*).

Building 3053

A sample (1197) from the northern terminal 3071 of the ditch included a large amount of poorly preserved oak (*Quercus*) roundwood (e.g. diameter 10 mm, 3 growth rings), sapwood and heartwood, hazel (*Corylus*), ash (*Fraxinus*), birch (*Betula*), willow/poplar (*Salix/Populus*), and gorse/broom (*Ulex/Cytisus*). Broken pottery also occurred in this fill and, although the function of this sub-circular building is unknown, it seems likely that the deposit accrued from general (fuel) debris.

Ditch 4085

The charcoal-rich upper fill (4405) of ditch segment 4406 included oak (*Quercus*), mostly sapwood, which was frequent. Other taxa included hazel (*Corylus*), ash (*Fraxinus*) and hawthorn type (*Pomoideae*). Handpicked charcoal from the same area consisted of a wedge of oak sapwood with a radius of 20 mm and 21 growth rings; the early rings were wide and characteristic of timber from managed woodland. Fill 4593 from the eastern end of the ditch included ashy material, charcoal and fired clay. The charcoal (sample1748) was mainly oak (*Quercus*) roundwood, sapwood and heartwood but also included alder (*Alnus*), birch (*Betula*), hazel (*Corylus*), ash (*Fraxinus*), willow/poplar (*Salix/Populus*), and gorse/broom (*Ulex/Cytisus*).

Ditch 103

Nine handpicked pieces of charred roundwood (context 101), included hazel (*Corylus*), ranging from 10 mm-15 mm in diameter, with 6-10 growth rings; oak (*Quercus*), diameter 15 mm, 5 growth rings; willow/poplar (*Salix/Populus*), diameter 25 mm, 5 wide growth rings; and gorse/broom (*Ulex/Cytisus*), diameter 10 mm.

Ditch 4720

Charcoal was particularly rich on the west side of the ditch where a dark layer suggested localised burning. Taxa identified included oak (*Quercus*) roundwood (e.g. diameter 10 mm, 8 growth rings) and heartwood, alder (*Alnus*) (including a handpicked piece from 3406), birch (*Betula*), hazel (*Corylus*), ash (*Fraxinus*), hawthorn type (*Pomoideae*), and blackthorn (*P. spinosa*).

Ditch 3265

The charcoal (sample 1224) was mainly oak (*Quercus*) roundwood (e.g. diameter12 mm, 5 growth rings), sapwood and heartwood, and ash (*Fraxinus)* sapwood. Smaller quantities of hazel (*Corylus*), willow/poplar (*Salix/Populus*), and gorse/broom

(*Ulex/Cytisus*) were also identified. Charcoal (sample1235) excavated from an upper fill of ditch 3265 included fast-grown oak (*Quercus*) roundwood (e.g. diameter 10 mm, 3 growth rings) and heartwood. Also ash (*Fraxinus*), birch (*Betula*), and gorse/broom (*Ulex/Cytisus*).

Gully 3042

Charcoal from the fill of gully 3043 (sample 1552) was fairly abundant but rather comminuted. Oak (*Quercus*) sapwood and heartwood predominated over small amounts of ash (*Fraxinus*), blackthorn (*P. spinosa*), and holly (*Ilex*).

Grain drier 3145

The fill of the flue from an oven bowl contained spent fuel deposits (sample 1287). Oak (*Quercus*) roundwood (e.g. diameter 20 mm, 5 growth rings), sapwood and heartwood was most frequent, but blackthorn (*P. spinosa*), hazel (*Corylus*), and gorse/broom (*Ulex/Cytisus*) were also recorded.

Pit 3159

The secondary fill of the pit consisted of a dense layer of charcoal which appeared to have been thrown into the pit, probably from a single event, and later sealed by further deposits. The charcoal (sample 1277) was composed of fragmented oak (*Quercus*) roundwood. Some pieces still retained bark. The roundwood was relatively fast-grown particularly in the early years, and characteristic of coppice growth. Some diameters equalled 20 mm and included 13 growth rings. Although the exact use of this fuel is unknown, the evident preference for oak roundwood in favour of other species suggests an activity that required good quality, high energy fuel, rather than, for example, for a domestic hearth or bonfire (in which mixed wood species would be usual).

Ditch 4711

Charcoal (sample 1490) was frequent but poorly preserved and included oak (*Quercus*) sapwood and heartwood, alder (*Alnus*), birch (*Betula*), ash (*Fraxinus*), and gorse/broom (*Ulex/Cytisus*).

Working hollow 4706

The fill of posthole 3786 included glass, pottery and charcoal. The charcoal (sample 1340) included oak (*Quercus*) sapwood and heartwood, ash (*Fraxinus*), birch (*Betula*), elm (*Ulmus*), hazel (*Corylus*), hawthorn type (*Pomoideae*), and blackthorn (*P. spinosa*). Three handpicked pieces of roundwood (context 986) from a large spread of burnt material consisted of hazel (diameter 30 mm, 8 growth rings) and oak (estimated diameter at 15 mm, 4 growth rings).

Grain drier 913

A blackish deposit within pit 3666 (part of 913) consisted of burnt flint and sandstone, fired clay and a large quantity of charcoal. This feature was interpreted as the possible rake pit for the adjacent fire-pit within the west end of the feature. Oak (*Quercus*) made up the bulk of the fuel residues (sample 1160), with a high proportion of roundwood (probably fairly narrow but the material was too fragmented to be certain) some of which was mature enough to include heartwood. The oak was supplemented with birch (*Betula*), hazel (*Corylus*), willow/poplar (*Salix/Populus*), and blackthorn (*P. spinosa*).

Charcoal associated with the fire-pit of 913 (context 3608, sample 1112) differed slightly in composition from that from the rake-out pit 3666, in that although it consisted mainly of roundwood, willow/poplar (*Salix/Populus*) appeared to be most frequent in the deposits, which also contained oak (*Quercus*) and alder (*Alnus*). Willow/poplar roundwood included fast-grown wood (e.g. diameter 20 mm, 6 growth rings) whereas oak roundwood was considerably older (e.g. diameter 30 mm, 18 growth rings) and also included some heartwood. The apparent paucity of willow/

poplar and alder identified in probable fuel deposits throughout the site suggests that these taxa were not rated highly as fuel. The conspicuous disparity of the residues from context 3608 to those from the adjacent rake-pit and fire-pit suggests an origin either from a different use of the kiln or possibly a structural origin. On excavation, there appeared to have been some collapse of the superstructure which covered the kiln. Since both alder and willow have long traditions of use for construction work, e.g. wattle hurdles etc, it is possible that the charcoal was related to this event or to a shelter or hurdles associated with the feature.

Charcoal was extremely abundant in a possible fire pit within 913; context 3675 (sample 1159). The sample was composed predominantly of oak (*Quercus*) roundwood, probably up to 20 mm in diameter and relatively fast-grown (e.g. diameter 20 mm, 7 growth rings). Roundwood from other taxa included hazel (*Corylus*) (e.g. diameter 15 mm), birch (*Betula*), willow/poplar (*Salix/Populus*) and gorse/broom (*Ulex/Cytisus*).

Oven 988

A circular feature was found on the west side of ditch 785, with slag in a fill tipping into the recut ditch 3834. Charcoal was frequent (sample 1264) and consisted mainly of narrow roundwood from numerous taxa. These included oak (*Quercus*), gorse/broom (*Ulex/Cytisus*), hazel (*Corylus*), blackthorn (*P. spinosa*), hawthorn type (*Pomoideae*), birch (*Betula*), ash (*Fraxinus*), and willow/poplar (*Salix/Populus*). Although much of this material was relatively juvenile (mostly <10mm in diameter) none of it appeared to contain fast-grown wood.

Well 920

The stone-lined well was sited just south of building 4103. Charcoal from the fill 4621 was predominantly oak (*Quercus*) sapwood and heartwood but also included birch (*Betula*), hazel (*Corylus*), ash (*Fraxinus*), maple (*Acer*), and hawthorn type (*Pomoideae*).

Cess-pit 819

This feature was used for the dumping of both hearth and domestic waste. Charcoal was common throughout the fills and samples from three distinct layers were examined. The most diverse range of taxa was identified from the upper layer 970, which also included burnt clay and pottery. The charcoal consisted of oak (*Quercus*) roundwood, sapwood and heartwood, ash (*Fraxinus*), blackthorn (*P. spinosa*), hazel (*Corylus*), birch (*Betula*), holly (*Ilex*), and willow/poplar (*Salix/Populus*).

A cess-rich layer 978 (underlying 970) was contained within a possible wattle lining of the pit. Charcoal from this layer consisted of oak (*Quercus*) roundwood, sapwood and heartwood, and hazel (*Corylus*) roundwood (e.g. diameter 12mm, 13 growth rings with rapid early growth). Although wattle hurdles were frequently constructed from oak and hazel, it seems unlikely that the wattle lining of the cess-pit could have been burnt *in situ* unless either it had been emptied of its contents or they had seeped away. It seems more probable that the charcoal originated from dumped fuel debris.

Context 3049 was situated beneath this layer but above the clay capping of the well. The fill contained charcoal and other preserved organic, and may have been deliberate back-filling to raise the level of the latrine. Charcoal in sample 1133 was similar in content and character to that from the layer above (978) and was therefore possibly similar in origin.

Building 3545 – overlying layers

Charcoal in a disuse layer (context 3388, sample1274), was mostly oak (Quercus) fast-grown sapwood and heartwood, but also hazel (Corylus), ash (Fraxinus) sapwood, and blackthorn (P. spinosa) roundwood (diameter 5 mm, 4 growth rings). The deposit also included several pieces of thick bark (12 mm) estimated to have originated from trunks/branches probably exceeding 100 mm in diameter. Possible origins include either burnt structural material or fuel residues. Two hand-picked fragments of charcoal were associated with a spread over building 3545. The charcoal (context 3387) included oak (Quercus) roundwood, diameter 30 mm with 15 growth rings

indicative of moderate growth. The stem had been felled in early spring. The second sample (769) included a piece of bark, probably of modern origin.

Outer defensive ditch 3057

Oak (*Quercus*) roundwood was retrieved from a layer abutting the southern bank of 3151 (context 3118). Although incomplete, a minimum diameter of 50 mm was estimated and included at least 26 growth rings. The growth pattern suggested an origin from managed woodland.

Phase 4(ii) (**Table 60**)

Grain drier 637

The remains of this feature occurred within the phase 4(ii) enclosure 4713 and consisted of a possible oven/drier with collapsed superstructures. Associated slag suggested its use for metalworking, but an agricultural use is probable. Numerous clay layers testified to fairly continuous use. Charcoal was relatively sparse from context 638 at the base of the feature (sample 1011), and consisted mainly of narrow roundwood (up to 7 mm in diameter) from oak (*Quercus*) and hazel (*Corylus*). These typically included 7 or 8 growth rings and did not appear to be from fast-grown stock (possibly implicating the use of brushwood). Birch (*Betula*) and willow/poplar (*Salix/Populus*) were also present.

Charcoal was more abundant in the upper fill 625 (sample 1007) of the feature, which also included layers of fired clay. Here again the charcoal was predominantly oak (*Quercus*) roundwood, ranging from 5 – 20 mm in diameter. In this instance the roundwood was mostly fast-grown (e.g. 3 and 5 growth rings, respectively) and characteristic of coppice growth. Other taxa included ash (*Fraxinus*), birch (*Betula*), hazel (*Corylus*) and hawthorn type (*Pomoideae*). A small pointed fragment of hazel appeared to have been worked and was possibly the base tip of a narrow stake or post. If from structural origins, the collapsed/burnt superstructure of the oven would be an appropriate source.

Similar fuel residues to those from the main bowl were found in the rake-out pit 790 at the mouth of the feature. The sample (1061) was composed predominantly of narrow oak (*Quercus*) roundwood up to about 10 mm in diameter, and fast-grown hazel (*Corylus*) and gorse/broom (*Ulex/Cytisus*) were also identified.

