Excavations at Tocra (1985-1992)

By Ahmed M. Buzaian[1]

Abstract

This article presents a preliminary report on the post-excavation analysis of excavations conducted between 1985 and 1992 by the Department of Archaeology of the University of Garyunis (Benghazi) at the ancient city of Tocra. The construction and design of the buildings excavated are analysed, with particular emphasis on the late antique phases; and descriptions of pottery, other artefacts (including two early Islamic coins) are given. The area appears to have been an artisan district, as evidenced by the finds of a pottery kiln, ovens, vats and other structures associated with manufacturing activities. Mortar and plaster samples were analysed to help phase the structures, and to compare the excavated vats with their counterparts at another site within the city. A limited study of the faunal remains gives some insight into diet at the site in late antiquity.

The study shows clearly that Tocra remained inhabited after the Arab conquest (AD 640s), confirming suggestions of previous excavations at other sites within the city wall.

Introduction

Tocra (ancient Taucheira) lies on the Mediterranean coast 65 km east of Euesperides/Berenice (modem Benghazi), where the coastal plain starts to open out to the west bctwccn the two plateaux of the Djebel Akhdar and the sea. The coastal plain, which at Tocra is about 6 km wide, is a semi-arid zone with an average annual rainfall today of 160 mm, although the higher mound to the south receives more—500 mm around Barce on the Lower Plateau, and over 500 mm on the Upper Plateau. The rainfall average allows the cultivation of wheat and barley and the raising of livestock. Herodotos (4.199) says that Cyrenaica had three climates, with the harvests extending over eight months, successively on the coastal plain, the Lower Plateau and the Upper Plateau. Strabo (17.21) records that the region was noted for fruit and breeding horses.

Taucheira, like Apollonia, was said to have been founded from Cyrcnc (Pindar, *Pythian* 4.26). Excavations by the British School of Athens of deposits associated with a sanctuary of Demeter and Kore produced material from the late seventh century BC onwards, suggesting that the city was founded shortly after the traditional date for the foundation of Cyrene, 631 BC (Boardman and Hayes 1966, 13). Herodotos seems to imply that in the fifth century BC Taucheira came under the control of Barce (4.171); in the late fourth century it was besieged by Thibron (Diodorus Siculus 18.20.6), and came under Ptolemaic rule in 322 BC with the rest of Cyrenaica, until Ptolemy Apion bequeathed the province to Rome in 96 BC. Taucheira was one of the five cities of the Cyrenaican Pentapolis (with Cyrene, Apollonia, Ptolemais and Berenice). Little is known in detail of the city's history; the broad outlines of Cyrenaican history as known from the literary sources include a serious Jewish revolt in AD 115 under Trajan, efforts at restoration by Hadrian; in the third century AD tribal attacks from the interior and general economic troubles seem to have caused widespread decline (Goodchild 1968; Lloyd 1989). In the AD 360s Cyrenaica was badly affected by earthquakes, and there were further raids by the Austuriani from the interior. Synesios of Cyrene presents a troubled picture of the region around 400; there was some effort at restoration under Justinian (Goodchild 1968). The Arab invasions of the 640s brought a swift end to Byzantine rule in the region, with

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a force led by Amr ibn al-'As with an alliance of Libyan tribes and a naval contingent under Duke Sanutius of Egypt. Taucheira had been chosen by the Byzantine administration as a last stronghold, probably because it had a natural supply of abundant groundwater within the wall circuit and was not therefore dependent on an aqueduct like the other cities of the Pentapolis. It fell to the Arabs during the second invasion campaign, in AD 645 (Goodchild 1967, 264).

The original city of the Archaic period seems to have lain between the quarries by the modem fort to the east, and quarries later incorporated within the Hellenistic wall circuit to the west; the 1966 British excavations lay within the city circuit, and the early city wall was identified in the section exposed by coastal erosion during a visit in 1998, to the north-east of the western quarries. In the Hellenistic period the city expanded and received an enlarged wall circuit, apparently rebuilt on much the original lines in the early Roman period, and restored in the Byzantine era; it has recently been comprehensively published by Smith and Crow (1998).

The later city was laid out on a grid plan dominated by a thoroughfare running between the east and west gates (the *decumanus* maximus); two further east-west streets are traceable to the north of this, crossed by north-south streets running at a slightly skewed angle. The insula blocks do not lie in regular, straight rows, but are somewhat staggered, an arrangement that would have provided some shelter from the strong north-westerly and north-easterly winds. An area of rubble at the intersection of the main east-west and north-south streets may have been an honorific arch (Beechey and Beechey 1828, 375); F. Bentaher in 1989 noted here a concentration of sandstone architectural elements (three-quarter column drums, capitals and frieze blocks with geometric decoration).

Underwater exploration has shown that Taucheira had an artificial harbour with two quays and a mole 220 m long (York 1972). The city's cemeteries were located within former quarries (a characteristic of the Pentapolis), with rock-cut chambers bearing Greek inscriptions, although some with Jewish names and also Egyptian names for the months. A large inhumation cemetery lay just outside the east wall (Beechey and Beechey 1828).

Most of the standing remains on land date from the Roman to early Islamic periods, but arc not well understood. A building to the south of the east church has a Christian mosaic, but may originally have sewed as a set of baths or have had some other function (Bentaher 1999). The east and west churches are both thought to be sixth-century; a third church, outside the walls some 200 m west of the Berenice gate, is probably also of the sixth century. Another extramural church, to the south, is now partly covered by a mosque (Abusbee 1985, 94-104). Inside the walls, a Hellenistic gymnasium lies immediately inside the east gate, later partly re-used by a Roman bath-house which was modified during the Byzantine period. The main door step of a late phase of the baths has a roughly chiselled Arabic inscription in praise of Allah, and was sealed by later debris (Jones 1984). To the south of the decumanus, west of the baths, a large Byzantine fortress was constructed hastily, and without foundations, over previous buildings, using stone taken from other monuments, especially the nearby baths, which were partly demolished to provide a clear field of fire. Barracks and a small bath-house, possibly for senior officers, have been identified within the fortress. The fortress is thought to have been constructed in the face of the Arab advance after the Byzantine commander Apollonios withdrew from Apollonia to Taucheira, and has therefore been identified as the last stronghold of Byzantine rule in Cyrenaica (Goodchild 1967, 262-4; Smith and Crow 1998).

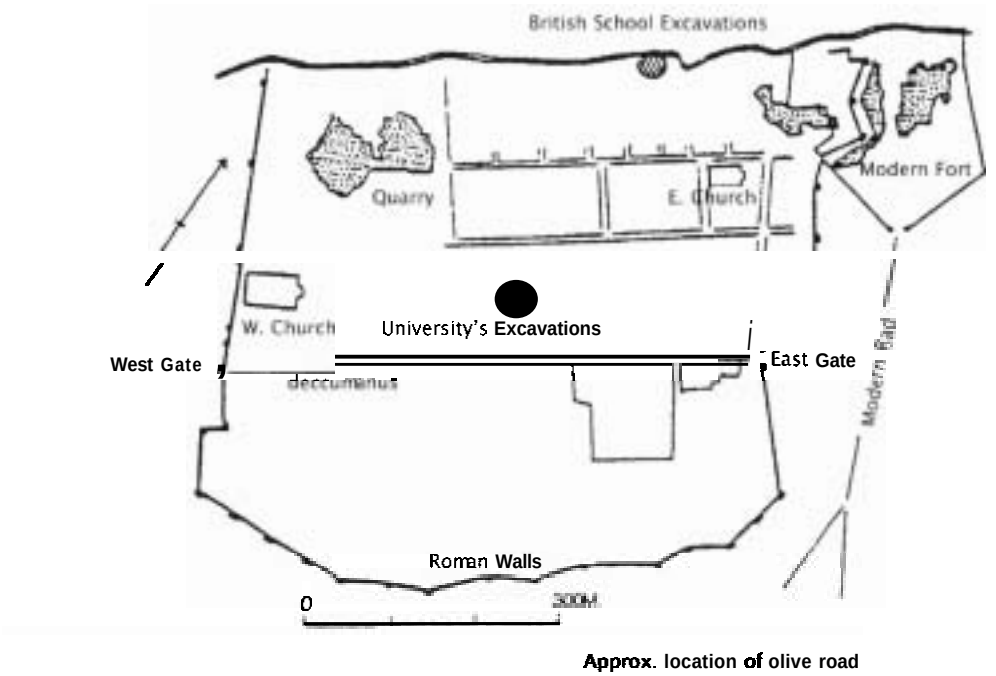


Figure 1. Site plan showing location of excavations.

The excavations

In April 1974 the Department of Archaeology of the University of Garyunis (Benghazi) commenced a series of training excavations at Tocra, in co-ordination with the Department of Antiquities of Libya. The area chosen, to the north of the southern *decumanus* near the centre of the walled city, was previously unexcavated and its surface was almost featureless (Fig. 1). The seasons from 1974-1983 were conducted by Dr T. Suleiman, who concentrated his programme of training on selected trial trenches within the area, organised on a grid system of rectangles each 20 by 40 m. These trial trenches were taken down to bedrock. Suleiman published these excavations in three volumes (in Arabic), and concluded that the site probably represented the agora of Tocra (Sulciman 1986.21).

In April 1985 supervision of the excavations passed to A. Abusbee and then to F. Bentaher. The latter concentrated on the search for evidence of the Late Roman, Byzantine and Early Islamic periods, using a system of controlled clearance combined with sondages to establish stratigraphy, largely confined to the later occupation. Occasional soundings to bedrock were undertaken to ascertain the presence of earlier occupation. With hindsight it is clear that sub-phases and mud-brick structures were undoubtedly missed using this method. The development of stratigraphic archaeology in Libya has been a slow process, hut following the University's collaboration with the British mission to Euesperidcs, the ongoing University excavations at Tocra (in an area to the north of that published here) have since 1996 adopted more controlled stratigraphic techniques, with single context recording; with the result that more mud brick structures and late sub-phases are being identified.

The excavations between 1985 and 1992 uncovered the remains of six buildings. The stratified materials spanned four main phases of occupation and included a large

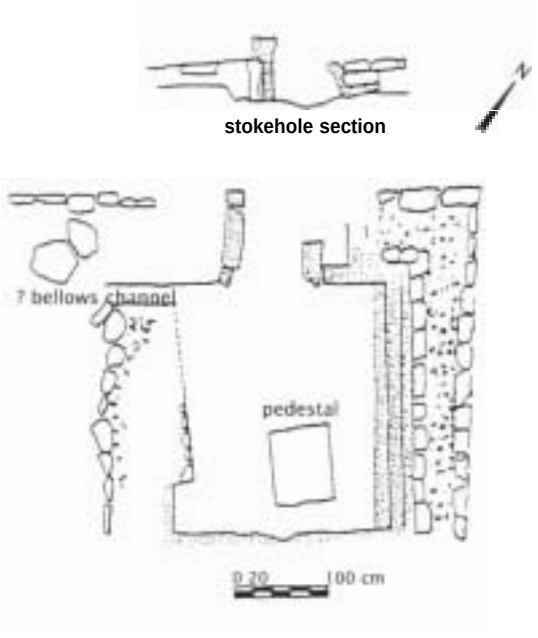


Figure 2. Plan of the Hellenistic kiln.

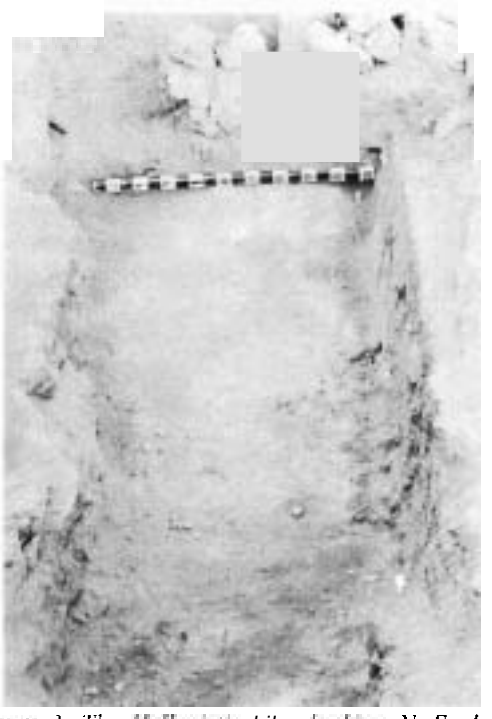


Figure 3. The Hellenistic kiln, looking N. Scale in units of 5 cm.

proportion of coarsewares. The four phases recognised are described here under the following terms: Hellenistic (second century BC to first century AD); Roman (first to mid third centuries AD); Late Roman/Byzantine (mid third to mid seventh centuries AD); and Islamic (mid seventh century AD onwards). Analysis of the building plans shows that there were further sub-phases, not rccognised during excavation, detectable by the manner in which some walls abut others of the same broad phase.

The Hellenistic Period: the kiln and associated features (Figs. 2-4).

