

Lepcis Magna Excavations

Preliminary Report
1997

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The 1996 Excavations at Lepcis Magna:

by Hafed Walda and Keith Wilkinson, with contributions from Sally Anne Ashton, Paul Reynolds, Jane Sidell, and Isabella Welsby Sjöström

1. Introduction

The 1996 season at Lepcis Magna was largely successful, with excavation being completed on the 4th / 5th century, stone built, atriumed house we had investigated in 1994 and 1995. We also confirmed our hypothesis of 1995 that a mud brick house dating to the 1st century underlay the later structure.

We received a warm welcome from the Department of Antiquities in Tripoli, and enthusiastic support from the Controlship of LebDAH (Lepcis Magna). They were all pleased to see us representing the Society of Libyan Studies in conducting field work with Tripolitania. This year the society was represented by two projects in Lepcis Magna; the Lepcis Magna Excavations (this project), and the survey of Nigel Fradgley.

2. Team Members:

The following people comprised the British part of the excavation team:

Sally-Ann Ashton	Registered Finds	King's College London
Kimberly Beaufile	Architectural Elements	University College London
Ian Blair	Senior Archaeologist	Museum of London Archaeology Service
Franca Cole	Conservator	University College London
Philip Frickers	Archaeologist	Pre-Construct Archaeology
Georgina Garrett	Conservator	University College London
Michael Halliwell	Photographer	University College London
Carrie Matthews	Archaeologist	King's College London
Adrian Miles	Senior Archaeologist	Museum of London Archaeology Service
Dr. Paul Reynolds	Pottery Specialist	Archaeological Consultant
Jane Sidell	Bone Specialist	Museum of London Archaeology Service
Dr. Keith Wilkinson	Site Co-ordinator	Cotswold Archaeological Trust
Isabella Welsby Sjöström	Pottery Specialist	Archaeological Consultant
George Wilson	Surveyor	RCHM(E)
Dr. Hafed Walda	Director	King's College London

In addition we employed two local foreman and ten workmen to deal with the heavy aspects of site work and various museum employees who assisted with the finds work (see Appendix 1).

3. Progress in 1996

This year's activities were a continuation of phase 2 (field work) of the project started in 1994 / 1995. Resources were directed towards site data collection, combined with an assessment of the material recovered from all three years of excavation (both artefactual and biological) to establish its archaeological potential. These assessments have yet to be completed as they require some background research in Britain. However, once completed an integrated assessment document will be produced prior to the 1997 study season. An essential part of this process will be frequent meetings of the investigative team. We have, however, completed the project archive for the excavations carried out so far and have copies of all record sheets, plans, drawings, and reference collections of various classes of remain in Britain

4. Potential future areas of study

The results of our studies in 1996 suggest the following areas of future research

1. Theoretical reconstruction of the building is possible due to the presence of highly detailed stratigraphic data. The detailed plans and records will make it possible to study the different phases of the house.
2. The relative chronology of site is of sufficient quality to allow a use of the sites ceramic sequence as a regional type sequence.
3. Water supply and storage containers are well represented on the site, and their study presents a unique opportunity for understanding how hydrological resources were used in Lepcis Magna.
4. The distribution of different types of pottery within the building will allow a chronology for construction and abandonment to be developed.
5. Data from palaeoenvironmental samples and the study of animal bones has provided a so far unique opportunity for studying the economy of Lepcis Magna, particularly with the discovery this season of the first waterlogged remains of Roman date to be found in North Africa (see below).

5. The 1996 excavation

The main intention of the 1996 season was to expand the excavation area of 1994 and 1995 so that encompassed the whole of the 4th / 5th century house. The layers which covered the 1996 trench extension were found to consist of the same erosional debris and reworked sediments found in previous seasons. All these deposits consisted of 4th century and later artefacts. It seems that the whole area west of the theatre suffered from selective stone robbing since at least the 1930's as large quantities of stone from the southern walls uncovered from the 1996 excavation were found to be missing. Robber trenches were located in association with much of the southern wall and included in one of them a coin of 1962. It seems that all the robbed stones were of sandstone and of sizes that could be comfortably carried by animals. Some larger sandstone blocks and a great deal of limestone were found adjacent to the southern wall and probably represent discarded material, too heavy to carry.