Enclosure 4713

Poorly preserved charcoal from the bottom fill of the ditch included oak (*Quercus*) sapwood, willow/poplar (*Salix/Populus*), hazel (*Corylus*), and blackthorn (*P. spinosa*).

Grain drier 3843

A sample (1530) from the primary use of the oven was taken from outside the mouth of the structure and within the stoke-hole structure 4043. An ash deposit (3851) in a rake-out hollow contained fragments of fired clay and pottery mixed with charcoal (sample 1410). Not unexpectedly, similar taxa were identified from the two contexts, demonstrating that oak (*Quercus*) formed the primary fuel. This consisted of roundwood, often fairly narrow (e.g. diameter 12 mm, 7 growth rings), although some was wide enough to have developed heartwood. In addition, small quantities of hazel (*Corylus*) and willow/poplar (*Salix/Populus*) were recovered, as well as birch (*Betula*) from sample 1530.

Gully 4025

Poorly preserved charcoal (sample 1526) from the southern terminal of ditch group 4025, included mostly oak (*Quercus*) roundwood, sapwood and heartwood, but also hazel (*Corylus*) and hawthorn type (*Pomoideae*).

Ditch 826

Charcoal was fairly abundant and was identified from samples from the centre of the excavated stretch, context 825 (sample 1096), and from the southern end, context 4207

(sample 1678). Both samples were dominated by relatively narrow, fast-grown oak (*Quercus*) roundwood (e.g. diameter 12 mm, 5 growth rings), although small quantities of oak heartwood from wider wood or timber was also present. Other taxa included hazel (*Corylus*), ash (*Fraxinus*) roundwood, blackthorn (*P. spinosa*), and willow/poplar (*Salix/Populus*) roundwood and from context 4207, alder (*Alnus*) and hawthorn type (*Pomoideae*).

Ditch 4714

Charcoal from the lower fill (3731, sample 1351) consisted mostly of oak (*Quercus*) roundwood, sapwood and heartwood, but also ash (*Fraxinus*), hazel (*Corylus*), blackthorn (*P. spinosa*), willow/poplar (*Salix/Populus*), elder (*Sambucus*), and hawthorn type (*Pomoideae*).

Ditch 3247

Charcoal and other finds were especially frequent in the fill of context 3249, from the central region of this ditch. Many of the charcoal fragments (sample 1482) were large and well preserved. Oak (*Quercus*) and hazel (*Corylus*) roundwood up to about 30mm in diameter was fairly common but none appeared to have been particularly fast-grown, and some oak fragments included heartwood. Material from other taxa, but probably from wider stems, poles or branches, included blackthorn (*P. spinosa*), elder (*Sambucus*) and fast-grown birch (*Betula*). Smaller fragments of hawthorn type (*Pomoideae*) and gorse/broom (*Ulex/Cytisus*) were also present. Of the taxa identified here, those most usually associated with construction work, e.g. for posts or hurdles, include oak and hazel (Edlin 1949). Species such as blackthorn, birch, elder, gorse/broom and members of the hawthorn group tend to be used more sporadically or casually, or for specific artefactual purposes, e.g. tool handles. All these woods, however, provide high-energy fuel and, by implication, at least some of the charcoal probably derived from fuel debris.

Some large handpicked pieces (sample 3250) produced similar results to those above, with birch roundwood (diameter 60 mm), hazel roundwood (diameter 22 mm) and a piece of oak heartwood from a wide pole/branch.

Pit 3146

Charcoal occurred throughout the fill of the pit. Oak (*Quercus*) sapwood and heartwood predominated; other taxa included hazel (*Corylus*), birch (*Betula*), ash (*Fraxinus*), holly (*Ilex*), gorse/broom (*Ulex/Cytisus*), and hawthorn type (*Pomoideae*).

Hearth 3014

This feature consisted of a hearth set into a natural scoop in the upper fill of the ditch 3057. Fuel residues still *in situ* demonstrated that fuel had consisted mainly of oak (*Quercus*) sapwood and heartwood (with some fast-grown wood) but also ash (*Fraxinus*), hawthorn type (*Pomoideae*), hazel (*Corylus*), willow/poplar (*Salix/Populus*), and possibly alder (*Alnus*).

Hearth 3085

This feature consisted of a shallow, circular hearth with associated charcoal and burnt clay. The stones at the base of the feature were not scorched, and suggested that the fire was either short-lived or burnt at low temperatures. The fuel residues were predominantly fast-grown oak (*Quercus*) roundwood, up to about 20 mm in diameter. Other taxa included hazel (*Corylus*), blackthorn (*P. spinosa*), gorse/broom (*Ulex/Cytisus*), and hawthorn type (*Pomoideae*). Roundwood burns through relatively quickly and, unless supplies are frequently replenished, fires are short-lived. The use of oak roundwood, however, which provides a high calorie fuel, would almost certainly have produced a fairly intense fire, hot enough to scorch stones if the hearth had had prolonged or repeated use. The evidence supports the suggestion that the hearth was used for a single event and was probably short-lived.

Pit 3073

The function of pit 3073, a shallow cut in the fill of ditch 3057, was unclear. It had been filled with a single deposit (3074) and although this included numerous burnt fragments, the material did not appear to have been burnt in the pit. Charcoal consisted of oak (*Quercus*) sapwood and heartwood, birch (*Betula*), hazel (*Corylus*), and willow/poplar (*Salix/Populus*).

Spread over 3047

Four large fragments of charcoal were handpicked from a spread of debris (765) which also included pottery, tiles, flint, fired clay and iron. The charcoal, birch (*Betúla*), and oak (*Quercus*) sapwood, originated from fairly wide poles/stems (e.g. birch diameter 80 mm, 22+ growth rings).

Spread over 4706

A piece of roundwood charcoal (961) from a large spread of burnt material was identified as maple (*Acer*). It measured 25 mm in diameter and included approximately 15 growth rings.

Unphased

Beam slot 3789

Charcoal from a possible beam slot in the 'working hollow' 4706 to the west of the military base, consisted of oak (*Quercus*) sapwood and heartwood, hazel (*Corylus*), ash (*Fraxinus*), blackthorn (*P. spinosa*), and possibly birch (*Betula*), and willow/poplar (*Salix/Populus*). The taxa identified could equally represent either spent fuel or burnt structural remains, e.g. posts/ hurdles, roofing, or a combination of both.

Burnt feature 3566

The fill (3565) of a small depression consisted of a densely compacted layer composed of highly burnt, slaggy material with charcoal and burnt clay. The charcoal was mostly oak (*Quercus*) sapwood and heartwood, with only small amounts of hazel (*Corylus*) and birch (*Betula*). Oak charcoal (particularly heartwood) has, traditionally, formed the primary fuel for metallurgy (Edlin 1949).

Phase 6 - Post-medieval

Well 920

Two hand-picked pieces from the uppermost fill (921) were visually comparable to coal, although other tarry or highly carbonised materials could not be ruled out.

Discussion

Charcoal was sampled from a range of contexts from four main phases of the site. By implication some charcoal has been interpreted as domestic debris since it occurred in deposits with other dumped rubbish, e.g. pottery, burnt flint or stones, or waste from food preparation (charred cereal grains), in the fills of ditches, postholes, pits and depressions. Some charcoal deposits with associated slag or other industrial artefacts, have been attributed to industrial waste. Evidence of wooden structural components was sparse although some charred remains were tentatively assigned to these origins. Comparative analyses of the unusually large quantities of charcoal have provided data on the woodland economy and management.

Phase 2: the 1st century military base **(Table 58)**

Waterlogged organic deposits from the well 3047 suggest that horses were accomodated in at least one area of the southern area of the base. Although on-site smithing facilities would almost certainly have been available, no evidence of such was recorded or, indeed, of any other industrial activity within the base. Charcoal deposits were frequent and abundant, and although it is probable that most of the

material examined originated from domestic contexts such as hearths for heating or cooking, there was some slight evidence for specialised use of fuel (see below). The main elements of the base from which charcoal was examined included the defensive ditch 748, building 3545, well 3047, gully 4301 and pit 4498 from within the enclosure.

Domestic fuel

The fuel appeared to have consisted mainly of fairly narrow roundwood, although oak roundwood was often wide enough to include some heartwood. Charcoal deposits, interpreted as probably from domestic waste, from the fills of the ditch 748 and features associated with buildings 3545 (slots/ postholes 4598, 3488, 3591, 4307 and 3971) were predominantly oak (*Quercus*) but all contexts included small amounts of material from other species. These included alder (*Alnus*), birch (*Betula*), hazel (*Corylus*), ash (*Fraxinus*), hawthorn type (*Pomoideae*), blackthorn (*P. spinosa*), willow/poplar (*Salix/Populus*), and gorse/broom (*Ulex/Cytisus*). Charcoal deposits from the infill of the well 3047 included a high proportion of fragmented roundwood, predominantly oak (*Quercus*) but also from other species. The well also included potsherds and other debris, implicating its final use as a general rubbish tip

Structural components

A single posthole (4366) from the interval tower 3545 included what may have been the remains of an oak (*Quercus*) post. Stabling refuse thrown into the well 3047 may also have included the piece of burnt alder (*Alnus*) roundwood. The charred diameter (30+ mm) of the wood indicated dimensions that would have been suitable for a narrow post/pole - but could also have provided roundwood for fuel.

The presence of oak (*Quercus*) in both the pit 4498 and nearby building 4731 may be coincidental but could indicate a common origin for the charcoal. The large deposit of charred oak in the foundation trench tends to support this suggestion and this may relate to the deliberate destruction of the building. Other origins are possible though, as

single species deposits were rare on site and when of oak, could also imply its selection for a specific activity requiring high calorie fuel.

As could be anticipated, the fuel grain drier 4123 consisted almost exclusively of oak (*Quercus*) (including some heartwood), and would almost certainly have been used as charcoal if for smelting or smithing.

Phase 3: the abandonment of the military base **(Table 58)**

Fuel residues

The two main ditches 748 and 3057 were substantial and deliberate backfilling would have involved considerable effort. Charcoal from six contexts of infill from the ditches was similar in dominance and range of taxa to those attributed to fuel residues in phase 2, and probably arose from similar origins. Some may have resulted from burning waste materials from the demolition of the site, although these would probably have been more usefully employed as bulk material for infill. The absence of alder (*Alnus*) and willow/poplar (*Salix/Populus*) (species more commonly used for structural components than firewood) tends to endorse the suggestion of fuel residues.

Industrial fuel

The outwork/annexe ditch 4715 to the west of the base was also filled in at this time. The occurrence of slag in the same context as charcoal suggests a common origin. If from smithing fuel residues it is interesting to note the wide range of species used: oak (Quercus) sapwood and heartwood, alder (Alnus), maple (Acer), birch (Betula), ash (Fraxinus) and blackthorn (P. spinosa).

Phase 4(i) **(Table 59)**

There was no evidence from the charcoal record to indicate the function of the round-houses built in this phase. Charcoal deposits from them (e.g. round-house 3415) suggested that fuel debris may have been domestic in origin. Numerous kiln/furnace

type structures established across the site underlined the importance of industrial work in the local economy.

Domestic fuel

Charcoal sampled from gullies and postholes associated with round-houses 3415, 4642, 4103, and 3724 may have originated from domestic or subsistence type fuel, although the similarity of this fuel to that from some apparent industrial contexts (e.g. ditch 3265, see below) calls for cautious interpretation. Samples from hearth contexts in round-houses 3415 and 4103 can be securely identified as fuel deposits, and the similarity of these with charcoal from associated postholes suggested a common origin. Oak (*Quercus*) evidently provided the bulk of the fuel but was routinely mixed with other woods from a wide range of taxa. These included hazel (*Corylus*), birch (*Betula*), ash (*Fraxinus*), gorse/broom (*Ulex/Cytisus*), blackthorn (*P. spinosa*), alder (*Alnus*), hawthorn type (*Pomoideae*) and (less frequently) maple (*Acer*), holly (*Ilex*), and willow/poplar (*Salix/Populus*). The fuel consisted of roundwood (see below).

