

◆ Part 4 – The biological and environmental analyses

MARINE SHELL

by E. M. Somerville & J. K. Bonell

INTRODUCTION

This report deals with the marine shell recovered from the excavations. A small amount of marine shell, mostly oyster (*Ostrea edulis*) was recovered. The dating information provided was solely based on the associated pottery. Some of the contexts which produced shell appear from the mixture of pottery (Roman and medieval) to contain residual material, and these are not reported here, but the data are given in the archive. Very little shell was recovered from contexts which are post-Roman in date, and, again, this is listed in the archive but not described here.

METHODS

RESULTS

1. Species Present

For the Roman period (i.e. associated with pottery datable to the 1st to the 4th centuries AD) 7 species of mollusc were found, all edible. The MNI and total shell weight is given in Table 16.

Table 16. Species present.

Species name	Minimum no. of Individuals (MNI)	Total shell weight (g)
Oyster (<i>Ostrea edulis</i>)	794	26100.1
Whelk (<i>Buccinum undatum</i>)	3	26.0
Winkle (<i>Littorina littorea</i>)	9	21.9
Rough or Spiny Cockle (<i>Acanthocardia</i> sp)	1	3.5
Carpet Shell (<i>Venerupis decussata</i>)	2	4.8
Mussel (<i>Mytilus edulis</i>)	2	7.4
Cockle (<i>Cerastoderma edule</i>)	9	13.7

Table 17. Oyster shell from contexts associated with pottery of different periods.

Dating from Pottery	Whole valves		Umbos		Fragments		MNI
	No.	Wt g	No.	Wt g	No.	Wt g	
Pre AD 70	0	0	96	1514.1	72	241.8	57
Other 1st C	4	63.2	238	4363.7	401	885.7	141
1st–2ndC	11	367.5	730	11626.6	1194	2517.5	453
1st–3rdC	0	0	237	3468	367	654.8	129
2nd–4thC	0	0	23	336.6	52	60.6	14
Total	15	430.7	848	21309	2086	4360.4	794

2. Oyster

Oyster dominated the finds of marine shell, and also produced the only whole shells retrieved from the excavations. Although the pottery-based dating does not allow for clear separation of the periods of activity, Table 17 shows the distribution of the shell by this chronology. As well as the overall MNI, the number of whole valves, umbos and fragments are given to give some information on preservation.

Clearly, whole valves are very rare in this collection, and all of these were the more robust right valves. The ratio between whole valves plus umbos and fragments shows some differences between the groupings given here, but this is confounded by differences in the overall size of the samples and the way in which the dating evidence overlaps. Overall, it is clear only that the contexts sampled by these excavations contained shell which was already fairly broken up, either by food processing or by trampling, before it was buried. There were no obvious differences in terms of average weight of umbos or fragments when the different types of contexts (e.g. pits, ditch and other fills, general spreads of soil) were analysed in this way, implying that a similar amount of breakage of the shell had occurred prior to final burial.

The sample of whole valves is very small and therefore is not particularly informative. The modal size was 76–80 mm in length, and the mean was 79 mm (range 5.5 cm–9.8 cm). The average age of the shells was 5 years (range 2–14 years). Forty per cent of the shells showed some distortion of the profile. Overall 31% of all right-hand umbos and 11% of all left-hand umbos showed some distortion of the shell profile.

Infesting and adhering species (see Methods) were noted both for whole valves and all sidable umbos, and Table 18 gives the combined incidence rates for

Table 18. Incidence of infesting species, epifauna and modification of the oyster shell.

Dating from Pottery	<i>P. ciliata</i>	<i>P. hoplura</i>	<i>C. celata</i>	Calcareous worm	Sand tubes	Drillholes	Barnacles	Nail holes
Pre AD 70	28.6%	13.1%	1.2%	-	-	-	-	-
Other 1st Context	22.0%	9.3%	1.2%	-	0.4%	0.8%	0.4%	0.4%
1st–2ndC	22.3%	4.0%	2.8%	0.2%	-	1.1%	-	0.4%
1st–3rdC	17.4%	5.8%	3.2%	-	-	1.6%	0.5%	-
2nd–4thC	17.6%	-	-	-	-	-	-	-

Table 19. MNI of oysters in key contexts.