Once we reached the archaeological layers the sheer volume of finds became apparent. These rich areas were encountered over much of the extended area, but particularly over the street to the North, over the flagstone floor in the NE room and to the SE of the building. Unfortunately the large quantities of artefactual material could not all be studied this year, but the majority of the contexts have nevertheless been spot dated. These spot dates are discussed in further detail in Appendix 1, but it appears that the later stone building dates to the middle 4th century and all material contained within them is of 4th and 5th century date. Beneath the stone building a mud brick predecessor was found, contained within the same stone outer walls. The mud brick internal walls follow the course of the stone walls in the majority of cases, and are found directly below them. However, in certain cases - notably the north-eastern room - mud brick walls are found in totally different locations, and even in different alignments. Ceramic dating of deposits associated with the mud brick walls indicate that this structure was in use during the 1st century, but had been abandoned by the beginning of the second century. There is thus a hiatus on the site of over 250 years.

The excavation this year confirmed that the northern facade of the house lay on one of the streets emanating from the theatre piazza. Its western boundary may also lie of a north south street, although this was not found in the present campaign. The eastern limits of the house were marked by a thick dividing wall with a great deal of plaster on both faces. This feature presumably separated the investigated building from a similar structure. The southern limit of the house was found in the extension trench in the form of a thick limestone / sandstone wall. To the south of this further north - south walls were encountered suggesting the presence of a further building..

6. Water storage

As stated in last years interim report three water storage features were found; two cisterns (one 5.5m deep and the other 8m deep) and a well (13m deep). All three of these features were investigated further during 1996.

a. The western cistern

This was completely emptied of sediment (very few artefacts were found), and planned in detail. The plans were augmented by several profile drawings. Diatom samples were taken from both the cistern chambers and will be studied during 1997 to determine the properties of water in the cistern during its use (salinity, pollution, origin etc). The cistern extends a total of 6m in a north-east to south-west direction.

b. The eastern cistern

This cistern of 8m depth was completely excavated, although once more few artefacts were found. The cistern was also planned in detail, profiles drawn and diatom samples were taken. A further study was made of paint and mud marks on the cistern wall, and it was found that a complex stratigraphy of marking exists. These probably formed during cleaning of the cistern, although a hypothesis of "mud fighting" has also been suggested. Tide marks within the cistern suggest that periodically water was of very poor quality - a hypothesis we hope we can confirm by the study of diatoms.

c. The well

Last year it was determined to be too dangerous to enter the well. This year we took out climbing equipment and two of us made a study of the feature. We found that the well had been bored through a previous cistern, suggesting that the well itself is a very late feature. The cistern was approximately 5m below ground surface. Sediments at the bottom of the well were of great interest. The initial fills were obviously post abandonment erosion deposits, but below them at a depth of 12.5m below ground surface we encountered a waterlogged deposit. Large samples were taken from this material, which is we believe the first waterlogged archaeological context found from North Africa. The samples produced large quantities of waterlogged wood and vast amounts of seeds, olive stones etc. The samples are currently being studied in Britain.

All drawings of the water storage features have been digitised and a CAD model is currently being developed in order to determine how much water could be retained in each.

7. Conclusions

We believe that our 1996 investigations at Lepcis Magna have been the most successful yet, and a remarkable series of discoveries made. We envisage the 1997 season to be largely a study of the collected material, with limited further fieldwork. Following completion of the fieldwork in Libya in 1997 we will begin work on publication. We see this as being in three forms:

- a. A monograph detailing the results of the excavations
- b. A CD-rom covering the same material as a. but in greater detail and using multi-media technology
- c. Articles written by the various specialists on particularly interesting data recovered during the excavations.

Appendix 1. Ceramic studies

Paul Reynolds and Isabella Welsby Sjöström

1. Introduction

During the 1996 season (starting work on the 3/9 and returning the finds to store on the 28/9), two persons worked full time on recording the pottery from the excavation. It was agreed that Paul Reynolds would deal with the amphorae and fine wares, while Isabella Welsby Sjöström would record the coarse wares. Additional help in the processing of the large numbers of pot sherds was given by two pot washers, an occasional pot marker, and a trainee draughtsman, who drew a number of the coarse ware type series. A team of trainees from the museum reconstructed a number of partially complete bowls, flagons and amphorae. In addition we were training two employees of the Libyan Antiquities Service to draw pottery.

Otherwise pottery work in the 1996 season at Lepcis Magna comprised

a) A full classification and quantification (Rim, sherd, base, handle count, weight and estimated vessel equivalent percentage/EVE) by form and fabric of selected well stratified deposits with clear low residuality. Several hundred drawings of pottery were also completed with a view to full publication (Contexts 180, 155, 157, 208, 157/209/104, 221, 223, 227, 230).

b) Spot dating of almost all contexts excavated this year, with more limited recording of key elements and separation of sherds for projected further analysis and drawing in the 1997 season. Some of these contexts merit full recording for full publication. Some of this pottery was also drawn.