Charcoal from infilled enclosure and boundary ditches, e.g. 3057 (the outer defensive ditch), 4085, 4720, and 3265, where there was no evidence to suggest industrial origins, may also have resulted from deposits of domestic fuel or other local hearths or fires. Charcoal from the well 3791 can also be included in this group. The charcoal from all these features was similar in type and character to that from round-house contexts. Fuel residues from ditch terminal 3407 of linear feature 4720 was comparable to the round-house deposits.

Industrial fuel

The working hollow 4706, sited relatively closely to the round-house group 3415, was, tentatively assigned to phase 4(i). Within the grain drier 913 the similarity in the type and character of the fuel debris from its rake-out pit 3666 and the fire-pit 3618 is unequivocal (**Table 59**). Charcoal is not strictly necessary to fuel industries other than metal-smelting and it is possible (although probably unlikely) that fuel used in these structures consisted of wood rather than charcoal. There is clear evidence for the

preference of high-energy woods such as oak, birch, hazel and gorse/broom, with the emphasis on oak (which would have provided a longer-lasting heat source). The fuel seems to have consisted mainly of faggots (narrow roundwood). The fuel residues from these features contrasted sharply with those from context 3608, which contained a high ratio of alder and willow/poplar with oak. When used as wood fuel the lightweight woods of alder and willow/poplar compare poorly with, for example, birch, hazel and gorse/broom, which evidently formed part of the fuel load in the furnace. When used as charcoal, however, the calorific value is significantly higher. Although different types of fuel may have been selected for firing, an alternative origin seems likely for the charcoal from context 3608, e.g. from part of the collapsed superstructure, which may have incorporated some type of wattle-work or hurdle. The construction of hurdles has traditionally incorporated fast-grown rods from both willow and alder (Edlin 1949), for which they are ideally suited. This was the only context from Pomeroy Wood from which elm (*Ulmus*) was identified.

The function of a circular oven-type feature 988, on the west bank of ditch 785, was probably associated with some type of commerce or industry. Charcoal deposits here contrasted with fuel residues from probable domestic contexts (e.g. hearths in round-houses) in the evident selection and use of very narrow roundwood (<10 mm). This type of fuel would have produced a hot but very short-lived heat-source (unless the fire was constantly fed with fuel). It seems unlikely that this material would have been used for smelting activities since this process requires prolonged high temperatures only obtained through the use of charcoal, and charcoal production in clamps usually employed much wider roundwood or cordwood (Armstrong 1978). Smithing hearths operate at lower temperatures, and although it was probably possible to work using well-seasoned, high-energy wood, fuels traditionally associated with smithing have included a good proportion of oak heartwood (Edlin 1949) – an element apparently absent from this context.

Although the function of the large pit 3670, close to the round-house 3671, was unknown, the dense layer of charred roundwood from within its fill appeared to have been used more selectively than fuel in the round-houses. It was generally narrower in

diameter and included only oak (*Quercus*), gorse/broom (*Ulex/Cytisus*) and willow/poplar (*Salix/Populus*).

The analysis of charcoal from contexts associated with possible industrial contexts was sometimes inconclusive. For example, the character of the fuel associated with smithing slag in the linear ditch 3265, did not differ significantly from that identified from round-house deposits (**Table 59**); and similarly, the fill of a flue from an oven bowl 3145. The fuel within pit 3159 related to a single deposit and demonstrated the exclusive use of oak (*Quercus*) roundwood; industrial waste therefore seems a strong possibility.

Phase 4(ii) **(Table 60)**

Domestic fuel

In common with the previous phases, the charcoal deposits were abundant and well preserved. Fuel residues from the enclosure ditch 826 and ditch 4714 were dominated by oak (*Quercus*), mostly roundwood of various widths, but also included *Alnus* sp., alder, hazel (*Corylus*), ash (*Fraxinus*), hawthorn type (*Pomoideae*), blackthorn (*P. spinosa*), willow/poplar (*Salix/Populus*), and elder (*Sambucus*). Similar species were identified from rubble and other debris in ditch 3247 and the components of the charcoal suggested that it probably accrued from domestic, subsistence or industrial fuel. Charcoal from pits 3073 and 3146, lying relatively close together in the south-east corner of the site, also included a diverse range of taxa. Fuel residues from burnt feature 3014 were comparable to the round-house deposits.

The 1st century well 3047 was capped and then re-cut as a latrine 819. This was, in turn, later used as a dumping ground for rubbish. Charcoal from an upper fill (970) was comparable to the multi-taxa type of fuel identified from other features possibly containing domestic fuel (**Table 60**). A different origin, however, may be implicated for charcoal from two lower fills (from the cess-rich layer 978 and an underlying context 3049), since these contained only oak (*Quercus*) and hazel (*Corylus*). This combination is more characteristic of fuel from industrial activity, as indicated, for

example, in the remains of the feature 3843 (sited at the western end of the area). If from industrial waste, it would infer that industrial activities probably operated in the immediate vicinity, otherwise waste deposits could be anticipated from a range of occupations including domestic fires. An interesting possibility arises here in the possible use of charcoal to abate and purify the foul odours from the cess-pit. This method of deodorising was possibly used in a Roman cess-pit at Salford Priors in the Arrow Valley, Warwickshire, where layers of cess alternated with carbonised material (Gale, unpub).

Industrial fuel

Industrial fuel residues (charcoal) from grain drier 3843, at the western end of the site, were obtained from within the stoke-hole structure [4043] and the rake-out hollow. The latter also included fired clay and pottery. The fuel from both contexts was similar and indicated that the fuel has consisted mostly of oak (*Quercus*) roundwood, with some wood mature enough to have developed heartwood. Other taxa included hazel (*Corylus*), birch (*Betula*), and willow/poplar (*Salix/Populus*).

A burnt feature 3566 (sited close to 3843 but of uncertain date) consisted of a small depression with compacted contents containing slaggy material, charcoal and burnt clay. Fuel deposits composed predominantly of oak (*Quercus*), including heartwood (see below), and associated slag, suggested an origin from metalworking.

Grain drier 637 sited within enclosure 4713 had required several replacement superstructures during its lifetime. The feature had been fired with roundwood, predominantly with oak (*Quercus*) but also quite a high proportion of hazel (*Corylus*). Other species used less frequently included birch (*Betula*), ash (*Fraxinus*), hawthorn type (*Pomoideae*), willow/poplar (*Salix/Populus*), and gorse/broom (*Ulex/ Cytisus*).

Burnt feature 3085 consisted of a shallow, circular hearth and although there was no evidence to indicate its purpose, the stones at the base remained unscorched, suggesting that the fire had been short-lived, perhaps relating to single event. The use

of narrow roundwood mostly from oak (*Quercus*) would have provided a hot fire, and the bias towards oak indicated that this was the preferred fuel.

Comparison of fuels used

Since only a small fraction of the site was excavated, it was impossible to estimate population levels and the corresponding demands on the woodland resources. Charcoal deposits were unusually abundant and frequent throughout the site. Despite the unknown origins of some charcoal deposits, others could fairly confidently be assigned to either domestic or industrial use. Few deposits appeared to have structural derivations. The excellent preservation of the charcoal and the large numbers of samples available for examination provided an opportunity to compare the character and type of fuel used at the site.

The similarity in the type of fuel used throughout the four centuries remained constant, despite what must have been continuous and heavy demands on local wood reserves. It is clear that oak (*Quercus*) provided the bulk of the fuel in all contexts. This usually consisted of a high proportion of fairly narrow roundwood (probably up to about 25mm in diameter when freshly cut or felled) although some was wider and contained heartwood. Some stems included fast-growth typical of trees grown in managed conditions while others indicated slower growth patterns (possibly brushwood).

In probable domestic contexts (e.g. hearths in round-houses), oak wood was supplemented with roundwood from alder (*Alnus*), birch (*Betula*), hazel (*Corylus*), ash (*Fraxinus*), hawthorn type (*Pomoideae*), blackthorn (*P. spinosa*), willow/poplar (*Salix/Populus*), gorse/broom (*Ulex/Cytisus*), and rather less frequently from elder (*Sambucus*), holly (*Ilex*), and maple (*Acer*). Birch, hazel, alder, ash and willow/poplar frequently included fast-grown wood.

Fuel for grain driers and/or ovens also consisted mainly of roundwood but usually contained a higher proportion of oak (*Quercus*). The use of other species was often minimal. For example, in the fire-pit of 913 (phase 4(i)), which contained fast-grown roundwood, with a high ratio of oak (*Quercus*) (charred diameter <20 mm), but also

small amounts of hazel (*Corylus*), birch (*Betula*), gorse/broom (*Ulex/Cytisus*), willow/poplar (*Salix/Populus*). The differences between probable domestic and industrial fuels were sometimes rather slight or subtle. For example, residues from the circular oven-type feature 988 (phase 4(i)) appeared to have consisted of very narrow, slow-grown roundwood (charred diameter <10 mm) from a wide range of taxa. This could infer either the deliberate selection of this type of fuel or that wide bore wood was scarce – the first suggestion would seem to be the most likely.

The use of single species fuel (i.e. oak) was rare and suggested the need for high temperature firing. Such use was demonstrated by the dense deposit of narrow fast-grown roundwood (charred diameter <20 mm) found in pit 3159 (phase 4(i)), although there was no evidence to indicate its particular function. Slag present in the double-bowled feature 4123, however, was more securely indicative of metalworking. The fuel consisted almost entirely of oak (*Quercus*) roundwood and heartwood, although very small quantities of hazel (*Corylus*) and birch (*Betula*) were also recorded - if used as charcoal fuel, it would have been the most appropriate fuel for either smelting or smithing (Edlin 1949; Armstrong 1978).

Wood fuel and charcoal fuel

Although it is impossible to ascertain from charred fuel residues whether the material had been used as charcoal or wood fuel, some indications may be gleaned from the character of the fuel and the context to which it related.

Faggots (small bore wood and brushwood) would certainly have been used for domestic hearths and ovens, and also (probably supplemented with wider logs) for industrial kilns and ovens for uses other than metalworking. Open fires and braziers for heating would also have required wood fuel and charcoal respectively. With the exception of metal-smelting (for which sufficiently high temperatures could only be achieved with charcoal in the oxygen-reduced atmosphere of the furnace) most industrial activities could have been fuelled with wood. The use of roundwood, with its high ratio of surface area to atmospheric oxygen, has the potential to produce intensely hot, although relatively short-lived fires. In some areas these traditional

methods are still in use today. For example, in tile kilns in northern Italy, where narrow roundwood is used to give the temperature a final boost (Ian Freestone, pers comm.).

Good quality charcoal produces a hot smokeless heat-source and was in general use in Roman Britain to heat braziers and cooking stoves (Allason-Jones 1989). Similar uses seem likely at Pomeroy Wood, particularly in the Roman military base where large-scale food preparation would have been required for the garrison. In some domestic situations small quantities of suitable charcoal may have been raked from the main fire for this purpose – much as was practised in more recent centuries (Hartley 1954).

Traditional methods of charcoal-making using clamps employed wide roundwood or billets of cordwood up to about 180 mm in diameter (Edlin 1949; Armstrong 1978), although narrower roundwood was frequently placed round the outside of the wood stack to fill in gaps. So called small charcoal could be made in small quantities by setting light to bundles of faggots and then extinguishing them by dowsing with water (Hughes 1954). Charcoal was expensive to make in terms of man-hours and wood reserves (the process consumes approximately 6-7 tonnes of wood to produce 1 tonne of charcoal). It would have been economically preferable to use wood fuel at Pomeroy Wood unless the activity involved dictated otherwise.

Fuel sources

Almost without exception the charcoal deposits were composed of relatively narrow roundwood. Diameters and growth rates varied enormously and where possible these were recorded. There was no discernible bias of preference towards specific stem diameter or age (rotational cycle) during the phases of occupation. For example oak stems ranged in diameter from 5-50 mm (charred) but most occurred in the 10-20 mm diameter, and hazel was roughly similar. A high proportion of the roundwood included wide early growth rings characteristic of coppice growth, although some stems were comparatively slow-growing. This could suggest that fuel was supplied from both managed and unmanaged woodland. It is probable that the provision of fuel, particularly for industrial purposes which would have required a high proportion of

charcoal fuel, could only have been maintained through regular coppicing/pollarding of managed woodland – especially since the production of charcoal would have consumed large quantities of seasoned wood. It seems probable that by the Roman period the conversion of woodland to agricultural land and stock/horse grazing would have reduced most natural or local woodland to managed copses, strips of woodland, shaws or shelter belts.