Context	Comment	MNI
613.2; 613.3	Lower fills of the aqueduct – Phase AC	113
626	Fill of the robber trench of the north flanking wall – Phase AC	33
601; 606	Fills of the disused slots of the timber building – Phase AE	96
598	Lowest levels of midden – Phase AF	149
558	Upper level of midden – Phase AF	86
585	Upper level of midden – Phase AF	77
all other contexts		240

these, in terms of the same division by pottery date as Table 17.

No bryozoans were seen, but this may simply reflect the poor surface preservation of the shell, and the trace levels of many of the other epifauna similarly cannot be taken as clear evidence of their near absence. No adhering shell was found.

Distribution

Table 19 indicates the principal contexts which included significant MNI of oysters.

From Table 19 it can be noted that the majority of oysters were concentrated in some key contexts. These include some early contexts of Phase AC, suggesting that oysters were being consumed at least from c. AD 50 onwards. The greatest number of oysters, however, come from contexts associated with the 2nd century midden, including those contexts filling the disused slots for the timber building, which in effect are the earliest levels of the midden.

Discussion

The lower levels of infestation by *P. hoplura* compared to the incidence of the shallow water polychaete species *P. ciliata* is commensurate with collection local to Fishbourne (Cole 1956; Smith 1987; Winder 1992), probably in and around Chichester harbour, where oyster beds survive to the present at Bosham for example (D. Combes, pers. comm.). The proportion of distorted shell could indicate exploitation of either a wild population or currently unmanaged oyster beds. Natural or aban-

doned beds should also give rise to incidence of adhered shell as spat settles haphazardly on the existing beds, gradually forming reefs. However, no adhering shell was found, nor were any of the shells examined conjoined. Unfortunately, the poor preservation of the shell surface and the generally broken nature of surviving shell makes it difficult to evaluate this apparent contradiction to the interpretation based on the proportion of distorted shells. A further indication that the oysters were not being intensively managed is the mean age, which is towards the upper age range expected by argument from modern farmed oysters (Walne 1974). The mean length of the few complete valves is larger than the 71.5 mm given for Roman period oysters by Winder (1992), but is comparable to the larger oysters from Chanctonbury (Somerville, unpublished data).

A NOTE ON THE SOILS by Richard Macphail ■

INTRODUCTION

The site was visited in August 1995. A representative soil and archaeological sequence was described (Hodgson 1974) from the north baulk of the excavation, whereas deeper subsoils were described from the centre and south-west corner. The courtyard pit (contexts 11, 28 and 29 – Phase AH), drain (context 22 – Phase AH) and a flint and mortar wall (Fig. 179) (context 6 – Phase AB) were also examined and sampled.

pH REPORT

by Patricia Wiltshire & Peter
Murphy 

DISCUSSION

Samples 9 and 10 were obtained from the base of the ploughsoil and top of the subsoil, during the 1995 season, away from the apparent focus of building activity. Both samples were of pH 6.7 ie slightly acidic. The other samples from the subsoil fell in the range of pH 7.2–7.7 i.e. slightly alkaline. The values for the feature fills ranged from pH 7.0–7.7 i.e. slightly alkaline. Although the range of pH seems to be relatively narrow, it must be remembered that because of the logarithmic nature of the pH scale, a unit of 1.0 represents a tenfold change in hydrogen ion concentration. It would seem that occupation and building materials (e.g. lime mortar) have probably had the effect of raising the base concentration of the soil and, hence, pH. The high pH overall and the dry, relatively aerated character of the soils might suggest that preservation of both microfossils and macrofossils would be poor to non-existent. Apart from the occasional fleck of charcoal, no charred organic remains were seen anywhere. This means that on-site environmental analysis will probably be restricted to the soils themselves. However, samples have been taken for palynological assessment (see elsewhere in this publication).