The structures belonging to this period had been largely obscured by later phases. However, soundings below the Roman period Building B, Room II, revealed a rectangular updraught kiln (2.60 × 2.20 m) resting directly on bedrock (F. I). The shape is noteworthy, as all other examples known from Cyrenaica and Tripolitania are circular (Buzaian and Lloyd 1996; Jones and Little 1971; Bartoccini 1928-9, 93-5; Goodchild 1976, 72-106; Arthur 1982; a group of Roman circular kilns were also discovcrcd in 1996 during construction works at Gargaresh, but destroyed without proper investigation). The external walls were formed of two parallel lines of squared limestone and sandstone blocks filled with mud and rubble; this was clearly seen in the well preserved eastern wall (0.90 m wide and 0.60 m high). The stokehole (0.80 m wide) lay on the north; its sides were composed of three courses of fired clay blocks with average dimensions 0.55 m long × 0.20 m high × 0.10 m thick. Similar blocks lined the interior of the kiln, usually in three successive layers, the innermost of which was scorched red. Oxygen could pass into the structure through a *tuyère* at the northern end of the west wall, adjacent to the stokehole. Ashy deposits were concentrated near the stokehole, and the bedrock was extensively scorched. Near the east comer there survived the lower part of a pedestal (0.60 × 0.80 m), originally one of several which would have been connected by

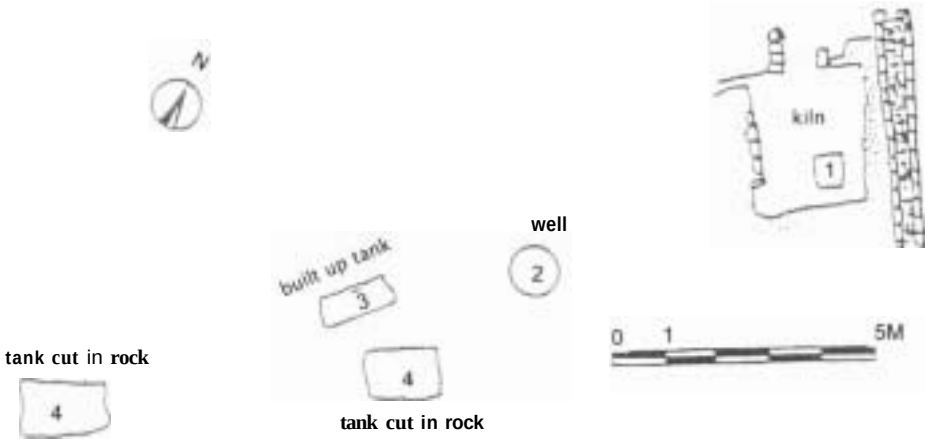


Figure 4. Plan of the Hellenistic kiln and other features.

clay bars forming the floor on which the pottery was stacked. The bottom of the interior of the kiln and the surrounding area yielded much coarse pottery, including misfired pots, or wasters, distorted and fused owing to firing at excessively high temperatures. The wasters (discussed in the section on finds below) included double-rolled handled amphorae and lagynoi, suggesting a date in the Hellenistic period, although this cannot be more closely determined without further study of Hellenistic coarsewares. A number of unfired clay discoidal loomweights were also found.

To the west of the kiln was a circular well (F.2), with an internal diameter of *c.* 1 m (Fig. 4). Clearance was stopped at a depth of 4 m. The shaft was rock-cut with recesses cut into opposite sides at regular intervals to provide hand- and foot-holds. Further west was a rectangular tank (1.70 × 0.75 m; depth *c.* 0.90 m), built directly over bedrock (F.3). Its walls were built of rubble and lined internally with a layer of dark red waterproof ***opus signinum*** c. 0.03-0.05 m thick. The eastern side was partly destroyed. The fill produced a jug and two complctc lamps of Hellenistic date. Further to the south-west of the kiln two rock-cut rectangular tanks were uncovered in 1985, each approximately 1.60 m long and 1.10 m deep, with widths varying from 0.80 to 1.00 m. The well and tanks would have been essential fcaturcs of a pottery workshop, which needed water and vats for preparing the clay. A similar rock-cut tank and well were found associated with an early Hellenistic kiln at Euesperides (Buzaian and Lloyd 1996, 134-6).

The Roman period

Considerable evidence of occupation in the Roman period was encountered but the density of later buildings made it impossible to develop a clear general impression of the remains. No complete building plan could be confidently restored, and although it is clear that in this period too the area was a focus for manufacturing activities, the precise nature of the structures remains in doubt.

Building A (Fig. *5*)

Building A lay in the centre of the excavated area, surrounded by later structures clustered around it in a haphazard manner. The layout of the original building was simple and compact, with rooms opening onto two courtyards. The complete absence of roof tiles suggested that the roof was flat, probably of timber and mud. No staircases were found to suggest an upper floor. The foundations used large neatly trimmed limestone and

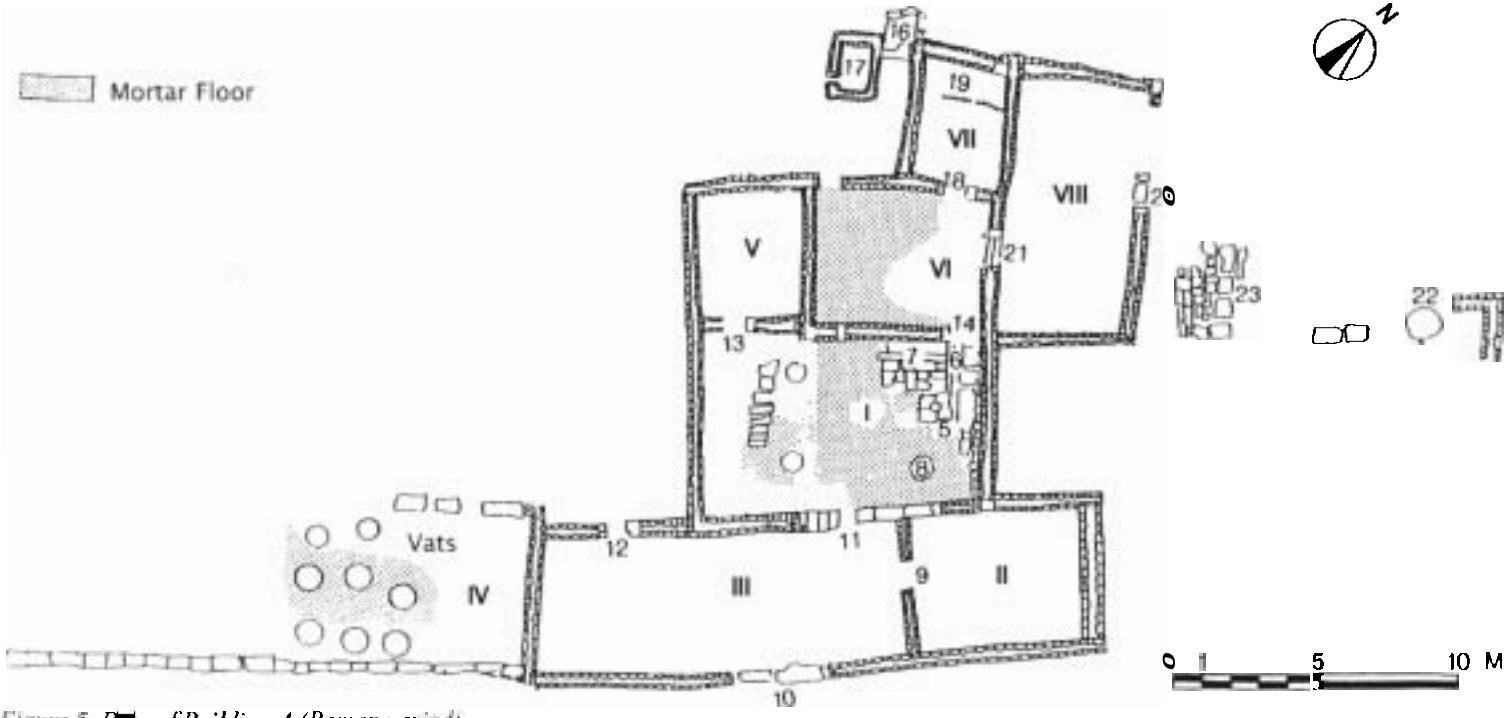


Figure 5. Plan of Building A (Roman Period).

sandstone blocks, some with drafted margins (similar to those used in the first phase of the city wall), and usually rested on a thin layer of soil for levelling up over the uneven bedrock. Above the foundations the walls were built of two parallel lines of squared blocks with a core of stone chips and mud mortar. The width of the walls measured 0.55-0.60 m. The southern wall of courtyard I was partly constructed in *opus africanum* style (Fig. *6)*, but this orthostatic method was not continuous along the length of the wall.

Cistern and courtyard I. Courtyard *I* measured 9.30 × 6.30 m, with a pale pink *opus signinurn* floor *c*. 0.05 m thick. The rough upper surface displayed heavy wear exposing underlying flagstones, notably at the northern comer (F.7; Fig. 7) and in the western part of the courtyard. The east wall rested on poorly trimmed heavy stone blocks (Fig. 8). Near the northern comer was a subterranean cistern (F.5), fed by runoff from the courtyard's mortared floor and by a mortared channel 0.25 m wide (F.6) (Fig. 7) from the adjacent courtyard VI, with three shallow circular sediment traps (c. 0.10 m deep and 0.80 m in diameter; Fig. 8). The inlet channel entered the cistern through the draw-shaft or neck, formed of three courses of opposed half-round mouldings each c. 0.55 m high. Below its neck the cistern widened out to the west and south to form an irregular rectangle (maximum dimensions 3.90 × 2.90 m, at 5 m below the courtyard floor. The walls were lined internally with *opus signinum* similar to that of the courtyard floor, with a varying thickness of 0.05-0,10 m. The cistern's capacity is estimated at *c.* 30 m³.

The cistern seems to have remained in use in the following period, as suggested by two finds of Late Roman/Byzantine date—a piriform lamp with unpierced handle and a St Menas flask (Fig. 37)—sealed under a deposit of sand and dust directly below the mouth of the cistern. This deposit had clearly accumulated by infiltration under the capstone which was found still *in situ.*

Figure 6. Orthostatic construction in south wall of Building A, Courtyard I.

Figure 7. Building A, Courtyard I: *stone flagged floor* **(F7)** *and feeder channel (F.6) to cistern mouth. Looking east (scale in 5 cm units).*

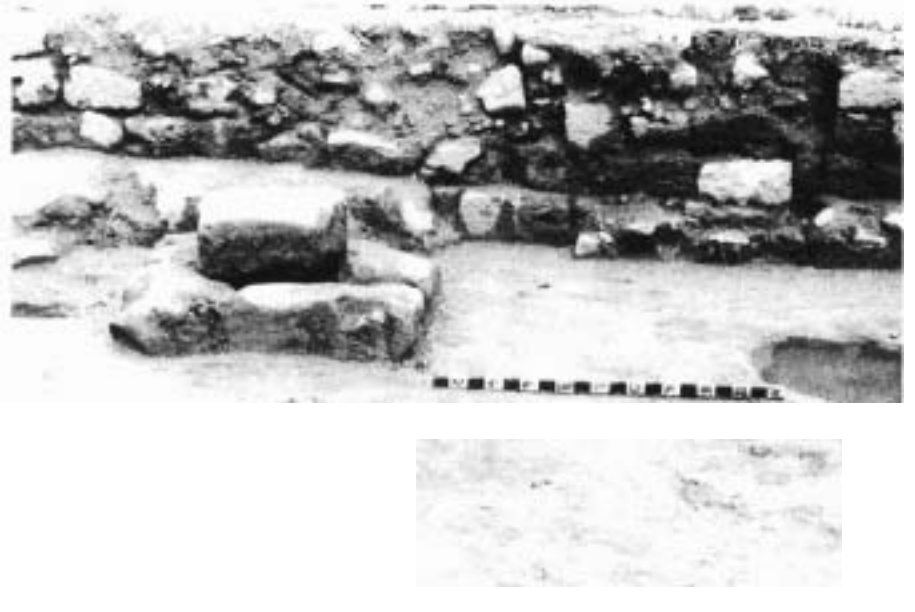


Figure 8. Building **A,** *Courtyard* I. **Cistern mouth** *and* **adjacent sediment** *trap (F.8);* **in** *the background,* **the** *substructure of the eastern* **wall. Looking cost (scale in 5 cm units).**

The South range (rooms II–IV)

Room II. Room II measured c. 6.40 × 5.20 m, with an entrance in the west wall (F.9). The eastern wall rested directly on bedrock and was built of well coursed squared blocks; it was 0.95 m thick and survived to a height of *c.* 2 m. The floor was of beaten earth, overlying the Hellenistic kiln.

Room III. Room III *(c.* 14 × 5.40 m) formed one of the main entrances to the house, and gave onto an open courtyard (partially excavated). The entrance (F. 10), 3.60 m wide, was in the south wall and used the top of the foundation course as its threshold, which was well worn. On its north side the room opened into Courtyard I via a doorway which was later blocked. Further west in the same wall was a second entrance, whose moulded threshold and lower section of the eastern door jamb were found ***in situ.***

Room IV. Room IV lay at the western end of Building **A,** and housed 8 deep circular vats sunk into the ground. The southern wall of the room was built of ashlars (of which only one course survived) resting on a thin layer of sand laid directly on bedrock. Some of the ashlars had drafted margins. The position of the entrance and of the wes and north walls could not be establishcd.

Two of the vats were excavated and found to be c. 3.50 m deep and c. 0.85 m in diameter, lined internally with *opus signinum* composed chietly of crushed tile and vitrificd clay. Their lower part was cut into bedrock for a depth of 1.85 m; above this they had masonry walls for a height of *c.* 1.70 m; at the point of junction the shaft narrowed slightly in a ring (Fig. 9). A rebated groove around the mouths of most of the vats seems to have provided a seated for a lid. The fill of the vats produced pottery from the mid third century AD, which may indicate that the vats fell out of use then.