During the 2nd – 4th centuries, smithing formed an important part of the economy, and without the use of coppiced wood, foresters would probably have been hard pressed to meet the fuel requirements, particularly if charcoal was used. The consistent use of relatively narrow roundwood was probably due to regional preferences rather than to diminishing wood supplies. It seems unlikely that iron-smiths would have continued to work for such a long period in an area with inadequate wood resources.

Hedgerows and hedgerow trees may have provided an additional source of rods/poles. Hedgerow management by layering and laying has been practiced in Europe since pre-Roman times (Landsberg n.d.). Since the medieval period, and probably based on more ancient practices, hedges were managed on about a 20 year cycle, by which time numerous sturdy poles and abundant brushwood had been produced. Ancient boundary hedges have traditionally included mixed species depending on the local geology, but usually with a good proportion of oak, whereas stock-proof hedges were composed largely of thorn bushes (e.g. hawthorn and blackthorn). Most taxa identified from Pomeroy Wood are suitable for hedging (although birch, gorse and broom would have been unlikely). Ditches were a common feature of the site and may have run adjacent to hedgerows.

Environmental evidence

Historically Devon has been noted for its coppiced oak (*Quercus*) woods, which have served fuel, tanbark and other products to woodland industries (including metallurgy) for centuries (Marren 1992). Evidence from charcoal deposits at Pomeroy Wood suggests that managed oak woodlands were in existence in this region since at least the Roman period. It seems likely that the abundance of oak in the charcoal reflects its

abundance in the environment - oak was commonly available and frequently used. Oak was almost certainly the dominant woodland element on the clay soils of the region. Other woodland components included birch (*Betula*), hazel (*Corylus*), ash (*Fraxinus*), maple (*Acer*), holly (*Ilex*) and elm (*Ulmus*). The paucity of maple, holly and elm in the charcoal could be indicative of the selective use of certain species or, alternatively, could suggest low distribution patterns in the environment. Shrubby species/small trees included blackthorn (*P. spinosa*), elder (*Sambucus*), gorse/broom (*Ulex/Cytisus*), and members of the Pomoideae which includes *Crataegus*, hawthorn; *Malus*, apple; *Pyrus*, pear; *Sorbus*, rowan, service tree and whitebeam. Damp or wetland species included alder (*Alnus*), willow (*Salix*) and/or poplar (*Populus*). The species named above typically grow in acid to neutral soils, although holly, elder, hazel, field maple and whitebeam also tolerate calcareous conditions, and elder (*Sambucus*) often frequents nitrogen-rich soils in areas of habitation. The presence of lighter, impoverished or poor/acidic soils is indicated by birch (*Betula*) and gorse/broom (*Ulex/Cytisus*), although gorse tends to be ubiquitous particularly on disturbed soils. Hawthorn (*Crateagus*), blackthorn (*Prunus spinosa*) and elder (*Sambucus*) suggest areas of marginal wood, scrub or possibly hedgerows.

Woodland species identified from the pollen profile taken from the waterlogged 1st century well 3047 included oak (*Quercus*), birch (*Betula*), alder (*Alnus*), hazel (*Corylus*), ash (*Fraxinus*), beech (*Fagus*), alder buckthorn (*Rhamnus cathartica*), pine (*Pinus*) and possibly spindle (*Euonymus*) (Scaife, this report). Alder buckthorn and spindle are more characteristic of calcareous soils. In an area of coppiced woodlands pollen deposits may not be representative of the tree flora, particularly when coppice stools are harvested on a short cycle (some species will not flower on juvenile wood).

During the Roman occupation of the site the social and economic success of the community may have been dependent on local wood reserves. The importance of supplying fuel to industrial activities appears to have ensured the survival of a stable woodland environment, in which the relative distribution of tree species probably remained unchanged throughout the centuries.

Conclusion

Comparative analysis of the charcoal from three main phases of occupation indicated that despite the change of use from Roman military occupation to a civilian settlement, the character and type of fuel used remained the same throughout this time. Most fuel reserves were supplied from managed woodland. The charcoal deposits identified a wide range of tree and shrub species growing in the local environment. Oak (*Quercus*) was the dominant woodland element and provided the bulk of the fuel, mostly as coppiced/pollarded roundwood. Other woodland components consisted of birch (*Betula*), ash (*Fraxinus*), hazel (*Corylus*), alder (*Alnus*), maple (*Acer*), elm (*Ulmus*), holly (*Ilex*) and willow/poplar (*Salix/Populus*). Shrubbier species included hawthorn type (*Pomoideae*), blackthorn (*P. spinosa*), elder (*Sambucus*) and gorse/broom (*Ulex/Cytisus*).

The radiocarbon date

The possibility that some of the round-houses were of post-Roman date and the Roman pottery associated with them was residual was considered, as the buildings at Pomeroy Wood may be compared with examples of 5-6th century date at Cadbury-Congresbury, North Somerset (Rahtz *et al.* 1992, 193-203, fig. 139-41, 147). Accordingly charcoal from the upper fill (4135) of a recut hearth, 4134 within round-house 3415 was submitted for radiocarbon dating (**Table 61**). The date range, within the 1st to 3rd centuries is consistent with the other evidnec in indicating that the round-houses at Pomeroy Wood all date to 2nd-3rd centuries.

Magnetic suscpetibility

by Hayley F. Clark

Introduction

Sub-samples for magnetic susceptibility were systematically taken from the standard bulk environmental samples across the excavated area. The samples came from a range of features such as ditches, ovens, grain-driers, pits, postholes and wells. As no significant difference between the high and low readings were revealed only the high frequency readings were plotted on site plans to assess the relative density of the distributions. The interquartiles were statistically calculated for each phase. These plotted results are discussed by phase below (**Table 62**).

Results

Phase 2

The 163 readings from this phase producing a varied range from 3 to 2513. They were centred around and inside the two defensive ditches 748 and 3057 with only six to the west of the base. Within the base a cluster of high readings relate to grain drier 4123. The foundation trenches and postholes of building 3545 carry both high and low readings but with no clear pattern. Building 4301/4731 also had a mixture of readings along the foundation trench. The readings from the defensive ditches themselves were generally low as were those from the outwork/annexe ditch 4715, and oven 988.

Phase 3

Forty-five readings were taken from phase 3 giving a span of readings from 6 to 616. The samples were taken both from and inside the defensive ditches with only 5 placed to the west, outside the ditches and these were from the outwork/annexe ditch 4715, which were low. The reading from grain drier 4123 was high. The readings from the western area of defensive ditches of the were high,a nd these sections contained quantities of charcoal, but the other readings from the ditches were quite low.

Phase 4(i)

A total of 252 readings were taken from phase 4(i) giving varied readings from 3 to 962. The samples were spread across the site, reflecting the changing occupation pattern. The highest reading was from well 3791 and the main concentration of high readings was again around the western arm of the former defensive ditches, now associated with 3415. The eastern arm of the former defences had very low readings particularly around ditch 3265 and round-house 3053. Curvilinear gully 4711, ditch 4710 and the related features gave low reading and round-houses 3671 and 3724 also had generally low results. The reading from the central part of grain drier 913 was high.

Phase 4(ii)

One hundred and thirty three readings were taken with the results spanning 8 to 1014. The highest readings were from grain driers 637, 4123 and 3843. The readings from ditch 3247 and 4713, which encloses grain drier 637, were low.

Interpretation

Phase 2

The high readings around 4123 are indicative that this is an area of intense heat: the outstanding reading possibly indicating the central point of the feature. The low results from the defensive ditches might suggest that they were not is use for a great length of time. The range of readings from buildingy 4301 may be due to disturbance by modern fencing.

Phase 3

The high readings from the western area of the defensive ditches can only be described as some form of high intense burning.

Phase 4(i)

The low readings from the western part of the site are due to it starting to be used. Well 3791 produced a high result possibly showing a connection to the dark spread within 4706, which has evidence for wide spread burning. The well itself may have been back-filled with soil from this nearby burnt deposit (hearth bottoms were found in the fill during excavation) within 4706. Round-house 3415 was an area of great activity and the high readings confirm the existence of high level use.

Phase 4(ii)

The readings from this phase are mainly from areas that were shown to be areas of localised burning, such as grain driers and ovens.

Conclusion

It is possible to that certain areas of the site continued to be used, particularly the western arm of the defensive ditches which give continuously high readings through the occupations. All the grain driers and ovens gave high readings and the ditches gave low readings. There does not, however, appear to be any significant difference in the results between the military and civil phases.

GITTISHAM FORGE AND NAG'S HEAD CULVERT

by J. Grove

Introduction

A further excavation was undertaken to the east of Pomeroy Wood, at Gittisham Forge, which lies on the eastern bank of the Nag's Head Culvert and is again on or close to the presumed line of the Roman road between Dorchester and Exeter (**Pl. 19**). A watching brief was also undertaken on a diversion channel for the stream while the Nag's Head Culvert was enlarged in advance of the road building.

Gittisham Forge

The site at Gittisham Forge, centred on SY 1345 9935, was first recognised when a ditch (952) containing Roman pottery was seen in a geotechnical pit close to the old Forge site in November 1996. Following the excavation of a series of evaluation trenches which confirmed the presence of linear features in this area and the presence of a thick deposit of material closer to the stream, two areas were selected for excavation. The two areas rose up the valley side from 75.5 to 80 m aOD, encompassing an area of 1,200 square metres, and both yielded similar information from a series of ditches and gullies. A deep deposit of dark brown to black silty loam sealed the lower, western, trench, 837, which became thicker towards the stream and which contained quantities of later Roman material. Post-medieval tiles and metalwork, but only a single sherd of pottery of this date were recovered from the cleaning layers. After the manual excavation of a series of test pits through the silty loam 837, which confirmed its character as an undifferentiated deposit, the layer was removed in 0.10 m spits using a mechanical excavator until the subsoil was exposed.

1st to 2nd century Romano British (**Fig. 71**)

A small number of features can be attributed to the 1st and 2nd centuries on the basis of the pottery found in them (**Fig. 72**). A later Romano-British feature cut a single circular pit, 814, in the eastern trench, which was 0.5 m deep. In the western area, the

westernmost gully, 936, was at 0.1 m deep, the shallowest of the linear features, but it described the south-eastern corner of an enclosure some 17 x 7 m. A shallow hollow, 932, immediately north of ditch 950 in the western area, also contained 1st-2nd century pottery and a layer in another shallow hollow, 923, on the northern edge of the area is of the same date (**Fig. 72**). On the basis of the pottery found in both excavation areas, there may have been a gap in the use of the site for up to a century before a series of enclosures were laid out.

2nd to 4th century Romano-British

The majority of features, a series of small enclosures, date from the late 2nd to the 4th century. Three of the enclosures have right-angled corners and the alignment of five of the ditches north-north-east/south-south-west, suggests that they may be perpendicular to a road.

In the western trench two adjacent enclosures, 950 and 951 lay on a similar north-north-east/south-south-west alignment. The larger of the two, 950, was a single ditch up to 0.5 m deep which formed a right-angle with each arm visible for a length of 10 m. Ditch 951 was somewhat slighter, 0.4 m deep and mirrored the alignment of 950. A shallow north-south gully, 949, was sited at the angle of the ditch arms. Gully 938, which lay to the west, was 0.3 m deep. A single post-hole, 927, three intermittent and shallow gullies, 907, 914 and 916, and a shallow hollow, 934, were all also recorded within the western trench. These features were overlain by a dark spread, 837, which contained much later Roman material comparable to that found in the eastern excavation area. The spread was deepest over the lower parts of the area as it fell down towards the Nag's Head Culvert.