ANIMAL BONE

by Lucy Sibun 

INTRODUCTION

The bone assemblage consisted of 7511 fragments, collected over the five seasons' excavations from 193 individual contexts. These contexts consisted primarily of pits, post-holes, ditches and layers. The size of the assemblage makes it significant, as does the fact that it spans the 1st to 4th centuries, as this permits a study of inter-period change.

The excavations undertaken during the 1995–96 seasons were located over the masonry Building 3, and produced very small assemblages. The assemblage from 1997 is more substantial and although most of the trench was situated over the building, it also incorporated an area to the west encompassing Palace demolition layers and the infilling of the stream. Most bone was recovered from the area to the north of the building, excavated during the 1998 and 1999 seasons, as the following Table indicates:

Table 20. Animal bone quantification.

YEAR	Total fragment count
1995	43
1996	228
1997	752
1998	3004
1999	3484
Total	7511

It was decided that the bone report should concentrate on the material from well-sealed and dated contexts, with emphasis on the Roman period. The material from the unsealed or disturbed contexts including medieval and post-medieval layers was not, therefore, studied in detail. However, even the sealed contexts included do not provide a particularly informative or reliable assemblage. The majority are demolition layers or post-holes, with very few large assemblages from well-sealed pits or ditches.

METHODOLOGY **THE ASSEMBLAGE**

The condition of the bone varied greatly. A few contexts, particularly from the earlier phases of excavation over the masonry building, contained heavily weathered bone, but the majority of the assemblage did not appear heavily weathered. This suggests that it was not left on the surface for long before deposition. The idea of quick deposition is supported by the small quantity of material that displays signs of gnawing by rodents or carnivores. Of particular note is the fragmentary nature of the assemblage, severely limiting the availability of any ageing, sexing and metrical data. This is thought in the most part to be due to the nature of the contexts from which the material was recovered. The degree of post-deposition fragmentation is likely to be increased in bone deposited in contexts such as demolition layers rather than bone deposited in pits. As a result of the fragmentation all calculations have produced small totals for MNI and this should be borne in mind when considering the interpretation based upon them.

The following taxa were identified: cattle (*Bos taurus*); sheep/goat (*Ovis/Capra*); pig (*Sus scrofa*); Equids (Equidae); red deer (*Cervus elaphus*); fallow deer (*Dama dama*); dog (*Canis familiaris*); hare (*Lepus*); small mammal; domestic fowl (*Gallus gallus*); bird; fish.

Table 21. Quantification by phase.

	1st–2nd centuries	2nd century	3rd–4th centuries	Roman	Post-Roman
Cattle	400 (7)	568 (12)	465 (7)	91	79
Sheep/Goat	282 (5)	393 (7)	235 (6)	35	62
Pig	230 (9)	275 (7)	170 (3)	59	10
Equid	21 (1)	14 (1)	175 (4)	99	30
Red Deer	21 (1)	44 (1)	21 (1)		
Fallow Deer		10 (1)			
Dog	3 (1)	6 (1)	4 (1)		
Hare	2	5			
Small mammal	25	52	9		1
Bird	68	20	1		
Fish	25	2	12		
TOTAL	1077	1389	1092	284	182

Of a total of 7511 fragments, 4024 were identifiable to taxa or species. The identifiable assemblage was divided into phases of occupation, 1st to 2nd century, 2nd century and 3rd to 4th century. Several contexts could be dated to the Roman period but not more closely. This material and that from post-Roman contexts has been included in the quantification (Table 21) but is not discussed further.

Data are presented in terms of NISP (Number of identified specimens) with MNI (minimum number of individuals) for the main species in brackets.

Cattle, sheep and pig

The Table below shows the relative percentages of the three main domesticated species by phase in terms of NISP, with MNI and relative percentage MNI in brackets.