2. Results

Time and the sheer volume of finds, particularly from extremely rich contexts such as 248, 239 and 249 (deposits overlying the northern street), 223 over the flagstone floor in the NE room and 209 to the SE of the building did not permit us to study all the contexts in detail, but we have made some considerable progress in this respect, while the majority of the contexts have been spot dated. In addition, Paul Reynolds will be publishing the pottery assemblage from layer 180, but in summary the following comments can be made:

1. Several early Imperial Roman assemblages were identified. These indicate that the earliest levels excavated so far date to the 1st century AD (Augustan to mid 1st AD, in the main: Contexts 165, 180, 231, 267). The latest early group must date to c.AD 80 according to the coin evidence (Context 256). African Red Slip Ware (ARS), from Tunisia, was notably absent from all early contexts.

Context 180, a large group of the first half of the 1st Century AD, was fully recorded and will be submitted for publication (by myself) early next year. Fine ware imports

included Arretine, Eastern Sigillata A, Cypriot Sigillata, Neapolitan Sigillata (formerly known as "Tripolitanian Sigillata") and Italian thin-walled wares. The context is important as it provides well dated examples of Tripolitanian and Tunisian amphorae. A few Campanian products were also present. The forms and fabrics of local and imported (South or Central Tunisian, and occasionally Italian and Pantellerian and an unprovenanced slow-wheel made ware = Fabric 50) were well recorded and provide a good indication of the range of plain and cooking wares of the period. The rarity of Pantellerian ware should be noted and contrasted with its much higher frequency at Sabratha in late Republican-1st C AD levels. Presumably Fabric 50 was a more closely located, alternative, cooking ware source.

The absence of Republican period black glazed wares (i.e. Campanian and related wares), even as residual material, is important as evidence for the, presumably, Augustan date of the earliest levels on the site.

Therefore context 180, in the so called 'Chariot Room', dates to the first century AD, and the excavation of layers 267, 268 and 269 in the last few days of the season in the NE corner of the building (under the stone floor) has given us similar dates for layers that similarly pre-date the stone building. These may be associated with the mud-brick walls that obviously belong to an earlier building altogether. It is interesting that we have so far found no 2nd or 3rd century contexts, but that there seems to be a gap between first and 4th/5th century occupation in the area. Possibly the earthquake of AD 365 laid waste the area to such an extent that subsequent clearing work prior to the erection of the stone building removed all trace of the 2nd and 3rd century deposits. The central location of the insula would surely preclude that it was uninhabited during Lepcis Magna's heyday.

The fine wares from floor/occupation deposits such as 209 in the SE corner of the building consistently date to the second half of the 4th century, occasionally stretching into the first half of the 5th. The date range of the amphorae sherds would allow for a later date still, but more detailed analysis of the data still needs to be carried out before this can be confirmed. The coarse wares appear to agree with a 4th/5th century date, but good parallels for many of the forms cannot always be found. It nevertheless seems probable that a good type series of coarse ware forms may be established in association with the better known amphorae and fine ware types. Layer 223, which overlay a fragmentary stone floor dated to the late 4th/ early 5th century, but a complete one handled jug (LM form 830x) found in a corner not covered by the stone slabs is of 1st century date. Two virtually identical jugs, both in terms of form and fabric, were found at Sabratha (cf LA XV-XVI, 1978-79, 'La tomba del 'defunto eroizzato' a Sabratha', by Giума Mabruk, Antonino Di Vita, Giovanni Garbini, pp 45-46, 50, figs 5-7, pl IV c), which on parallels from the tophet at Sabratha seen to be convincingly datable to the 1st century AD. The complete glass bottle found near the jug presumably has a similar date.

Fabrics noted elsewhere in the later contexts are discussed in the notes that follow:

1. The majority of activity on the site is late Roman. Two contexts differed in their composition from the rest and should date to the early-mid 4thC, Contexts 208 (with early to mid 4thC ARS) and 230 (with the only example so far of Riley MRA 1).

Contexts of probable late 4th rather than 5th century date were Contexts 81, 82, 100, 103, 144, 168/171, 149 (ARS 61A/B).

2. Contexts dating to the first, or possibly second, quarter of the 5thC were Contexts 104/157/206 (Keay XXXV), 225 (91B), 209/155 (LRA 5), 223 (ARS 81), 239/250 (Keay XXXV). Fifth rather than 4th century contexts were Contexts 113, 126, 138, 199?, 221?, 248. Contexts of the second quarter of the 5th or mid 5th century were Contexts 92 (ARS 84, joins 60, 114, 73: AD 430-475), 227 (ARS 61B).