An L-shaped ditch, 952, which was up to 0.4 m deep, was found in the north-eastern corner of the eastern area and probably formed the south-western corner of an enclosure. A larger ditch, 806 (**Fig. 71-2**), had a maximum width of 2 m, was 0.6 m deep and contained a large amount of pottery which was mainly of 3-4th century date, like that from 952. As well as the earlier pit 814, which was cut by ditch 806, two small, ovoid pits, 807 and 825, a shallow sub-rectangular pit 832, a shallow scoop filled with charcoal and burnt clay 828, and a post-hole 829 were also identified.

Nag's Head Culvert

The watching brief over the excavation of a diversion channel for the stream while the Nag's Head Culvert recorded a band of grey silty clay in the section of the newly diverted channel (**Fig. 71**). The deposit (700) was approximately 0.5 m above the alluvial gravels at a level of 75.2 m aOD. The silty clay was then exposed in plan using a mechanical excavator under archaeological supervision in the adjacent areas which could be damaged during further building works. The deposit was very mixed, but contained abraded Roman pottery dating to the 3rd to 4th centuries, as was a quantity of slag. An unstratified quern stone very probably derived from this deposit. Otherwise, no archaeological features were noted.

THE FINDS

The coin

by Nicholas Cooke

One very poorly preserved coin was found (ON 1003; context 801). It cannot be dated closely, but clearly belongs to the first to early third centuries AD.

The metalwork

by Emma Loader

Three nails were found in ditch 806; two from the northernmost section excavated and one large square sectioned nail from the southernmost section. Fourteen iron and one lead object from cleaning layers of post-medieval date may well derive from the old Forge, which stood immediately to the east of the site until recently.

The metalworking debris

by P. Andrews

A small quantity of ironworking debris totalling 2.87 kg. was recovered comprising smithing slag (including two small hearth bottoms) and fuel ash slag. All of the material is in an abraded condition and likely to be residual and the majority of contexts produced less than 100 g. of slag. A total of 860 g. of smithing slag and fuel ash slag came from the silty clay deposit at Nag's Head Culvert (700), all of which is abraded and likely to be residual.

The Roman pottery

by Rachael Seager Smith, with a contribution by J.M. Mills

A total of 744 sherds, 10,758 g., was recovered from stratified features and, with the exception of one sherd of post-medieval date, all were Roman. The small quantity of abraded material from the Nag's Head Culvert does not warrant further analysis and is not included here. The mean sherd weight for the assemblage as a whole is 14 g. In general, its condition was comparable to that from Pomeroy Wood, although larger, better-preserved sherds were found in ditch 806. The same methods, fabric and vessel form descriptions used to analyse the pottery at Pomeroy Wood were applied here. Only one new vessel form was recognised, the carinated bead rim bowl (type 158) described at the end of the site-specific type series for Pomeroy Wood (**Appendix II**). The total number and weight of sherds found in each feature is shown in **Table 63**. The samian is reported on separately below. All the amphorae from this site belong to Peacock and Williams Class 25 (Dressel 20).

Early Roman material was recovered from pit 814 (**Fig. 72**), gully 936 and layer 923 (**Fig. 72**). On the basis of the samian, hollow 932 has also been included in this group of early features. The preponderance of sandy grey wares in this group of features is comparable with the military deposits (phases 2-3) at Pomeroy Wood, although at Gittisham Forge it is likely that some of the features continue into the 2nd century. The complete absence of the South-western Black Burnished wares is perhaps unexpected,

especially as they occur, albeit in very small amounts, in the later features, but can perhaps be explained by the small assemblage size. The vessel forms present in this group consist of jars with straight or very slightly curved upright rims and bead rim bowls. The carinated, bead rim bowls may have been inspired by samian form 29 vessels or *Terra Nigra* types and can be paralleled at Seaton (Bidwell 1981, 72, fig. 13, 2) and at Exeter, some in contexts as early as *c.* AD 55/60-75/80 (Holbrook and Bidwell 1991, 159, fig. 60, 37; 61, 43-5).

No pottery specifically attributable to the period between the early 2nd century to around the third quarter of the 3rd century AD has been identified, implying a gap in the activity at this site.

Pottery of later 3rd and 4th century AD date was found in nine features as well as the black silty layer 837. All the characteristic elements of the late Roman (phase 4ii) assemblage at Pomeroy Wood can be paralleled here – the presence of New Forest and Oxfordshire wares, South Devon ware, the South-western grey storage jar fabrics and the predominance of the South-east Dorset Black Burnished wares over the sandy grey wares. The vessel form assemblage, too, is dominated by everted rim jars, conical flanged bowls and 'dog-dishes'. The largest group came from Ditch 806 (**Fig. 82**).

Samian

by J.M. Mills

A total of 29 sherds, 109 g, was found (**Table 64**). Of these two were unstratified and are not considered further. The material from layer 837 includes scraps of both Southern and Central Gaulish wares, of which two sherds from two Ludovici Tg dishes were the most noteworthy. Like the vessel of the same type from Pomeroy Wood, these were early examples of these types datable to *c.* AD 155-170. Hollow 932 yielded sherds from three form 37 bowls dating to the Flavian/Trajanic, Trajanic and Hadrianic/early Antonine periods, and a scrap from a second Les Martres vessel of Trajanic/Hadrianic date. Although the coarsewares from this 932e are undatable, the samian suggests that it may be of late 1st to early 2nd century AD date. Fragments

from an Antonine form 45 mortarium, probably the latest vessel recovered from the site, were found in ditch 806.

As the site is so close to Pomeroy Wood fort it is unsurprising that the date range of the two assemblages is the same. Neither of the early Lud. Tg sherds are from the same vessel as the one found at Pomeroy Wood, but it is possible that the three vessels were imported together.

Worked stone

by Emma Loader

A single quern stone was recovered from Nag's Head Culvert. Although it was unstratified it probably came from layer 700.

Ceramic building material and Fired clay

by M. Laidlaw

A small assemblage of ceramic building material was recovered (65 fragments; 2,116 g.), which consists mainly of post-medieval material with only a small number of Romano-British fragments. No diagnostic Romano-British forms were recorded. A small amount of fired clay was recovered (63 fragments, 777 g.). With the exception of five fragments with surviving surfaces and one wattle-impressed fragment, all are small, featureless fragments. The fragments were found dispersed in small quantities in a number of features across the site. The associated finds indicate a Romano-British date, and a structural derivation is likely.

THE ENVIRONMENTAL ANALYSES

The charred plant remains

by Alan J. Clapham

Introduction

Five contexts were examined, one dating to the 1st- early 2nd century, the others to the 2nd-4th century AD. In general, though the samples were not rich in charred plant remains, those present were well preserved (**Table 65**).

Results

1st-2nd century AD

Cereals, including spelt wheat (Triticum spelta), Triticum sp. and a possible example of cultivated oats (Avena sp.) dominated the sample from gully 936. The few weed seeds included dock (*Rumex* sp.), vetch/vetchling (*Vicia/Lathyrus* sp.), ribwort plantain (*Plantago lanceolata*) and field wood-rush (*Luzula campestre*).

The domination of cereal remains, the small number of weed seeds, and the number of broken glume bases suggests that the assemblage may be from the final stages of processing, i.e. the pounding of the spikelets after parching in order to release the grain. The remains may have been used as tinder.

2nd-4th century AD

The primary fill of ditch 806 in the southern segment excavated (820) contained few remains, and represents a 'background flora' of redeposited material. Grain and glume bases of Spelt wheat and Triticum sp., and a possible cultivated oats grain were found. Non-cultivated species included buttercup (*Ranunculus* subgenus *Ranunculus*), hazel nutshell (*Corylus avellana*), dock and clover (*Trifolium* sp.). Other finds include fragments of oat awns, culm nodes and grass stem fragments.

Cereal were the most common find in gully 938, which might date to the 1st or earlier 2nd centuries; a sprouted grain of possible emmer wheat (*Triticum dicoccum*), spelt, and *Triticum* sp. Caryopses of a possible cultivated oats were also recovered and with the non-cultivated species of hazel nutshell, chickweed (*Stellaria media*) and sheep's sorrel (*Rumex acetosella*). The paucity of cereal remains apart from *Triticum* sp. glume bases suggests that this charred plant assemblage probably also represents crop processing waste used as tinder. The lack of non-cultivated remains suggests that either the crop was stored as clean spikelets, or that the weed seeds did not survive the charring process.

Although few remains were found in Pit 807 they were dominated by cereals with no non-cultivated species recorded. The cereals consisted of spelt grains and glume bases, *Triticum* sp. glume bases and cereal grain fragments.

The black silty deposit, 837 (Layer 107 in the evaluation trench 1) contained few plant remains. Triticum sp. grain and glume bases and bracken (*Pteridium aquilinum*) pinnules wee present but probably represent a 'background flora'.

Discussion

Although charred plant remains were sparse they show that emmer and spelt wheat, perhaps along with cultivated oats, were grown locally. The dominance of chaff suggests that remains may be from crop processing waste used as tinder. The hazel nutshell may suggest a wild food source gathered from local scrubland. The buds from several samples (**Table 65**) probably derive from wood used as a fuel. The remains are generally comparable with those from Pomeroy Wood.

The charcoal

by Rowena Gale

Introduction

Six large samples were analysed with most including >50 fragments measuring 2 mm or more in radial cross-section. The charcoal was firm and well preserved and samples 1809 and 1804 were 50% sub-sampled (**Table 66**).

Results

The taxa identified are:

Aquifoliaceae. *Ilex* sp., holly
Betulaceae. *Betula* sp., birch
Corylaceae. *Corylus* sp., hazel
Fagaceae. *Quercus* sp., oak
Leguminosae. *Ulex* sp., gorse or *Cytisus* sp., broom (these genera are anatomically similar).
Rosaceae.
Pomoideae which includes *Crataegus*, hawthorn; *Malus*, apple; *Pyrus*, pear; *Sorbus*, rowan, service tree and whitebeam. These genera are anatomically similar.
Prunoideae. *Prunus spinosa*, blackthorn

1st–2nd century

Charcoal gully 936 consisted mostly of oak (*Quercus*). The charcoal was fragmented but included a high proportion of roundwood, with rather less heartwood; some oak was fast grown. A twiggy piece of birch (*Betula*) (diameter 1 mm) and possibly hazel (*Corylus*) were also present.

Pit 814 only contained sparse and fragmented charcoal including oak (*Quercus*) sapwood and heartwood, hazel (*Corylus*), blackthorn (*P. spinosa*), and possibly birch (*Betula*).

2nd–4th century

Charcoal from the primary fill of ditch 806 in the southernmost section excavated was predominantly of oak (*Quercus*) from roundwood, sapwood and heartwood including both fast and slow-grown wood. Other taxa included hazel (*Corylus*), birch (*Betula*), gorse/broom (*Ulex/Cytisus*), blackthorn (*P. spinosa*), and hawthorn type (*Pomoideae*). A very similar range of taxa was present in the sample from gully 938 (which may be of 1st-2nd century date), with the exception of the hawthorn group (*Pomoideae*), and the addition of holly (*Ilex*). Pit 807 contained a large volume of charcoal. Oak (*Quercus*), mostly roundwood and sapwood (e.g. diameter 20 mm, 5 growth rings; diameter 7 mm, 2 growth rings) but also a small amount of heartwood predominated. Other taxa included hazel (*Corylus*), hawthorn type (*Pomoideae*), and birch (*Betula*). Charcoal from the black silty deposit 837 was also mainly oak (*Quercus*) roundwood (diameter 11 mm, 4 growth rings), sapwood and heartwood, but also included hazel (*Corylus*), birch (*Betula*), and blackthorn (*P. spinosa*).

Discussion

Charcoal from all the samples was usually abundant, with a similar range of taxa. Oak (*Quercus*) was most frequent species and consisted of a high proportion of roundwood (sometimes <10 mm) and sapwood, with a low ratio of heartwood. Other taxa usually present, albeit sometimes in very small quantities, included birch (*Betula*), hazel (*Corylus*), and blackthorn (*Prunus spinosa*), and more sporadically, hawthorn type (Pomoideae), holly (*Ilex*), and gorse/broom (*Ulex/Cytisus*).