Cattle comprise the largest percentage of the 1st to 2nd century assemblage in terms of NISP (43.8%) with sheep and pig forming the next largest (31% and 25.2% respectively). However, the MNI and relative percentage MNI for each species (cattle; 7; 33%, sheep; 5; 24%, pig; 9; 43%) indicate that pigs were better represented than the fragment count would suggest. It is likely that the MNI calculations more accurately reflect the situation and that differential fragmentation rates and preservation have caused the over-representation of cattle and the under-representation of pig. Change is reflected during the

Table 22. Cattle, sheep/goat, and pig by approximate period.

	1st–2nd centuries	2nd century	3rd–4th centuries
Cattle	43.8 (7; 33%)	45.9 (12; 46%)	53.4 (7; 44%)
Sheep/goat	31 (5; 24%)	31.8 (7; 27%)	27 (6; 38%)
Pig	25.2 (9; 43%)	22.2 (7; 27%)	19.5 (3; 19%)

2nd century with cattle seeming to increase at the expense of pig. This trend continues into the final phase with the percentages of both sheep and pig decreasing as the number of cattle increases.

The results are interesting when compared to the animal bone assemblage from the earlier excavations, which encompass the lifespan of the Palace (Grant 1971). In accordance with the present results,

Grant found that cattle were the main meat source and that they increased in relative importance throughout the occupation. The most notable evidence from the MNI totals for this assemblage and one that is mirrored by the NISP, is the significant decrease in the number of pigs from the 1st to 4th centuries. This differs from the earlier assemblage, which found that the quantity of pig was significantly greater than that of sheep (Grant 1971, 379). However, both assemblages do indicate a decrease in the relative importance in pig through the centuries.

In general terms the Fishbourne assemblage does fit with the national trend for civilian sites and in particular romanised settlements and villas. This sees a progressive increase in cattle as sheep decrease (King 1984). King puts forward the process of acculturation and romanisation as an explanation, indicating that those who built and lived in villas preferred more Roman style diets. This increase in cattle at the expense of sheep during the Roman period was also noted by Noddle (1984) who studied changes in livestock from the Iron Age through to the 5th century. This is in contrast to the sheep-dominated assemblages of the Iron Age. It is also noted (King 1984) that the increase in cattle into the 3rd and 4th centuries coincides with the establishment of new agricultural techniques, enabling the utilisation of heavier soils.

Noddle does not note any strong trends with regards to pig. However, King (1984) noted that an abundance of pig reflects Italian dietary preferences. At Fishbourne it is suggested that this reflects the status of the site with the owner's ability to import foodstuffs befitting an Italian aristocratic lifestyle (King 1984, 201). The Roman influence, with the relative importance of pig in the 1st and 2nd centu-

ries and a preference for cattle, is evident in the present data.

EQUIDS

In the 1st–2nd and 2nd century phases equids are only represented by one or two bones in any one context (21 and 14 fragments respectively), and these are from the lower limbs, the skull and trunk. The MNI for both periods is one. Epiphyseal fusion has provided an age of less than 4–5 years for a equid in the 1–2nd century and dental data have provided an age estimate of 3 years + for the equid in the 2nd century. Metrical data was unobtainable.

The Table below shows the calculated MNI for equids for a selection of elements in the 3rd–4th century assemblage.

Table 23. MNI for 3rd–4th century.

	Equid
Mandible	3
Scapula	1
Humerus	0
Radius	1
Ulna	1
Metacarpal	4
Pelvis	4
Femur	4
Tibia	2
Calcaneum	0
Metatarsal	0
Phalanx I	0

The 175 fragments from 3rd–4th century contexts provide a MNI of four. However the large fragment count is in part due to the partial skeleton recovered from context 909 (the northern pit in Area B - Phase BF), which accounts for approximately 35% of the equid material. Dental data and epiphyseal fusion data provide an age estimate of 4 years +.

The one complete metacarpal measured as follows;

greatest length	210 mm
proximal breadth	50.5 mm
distal breadth	47.8 mm

The greatest length measurement compares well with other equids of the Romano-British period (Luff 1982, 136, 165–6) and suggests a pony-sized animal.