Around the top of the vats was a smooth ***opus signinum*** floor. Chemical analysis of the mortar surrounding the vats showed a close similarity of composition with the ***opus signinum*** of vats from the so-called 'Roman villa' *c.* 100 m to the

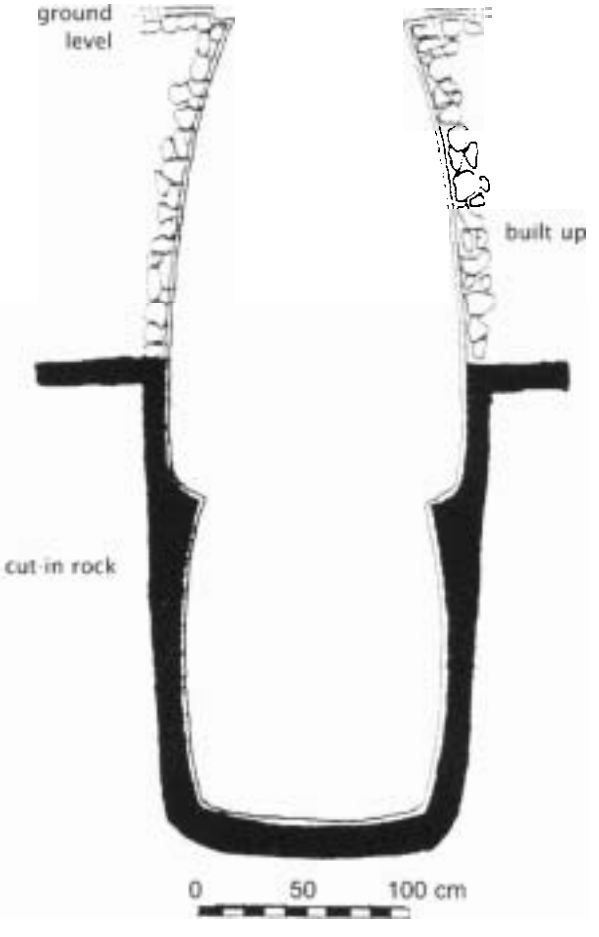


Figure 9. Section "/one of the vats i f Building A, Room II!

east (Building 13 on Jones 1983 fig. 6), possibly suggesting broad contemporaneity (see below). Unfortunately it has not yet been possible to perform similar analysis on the vats discovered at Berenice (Lloyd 1977, 214) and compare the results with the samples from Tocra.

Similar groups of 6 and 12 *opus-signinum* lined vats were found at Bercnice (Lloyd 1977, 214), and comparable examples also exist at Apollonia (a group of 5 by the shore, and two groups, of 4 and 2 vats, to the west of the east church). The *opus signinum* linings indicate that the vats were for liquid, and given the similarities to interred *dolia* at wine-producing sites in Italy, and the evidence for lids at Tocra, it may be suggested that the Cyrenaican vats were for the fermentation of wine.

The North range (Rooms V–VIII)

Room V. Room *V* measured c. 5 × 4 m, with a doorway (F.13), blocked in the Late Roman period, at the southern end near the west wall of Courtyard I.

Courtyard VI and adjoining urea. This courtyard (c. 6.40 × 5.40 m) had a mortar floor similar to that of the adjacent Courtyard I, but heavily worn, particularly in its eastern half. Tbe two courtyards communicated through a doorway (F.14), with a crude sill added later over the mortared channel (F.6) feeding the cistern in Courtyard I.

Towards the west end of the north side of Courtyard VI a door (F.15) with a sill *c.* 0.25 m high led to a partly excavated open area with a well and an adjoining shallow basin. The well (F.16) was c. 7 m deep, with an internal diameter of 1.1 m. The lower part was rock-cut, with recesses for hand- and foot-holds in the north and south sides; the upper 2.4 m were steined with masonry including a re-used stone drain block (Fig. 10). Next to the well was a basin (F.17) (1.40 × 1 m × 0.40 m deep) built of small stones bonded with white lime mortar and lined internally with a waterproof mortar. In its western side was a channel 0.20 m wide.

Room VII. Room VII (c. 2.85 × 4.05 m) opened off courtyard VI via a doorway in the southern wall of the room. The two flanking jambs were well preserved. Opposite the entrance were the remains of

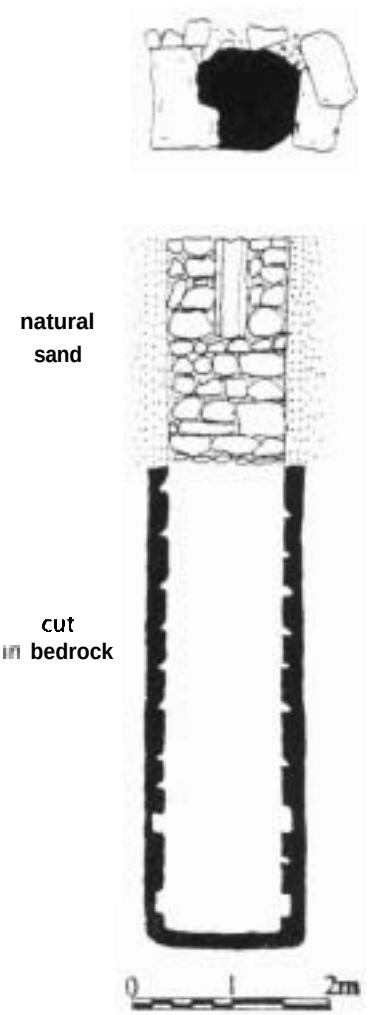


Figure 10. Section of the VI/(F.16), facing w e ~

a possible bench (F.19) along the northern wall. The walls were decorated with whitish wall plaster, of which traces survived *in situ* on the west wall. The floor was of earth.

***Room** VIII.* This large room **(c.** 8.90 × 4.70 m) may have provided another entrance (F.20) to the house through the east wall. The threshold block had a hinge socket for a door at its southern end. In the west wall another doorway (F.21) led down to courtyard VI via two crude steps. At the northern end of the lower step, in line with the exterior of the wall, was a hinge socket.

*The **Roman oven** or **kiln.*** Some 9.50 m to the south-east of the entrance (F.20) was an oven or kiln (F.22; Figs. 11-12). This lay below the stone pavement of the later Room II in Building C, which had caused slight damage to the top of the structure, but it was otherwise substantially intact. The oven or kiln was circular ***(c.*** 1.08 m diameter) and was built up in beehive fashion, surviving to a maximum height of 0.55 m. The stokehole measured **c.** 0.50 × 0.38 m. The walls were made of clay, fired dark red, constructed in three coils varying from 0.03 to 0.05 m thick. The lowest coil was 0.20 m high, resting on flat stones; the second was 0.16 m high, and the third 0.18 m. Oxygen passed into the structure through a small circular *tuyère* made of re-used sections of amphora necks, which led into the interior just above floor level. A similar technique was used at Berenice, in oven 2 in Building B2 (Lloyd 1977, 122).

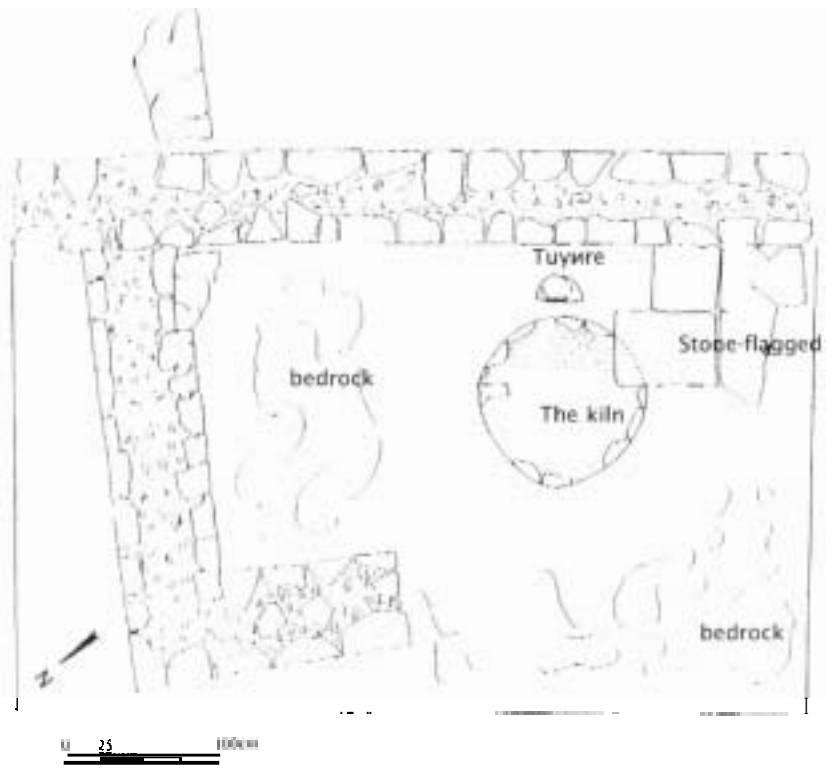


Figure 11. Plan of the Roman oven or kiln.

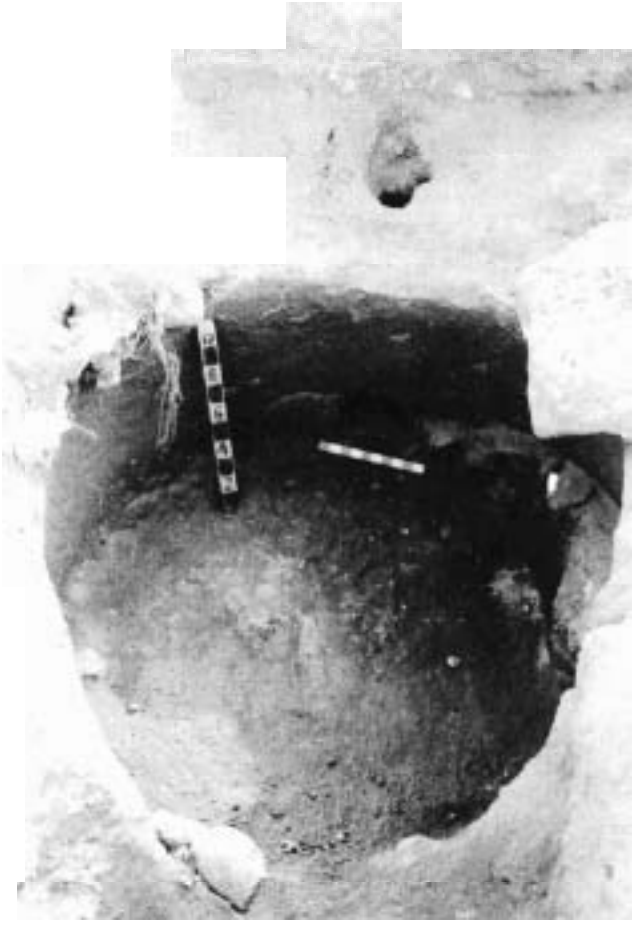


Figure 12. Roman oven or kiln *(F.22)* in *Building A. Looking south (small scale in units of 2.5 cm)*

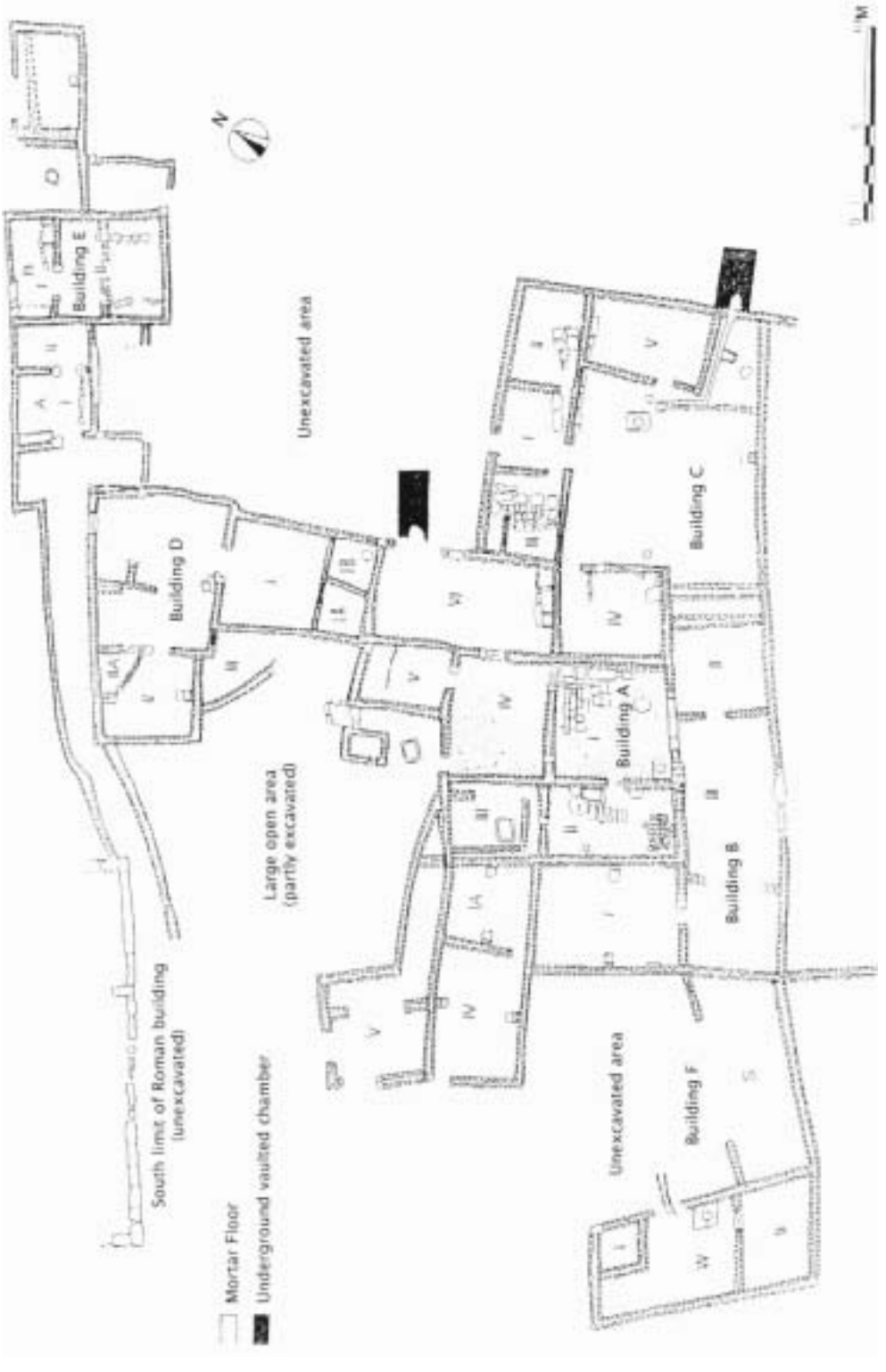
Surrounding the oven or kiln was a compacted mixture of organic sand, ash and a vast quantity of pebbles and pottery sherds. No kiln furniture or wasters were found to suggest pottery production, and the structure may have been an oven or some kind of furnace rather than a pottery kiln.