3. In late Roman levels fine wares comprised Tripolitanian Red Slip (TRS) forms 2-5, and occasionally 1. A smaller number of ARS of Central, South and North Tunisian origin (forms 53, 63, 66, 67, 68, 72, 81) were present.

4. The absence of most classic 5th century Vandal Tunisian forms should be noted: e.g. ARS 73, 76, 77, 79, 82-87 (one example of 84). Late 4th-6th century flanged bowls ARS 91A-C were also absent, as were flanged bowls generally, with the exception of one example of ARS 91B in Context 225. Vandal Tunisian amphorae of c.AD 450+ date such as Keay LV, LVI, LXI and LXII were also absent, whereas there were several examples of Keay XXXV for which a date of c.425-500 has been suggested (Reynolds 1995).

5. There was one context of later, probable mid 6th century date (presence of a local TRS version of ARS 101): Context 125.

6. A deposit sealing the street to the immediate North/seaward side of the site may date to the mid 6th century on the basis of a TRS copy of ARS 99B (Context 263). An example of ARS 61B of c.425-475 date was also present. Note that the Cisterns 207 and 208 were sealed at the same time as there are joining sherds of Jug form 768x.

7. A regular component of the amphora assemblages of late 4th/5th century date were examples of East Sicilian or Calabrian Keay LII (Fabric 102a-c) and a so far unclassified form which may well be of Neapolitan origin (in Fabric 49). Three examples of an unclassified amphora import with a narrow body and wide ribbing and several other distinctive, unclassified/unprovenanced forms were also found in well dated contexts.

8. Fifth century amphora imports from the eastern Mediterranean were quite common in some of the levels and comprised, principally, LRA 2, LRA 3, and LRA 1 (in three fabrics), with one example of LRA 5. The absence of Gazan LRA 4 was a surprise as it is extremely common in late 4th-5th century levels elsewhere in the western Mediterranean.

9. The most common amphorae in late contexts were of Tripolitanian origin, in several fabrics. The assemblages will now offer a rare chance to study the range and fabrics of these local/regional, products. Indeed, a good number of complete or near complete amphorae were recovered.

10. Late 4th-5th century coarse wares included Pantellerian ware. Sardinian Fulford HM 32 was absent as are examples of Carthage LRCW II and III (not necessarily due

to their later date). The degree to which coarse wares are of (Central-South) Tunisian rather than Tripolitanian origin does need to be addressed (and should parallel work on the origins of the amphorae). One fragment of Murcian cooking ware Reynolds Ware 2C ware was noted (5th century: Reynolds 1993).

11. The pottery from the wells and cisterns is late, dating to the late 4th/5th centuries, possibly even later. Similar flagons in a buff fabric were found in two of the cisterns, the western and the eastern one (Lepcis form type 707x). Interestingly, the rim and neck of a two-handled flagon, similar to Riley 1979 form 1205 (Late Roman) was found to have conjoining sherds in contexts 249 and 263, which overlie the paving stones of the street (?) to the north of the house. The layer immediately over the street, 263, dates to the second quarter of the fifth century, and it thus proves that the well to the east was still open at the time.

3. Conclusions

One of the striking aspects of the Lepcis 1996 season has been the recognition that the site offers a good number of well stratified contexts of 1st century AD and late 4th-c.450 date, with little residuality. These will aid the definition of ceramic types (local and imported) for these periods. It is hoped that a revision of later, post AD 450, contexts will provide a similar quality of material.

As I have tried to show, it is the absence, as well as the presence, of key imports that will illustrate the role of Leptis in the overall complex pattern of regional and interprovincial exchange within the Roman Mediterranean. The links of Leptis with specific cities or regions is already becoming evident (Carthage and other regional Tunisian ports; Rome-Naples-Sicily; the Eastern Mediterranean). In contrast, the absence or rarity of certain imports will help to establish the extent to which the port was bi-passed by trade linking other major ports (e.g. the extent to which Carthage, Sabratha, Benghazi and Leptis differ in their respective imports and sources of Eastern amphorae and South-Central Mediterranean cooking wares).

4. Future work

During next years' study season we envisage finishing recording of the contexts that we have provisionally dated, complete the drawing of the type series, and leave a study collection with the museum at Lepcis. The help of an assistant to sort, mark and draw some of the pottery would be useful, but we are otherwise on course to finish the study of the material next season. We hope to bring back specific fabric samples for thin sectioning and chemical analysis next year, to establish the provenance of some particular amphorae types.