The remaining fragments mostly comprise cranial fragments and loose teeth, but other parts of the skeleton are present. No concentrations of equid material were noted in any other particular contexts and there is no evidence to suggest that the remaining fragments were partial skeletons or articulated limbs

Butchery is suggested by a single 1st- to 2nd century fragment, a cervical vertebra, which has been sliced through axially. A 2nd century radius has been split longitudinally which may suggest marrow extraction. However, the presence of the partial skeleton with some of the main meat joints present indicates that the equid was not always eaten.

Dog

Dog are only represented by thirteen fragments. The majority of the fragments recorded are teeth or mandibles and metapodials. The metapodials are fused suggesting animals of 10 months or more, but the dentition of one animal of the 2nd century suggests a probable age of 5–6 months. Metrical data were not available.

Wild mammals

Red, fallow and roe deer were all identified. Roe deer, however, are only represented by a single fragment in a non-securely dated context. The data from the earlier excavations would suggest that a larger quantity of roe deer might have been expected. It is possible that they are present in the unidentifiable fragments.

Red deer are represented in all three periods primarily by limbs, metapodials, antler and teeth. All fragments are from mature animals. Assuming that these animals were hunted, it would appear that they were brought back to the site complete. In accordance with the assemblage from the earlier excavations (Grant 1971) only small quantities were recovered, suggesting that they were not a regular food source.

Ten fragments of a single antler represent fallow deer. Sykes (forthcoming) has recently undertaken a study of the introduction of fallow deer to Britain. Rather than being introduced by the Romans, it would seem that their remains are a result of trade. The shed antler recovered from this site would seem to fit this picture.

A total of seven fragments were identified as hare and this was the only small mammal noted.

Other

A total of 89 bird fragments were recovered. With the exception of domestic fowl the bird fragments were not identified. Domestic fowl constitute approximately 36% of the bird assemblage and limbs form the majority of the assemblage. Spurs, indicative of males, were noted on half (2/4) of the tarsometatarsi present.

The 39 fish fragments were all recovered from soil sample processing, but were not identified. The small quantities present may be a result of their fragile nature and the on-site preservation conditions and recovery techniques. A lack of fish bones was noted in the earlier assemblage (Grant 1971, 378).

Worked bone

A single fragment of bone recovered from the 2nd century aqueduct (context 613) shows signs of working. A splinter from a large mammal long bone shaft measured a maximum of 107.1 mm in length and 10.4 mm in width. The splinter tapered at one end to a rough point and saw marks are evident across both ends of the fragment. It does not appear to resemble a finished tool, but instead an abandoned attempt at making something.

PATHOLOGY

BODY PART DATA

AGEING DATA

It was only possible to provide an approximate age for 16 cattle, 24 sheep and 20 pig mandibles. There are insufficient data to permit a meaningful study of any sort, but the results are summarized.

CONTEXTUAL ANALYSIS

There are few large contexts in the assemblage but the largest from each period are outlined below with a discussion at the end.

1st century; Pit 918 (Area B)

Although only 81 bone fragments were recovered from this feature, it is the largest of the period and is included for that reason. Cattle, sheep, pig, equid and bird were identified in this context. The relative proportions of the main meat species closely match those of the overall 1st- to 2nd century picture for this assemblage (cattle 46%, sheep 34%, pig 20%), but cattle and sheep are both slightly increased at the expense of pig. Ribs and mandibles dominate the cattle assemblage. This is in contrast to the general picture, which, although dominated by mandibles and metapodials, also contains a quantity of meat-bearing elements. The picture for sheep and pig conforms to the rest of the 1st- to 2nd century assemblage with both meat and non meat-bearing elements represented. Very few fragments represent equid and bird.