An L-shaped wall lay 1.75 m to the east, 0.70 m wide and surviving to a height of 1.20 m, built on bedrock. To the west of the oven or kiln was an area of flagstones (F.23).

Building A seems to have been connected with artisanal activities. Although direct connection between them was not established, the house lies between the oven or kiln in an open yard to the east, and the vats in Room IV to the west. Living accommodation probably opened off one of the courtyards; the bed or bench in Room VIII, the only room with wall plaster, may suggest that this was a bedroom.

It is unclear whether the vats in Room IV formed part of the same property as Building **A,** but these too suggest manufacturing or commercial activities, probably to do with wine rather than olive oil.

A sounding to bedrock (F.24) was taken through the floor of the western half of courtyard I. This yielded stratified materials ranging in date from the second century BC to the early first century AD; the house was probably therefore constructed at some point after


Building E
Building D
Unexcavated area
Building C
Building A
Large open area
(partly excavated)
Building B
South limit of Roman building
(unexcavated)
Unexcavated area
Building F
Mortar Floor
Underground vaulted chamber

that. The fill of the oven or kiln and the surrounding area support this dating. However, such conclusions remain provisional pending comprchcnsivc artefactual study.

The late Roman/Byzantine and early Islamic periods (Fig. 13)

The later buildings on the site seem to have been built in the Byzantine period, but underwent alterations and additions which appear to belong to the Islamic period. The buildings had been partially looted for building stone and the surviving remains were flimsy. The construction methods showed little regard for uniformity; walls were built mainly of re-used materials, in two lines of rubble roughly squared on the exterior, sometimes without any attempt at coursing. Occasionally the earlier structures were re-used as foundations; in other cases the walls rested directly on the natural subsoil. Floors were generally of beaten earth; mortar floors were rare, and the internal walls were unplastered. For the most part, the buildings were humble, and clustered around the Roman Building A.

Note that in the following description the room numbering system for this pcriod does not correspond with that for the Roman period.

Building A (Fig. 14)

The Roman pcriod Building A underwent modification and additions during its later phases of occupation. Courtyard I was reduced in area by a partition wall (Fig. 15) resting directly on the courtyard floor and overlying two sediment traps for the cistern. The doorway (F.11) between courtyard I and the vestibule III to the south was blocked in this phase of occupation. The open courtyard IV and Room V remained without modifications or additions.

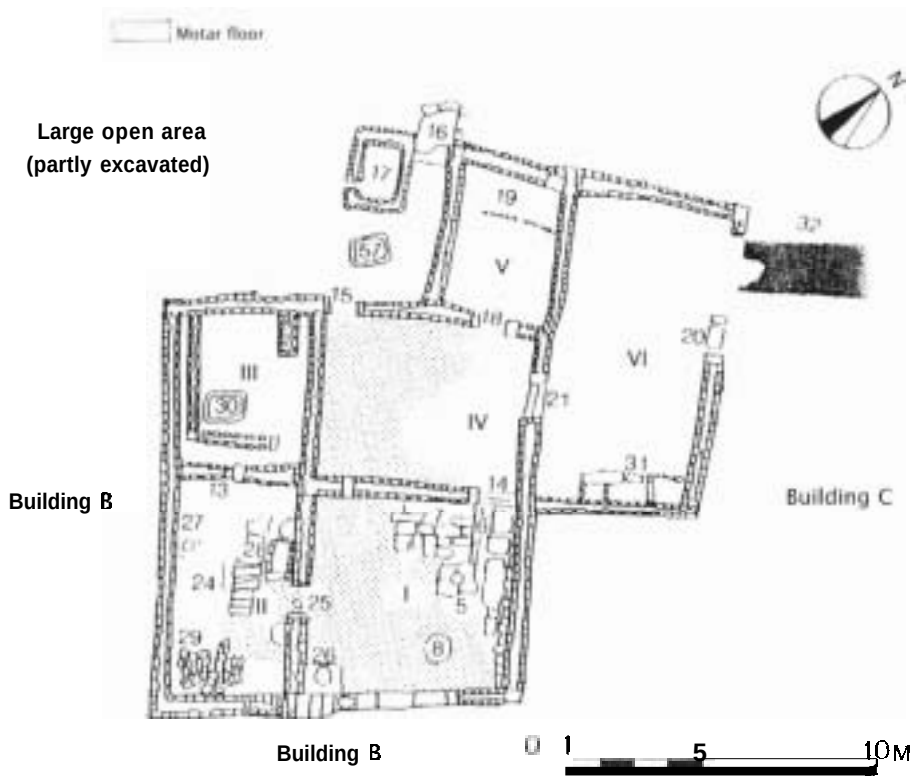


Figure 14. Plan of Building A in the late Roman / Islamic periods.

Figure 15. Late wall (indicated by scale) dividing Building A, Courtyard I. Looking west (scale in 5 cm units).

Figure 16. Oven (F.26) in the southern corner of Building A, Courtyard I. Looking south (scale in 5 cm units).

The oven in Courtyard I. In the southern comer of courtyard I was placed a small circular oven (F.26; Fig. 16), resting on a thick layer of mud mixed with small stones overlying the courtyard floor. The oven survived to a maximum height of 0.37 m and its diameter at the bottom was 0.35 m; the walls were of clay of which the inner 0.02 m had been baked red. Very fine orange sand was observed in the base of the oven. The oven was probably a simple domestic structure used for baking and cooking.

Room II. The partition wall across Courtyard I created an extra room, II, which opened onto the courtyard through a doorway (F.25) whose mortar threshold incorporated a piece of white marble (Fig. 17). Room II was rectangular (*c.* 6.30 × 3.30 **m),** with walls surviving to a maximum height of 1 m. Against the western wall lay a circular oven, 0.25 m in diameter, with clay walls reinforced externally with sherds of amphora neck covered with white mortar (F.27; Fig. 18). The walls survived to a height of 0.35 m and the inner 0.02 m had fired red. Inside the oven over twenty wineglass bases were retrieved (for comparison see Kraeling 1962, 270 pl. LXIV, B, top – fourth-century AD or later). In the absence of any finds of cullet or slag this cannot be taken as evidence for glass production.

Opposite the oven and flanking the doorway was a built-up basin made of re-used materials (F.28; Fig. 19), which also encroached on one of the sediment traps. Against the southern wall was a patch of stone-paved floor which incorporated fragments of a lava millstone.

Figure 17. Piece of marble incorporated in mortar threshold of Building A, Room II. Looking west (scale in 5 cm units).

Room III. The doorway of Room III was neatly blocked (Fig. 20) and a small irregular room was built on compacted debris within the shell of the former room V of the Roman period. Although the alignment of the southern and western walls of the earlier room remained the same, the later builders made no attempt to re-use these walls as foundations (Fig. 20). The walls of this later room were crudely constructed of two lines of stones facing a mud inner core. A small basin (F.30), fashioned from a sandstone block, was found in the south corner. Two early Islamic coins were found inside the room; both bore the monotheism statement on the obverse, and one coin was possibly overstruck on a Byzantine or Sassanian coin (Fig. 37). Further details are given below.

Room VI. Room VI received three crude tubs or basins of different sizes, built against the southern wall and made of re-used materials including one ashlar block.

Underground vaulted soakaway chamber: Immediately to the east of Room VI lay a vaulted subterranean chamber (3.65 × 1.65 × 1.60 m high; Fig. 22). It is uncertain whether the eastern wall of Room VI overlay the vaulted chamber. The structure (F.32) rested directly on bedrock and the vault, elliptical in section, was built of limestone and calcareous sandstone blocks squared only on their inner face, and placed horizontally except in the uppermost part of the vault where they were wedged in vertically. At the base of the chamber on all four sides were holes at random intervals, allowing waste water to soak away into the surrounding earth. The west end of the chamber was closed by a metal or wooden grille, as indicated by two sockets on the southern side.

The chamber evidently functioned as a soakaway, as shown by a drain leading into the chamber, and the drystone construction allowing liquid to seep into the sandstone bedrock. Similar examples are found in Building C (below), and in the

Figure 18. Oven or furnace (F.27) in Room II, Building A. Facing west (small scale in units of 2.5 cm). The wine-glass stems (here arranged for the photograph) were found in the oven.

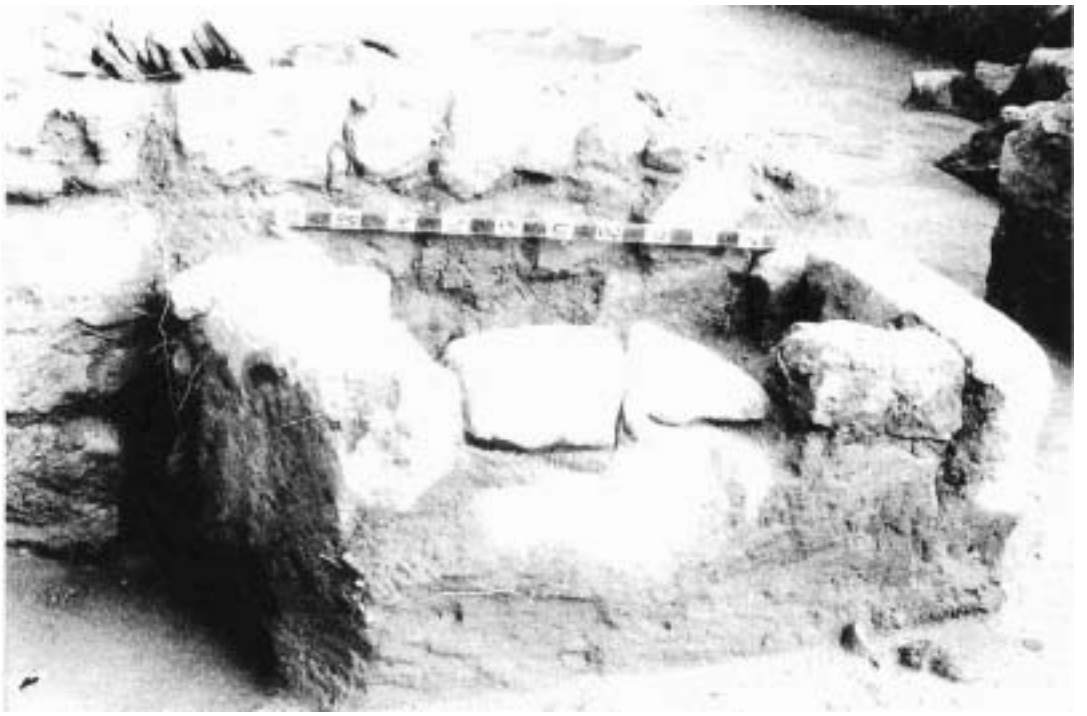


*Figure 19. Built-up tub or basin (F28) against the eastern wall of Building A, Room II. Looking east (scale in **5** cm units).*

*Figure 20. The blocked doorway (F13) of Building A, Room V of the Late Roman period. Looking north (scale in **5** cm units).*

Figure 21. Tub or basin (F.31) in Building A. Room VI in the foreground; in the background. Room III. Looking west (scale in 5 cm units).

building to the south of the East Church (Bentaher and Dobias-Lalou 1999, 22).

The vaulted chamber was completely filled with rubble and soil and yielded well-preserved finds including jugs and a decorated lamp (see finds discussion below), dated to the Byzantine period. Animal and bird bones were also present (see bones discussion below), including a fragment of the jawbone of a young pig with one tooth (M1), suggesting this came from a pre-Islamic phase or a non-Moslem household.