More specific objectives of the study season will be:

1. Fabric samples were taken of all rims and distinctive but unprovenanced body sherds for future analysis (with a binocular microscope) to define local and imported fabrics. This work will be combined with visits to local Tripolitanian amphora kiln

sites (e.g. at Tarhuna) and my projected visits to sites in Central and Southern Tunisia in June 1997 (when I shall be working at Carthage).

The definition of North, Central and South Tunisian amphorae and coarse wares and their distinction from Tripolitanian products will be the principle aim of this work. Indeed the role of South and Central Tunisian exports to Leptis is an important subject that needs to be addressed.

Furthermore, I already have a large number of fabric samples for comparative work from Carthage, Beirut and sites in southern Spain. One simple, but significant task, for example, will be the comparison of fabrics of examples of one amphora type from the eastern Mediterranean - Late Roman Amphora 1, known to have been produced at numerous centres in south-eastern Turkey, north-western Syria and Cyprus. Preliminary observations would suggest that there are major differences in the sources and supply of LRA 1 to these sites.

It is also one of the goals of the following season to sort out the general confusion over the origins of certain mid to late Roman amphorae of similar morphological and fabric traits that are connected with the Rome/Naples-Sicily-Tripolitania grain and oil shipping route: e.g. Riley Mid Roman Amphora 1, MRA 2 and Keay LII. A good number of complete examples of all of these are to be found in the stores of the Dept. of Antiquities at Leptis and a systematic analysis of these would be an obvious help.

2. The full recording and drawing of selected deposits for full publication will be a priority in 1997. It will also be necessary to review the pottery processed in 1995.

List of spot dates of various contexts studied during the 1996 season:

81	4 th -5 th C
92	425-475
100	4 th
104	5C AD (but several joins with 157)
115	mid Roman to 5 th century (joins with context 209)
121	4 th /5 th
126	4 th /5 th
138	4 th - 5 th , most likely 5 th
144	late 4 th , early 5 th
145	4 th to 6 th
149	basically 5 th , but with residual from 1 st (contexts 180,182,152)
155	Late 4C, early 5 th
157	1C AD; also some 4 th
165	early 1 st
166	4 th
168	4 th to 5 th , (joins with context 171)
171	4 th /5 th , (joins with context 168)
179	2 nd -4 th century cooking ware dish.
182	1 st
192	4C+
199	5 th
200	No date (this was the mortar from the eastern well head)
206	Joins with 157; nothing particularly datable
209	did to late 4 th
212	4 th , 325-400
225	late 4 th , max. 5 th
231	first half of the 1 st century
232	5 th
233	4 th / 5 th
238	Late 1C BC-1C AD
239	2 nd half of 4 th ; also a possible 7 th century sherd.
248	5 th
249	late 4 th , early 5 th (join with 207/208)
250	2 nd quarter of 5C; joins with 249
254	1 st half of 1 st
256	late 1 st BC, first third of 1 st AD
263	second quarter of 5 th
264	1 st
267	1 st BC to Augustan
268	first half 1 st century AD

Appendix 2. Registered finds: some initial results

Sally Anne Ashton

1. Introduction

This season saw a greater emphasis placed on the finds than in previous years and care was taken not only to register incoming objects, but also to study the existing material in more detail. During the study season in 1997 it will be possible to carry out further study of particularly important artefacts, including their drawing (photographic records have been made of all finds during the 1995 and 1996 seasons).

2. Objects of Ivory and Bone

This year saw an increase in both the quality and quantity of ivory objects in particular recovered from the site, especially from the earlier phases. Several complete hair pins were found, probably of local manufacture, alongside cheaper bone imitations. The top half of a highly polished ivory spatula was also found, possibly used for the application of make-up. No further bone or ivory jewellery was found this year, but several decorative ivory objects were registered including a fragment of a rather small and intricate ivory cylinder.

3. Glass

One of the most remarkable finds of this season was a complete glass bottle. The vessel is green in colour and has a large circular lip with short neck and four rounded sides. Many other fragments of similar vessels were also found and a full study of the glass objects will be made in the next season. Several lamp rims and bases were also found, although the majority of these are too fragmentary to reconstruct.

Several glass counters were recorded, made from the same glass as the majority of the tesserae and possessing a green yellow appearance. Two sets of ring inlays were retrieved one example had two sections of blue and purple which had been pasted together. This discovery led to the reinterpretation of some of the glass counters from previous years.