Later 2nd century, lower midden layer 598 (Area A)

This context contained 175 fragments and cattle, sheep, pig, equid, red deer and small mammal were all recorded. Of the main meat species there are 42% cattle fragments, 36% sheep and 22 % pig. This shows a slight deviation from the overall 2nd century assemblage with an increase in sheep of 4 % and a corresponding decrease in cattle. The skeletal representation matches the general 2nd century picture for this assemblage with all parts of the skeleton represented, but the skeletal extremities more abundant. Equid, red deer and small mammal are only represented by one or two fragments.

Later 2nd century, upper midden layer 905 (Area B)

A total of 161 bone fragments were recovered from this context and cattle, sheep, pig, equid, red and fallow deer, dog, small mammal and bird were all identified. Of the main meat species there are 51% cattle fragments, 31% sheep, and 18 % pig. This shows a 5% increase in the percentage of cattle and a corresponding decrease in the percentages of sheep (1%) and pig (4%) when compared to the overall 2nd century assemblage. The skeletal representation of the three main food species conforms to the 2nd century picture as outlined above.

Few fragments represent equid and dog. Red and fallow deer are represented exclusively by antler fragments. The fallow deer antler appears to have been shed, but this evidence was not available for the red deer fragments. In both species however, only one individual is represented. The bird fragments have been identified as domestic fowl.

Earlier 2nd century, lower midden layer 907 (Area B)

A total of 186 fragments of bone were recovered from context 907 and as well as the main meat species, equids, red deer, small mammal and bird were present. In contrast to the overall picture for this period of occupation, pig form the largest percentage of the three main food species (35%) with cattle and sheep closely following (34% and 31% respectively). The skeletal representation data do, however, conform to the 2nd century picture with the majority of the pig assemblage formed by skull fragments and lower limbs, but with the rest of the skeleton also represented. Ribs dominate the cattle and sheep assemblages with bones from the skeletal extremities also common. Least common are long bones. Small numbers of red deer, small mammal and bird fragments were recovered. Three of the nine bird bones recovered are from domestic fowl.

3rd century, pit 909 (Area B)

The 119 fragments recovered from this context were identified as cattle, sheep, pig, equid and dog. Of the main meat species cattle represent 56%, sheep 21% and pig 23%. Whilst this large percentage of cattle does mirror the 3rd- to 4th century picture for this assemblage, the percentage of pig shows a 4% increase with a corresponding decrease in the quantities of sheep. Almost half the identified fragments in this context were equid, but this is due to the presence of the partial skeleton recovered (discussed above). No particular parts of the cattle skeleton dominate the assemblage and all are represented. A similar spread of material is available for pig and sheep but the numbers of fragments involved are considerably less. These data conform to the general 3rd-to 4th century picture for this assemblage.

DISCUSSION

As has been stressed throughout this text, there are few large or well sealed and dated contexts in this assemblage so the information available for meaningful contextual analysis is minimal. The 1st century context outlined above is dominated by the three main meat species and the quantity of equid, bird, small mammal and fish remains is small or non-existent. This is in contrast to the general assemblage which contains larger quantities of small mammal, bird and fish. Of the three main species the skeletal extremities are most numerous perhaps suggesting that these deposits represent primarily butchery waste. This and the lack of other species may imply that this context was located in an area set aside for large-scale butchery. The presence of cattle, sheep and pig suggests that butchery areas may have been general rather than given over to a particular species.

The 2nd century deposits seem to conform to the overall picture for this assemblage with a slight distinction maintained between the meat and non-meat bearing elements of the cattle, sheep and pig skeleton. The only significant difference in the proportions of different species is the abundance of pig in context 907. However, with the exception of context 905 containing the red and fallow deer antler, these contexts are still dominated by the main meat species with other mammals less well represented than the general picture would suggest. As above, this suggests a specialised butchery area. The 3rd century context does fit the general picture with less small mammal, bird and fish dating to this period.

This and the presence of the equid skeleton suggests a more generalised deposition area, probably at some distance from the centre of activity.