Building B (Fig. 23)

To the south and west of Building A lay Building B, separated from Building A by the blocking of the doorway (F.11) which had previously connected the south range with the cistern courtyard I. Building B was extended by the addition of at least three rooms

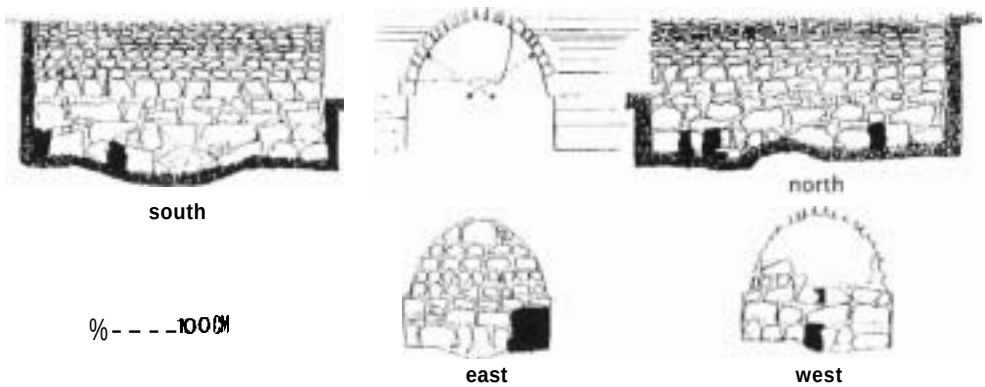


Figure 22. Elevation drawings of the underground soakaway chamber (F.32) in Building A

(I, IV and V) to the northern side of the western half of Room III. A characteristic feature of this building was the use of stubs of walling butted against the inner faces of the walls and matched in pairs projecting from opposite sides. This feature is exactly paralleled at Ptolemais (especially House G; Ward-Perkins *et al.* 1986); but at Tocra they cannot have been intended to support vaults as the structural walls arc too thin. On average the walls were 0.60 m wide and survived to heights varying from 0.20 to 0.90 m.

Room I. This was a large room measuring c. 10 × 5.3 m with four stubs, two on each side. The northern part had a heavily worn red ***opus signinum*** floor. The northern wall bad a foundation course of heavy well laid stones, surmounted by a superstructure of small faced stones. There was a doorway (F.32) near the northern end of the western wall; this, and the wall to the north, was offset relative to the southern part of the wall. As room IV lies 0.30 m lower than Room I, it is possible that the doorway was equipped with at least two steps.

Room III. Modifications to this room were limited to the addition of one pair of wall stubs on the north and south walls.

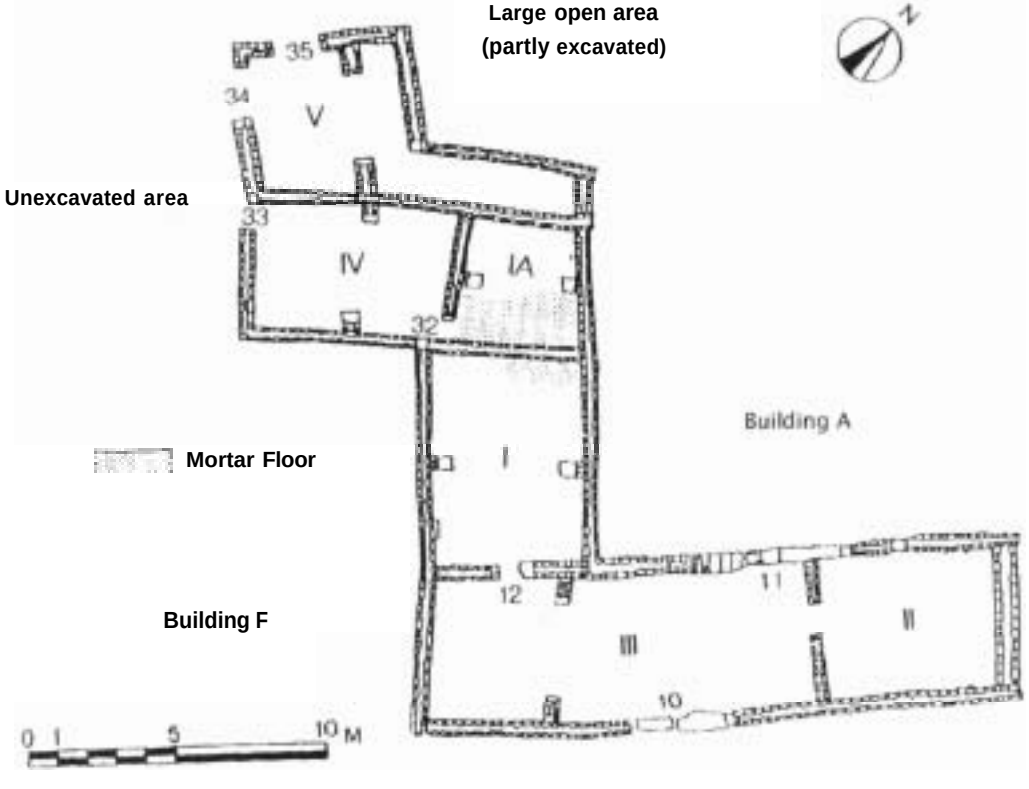


Figure 23. Plan of Building B, Late Roman / Islamic periods

Room IV. This room (3 × 5 m) may have served as the kitchen of the complex in late antiquity, as suggested by the installation along its north wall of a pair of rectangular stones c. 0.60 m high by 0.35 m wide and 0.40 m apart, probably supporting a slab to form a table or counter. Between the two slabs the bottom half of an amphora neatly chopped was found in *situ*. At the inner comer of the northern stub was a portable plain brazier, and against the western face of the opposite stub was a badly damaged hearth. Two large mortars fashioned from column drums were found in this room. There was a second door (F.33) into room IV from room VI to the west.

Later modifications were discernible in Room I. Its mortar floor was overlaid by a wall, *c*. 0.60 m wide, running east-west. The wall was built of one course of faced masonry surmounted by small stones with a rubble and mud infill. This partition created an irregular room (IA) measuring c. 3.50 × 3 m) whose only access was from Room IV to the west; in this phase Room IA must have formed part of a different property ti-om Building B. Subsequently an L-shaped annex (V) was added, adjoining the external wall to the north of rooms IV and IA. It had two entrances (F.34 and F.35), and may have served as a store or outbuilding.

Building C (Fig. 24)

The building lay towards the east part of the excavated area adjacent to Building **A,** with which it shared its western wall. The walls survived to heights varying between 0.30 and 1 m, exhibiting the same construction materials and methods as other late antique structures on this site. The building consisted of five rooms grouped around three sides of an open courtyard.

Room I. Room 1 formed the main entrance to Building C, opening from the unexcavated area, which may have been either an alley or another courtyard. The main entrance (F.36) was indicated by a squared block with a shallow central hole (F.37). **A** second door, in line with the entrance, opened into the courtyard to the south. To the east and west doors led to the adjacent rooms. Remains of a stone floor of weathered calcareous sandstone survived near the door to Room II: this and a similar patch in Rooms II and III seem to have belonged to a stone yard surface of the earlier period, around the Roman oven or kiln, and overlain by the walls of Building C.

Room II (3.90 × 2.60 m) opened off the vestibule I via a door at the southern end of its west wall. The floor was of stone flags, some of which survived also in Room V and the courtyard to the south. Below this stone pavement lay the Roman oven or kiln (above).

Room III (3.40 × 2.60 m). The floor of this room re-used an earlier pavement (F.23). The door to the vestibule was at the south end of the east wall. Parallel to the north wall, at a distance of 0.80 m from it, a wall 0.50 m wide projected for c. 1.90 m, surviving to a height of 0.55 m. It is unclear what was the purpose of the space thus created. Between the western limit of the flagged stone pavement and the west wall was an area of compacted mud with fragments of mud brick, probably the demolition of the previous phase.

Room IV (4 × 3.40) was entered from the courtyard through a doorway (F.41) flanked internally on the southern side by a wall of uncoursed squared stones.

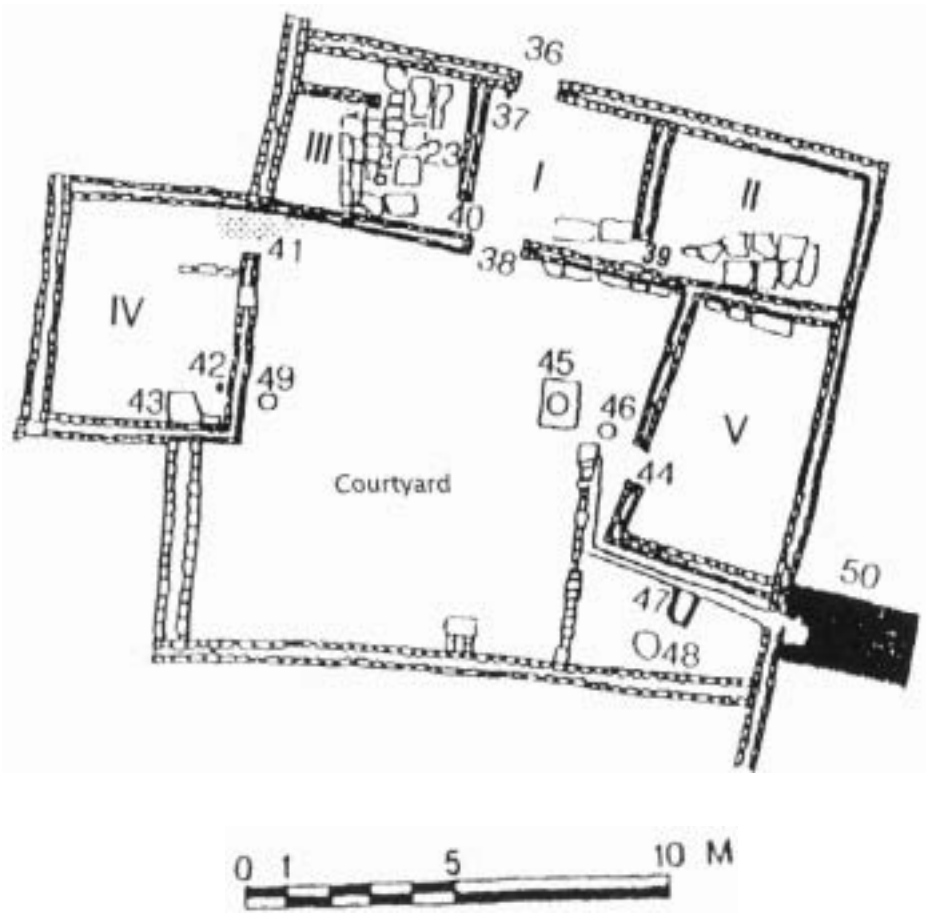


Figure ***24.*** *Plan of Building C, Late* **Roman** */Islamic periods.*

A fluted colonnette of dark basalt (F.42) was found ***in situ*** against ***the*** east wall. In the cast corner were the remains of two slabs (F.43), and against the south wall were remains of *dolia* (Fig. 25).

Room V lay opposite room IV across the courtyard to the cast. In shape it was an irregular quadrilateral with maximum dimensions of 4.90 × 3 m. There was a door from the courtyard towards the southern end of the west wall.

The courtyard was irregular in plan, with an earthen floor, surrounded on three sides by rooms and with an underground vaulted chamber to the east. A well (F.45) stood close to the doorway of Room V, crowned by a framed well-head fashioned from a large sandstone block (0.90 × 0.80 × 0.30 m high). The opening had a diameter of ***c.*** 0.55 m, and the well was 7.50 m deep. Part of the shaft was visible to a depth of ***c.*** 2 m, lined with faced stones and with hand and footholds in

Figure 25. ***Building*** *C. Room IV. Colonnette and dolium in situ (Late Roman / Islamic period). Looking south (scale in 5 cm units).*

opposite sides at regular intervals. To the east of the well was the base of a column drum (F.46), which may have provided a seat for washing, as two drains originated near it, one covered with rough slabs which led out through the south wall of the house, while the other (uncovered) turned through a right angle to the east, flanking the southern wall of room V and discharging into the underground vaulted chamber (F.50). A rough basin (F.47), measuring *c.* 0.35 × 0.25 m, abutted the south edge of the uncovered drain. Further south was an oven of baked clay (F.48), badly damaged. Another oven (F.49) was discovered against the east wall of room IV, surviving to a maximum height of 0.38 m. It was built of clay resting on flat slabs. The oven was surrounded by orange sand mixed with pebbles. A wall stub of unknown purpose was butted against the south wall of the house, close to its mid point, possibly a survival of a different phase.

The underground vaulted chamber to the east of the courtyard measured 2.50 × 1.70 × 1.60 m high, and was built in the same manner as its counterpart F.32 in Building A. As both chambers lacked waterproof linings, and a drain discharged into the subterrancan chamber of Building C, it seems that both vaulted chambers were soakaways receiving waste water. Its similarity with the soakaway in Building A, and flat-based jugs and a lamp from its fill suggest a late Roman date (see below). There is a similar chamber in the building to the south of the east church, near the centre of the site of Tocra (Bentaher and Dobias-Lalou 1999, 22).