4. Marble Objects

Two important finds from this category were found. The first was the lower section of a statuette of Venus and Cupid. The piece is probably a locally crafted copy of the standard draped Venus-Aphrodite type; Cupid is shown riding a dolphin and his figure has been completely preserved whereas only the lower half of his mother remains. The marble is a high quality imported type, possibly pentelic or phrygian. At the base is the end of an inscription, possibly a dedication reading [.....]NT.

The second object was also inscribed. It was a rim fragment of a marble funerary urn with the letters[.SA]TURNIN[I]. Miss Joyce Reynolds very kindly looked at the object and said that the name Saturninus was common at Lepcis during the 2nd century AD and that the urn once held the ashes of a man of this name. Again the marble is imported which would imply that the dedicant was of a middle class family.

5. Decoration of the House

Reference samples of all the marble from the site has now been taken. During the 1997 season a detailed study of marble from the excavation area within the wider context of the Roman city will be undertaken, since a large proportion seems to have been reused as wall fill for example rather than forming an integral part of the decoration. A very small proportion seems to have actually been used to decorate the house. There does, however, seem to have been a change in some of the marble types found in the earlier phases of the house (i.e. the levels below the flagstone floors) where a greater variety of marble types were found. This will be looked at more carefully during the study season.

During the recent season I was also able to record the large quantity of painted wall plaster which had been collected in the two previous years. Although, as with the marble, much of the evidence from the upper strata seems to be part of a dumped infill; the wall plaster from the lower occupation layers is often found to be part of a decorated scheme from the house itself. There is also evidence of the repainting of existing painted plaster and the placing of stucco over paint.

Many stone, glass and ceramic tesserae were also found this year, including three pieces of stone mosaic still in its setting. These will be looked at in conjunction with the above materials to give a broader impression of the overall decoration of the house during the later period of occupation.

6. Metal Objects

Two unregistered rods from separate weighing scales were recorded this year, from the 1994 and 1995 excavations. One in particular is a very good example and the measuring marks can still clearly be seen on all four sides. The lower section of the rod has broken off and was unfortunately not found. However, the chain for the balance has been partially preserved and gives a good indication of the type. In the street area north of the house a lead weight of 650g was found in addition to other possible bronze weights from previous years and what appears to be a pan from a set of weighing scales.

The northern street also revealed bronze objects which may be related to the carriage fitting which are mentioned in the next *Journal of Libyan Studies*. However these are still awaiting cleaning and a proper study will be undertaken next year.

In addition to the bone and ivory pins mentioned above, a rather delicate bronze and gold leaf pin was found. The object at first appeared to be copper alloy and consisted of a very thin shaft with a coiled decoration and a hexagonal head, which following cleaning was found to be coated in gold leaf.

A small bronze signet ring also revealed traces of gold or electrum on the shoulders of the main design and around the outer part of the band. The decoration was in a very simple form of an engraved single line star. Several other bronze finger rings were also found, including two identical examples with a simple engraved line decoration on the band. Other pieces of jewellery included several bronze earrings of a similar design, one of which was decorated with diagonal crosses burnt into the metal.

Fragments from bronze vessels were also found including handles and part of a rim. Other fittings, perhaps from furniture will require further attention in the 1997 season.

7. Ceramic Finds

A small terracotta head of Tyche was found in the same area as two previous figurines of a monkey head and the body of a dwarf (or possibly Selinus). The goddess wears a crown and although her face is badly worn her features are distinguishable.

The largest category of ceramic small finds are the oil lamps. Many datable examples were found this year. From the upper layers an almost complete locally made red slip lamp decorated with a chi rho motif and dating from the 5th-6th centuries AD. Several of these locally manufactured examples were found and this type seems to make up the largest category for the later occupation levels. In the earlier layers there seems to be a higher percentage of imported Italian lamps alongside the continued presence of local and African red slip, including several from Tunisia. Before the 1997 season it will be necessary to look in more detail at the lamps, but I am confident that they can be used as a dating tool in conjunction with the pottery since parallels for most of them can easily be found.

8. Other objects of Importance

A plain chalcedony ring setting was found early in this seasons excavation. The undecorated stone is in good condition and the only damage to the gem seems to have been from its original fitting, in the form of two small holes perhaps from a clasp. The overall colour is excellent and it is easy to see how attractive the object must have been in its original setting.

Appendix 3: The Animal Bone

Jane Sidell

1. Introduction

Animal bone has now been collected from all three seasons of excavation. It has been recovered by hand and from the environmental samples. This season saw the commencement of the catalogue.

2. Methods

Each bone was recorded directly onto an EXCEL spreadsheet. Standard faunal data were recorded, loosely following the Museum of London Archaeology Service (Environmental Archaeology Section) and the same as that employed by the Sparta Project.