Some general trends can be seen in the current assemblage, but its fragmentary nature and the limited data which resulted should be borne in mind. Cattle increase in abundance from the 1st to 4th centuries with a corresponding decline in sheep and pig. This illustrates the impact of the Roman influence and the inclination towards a Roman-style diet of those who built and lived in villas (King 1984, 190).

The minimal ageing data available, in particular the lack of juveniles, suggests that this was a consumer site. It would also seem that the animals imported to the site were at the age for providing prime meat. Indeed, a site of such status would be expected to be able to afford the best quality produce. A slight change is seen towards the 3rd and 4th centuries with an increase in the numbers of mature animals. It is possible that this could reflect a change in demand, availability or use for the animals and corresponds with the decline of the Palace.

The presence of waste from primary butchery processes suggests that the animals were brought to the site on the hoof rather than as ready-butchered joints. The data available from the largest contexts studied would suggest that this butchery was undertaken in specialised areas. There is evidence for skinning, dismemberment and jointing of the skeletons, but of the bones showing signs of butchery, the highest proportion are long bones of all species which have been split longitudinally. This is likely to represent an attempt to extract the bone marrow for use in food preparation.

With the exception of the partial skeleton recovered, the equid remains from the site were not numerous. These animals are likely to represent transport rather than food, although a split vertebra and radius suggest that some butchery did take place. The diet was supplemented with red deer and hare. It is likely that hunting would have been a leisure activity for the occupants of a high-status site. The small quantities of red deer present actually seem to be quite large when compared to other Roman sites (Luff 1982) but MNI totals remain small. The fallow deer remains do not appear to represent food but are most likely to represent trade in raw materials for antler working (Sykes forthcoming).

The diet was also supplemented by fish, bird (including domestic fowl) and probably small mammal. These remains are most abundant in the earliest

phases of occupation. It is possible that the relative lack of these taxa in 3rd- to 4th century contexts is a consequence of the contexts available for study rather than their dwindling popularity. The 3rd- to 4th century assemblage seems to contain a large proportion of butchery and general waste as opposed to kitchen or food waste.

In summary, the Fishbourne assemblage does conform to the general picture of a Romanized civilian settlement or villa. The high status of the settlement does appear to be reflected in the assemblage. It is a consumer site, displaying a preference for a Roman-style diet and importing the best quality produce.

TABLES

CHARRED PLANT REMAINS

by Ruth Pelling 

DISCUSSION

The charred cereal remains add to our knowledge of cereal cultivation and processing derived from the analysis of material from the 1985/6 excavations by Wendy Carruthers (1992). Spelt wheat and possible bread type wheat (cf. *Triticum aestivum*), hulled barley and oat (*Avena* sp.) were identified, although the oat could have been wild. The assemblages were interpreted as a mixture of cereal product and processing by-product, much of which had derived from possible manuring, perhaps originally from kitchen waste. The 1995–99 samples fit this pattern,

and add emmer wheat, plum or bullace and possibly lentil to the economic species list.

The economic species present are well-attested for the Romano-British period. Spelt wheat tends to dominate deposits of this period while the role of free-threshing wheats is not clear at present and identifications based on grain alone must be taken as tentative. Emmer wheat has now been recorded on several Roman period sites in central and southern Britain, such as Tiddington (Moffet 1986), or Barton Court Farm (Jones & Robinson 1984) and in very large numbers from a site at Mansfield College in Oxford (Pelling 2000). Barley is consistently present on sites of this period, while oats may have been cultivated in some areas, although may have been present as weeds of the major cereal crops. Cultivated legumes tend to be poorly represented in charred assemblages owing to the reduced chance of their coming into contact with fire. Both broad bean and pea were well-known by Roman times. Lentil is also recorded from Roman sites, and is likely to be an import from the Mediterranean, perhaps a reflection of the high status of the site.

The deposits are generally suggestive of small-scale background scatters of redeposited cereal processing waste. This includes occasionally damaged grain mixed with the chaff and weeds. With the evidence from previous years taken from the garden features, they suggest that some degree of cereal processing was taking place prior to cooking/consumption, although the scale of processing is not clear.