Building D (Fig. 26)

Building D lay immediately to the north of Building A, with which it shared the south wall of rooms IA and IB. To the north it opened onto an alley running E-W with a

maximum width of 2.40 m, between Building D to the south and a crude wall ***c.*** 0.35 m high and an unexcavated Roman building to the north. The alley had an earthen surface, terminating at Building E to the east; its western extent is uncertain. The walls of the building survived to a maximum height of 0.90 m.

The courtyard. The main entrance (F.51) to the house was towards the castcrn end of the north wall, opening directly onto a courtyard with an earthen surface. There was a posthole in the eastern end of the threshold block, which was raised on the outside to the same level as the alley. Traces of rooms in the south-western part of the courtyard are suggested by a thick wall of faced stones, running north-south for 1.20 m (0.90 m thick; max. preserved height 0.85 m), with its alignment continued by a crude wall ***c.*** 1.40 m long by 0.45 m wide (max. preserved height 0.70 m). Two phases are probably represented here. Against the latter wall was butted a stub wall.

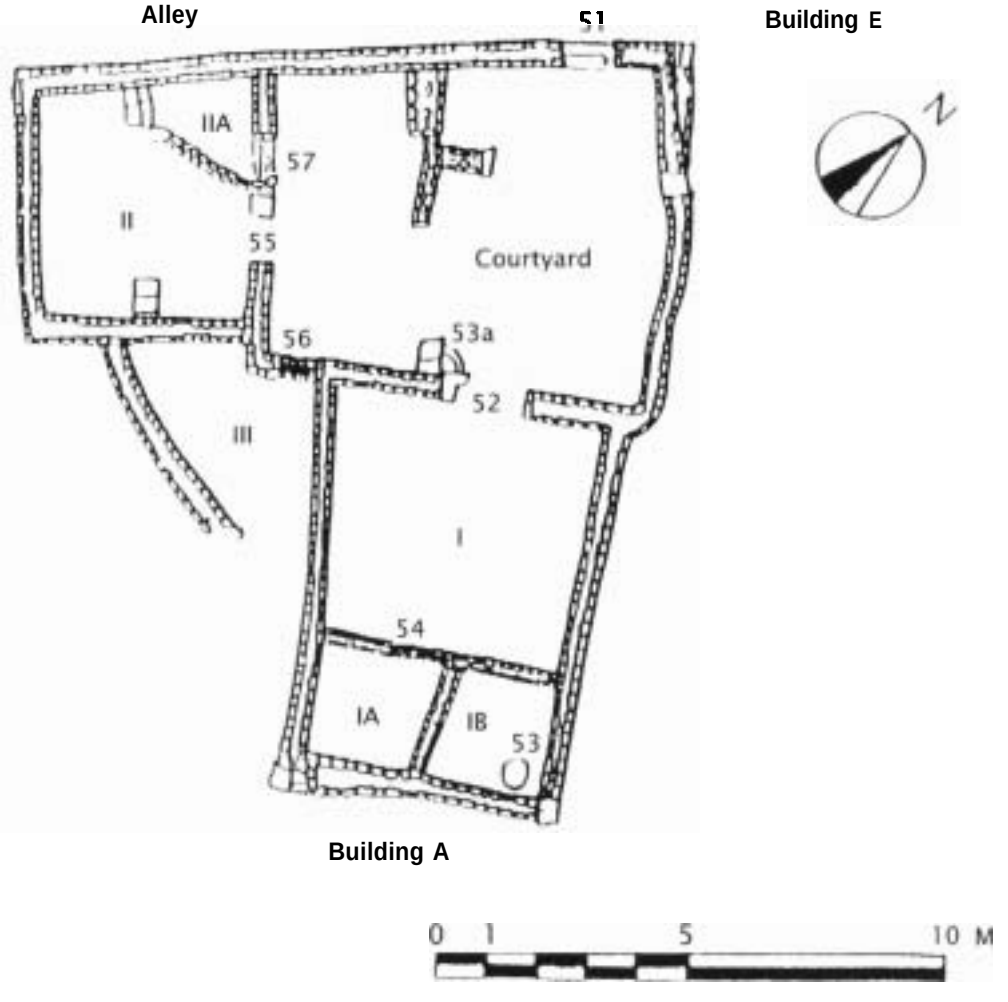


Figure 26. ***Plan of Building D, Late Roman / Islamic periods.***

Figure 27 *Remains of wall plaster in Building D, Room I (Late Roman / Islamic). Looking north (scale in 5 cm units).*

Room I (c. 4 m square). The entrance to this room from the courtyard was through a doorway (F.52) in the north wall; only the lower part of the western jamb was found in *situ*. A limestone block with a hinge socket (F.53a) was set against the outside of the jamb, protected by a short stub. The room had an earth floor and the walls were coated with rough whitish plaster, which survived on the east, west and north walls (Fig. 27). The fill consisted of rubble and soil mixed with coarse pottery, including part of an amphora with a stamped handle depicting the bust of a Byzantine emperor resembling those on the obverse of Byzantine coins (below).

To the south of Room I, and separated from it by a thin wall 0.50 m wide, were inserted the small rooms IA and IB. Room IB contained an oven (F.53) in the east corner. The location of the doorway into Room IB could not be established, but Room IA was entered from Room I through a doorway (F.54) which was blocked in a late stage of occupation.

Room *II* (c. 3.80 m square) opened onto the courtyard through a doorway (F.55) in its eastern wall. It was earthen floorcd, and there were two wall stubs opposite each other on the north and south sides.

Later *modifications.* At a later stage of occupation a crude curved wall resting directly on the earth floor was added within Room II, creating an uneven Room IIA (Fig. 28) whose doorway was cut through the east wall. The small, irregular structure may suggest a latrine, but the lack of further evidence makes it impossible to confirm this.

A second entrance to the courtyard (F.56) was blocked and another curved wall was butted against the outer face of the south wall of Room 11, made of uncoursed squared stones resting directly on the earth. Its purpose is unclear.

Figure 28 Building D, irregular shaped Room IIA inserted within Room II (Late Roman - Islamic). Looking west (scale in 5 cm units).

Building E (Fig. 29)

Building E lay in the northern part of the excavated area and was not fully cxcavated. It contained numerous tubs or basins suggesting a commercial or manufacturing function.

Unit A. Access to this unit was from the north (F.58); a second entrance (F.59) opened onto the alley to the west. The alley ended at Unit A, with two recesses forming a T-shape in front of the entrance. This western entrance remained in use throughout the life of the unit, but the northern entrance was blocked in a later stage of occupation.

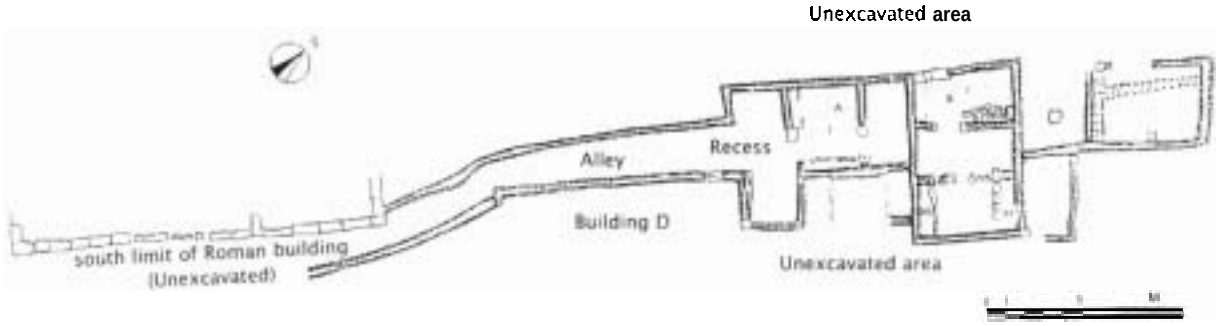


Figure 29. Plan of Building E, Late Roman/Islamic periods.

Unit A was divided into two sections connected by a doorway (F.60) flanked by two large re-used column drums 0.75 m in diameter and 0.80 m high. The western room (I) contained a tub or basin (F.61) against the south wall, and the remains of a possible bench survived against the north half of the west wall.

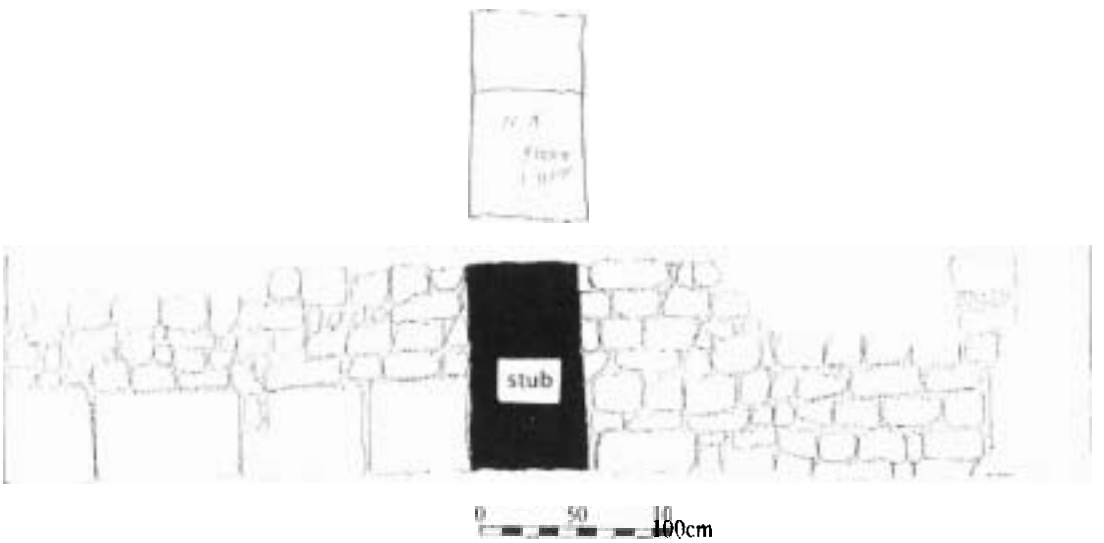
Unit B lay to the east of Unit **A,** entered through an entrance from the north (F.63) whose position was indicated by a threshold block. This unit was also divided into two rooms. Alongside the west wall of Room I, flanking the entrance, was a tub or basin (F.66) lined internally with a thin layer of lime; at a later stage two further tubs or basins were added (F.67 and F.68).

The west wall of Room II was butted by a stub wall incorporating a large ashlar block with graffiti on its face (Fig. 30). This room was later divided by a wall crudely and unevenly constructed from re-used materials including blocks and column drums. In the innermost part of the room, to the south, were two trough-like structures (F.64, F.65) along the east and west sides, also built of re-used materials.

To the east of Unit B was a well (F.69), c. 6 m deep and bottle-shaped in section with a diameter of 0.55 m at the top widening slightly to 1.20 m below its neck, which was built with faced stones. Further east were two rooms, not fully excavated and of indeterminate dimensions.

Building F (Fig. 31)

At the western limit of the excavated area, this building exhibited the same construction method as that of the other buildings of this period, except that its walls, which survived to a maximum height of 0.60 m, rested directly on the earth with no foundations.



Looking east

Figure 30. Elevation of the west wall of Building E, Unit B.

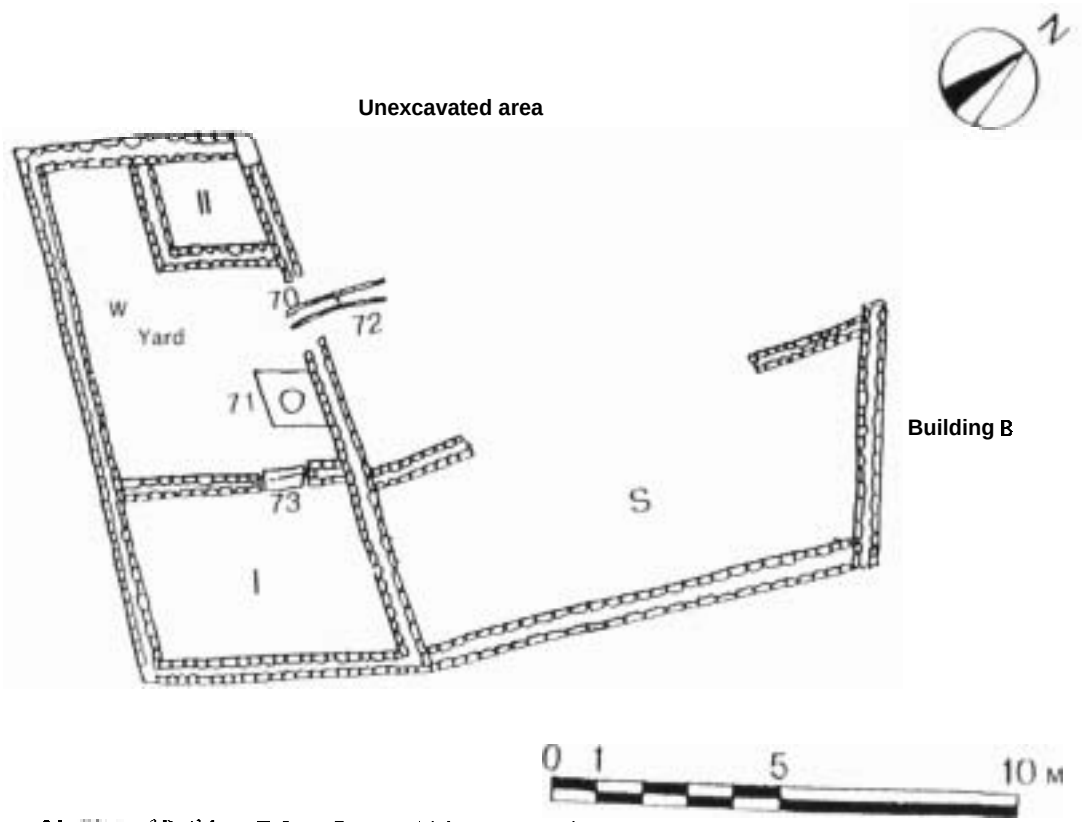


Figure 31. Plan of Building F, Late Roman / Islamic periods.