Unique identifying numbers were allocated and the bones were then recorded by context. Species and anatomical element were recorded. Weight was measured to the nearest 2 grammes using an electronic balance. Next, the part of the bone was recorded (most bones are present as fragments rather than whole bones), i.e. distal, shaft, proximal, as were zones (see Rackham 1986). Fusion stages of the epiphyses were noted, and age classes were allocated where possible. Tooth wear stages were allocated after Grant (1982) and Deniz and Payne (1982). Gender was also ascribed where possible. This was mainly associated with pig teeth and chicken (sized) tarsometatarsi, although much caution was employed in the latter case.

Modification was recorded where observed. This included butchery, pathology, burning and gnawing. The extent, location and method was noted, with interpretation where possible. Selected measurements were recorded following von den Driesch (1976). Any additional comments such as state of the bone, modern breaks etc. were mentioned in a comments field.

Identifications were made with the aid of a reference catalogue (Schmid 1972), whilst sheep and goat were, to an extent, separated after Boessneck, in Brothwell and Higgs (1969). Gazelle was tentatively identified following discussion of morphological characteristics with Alan Pipe and Kevin Rielly (MoLAS) prior to the excavation in anticipation of recovering this species. Bird bones were mainly identified as chicken-sized, in the absence of reference material, although these were mainly considered to be chicken, caution was exercised. Fish and small mammals (with the exception of rat) were not identified. One large mammal vertebra was unidentifiable to species, although it is thought to be camel, and has been retained for formal identification.

3. Statistics

Number of fragments recorded	9166
Total Weight	25296

Species List:

Cattle	(<i>Bos taurus</i>)
Sheep	(<i>Ovis aries</i>)
Goat	(<i>Capra hircus</i>)
Pig	(<i>Sus scrofa</i>)
Horse	(<i>Equus caballus</i>)
Gazelle	(<i>Gazella</i> sp.)
Dog	(<i>Canis familiaris</i>)
Chicken	(<i>Gallus gallus</i>)
Rat	(<i>Rattus</i> sp.)

Unidentified Bird

Unidentified Small Mammal

Unidentified

This species list will extend when the material retained has been identified. Also the weight and number of recorded bones will similarly increase.

4. Recovery

The recovery of bone is considered to be above expectations. Although bone was not particularly well preserved in the upper layers, preservation is generally good, although heavily fragmented. The hand-collected bone assemblage contained many small fragments and also anatomical elements such as distal phalanges of species such as sheep and goat which are notoriously difficult to recover. Comparison with the assemblages from the samples indicate that no substantial bias in recovery was introduced, and that the hand-collected assemblages demonstrate a high level of integrity.

5. Modification

As mentioned above, recovery was variable, with a small percentage of bones also demonstrating substantial surface erosion. This indicates weathering which might be expected if these bones were not quickly sealed. Potentially, this could indicate redeposition. A number of modern breaks were observed, some of which were refitted, however, this was not always the case, and although recovery is judged to be good, it was obviously not perfect.

Although the data have not been examined, it may be stated that very little pathology was observed. Burning and gnawing was more pronounced, whilst butchery marks were relatively common. Some bone working was observed, mainly in the form of bone pins, which were transferred to the finds specialist.

6. Summary

Preliminary impressions point towards a larger than expected proportion of material to be derived from primary butchery waste, i.e. the large quantities of head and foot elements that were recovered. This either indicates the house was used as a dumping ground at some stage of its history, or that butchery was taking place extra-locally. In terms of species represented, again results differ from expectations. Cattle and pig are more common than was anticipated. This is a factor of the relative difficulty of raising these species with regard to sheep and goats. These two species, particularly the latter are easier to graze, whilst cattle require slightly better conditions to do well. Pigs, although they can act as scavengers to an extent, require a much larger human input to produce well fattened animals. Their presence in such relative quantities would imply a reasonably costly diet. It will be necessary to look in detail at the composition of the pig assemblage in order to consider whether the animals were being produced as meat for purchase, or were present 'on the hoof' and being kept locally.

7. Priorities

- Two boxes of bone are left to record, and this will need to be carried out before detailed analysis can be undertaken.
- Context information should be linked to the faunal archive, preferable via the site database, in order to facilitate processual interpretation of the features and deposits.
- Analysis of all secure context assemblages should be undertaken. This will focus on several research topics:
- Identification of whether the material represents a producer or consumer economy.
- Identification and classification of trends relating to diet.
- Identification of any husbandry patterns, i.e. sex/age ratio kill-off patterns.
- Identification of any distinction with regard to status which may be observed within the temporal sequence.