In view of the limited range of types of features in the areas excavated, it is difficult to interpret the origin of the charcoal. If it is from fuel residues, the charcoal demonstrates the consistent use of oak (in itself probably indicative of fuel debris), usually supplemented with small amounts of wood from other species. All the species, but particularly oak, would have provided a source of high-energy fuel. This is

consistent with the evidence from Pomeroy Wood, and the woods at both sites would probably have been gathered from a similar catchment area.

An alternative origin worth consideration, had the site been used for gardens, cultivation or enclosures of any type, is the burning of invasive scrub or hedge trimmings. It is likely that enclosure ditches and banks supported boundary or dead hedges. Boundary hedges in cultivated areas have traditionally included oak, hazel, blackthorn (*P. spinosa*), hawthorn (*Crataegus*) and holly (*Ilex*), depending on the type of soil, although birch (*Betula*), gorse (*Ulex*) and broom (*Cytisus*) would be less likely. Gorse and broom are quick to colonise disturbed soils.

Discussion

Little evidence for activity on the site during the 1st century was recovered. Only a small number of features can be attributed to the 1st-2nd centuries, pit 814 in the eastern trench, shallow gully 936, and hollows/layers 923 and 932 (**Fig. 81**). On the basis of its small size it is possible that gully 938 was contemporary with 936. Gully 936 is aligned north-north-east/south-south-west an orientation that was followed by the later and more substantial ditches 950 and 951, and 806 and 952. It is possible that the Roman road defined this orientation. If this is so, it may be that the road approached the stream by cutting across the valley slopes rather than by going straight down them.

There is little evidence for activity on the site during most of the 2nd century and the bulk of the material is contemporary with phase 4ii at Pomeroy Wood. As the pottery assemblage is small, the significance of this dating should not be over-emphasised, but the contrast between phases 4i and 4ii at Pomeroy Wood is that focus of settlement appears to have shifted and most of the activity is related to the extension of a series of enclosures or compounds (which may the evidnec from the charcoal hints may been hedged), and the accumulation of significant deposits of dark earth or rubbish. The digging of enclosures and the accumulation of dark earth deposits is characteristic of the later Roman activity at Gittisham Forge, and also in layer 700 at Nag's Head culvert.

The quantity of finds recovered from ditch 806 and from the layers all suggest occupation in the immediate vicinity, but not within the excavated areas. It may be that these areas represent back plots or field systems for a settlement fronting on to the road. The quantity of slag from Nag's Head Culvert would suggest that iron smithing took place nearby, as was also the case at Pomeroy Wood. All of these sites appear to have been given up at around the same time, suggesting that they were parts of the same roadside settlement.

THE WATCHING BRIEF

by R Davis, A.P. Fitzpatrick and J. Grove

The location of finds of Romano-British finds is indicated on **Figure 2.**

Dart Lane/Iron Bridge evaluation

Following the discovery of the Roman sites at Gittisham Forge and Pomeroy Wood, nine trenches were excavated using a mechanical excavator along the new line of the A30 to the west of Pomeroy Wood to establish whether the roadside continued to the west of Dart Lane. No Roman features were identified in these trenches, although four sherds of South Devon ware were recovered unstratified close to Iron Bridge at Trench 8 (SY 12120 98870). Roman pottery has previously been reported from Fenny Bridges close to Iron Bridge (Todd 1984, 266). The only feature identified in the trenching was in trench 1, nearest to the western end of the Pomeroy Wood site. This was a shallow linear feature that contained large pieces of burnt chert and flint as well as burnt stone and is as likely to be modern as it is sandwiched between the railway line and the modern road, as prehistoric in date. On this basis the western limit of the Roman settlement may be defined as the modern route of Dart Lane.

The eastern extent of the settlement is less clearly defined; only a single sherd of samian was found immediately to the east of the former site of the forge at Gittisham Forge.

Brinor (Railway Bridge South) evaluation

Following the discovery of a quantity of flaked stone to the east of the London-Exeter railway near Castle Hill, ten evaluation trenches were opened using a mechanical excavator. A small quantity of additional flaked stone was found in the topsoil from these trenches, but the only archaeological features located (within Trench 8 at SY 11105 98790) were two shallow ditches, a small pit and a stone spread. All of these features lay close to the lane that crosses the railway and it is possible that they have

been preserved by the colluvium that had accumulated against the edge of the slightly sunken lane.

Linear 23 was 0.5 m wide x 0.15 m deep with a rounded profile; the dark greyish brown silty clay fill contained a rim sherd from an everted Romano-British jar. Linear 21 was 0.6 m wide and 0.29 m deep with a rounded profile, but was undated. Stone spread 32 was seen for a distance *c.* 5 m x 0.6 m, was 0. 05 m deep and made up of well-spaced medium to large cobbles. Two pieces of flaked stone and five sherds of South Devon Ware and grey wares were recovered from the spread. Pit 25 was 1.5 m in diameter, 0.17 m deep and had a rounded profile. The dark reddish brown silt fill also contained six sherds of Romano-British pottery, including South Devon Ware. Fragments of stone, possibly from a quern, were also recovered from the Watching Brief immediately to the south.

It did not prove possible to undertake further work at Brinor and no further features or finds were observed during the subsequent watching brief on topsoil stripping. It should not be assumed that the undated features are necessarily Roman in date, as the Feniton Tithe Map of *c.* 1840 shows a barn, Down's Barn, sited at SY 1108 9880 and which is mentioned in the Apportionment as Down's Barn and Courtlage, forming part of a small holding of 12 acres (Weddell 1991, 25). Although not post-medieval pottery was recovered, it is possible that some of the undated features could be post-medieval. However, to the west of the Railway Bridge at Castle Hill, sherds of Romano-British pottery were retrieved during the initial walkover survey (Weddell 1991, 24), the evaluation (Reed and Manning 1994c, 5), the excavation (**chapter 00 above**), and during the Watching Brief over the v-ditching. All of this evidence, limited though it is, indicates a Roman settlement in the immediate vicinity.

Roman road at Birdcage Lane

During the Watching Brief over a road diversion at **chainage 11,700**, a concentration of flint cobbling was noted. Further investigation by means of three narrow slot-trenches confirmed the presence of a 34 m length of a compact cobbled surface, though the width of the surface could not be established as service trenches adjacent to the existing A30 truncated it. The cobbling continued to the south beyond the

stripped area. This surface is interpreted as the remains of the Dorchester-Exeter Roman road, whose route has been confirmed immediately to the west of the site between SY 050960 and 062963 by aerial photography (Griffith 1984, 27).

The cobbled surface (1122) rose by 0.10-0.15 m to the north and a second layer of smaller cobbles and pebbles (1123) could be seen in one place. The principle surface, 1122, consisted of 80% pebbles and cobbles, 0.01-0.15 m in size, with infrequent pieces of sandstone, set in a matrix of greyish brown clayey silt. The centre of the road surface, the top of the camber, could be implied to lie to the north.

No finds were recovered to confirm the Roman date suggested here, but the observation is in line with the route of the Roman road seen on the air photographs in the fields immediately to the west. The area investigated was sealed below road make-up, but not destroyed during the road diversion operations of July 1998.

Elsewhere on the route no trace was seen of the Roman road. Although it is widely assumed that the route of the A30 immediately west of Honiton follows the Roman road (Margary 1955, 106; Todd 1986, 218; cf. Weddell *et al.* 1993, 812), it was not seen during when the existing road surfaces were removed or in the excavations for a number of culverts which cut north-south across the old and new carriageways of the A30. It is possible that immediately to the west of Honiton the Roman road runs further to the south where a number of fields thought to be on a different alignment from the modern A30 and so be of prehistoric date (Weddell 1991, 31, fig. 34), could instead preserve the orientation of the Roman road. The clearest evidence for the line of the road in this area appears to be from the orientation of the enclosures at Pomeroy Wood and Gittisham Forge, which may be aligned on the Roman road. The enclosures are, however, aligned slightly differently at both sites, endorsing the observation that Roman roads may well be straight, but often only in short lengths.

Two sherds of Roman pottery - weighing 2 g. - found at the site of the slip road from the new line of the road at the junction for Exeter airport at SX 99160 93260 represent the only other Roman material recorded during the Watching Brief.

Discussion

by A.P. Fitzpatrick and J. Grove.

Although there was clearly activity at Pomeroy Wood during the prehistoric period, perhaps of Late Neolithic/Bronze Age date, there is little evidence for any significant occupation on the site and it may be that much of the flaked stone was introduced to the site during the Roman period when the turf-faced rampart was built.

The defences of the military base

The earliest certain Roman military occupation at Pomeroy Wood was a small base with an earth and timber rampart and two defensive ditches which was established in the 60s AD during the reign of the Emperor Nero. It is not known if the outer work or annexe was established at this time, its ditch would be very large for a marching camp, but not without precedent (Welfare and Swan 1995, 18). The date at which the base was abandoned is less clear, but it seems likely to have been in the 80s. There is some evidence for different phases use of the small part of the site that was excavated, where a timber building was replaced by an interval tower which was added to the inside of the rampart. A closer dating of these sub-phases has not been possible.

The siting of the base is "typical" for the south-west, and indeed further afield, being on a low hill or in this case a slight promontory, adjacent to a valley or river crossing (Griffith 1995, 365; Jones 1975, 45-9). Neither the size of the base or of the outwork or annexe is yet known, nor is there any reason to assume that these are only two military installations in the vicinity. The Iron Age hill fort of Hembury lies just 4 km to the north (**Pl. 20**) and the was re-used and garrisoned by the Roman army in the 50s AD but lying on the edge of the Blackdown Hills at a height of 270 m aOD, the base at Hembury was not as accessible as the river valley siting of Pomeroy Wood, astride the major route to Exeter and the south-west peninsula.

On the evidence available Pomeroy Wood is too large to have been a fortlet. It is certainly much larger than the fortlets known in the south-west (Fox and Ravenhill 1966; Griffith 1984, 17) and elsewhere (Maxfield 1985, 56), but by any standard

Pomeroy Wood would have been a small fort. If, extrapolating from the single known dimension at Pomeroy Wood of 75 m (measured from the inner ditch edge), a breadth: length ratio of 1:1 (square) to 2:3 (rectangular) is postulated (Jones 1975, 49, tab. 3), the size would be between 0.19 and 0.84 hectares (**Table 67**). This area is considerably than that of most of the bases known in the south-west, and indeed within Britain, where Nanstallon in Cornwall is one of the smallest at 0.86 hectares. A breadth: length ratio of 2:3 is, however, exceeded by two forts of similar size in Devon, at Cullompton (Simpson and Griffith 1993, 149-59), and Okehampton (Griffith 1984, 13). If the size range of Pomeroy Wood were similar to this, the area of the site could be almost one hectare, which is comparable to several sites in the south-west; Cullompton, Clayhangar (Frere and Tomlin 1991, 281) and Killerton (Griffith 1984, 25) (all in Devon), Nanstallon, Okehampton. If the base at Pomeroy Wood faced the line of march, the front gate was probably to the west. However, none of these possibilities detract from the point that Pomeroy Wood appears to be a small base. Although it might be comparable with the possible, but undated, fort at Broadbury Castle, Devon which Maxfield (1985, 56) has compared in size to the slightly later *numerskastelle*, at present the closest comparison to Pomeroy Wood is Nanstallon.

This small size may be one of the reasons which it was provided with what may be an outwork, but which is more likely to be an annexe, on its western side. Annexes are certainly or probably known at the sites of Cullompton (Griffith 1984, 13; Simpson and Griffith 1993) and North Tawton (Griffith 1984, 20-5; Welfare and Swan 1995, 54-6, fig. 46).

In many respects the defences of the site are typical of 1st century military bases, double ditched with a cleaning slot at the base of each ditch, and a narrow berm between the ditches and the rampart, which was made of earth and timber. The defences are slightly unusual, though, in the absence of a gate on their southern side. This is by no means unknown, Tiberio-Claudian sites such as Hofheim in Germany and Valkenburg in The Netherlands only have three entrances but in Britain the layouts of some bases with three gates, such as Hod Hill or The Lunt, Warwickshire, are atypical in many other regards. It is possible that the small fort at Bury Barton in Devon only has three entrances (Todd 1985a, 53).