The building had two wings, west and south, both trapezoidal in plan, with earth floors and plain walls.

The west wing measured *c.* 11 × 5 m and consisted of a yard flanked to the south by Room I and to the north by a small room, II. The main entrance (F.70) was in the east side of the courtyard, with a well (F.71) flanking the entrance to the south. The well was carafe-shaped with a framed head covered **by** a capstone. A section of drain, of two sandstone blocks (F.72) ran from north of the well out through the entrance to the east.

Room I (c. 5 × **3** m) was entered from a doorway (F.73) in the north wall, indicated by a threshold and a flight of two steps. Room II was a box-like structure (a rhombus c. 1.75 m on a side), apparently without an entrance (the walls survived to a height of 0.60 m); among possible interpretations it is tempting to suggest a manger for hay.

Little can be said about the south wing, a large room ***(c.*** 11 × **3** m) with an entrance in the north wall which had been partly robbed out either side of the entrance. Very little pottery was found in either wing, which might possibly point to a use as stores or animal shelters.

The pottery and other finds

The pottery assemblage was dominated by local and imported amphorae and coarsewares, including jugs, lagynoi, cooking vessels and lamps. There was a small amount of finewares, including some residual sherds of the fifth century BC in the earliest

(Hellenistic) deposits. The pottery sequence indicated occupation from the Hellenistic through to the Islamic periods, predominantly from the second century BC to the seventh century AD.

Comprehensive study of the pottery has not yet been completed, and selected fonns only are presented here to give some brief idea of the range of material present.

Wasters from the Hellenistic kiln (Fig. *32)*
Two samples from the kiln were analysed to determine their minerological characteristics. Both fabrics, A and B, are local to the Tocra region.

Fabric A: Fairly hard fabric, compact with abundant flakes of white to greenish shell. Small white limestone inclusions, some elongated voids. Waster of a double-rolled handle amphora, possibly an imitation of Koan amphora'? Cf. Fig. 33, no 3.

Fabric B: As Fabric A, but tired red (Munsell 2.5 YR 5/6) and with fewer voids. Very fine quartz grains. Mis-shaped neck of lagynos with handle and an incomplete defective rim (cf. Fig. 34, nos 8 and 9).

Amphorae (Figs 33, 34)
Seven amphora types have been recognised to date, chiefly from the late Hellenistic to mid-Roman periods. No complete profiles were retrieved.

I. Rhodian (Riley Type **3).** Rather hard, creamy buff clay with occasional white inclusions (Riley 1979a, 122-4, fig. 69 D.16).

2. Dressel 7-11. Kadish shaped body and hollow toe; short rim which thickens and **turns** outwards. At Berenice this fonn occurs in the late first century AD (Riley 1979a, 159; fig. 75, D133).

3. Riley Early Roman Amphora 4 (Dressel 2-4; Ostia LI; Peacock and Williams Class 10). Fabric: gritty, mauve red with abundant black grits and a thin white surface wash. Long narrow body with double-rolled handles and a solid, slightly tlared base; carinated shoulder

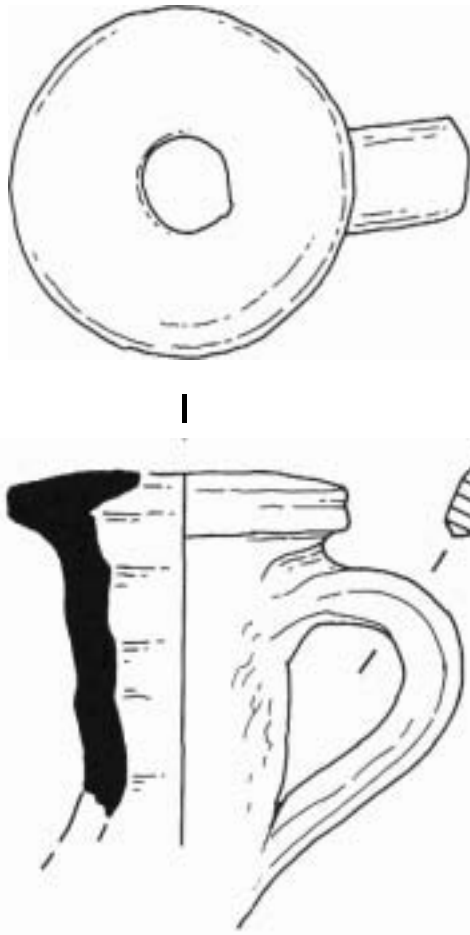


Figure 32. Wasters from the Hellenistic kiln: *a deformed lagynos spout and* **o** *double-rolled handle of an amphora.*

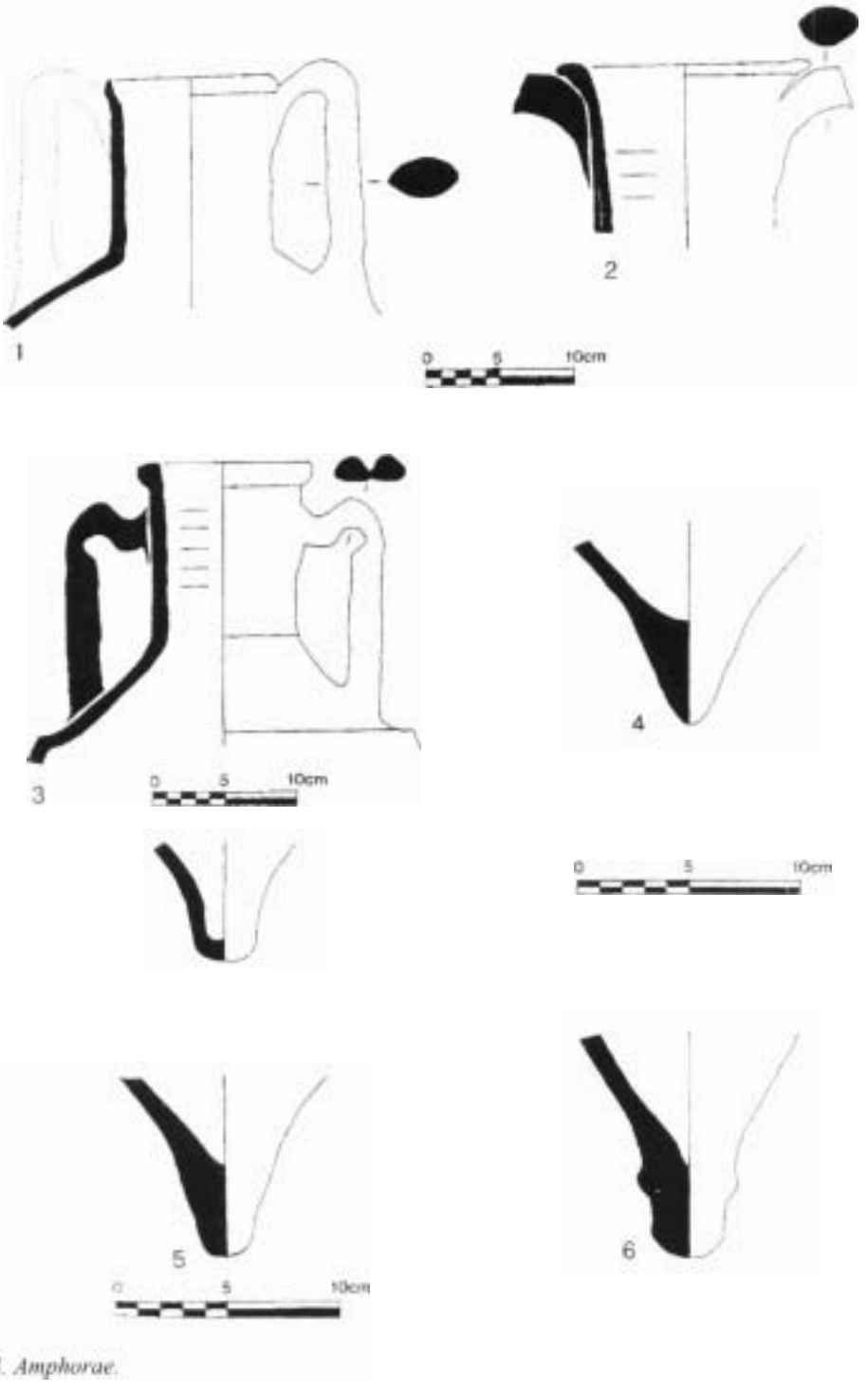


Figure 33. Amphorae.

arid rounded rim. This wine amphora form was manufactured in several areas of Italy, Spain, southern and central France, and Britain: a derivative also seems to have been produced in southern Tunisia and Tripolitania. Production began in the last quarter of the first century BC and lasted to the mid second century AD. Found throughout the Roman Empire, from Britain to eastern India, including at Berenice (Riley 1979a, 149-50, fig. 74, D118) and Sabratha (Keay 1989, 38 fig. 11, 188).

4. Mid-Roman amphora 18 (Zeest form 90). Oval body, rounded base with nipple toe. Orange fabric, with occasional mica specks. Probably originated in the north Aegean or the Black Sea; appears at several coastal sites in southern Russia. frequently in first- and second-century AD contexts; also in Malta in the early third century AD. It was very rare at Berenice (Riley 1979a, 205-6, fig. 90, D327).
5. Africana II 'Grande'; Beltrán 56; Ostia III; Keay IV-VII; Peacock and Williams Class 34. Fairly solid red clay with frequent hard creamy grits. Cylindrical body with a conical neck. thickened rim and handles running from the lop of the neck to the shoulder. Produced in the Sahel region of central Tunisia, from the late second century AD until at least the late fourth century AD. Contents are thought to have been olive oil or fish products (Riley 1979a, 200, fig. 87, D289; Peacock and Williams 1986, 155-6).
6. Late Roman amphora. Long tapering body with thick ridge on the base. Orange fabric with fairly small white grits. Found at Berenice (unclassified deposits) and compared with an example from the second half of the fifth century AD from near Barcelona in Spain (Riley 1979a, 234, fig. 96, D391).
7. Stamped amphora. Fairly micaceous fabric, with reddish core and whitish surface. Narrow neck with curved handles running from below the rim to the shoulder. One handle survived intact, stamped with the bust of a Byzantine emperor similar to depictions on coins; the other handle seems to have been stamped in the same manner, but only a portion of it survived. This is the first recorded occurrence of this type in Cyrenaica; the only known parallel comes from the Athenian Agora, where the stamp was compared with busts on coin types of the seventh century AD—Phocas I and Heraclius (Grace 1949, 188 Pl. 20,14). Found in Building D, Room I.

Lagynoi and jugs (Fig. 34)

8. Local plain lagynos. Lagynoi are common on most Hellenistic/early Roman sites in the Mediterranean, up to around the first century AD. Distorted wasters, and overfired and broken lagynos sherds were found in the Hellenistic kiln at Tocra (see above for fabric description).
9. Lagynos.
10. Late Roman jug 2. Trefoil mouth with widened handle at the point of junction with the shoulder; probably flat base. Orange-brown fabric, with shelly white grit specks. Quite common at Berenice where it dated to the early sixth century AD. Uncertain whether this was locally made or imported (Riley 1979a, 393-4, fig. 142, D1191).
11. Late trefoil jug. Crude, probably local, version of late trefoil jug 2, with which it is contemporary. Pale cream fabric with grey grits. The handle joins the upper level of the flaring rim. From the underground vaulted chamber F.32 in Building A.
12. Flat-based jug. Orange-brown fabric, with occasional white specks. There is a wide range of rim forms. Mouth and handle missing. Probably imported; common in Athens between the fifth and seventh centuries AD; also common at Apollonia and Berenice, and occurs in the eastern Mediterranean (Riley 1979a, 395 fig. 143, D1201). From the underground vaulted chamber F.32 in Building A.
13. Flat-based jug. Greyish-orange fabric, similar date to no. 12. Body and base fragment only. (Riley 1979a, fig. 142, D1199). From the underground vaulted chamber F.32 in Building A.

Local Hellenistic finewares (Fig. 34)

14. Conical body with diagonal flutes and horizontal grooves. Fabric colour varies with different degrees of oxidation during firing; core ranges from pale brown to grey, usually containing abundant white flecks of lime or shell; slip varies from red to purple or black, with a slight metallic gloss. The type occurred in Hellenistic deposits at Berenice, where Kenrick considered it a local production imitating contemporary imports (Kenrick 1985, fig. 18, B124). Large quantities of this form were found in the sounding to Hellenistic levels under the floor of Counyard I in Building A, its abundant occurrence here, not far from the Hellenistic kiln, may suggest that it was produced at Tocra

Plain wares (Fig. *35)*

15. Cream fabric. containins white ants and occasional mica specks. Distinctive incised decoration on exterior below the rim. comprising narrow bands of wavy and horizontal grooving Very rare at Berenice; comparanda (but not closely similar) were found in late Roman contexts at Ajdabiyah (Riley 1979b, 72).