These fundamental questions should contribute to an understanding not only of what was occurring within the excavated structure, but can potentially be used as an example of economic traits for the two periods under question. It will be possible to consider the nature of local ecological conditions through identification of the small mammal bones which have been recovered from the samples, particularly from the deep cisterns and well, which could have acted as pitfall traps. However, this aspect of the research programme will be limited, and play a much smaller role than the study of economic traditions.

Appendix 4. Palaeoenvironmental samples

Keith Wilkinson

Over the three excavation seasons a total of 33 bulk palaeoenvironmental samples have been taken, of which 10 were collected during the 1996 samples. All are from "fills" of features such as pits, stone features and cisterns, and also from occupation deposits. Processing of the samples (except the waterlogged sample) was carried out using the flotation technique with mesh sizes of 1mm and 0.25mm for the residue and flot respectively. Both flots and residues were air dried, the flots being brought back to Britain for further study and the residues left in Libya. Unfortunately because of lack of suitable personnel and time constraints none of the residues could be examined from the 1996 season. They have thus been left in storage in the Lepcis Magna museum for sorting during the 1997 season.

The 10 samples taken in 1996 were mostly associated with the 1st century mud brick building (samples from previous years were all from the later structure), and in common with previous years samples are extremely rich, not only in bio-remains, but also in artefactual material. One important objective of the study of the bio-remains will be to determine if there are assemblage differences between the different phases of use. Other than study of the animal bones (Appendix 3), we have yet to carry out any analytical work on the biological remains, although it is hoped to do so both prior to, and during the 1997 study season.

Certainly the most important samples taken this year were from the waterlogged well fills. Two samples were taken from separate contexts and both processed by wet sieving the sediment through a 0.25mm sieve. The residue retained was kept wet and has been brought back to Britain for detailed study by John Giorgi of the Museum of London Archaeology Service. It cannot be emphasised enough how important these samples are as the sampled layer appear to represent the only archaeological waterlogged deposit ever investigated in North Africa. The biological remains noted during processing including large number of seeds, olive stones, grape pits amongst the food remains, and also beetles and animal bone. The study of this material will provide important new data on 4th / 5th century diet in North Africa, while the study of the various types of insect remain will provide additional information on such divergent areas as local environment, the inhabitants health, water quality and sanitary conditions.

We will be applying for a Scientific Archaeology Grant from the British Academy to enable John Giorgi to study all the botanical remains collected from samples during the past three years of excavation. In addition the grant (if the application is successful), will enable Dr. David Smith to make a study of insects from the well excavated in 1996.

Bibliography

- Boessneck (1969) In Brothwell and Higgs Science in Archaeology.
- Deniz, E. and Payne, S.(1982) Eruption and wear in the mandibular dentition as a Guide to ageing Turkish Angora Goats. In Wilson, Grigson and Payne (eds).*Ageing and Sexing animal bones from archaeological sites*. BAR British Series 109. pp 91-108
- von den Driesch, A. (1976) *A guide to the measurement of animal bones from archaeological sites*. Peabody Mus. Bull. 1. Cambridge, Mass.
- Grant, A. (1982). The use of toothwear as a guide to the age of domestic ungulates. In Wilson, Grigson and Payne (eds).*Ageing and Sexing animal bones from archaeological sites*. BAR British Series 109. pp 91-108
- Keay, S.J. (1984) *Late Roman amphorae in the Western Mediterranean. A typology and economic study: the Catalan evidence*. BAR International Series, 196. Oxford.
- Rackham, D. J. (1986). Assessing the relative frequency of species by the application of a stochastic model to a zooarchaeological database. In L.H. van Wijngaarden-Bakker (ed.) Database management and zooarchaeology. *Journal of the European Study Group of Physical, Chemical, Biological and Mathematical techniques applied to Archaeology*. Research Volume 40.
- Reynolds, P. (1993) *Settlement and pottery in the Vinalop— Valley (Alicante, Spain): AD 400-700*. BAR International Series, 588. Oxford.
- Reynolds, P. (1995) *Trade in the Western Mediterranean, AD 400-700. The ceramic evidence*. BAR International Series, 604. Oxford.
- Riley, J.A. (1979) "The coarse pottery from Berenice", in Lloyd, J.A. (ed.), *Excavations at Sidi Khrebish, Benghazi (Berenice)*. *Supplements to Libya Antiqua, V, Volume II*: 91-467. Tripoli.
- Schmid, E. (1972) *Atlas of Animal Bones for Prehistorians, Archaeologists and Quaternary Geologists*. Elsevier, Amsterdam