The rampart base at Pomeroy Wood appears to have been very narrow. Despite a careful search, there was no evidence for the base of the rampart, or of any timber revetment to it. However, the distance from the inner lip of the inner ditch to timber building 3545 is *c.* 4m. The evidence from the south-western sites of Nanstallon and Tiverton shows that the berm between the inner ditch and the rampart need have been no more than 0. 5 m. At Tiverton the rampart base was seen to be almost 6 m wide, but at the smaller site of Nanstallon it was only 3.65 m, giving a combined width for the berm and rampart of just over 4 m, virtually the same as at Pomeroy Wood. The lengths of rampart built by the Roman army at Hod Hill are only 3 m wide (Jones 1975, 69-70, fig. 14). It remains possible that the fort originally had a single ditch with buildings 3545 and 4731 laid in relation to that, but that the area was subsequently reduced in size by the excavation of what became the inner ditch. The slot 3229 between the ditches could perhaps be related to an earlier rampart, but there is no certain evidence for this possibility.

Another unusual feature of the defences at Pomeroy Wood is the absence of interval towers or angle towers at the southern corners, set within the body of the southern rampart. These towers might have been expected to have been present (Jones 1975, 92). It may be that the addition of an interval tower (4724) on the inside of the southern rampart was an attempt to partially make good the absence of towers in the original layout, or to provide greater visibility than was possible from a rampart that may not have been as high, or as the walkway as wide, as was then desired (*op. cit.* 69-70; **Fig. 73**). The evidence for tower 4724 might suggest that the interval tower was free-standing, being supported on four posts, but it is possible that there were further posts which were inserted into the body of the rampart but which were not earthfast. If access from the rampart walkway was difficult, it is possible that narrow slot 3495 to the west of the tower represents the base of an access ladder.

It is possible that corner towers were present, pits 4187 and 4315 in the south-western corner, and 4498 in the south-eastern corner could be post-holes of towers, only part of which lay within the area available for excavation. Of these pits, 4198 is comparable in size to the post-holes of tower 4724, though it is oval rather than square in plan and a post pipe was not visible, again in contrast to those of 4724.

The ditch of the outwork or annexe 4715 has a Punic profile, being much steeper, though far from vertical, on its outer, western, face. Although pollen was not preserved to demonstrate this, it is probable that the characteristic greenish clay silts in the ditch are the remains of a turf-faced rampart that was reduced when the site was abandoned.

The orientation of the compounds and enclosures to the west of the base suggests that the road between Dorchester and Exeter was aligned on it, even if the exact course of the road is not known. If, on the west of Nag's Head stream, it is assumed to have been on the line of the northern side of the old A30 dual-carriageway it would run through the south side of a rectangular fort, or the centre of a square one. The building of the length of road between Axminster and Exeter is not closely dated but it may be presumed to have been during the military occupation of the south-west (Maxfield 1986b, 1-8). As the compounds or enclosures at Pomeroy Wood and Gittisham Forge are on slightly different alignments it may be that the road approached the streams crossing on slightly different lines. At both North Tawton (Welfare and Swan 1995, 54-6, fig. 46) and Woodbury (Weddell *et al.* 1993, fig 27) the Roman road appears to pass to the north of the base. It may be that the bases and the road were conceived as a single programme of building.

The internal organisation of the base

Too little of the interior of the base survived to adduce much of the internal organisation of the base. What evidence there is, is for buildings occupying part of the *intervallum*, the area between the rampart stack and the *via sagularis* and which might be expected to have been between 2 and 5 m wide, with the inner edge being defined by a gully. The presence of ovens and pits in this area might be anticipated, the discovery of buildings is more unusual. It is not known if this represents the primary layout of the base at Pomeroy Wood.

Although fragments of what may be buildings are represented by east-west gullies 4058 and 4721, only two timber buildings can be identified confidently, 3545 and 4731. Both fall comfortably within the range of types known from sites of this date,

and the building techniques used in 3545, a construction trench with post-holes set within it, are typical (Hanson 1982). However, there is scant evidence for any internal sub-divisions. The traces of burnt clay around 4731, which was found with considerable quantities of oak charcoal, may be the remains of daub and suggests that this building may have been burnt when the base was given up. Both these buildings are *c.* 8 m wide. There is no certain evidence for internal sub-divisions of these buildings into double rooms, although there are hints of one cross-division in 3545. This lack of evidence for sub-divisions could be construed as suggesting that the buildings are stables, but in view of the difficulties of interpreting complete buildings within bases (Maxfield 1986a), let alone an incomplete plan such as Pomeroy Wood, the temptation should be avoided. Similarly the fact that two buildings appear to have been burnt (below) is insufficient grounds on which to propose any finer phasing.

Some of the pits attributable to the base may have been water tanks; the size, shape and location of 4187, which might be part of a corner tower is also close to features suggested to be water tanks in the cavalry base at The Lunt (Hobley 1975). No buildings contemporary with the military occupation of the base were identified within the area enclosed by the outwork or annexe. There is some inferential evidence from the charcoal for metalworking in the area defined by the ditch. This limited evidence is quite consistent with the variety of uses known, or suspected for annexes (Bailey 1994).

Charcoal from one of the postholes belonging to the interval tower suggests that it may have been one of the timber supports burnt *in situ*, and the same applies to building 4731. What may be hurdling, perhaps from the superstructure of the defences or an internal building, was found in the western arm of the outer fort ditch along with quantities of other charcoal. All of this suggests that the final closing of the base included the burning of some or all of the structures, a well-known Roman military practice.

The garrison(s) of the base

Little information is available about the garrison(s) of the base. Insufficient of the buildings within the base survives to allow more than the statement that they are of

military type, and that the construction details of buildings like 3545 are well-known. There are few finds of military equipment. One of the spearheads (**Fig. 42, 2**) is of a type found commonly on forts thought to be garrisoned, at least in part, by cavalry, while another (**Fig. 42, 3**) may be a lance. The waterlogged materials, particularly from well 3047, shed some further light, showing that horses were stabled or tethered nearby. The beetles are not characteristic of those found in stables and it may be that animals were sometimes tethered at line. Amongst the charred plant remains, the ling may have been used for bedding and the quantities of sprouted grain, particularly from building 3545, which have been used for fodder. While there would have been horses or mules whether as officer's mounts or baggage animals in almost every military base, as Wells has said 'we are again reminded that we need not necessarily expect to find permanent stabling provided for all the animals of a unit, especially one on active service' (Wells 1977, 662), perhaps in the *intervallum* (where well 3047 is sited) rather than stabled (cf.. Glasbergen and Groenman-van Waateringe 1974, 20; Dixon and Southern 1992, 196) or that the occupation was too short lived for these fauna to have inhabited such buildings. However, so few stables have been identified within any degree of certainty within Roman military bases (Wells 1977; Dixon and Southern 1992, 181-94; cf. Schönberger 1975, 58-67, Abb. 13-14), that the most that can be said is that this limited evidence is not inconsistent with cavalry having been garrisoned within the base at some time (**Fig. 73**).

The beetles that infest grain seems likely to indicate the presence of a granary, though this may not have been the only place in which foods for the garrison and the animals were stored (Davies 1989, 52; Dixon and Southern 1992, 214-5). and it may well be that the cereals were stored there before at least some of it, and the chaff from processing and cleaning, was used as horse fodder. The waterlogged remains provide further information about the environment of the fort. The majority of plant species are from arable or pastoral environments, i.e. an open farmed landscape, and all the habitats could occur within a short distance of the base. The floodplain of the Otter valley could have provided grazing and hay, and cereals could have been grown locally or supplied from further afield. The taxa of scrub and heathland could come from uncultivated higher ground to the south, perhaps brought in with bracken for bedding to absorb the manure and moisture.

The grasses from a wide range of habitats and the hay also, represent horse food and the chaff from cereal processing may have been mixed in with some of this, a practice is widely attested amongst the Roman army, although it is possible that some of the chaff was used for bedding (Dixon and Southern 1992, 209). The pollen suggests that grasslands were the most important habitat. Many of the grasses could, of course, have arrived in the base in the horse's gut, having been eaten while grazing beyond the base. The relatively high proportion of taxa characteristic of wetlands suggests that, as might be expected (*op. cit.* 213), the lush grazing of the river valleys was used extensively as the *prata* or meadowland of the base, for the supply of the garrison whether infantry or cavalry was a major logistical exercise (Davies 1989, 52; Hyland 1990, 87-94; Dixon and Southern 1992, 206-17).

This waterlogged evidence is complemented by the charred plant remains from features around building 3545 which include quantities of oats and barley, some of which are sprouted, and are likely to represent fodder. The apparent absence of cereals in the waterlogged remain may be explained by the actions on the digestive system on the cereals in which the starches of the cereals are broken down, whereas the cellular structure of the chromosomes of the grasses passes through the gut.

The context of the military base

The military occupation of the hillfort of Hembury (**Fig. 1-2**), some 3 km to the north has been attributed by Todd to the early phases of the occupation of Devon, which he dates to the early 50s (1984, 261-6). The re-use of existing defended sites by the Roman army in this way is now well-attested, with examples in south-west England known at Hod Hill, Waddon Hill, and possibly Maiden Castle, in Dorset, and Cadbury Castle and Ham Hill in Somerset (Todd 1985b, 195-6; 1987, 189-91; Sharples 1991, 40; Alcock 1995, 170). Despite the play made of the early dating of the Roman occupation of Hembury (Todd 1982; 1984; 1987, 192; 1993) in relation to the foundation of the legionary fortress at Exeter, if Hembury was garrisoned during the early years of the 50s AD, it may be that this had less to do the occupation of areas immediately to the west, than with the exploitation of the Blackdown Hills to the north. At this date it is possible that many bases remained to the east in Devon, even if there was campaigning in modern Devon (Maxfield 1986b; 1987, 14). There is still

some uncertainty whether the fortress at Exeter housed all of a legion, almost certainly II Augusta, or whether part of it was stationed elsewhere, perhaps at Lake Farm, Dorset (Field 1992, 44).

Although Todd has argued that the fortress at Exeter was founded *c.* 50 (1987, 195-6), a date closer to 55 is preferred by Holbrook and Bidwell (1991, 3-6) and Maxfield (1991, 56). It has usually been presumed that most, if not all, of the other Roman bases in the south-west were established in the 50s (e.g. Todd 1987, 197). In fact, few of these sites are well dated, but those at Axminster (where the data are small: Holbrook 1993, 93), Tiverton and Pomeroy Wood appear to have been established in the mid-60s continuing to be garrisoned after the mid-70s, around which time the legionary fortress at Exeter was abandoned.

A number of bases are known in quite close proximity to each other (Griffith 1984, 28). As the sites of Tiverton and Cullompton are only 8 km apart it may be thought unlikely that the two were occupied at the same time. While the base(s) at Cullompton are not well-dated (Simpson and Griffith 1993), the evidence from Tiverton would suggest that Cullompton is likely to be the earlier of the two.

All of those sites lie in eastern Devon, but is possible that bases further to the west were also founded in the mid-60s. The evidence from Nanstallon, Cornwall is as compatible with its foundation at this time (Fox and Ravenhill 1972, 88), as the date in the 50s suggested by Todd (1987, 201). The base at Okehampton in west Devon might also date to the 60s, superseding the base at North Tawton 7 km to the south-west (Bidwell *et al.* 1979, 258). To the north, the Neronian fortlet on the coast at Martinhoe appears to have superseded the Claudian one at Old Burrow (Fox and Ravenhill 1966).

Too much weight should not be put on this slight evidence and inferential arguments, but it may at least be said that it is consistent with Maxfield's suggestion of a redeployment of forces in the south-west in the mid-60s, perhaps in relation to Nero's projected eastern campaigns (1991, 56; see also Holbrook and Fox 1987, 53-5). On this basis, while Pomeroy Wood may have been established after the occupation of

Hembury, it need not necessarily be regarded as the successor to it; there may have been a gap between the two.

The evidence from Pomeroy Wood follows that from Tiverton in some other regards. At Tiverton the defences were remodelled by the rebuilding of at least the western gate in the 70s, and this may have been associated with a redeployment of auxiliary units consequent on the Flavian advances into Wales and Scotland which may well have led to the abandonment of the fortress at Exeter. At Pomeroy Wood one of the buildings was replaced by an interval tower that was added to the southern defences, though there is no evidence for the date at which this occurred. The base at Tiverton was abandoned in the mid-80s, which Maxfield plausibly suggests may have been associated with the widespread troop movements in the western Empire in 86/7 related to the wars on the Danube (1991, 57). The date at which the base at Pomeroy Wood was given up is less well established than that of Tiverton but it does appear to also have been at about this time.

The civil settlements

The nature and extent of the settlement

The civil settlement at Pomeroy Wood stretched along the line of the Roman road for at least 700 m. In the 2nd-3rd centuries (phase 4i) a series of round-houses were built on the site of the former base. Although the houses appear to occur in pairs, it is probable that this represents the replacement of single buildings. To the west a series of compounds were laid out, extending from the single military phase compound next to the outwork or annexe. There is evidence for less substantial north-south aligned divisions on the site of the base which may not have survived in the more truncated western areas of the excavation, and it may be that the buildings, which are *c.* 50 m apart, lay within plots. Whether there were rectangular Roman-style buildings on the road frontage is unknown.

The round-houses has passed out of use in phase 4ii and the area previously occupied by them was used for some industrial activity and the dumping of rubbish. To the west, the compounds continued in use and a number of grain driers were built.

Although no buildings stood in the area of Gittisham Forge that was examined, the extensive rubbish or midden deposits also occur in phase 4ii.

The origin of this civil settlement is not known with certainty, but it seems likely that as with many other settlements it developed around the fort, probably as a *vicus*, and continued after the garrison left (Burnham and Wacher 1990, 7-9). Many Roman roadside settlements with military origins only expanded significantly once the base had been given up (1987, 8-9), which is probably due to the control exercised over *vici* (Sommer 1984). Smith demonstrates that across much of Roman Britain roadside settlements expanded in the later 1st and 2nd centuries, sometime as at Pomeroy Wood over considerable distances before either changing or declining in the 3rd to 4th centuries (1987, 97-104). It is noticeable that there only appears to have been an increase in building in Exeter in the second half of the 2nd century (Bidwell 1980, 69-72). There was clearly a shift in settlement during the latter part of the occupation at Pomeroy Wood where the evidence for occupation in phase 4ii is limited to a handful of features and a wealth of debris; no occupation structures could be identified as originating during this period. There appears to be an expansion to the west of the military base, represented by a higher proportion of features than within the site of the base. The quantity of finds within the upper spreads of material can be attributed to a shift in the location of occupation, possibly concentrated nearer to the roadway, perhaps with the backplots now being used for depositing rubbish.

The only comparable site in Devon is at Woodbury, Axminster, where occupation stretched along the Dorchester-Exeter road for at least 600 m and to a depth of 200 m in places (Weddell *et al.*1993, 76-7). Numerous enclosures were identified in a watching brief and by geophysical survey (Cole and Linford 1993), though apart from what may be *mansio* on the site of the former military base, no buildings have been yet been recognised. The occupation debris dates to the 2nd to 4th centuries, a range that is very similar to that of the civil settlement at Pomeroy Wood. Another parallel from the Woodbury site is the presence of a dark soil layer containing 3rd to 4th century material was noted as overlaying or infilling many features. As at many Romano-British sites, this layer may represent the spreading of midden deposits and the decay of organic materials after the abandonment of the settlement.

At present these two Roman roadside settlements are the only two of their kind known in Devon. On the basis of the evidence presently available it is doubtful whether either can lay claim to having been 'small towns.' Roman period settlement in east Devon is equally elusive. A small number of sub rectangular and sub-circular ditched enclosures, presumably farmsteads are known, for example at Rewe, Clyst Honiton, and Thorverton (Griffith 1994, 95). An enclosure at Pond Farm, Exminster is provisionally dated to the 2nd century AD (Jarvis 1976, 67-71), with aerial photography indicating circular features, possibly roundhouses, although these have not been investigated. Other settlements of Romano-British date are suspected from surface finds at a number of places.

The buildings

Most of the buildings at Pomeroy Wood are round-houses dating to the 2nd and perhaps 3rd centuries. The buildings are represented by two concentric gullies and it appears that the inner of these was a continuous bedding trench that was sometimes packed with stones. The outer gully may be an eavesdrip. Some of the numerous nails and staples found presumably derive from timber buildings, but only a single possible door key were found. There is no evidence for substantial buildings within the area excavated.

Roman domestic buildings are in Devon, the best example being a rectangular timber building at Topsham (Jarvis and Maxfield 1975, 209-66). At Stoke Gabriel (Masson Philips 1966) as an oval stone footing is dated to the 1st century. Undated round-houses, which could be either later prehistoric or Romano-British, were excavated at Honeyditches (Silvester 1981, 47), and gullies and postholes at Milber Small Camp (Fox *et al.* 1949-50). The round-houses at Pomeroy Wood do, however, fit into a well-known pattern in lowland Britain in which round-houses continued to be built well into the 2nd century (Hingley 1989, 30). For example at Catsgore, Somerset, two round-houses (or oval/polygonal houses) date to the 2nd century (Leech 1982, 5-17). At Pomeroy Wood it is uncertain whether any round-houses were built in the 3rd century and by the 4th century the focus of the settlement had shifted. Over much of England they had been superseded by rectangular buildings, though they continued to

be built in Cornwall (e.g. Johnson and Rose 1982, 201), north Wales and Northumberland in the later Roman period.

Four post structures occur frequently on rural sites, as at Topsham (Jarvis and Maxfield 1975, 215-8), and they are usually interpreted as granaries or other stores. The two examples at Pomeroy Wood, 4733 and 4302, are sited within the main area of phase 4i occupation area.

There were no substantial buildings in the area examined but the quantities of stone and tile in phase 4i and the presence of a single possible architectural stone point to the presence of at least one significant building in the area, presumably now collapse or demolished. It is possible that a bathhouse associated with the military base was the source of these. However, quantities of tile also occur in phase 4ii and could represent the continuing re-use of the same materials. Given the nature of the settlement the source seems unlikely to be a villa. Indeed the villa at Holcombe, close to the modern Devon-Dorset county boundary (Pollard 1974) is something of a rarity, though not as much of one as Todd (1987, 221) has suggested (Brown and Holbrook 1989, 38-9).

The suggestion has made for the Devon sites of Bury Barton (Todd 1985b, 54-5, Seaton (Holbrook 1987, 71-2; Todd 1987, 221) and Woodbury (Silvester and Bidwell 1984, 53-4; Weddell *et al.* 1993, 77) that there may have been buildings associated with the functions of provincial government in these settlements. Some of the buildings may have been *mansiones*. These buildings were intimately linked with the *cursus publicus* (which is, after all, the context of the various Roman itineraries discussed below should be seen) and were frequently built on the sites of former military bases (Burnham and Wacher 1990, 12-13, fig. 4). Not too much emphasis should be placed on the styli from Pomeroy Wood or the graffito *Januarius* in this context, as it is clear that literacy was more widespread in Britain than has commonly been appreciated (Evans 1990).

The economic basis

Although the beetles from well 3791 show that domestic animals, perhaps cattle were kept at the settlement, the absence of animal bone makes any assessment of the

agricultural economy of the settlement at Pomeroy Wood difficult, and there are few assemblages of animal bone of Roman date from Devon which might provide some guidance. Some of the numerous grain-driers at Pomeroy Wood were rebuilt on several occasions, crop processing residues occurred widely in the charred plant remains, and several quernstones were found, all suggesting that farming was an important part of the lives of the inhabitants. The drying of a cereal crop before threshing is, however, just one of several functions that a 'corn-drier' might have performed (Smith 1987, 61; van der Veen 1991): roasting of grain, fumigating for insect pests, parching of wheat glumes, or the drying of pulses. An very similar to 988 in its size and form, with an associated ash pit, was excavated within the pre-Flavian fortress at Usk, Gwent (Manning 1989, 146). The single reaping or billhook found (**Fig. 43, 4**) could also have been used for a variety of purposes (Rees 1979; Manning 1985, 55-8).

The quantity of smithing slag suggests that iron was probably imported from the Blackdown Hills to the north (Weddell and Griffith 1996; Reed 1997) although it is difficult to assess the significance of this smithing. Otherwise the range of tools, a few knives, a leatherworking awl, a few needles provide a few hints as to the crafts carried out at the settlement, which are typical of those on a range of Romano-British sites in south-western England (Woodwind et al. 1993, Smith *et al.* 1997, 240).

A wide range of pottery and glass vessels, and up to the 2nd century at least, some Spanish olive oil and French wine were available. In the later phases it is noticeable that the quantity of finewares recovered from Pomeroy Wood is comparable to that of Exeter. This may reflect the fact that the site lies further east than Exeter, closer to the producers and perhaps that the pottery arrived by road rather than by sea. It may also reflect a relatively high status for the roadside settlement, suggested by the presence of the substantial building in the vicinity, and this may also account for what is by Devon standards, a relatively long coin list.

A note on *Moridunum*

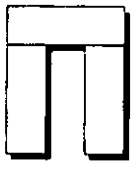
by J. Grove

Three sources refer to a Romano-British settlement called *Moriduno/Moridunum.* The Antonine Itinerary (Rivet, 1970, 60-2), a 2nd-4th century compilation of routes and journeys, twice places it 15 Roman miles from Exeter and 36 from Dorchester (both Iter.XII and XV). The Ravenna Cosmography, an 11th century summary of a fifth century road map, includes four versions of *Moriduno* on the route out of Exeter (Rivet and Smith 1979, 421). The Peutinger Table (Rivet 1970, 45), a medieval copy of a late Roman map, depicts *Moriduno/um* as being 15 Roman miles inland east of Exeter.

These sources suggest that *Moriduno* was extant in the later Roman period, as well as being a fort, '*dunum*', on a Roman road to the east of Exeter. The repetition of *Moriduno* as a road station (Rivet and Smith 1979, 180) between Exeter and Dorchester limits the possibilities for location of the settlement. Cases for the identification of *Moridunum* with several sites have been made previously; for Hembury by Todd (1984, 266) for Seaton by Holbrook (1987, 68), for Woodbury by Weddell, Reed and Simpson (1993, 78), for Sidford by Rivet and Smith (1979,180) and for Fenny Bridges by Todd (1984, 266). All these locations have, in some way, not accorded with the historical context described above. Nearly thirty years ago Smith (1970, 62) predicted a likely location for *Moriduno* as being 'in the parish of Gittisham, near Honiton'.

As far as the fort and settlement at Pomeroy Wood is concerned, its location is consistent with the historical references to *Moriduno*. It is located approximately 15 miles from Exeter, 39 (depending on route taken) from Dorchester, sited on a major Roman road, originally a fort, and with an occupation attested as continuing into the fourth century AD. The place-name evidence is the only part not to fully accord with the location, as it has been interpreted as meaning a 'sea-fort', as at Camarthan

(*Muriduno*) (Jackson 1970, 77). However, Rivet and Smith (1979, 421) point out that *mori* may also be used for inland waters, a 'river-fort' is more consistent with the location of Pomeroy Wood, which overlooks the River Otter to the north, commanding views of the valley to the east and west. The wide flood plain is today often subject to inundation, which was possibly also the case during the Roman occupation.



THE TRUST FOR WESSEX ARCHAEOLOGY LTD.
Portway House, Old Sarum Park, Salisbury, Wiltshire SP4 6EB
Tel: (01722) 326867 Fax: (01722) 337562 E-mail: wessexarch@dial.pipex.com

Registered as an archaeological organisation with the Institute of Field Archaeologists
Registered Charity No. 287786
A company with limited liability registered in England No. 1712772