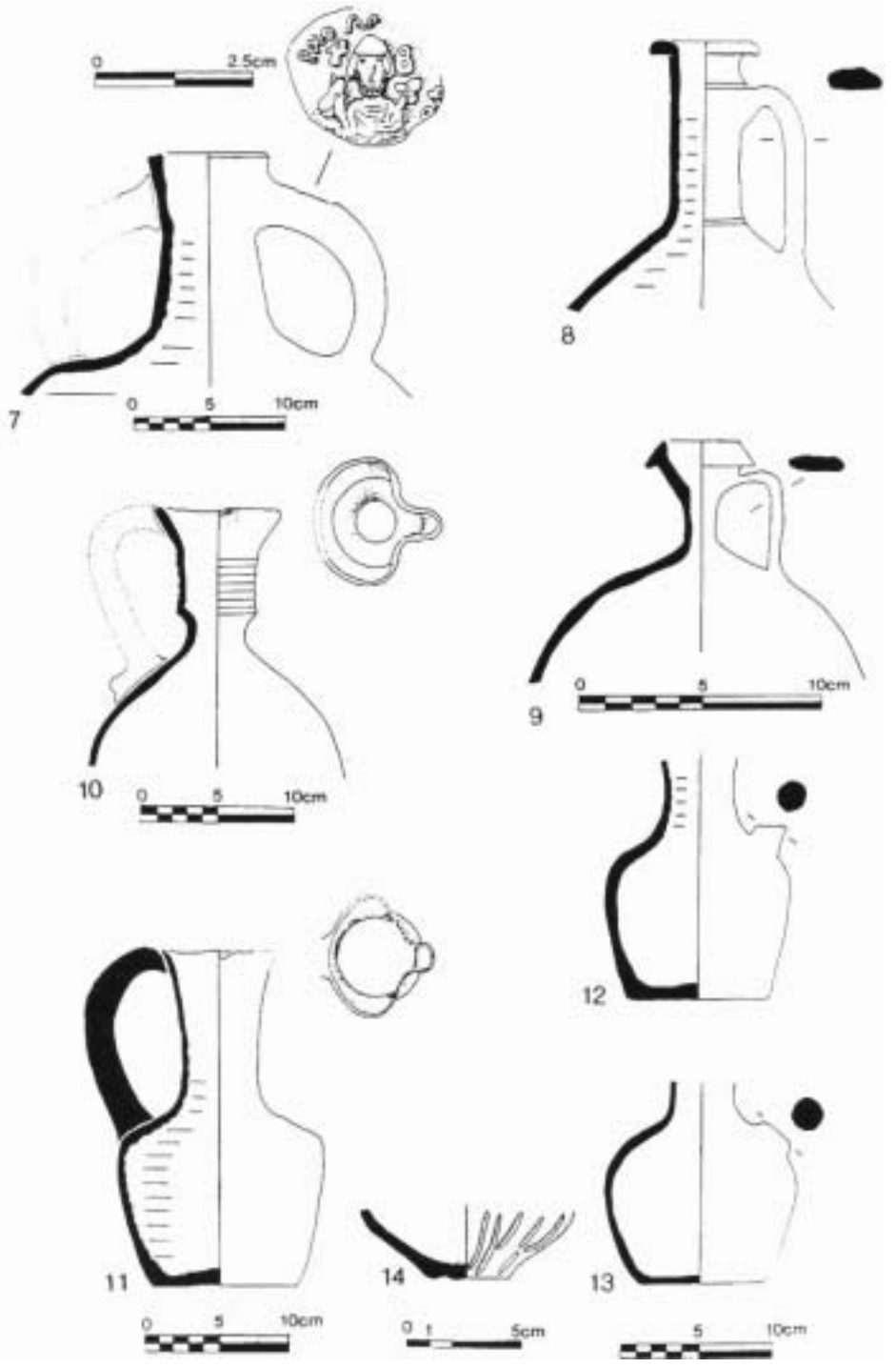


Figure 34. Amphora, lagynoi, jugs and fine ware.

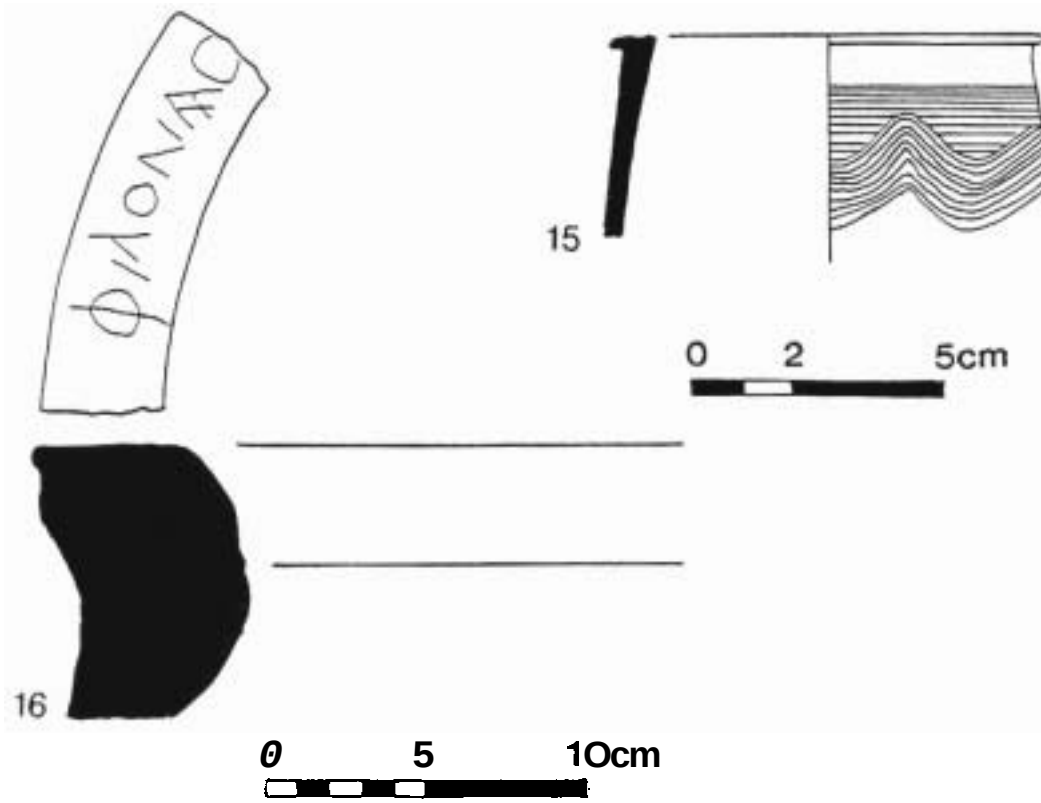


*Figure 35. Plain wares. 15 =**plain ware** vessel. 16 = saggar.*

16. Plain ware 9: saggar. Greenish cream wash on surface. This form occurred in Cyrenaica in the second century AD. It has clear associations with kiln sites throughout the Mediterranean, and is thought to be part of the kiln furniture, supporting pots during firing. This fonn was found in a late Roman context in Building C, where it may possibly be residual from the oven or kiln of the earlier (Roman) phase below Room II. However, it showed no signs of over-firing or use in pottery manufacture. This examplc was made locally and bears a graffito signature φλοναο[on the rim. A similar type was found at Berenice (Riley 1979a, 353, fig. 128, D963) and around the extra-mural kiln site at Tocra (Riley 1979b, 40).

***Late** Roman cooking wares* (Fig. *36)*
Very coarse, dark grey fabric containing abundant shell. Type I is characterised by a rounded body and horizontal lugs; several variant sub-types were classified according to variations of their lugs. The excavations at Tocra produced numerous examples of Types I (with a row of finger indentations on the upper part of the lugs) and la (plain lugs). The general form of this cooking ware was common in many Cyrenaican sites around the sixth century AD, and may have continued well into the twelfth century, as suggested by the evidence from Ajdabiyah. Similar forms were occasionally represented at Carthage, but lacking from contemporary sites in the Aegean and Egypt (Riley 1979a, 267-9, fig. 106, D542-545; 1982, nos 45, 46). The occurrence of this fonn by itself, without rcinforcetnent from other evidence, is not sufficient to assign it to the Islamic period (Riley 1979a, 286).

17. Type 1. Rim and body fragment, int. diam. 0.13 m.
18. Type la. Rim and body fragment, int. diam. 0.13 m.
19. Type 1a. Rim and body fragment, int. diam. 0.23 m.

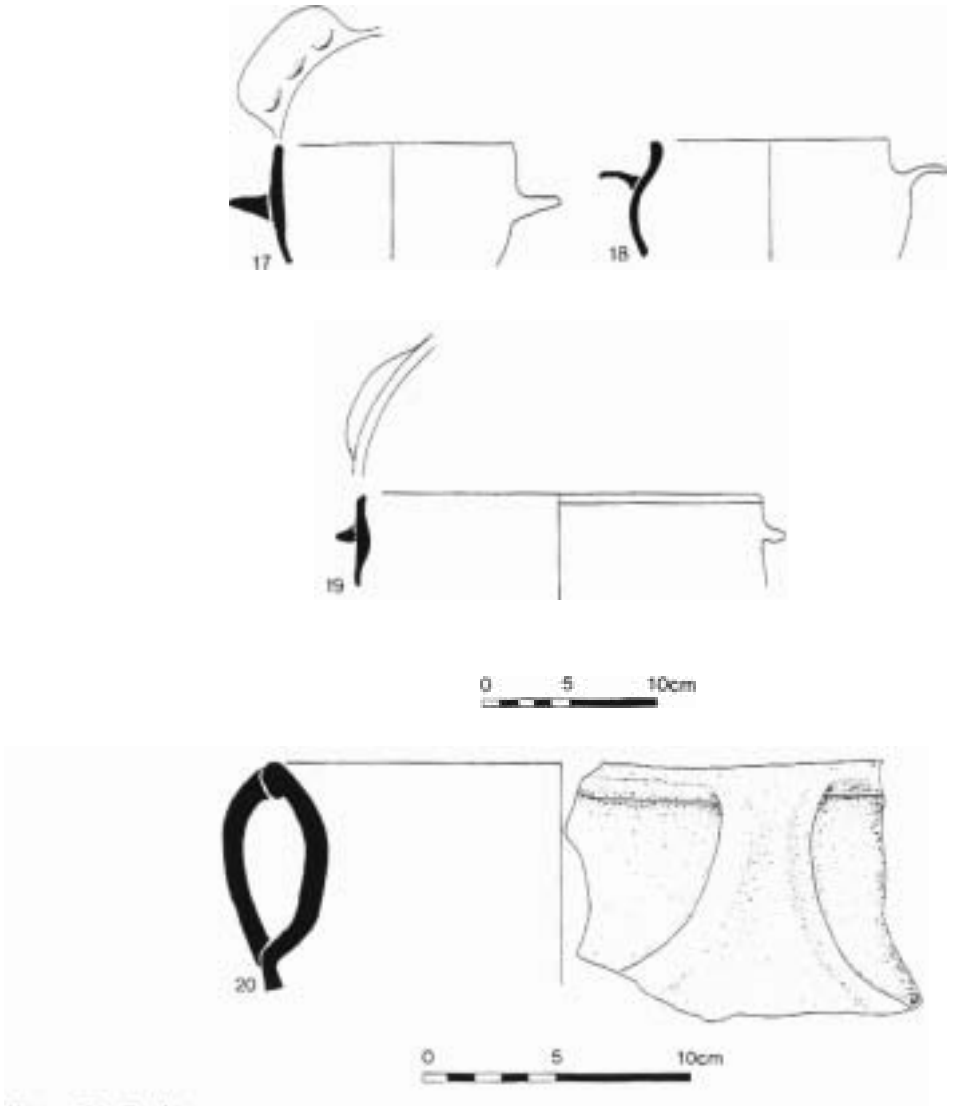


Figure 36. Cooking wares.

20. Type 2b. Globular with a broad handle merging with an everted rim. Hard, gritty brown fabric with shell and mica inclusions, fired grey at the edges. The form occurred at Athens in the fourth century AD; at Tocra it is probably a local imitation of the imported Type 2. It occurs at Berenice in late Roman deposits (Riley 1979a, 271, fig. 106, D549); a similar form was found at Ajdahiyah in late Roman contexts, and it possibly continued well into the Islamic period (Riley 1982, no. 68).

Lamps (Fig. 37)

21. Complete local wheel-made Hellenistic lamp. Length 0.095 m; width 0.07 m. Grey-brown local fabric. Flat-topped nozzle, sharply splayed at the end, with slight flukes; deeply concave filling hole without traces of applied handle. This local form was influenced by the mid second-century BC products of Cnidus in Asia Minor and continued to be produced until around the first half of the first century BC. The few examples found in first-century AD contexts at Berenice are likely to be residual (Bailey 1985, 19, C94).
22. African Red Slip lamp (Hayes Type II). Complete lamp, length 0.125 m, width 0.09 m. Orange-red fabric, with unpierced handle and large nozzle, decorated with degenerate palm leaf motifs and triangles on the shoulder. Concave discus with a running hare in relief, flanked by two filling holes.

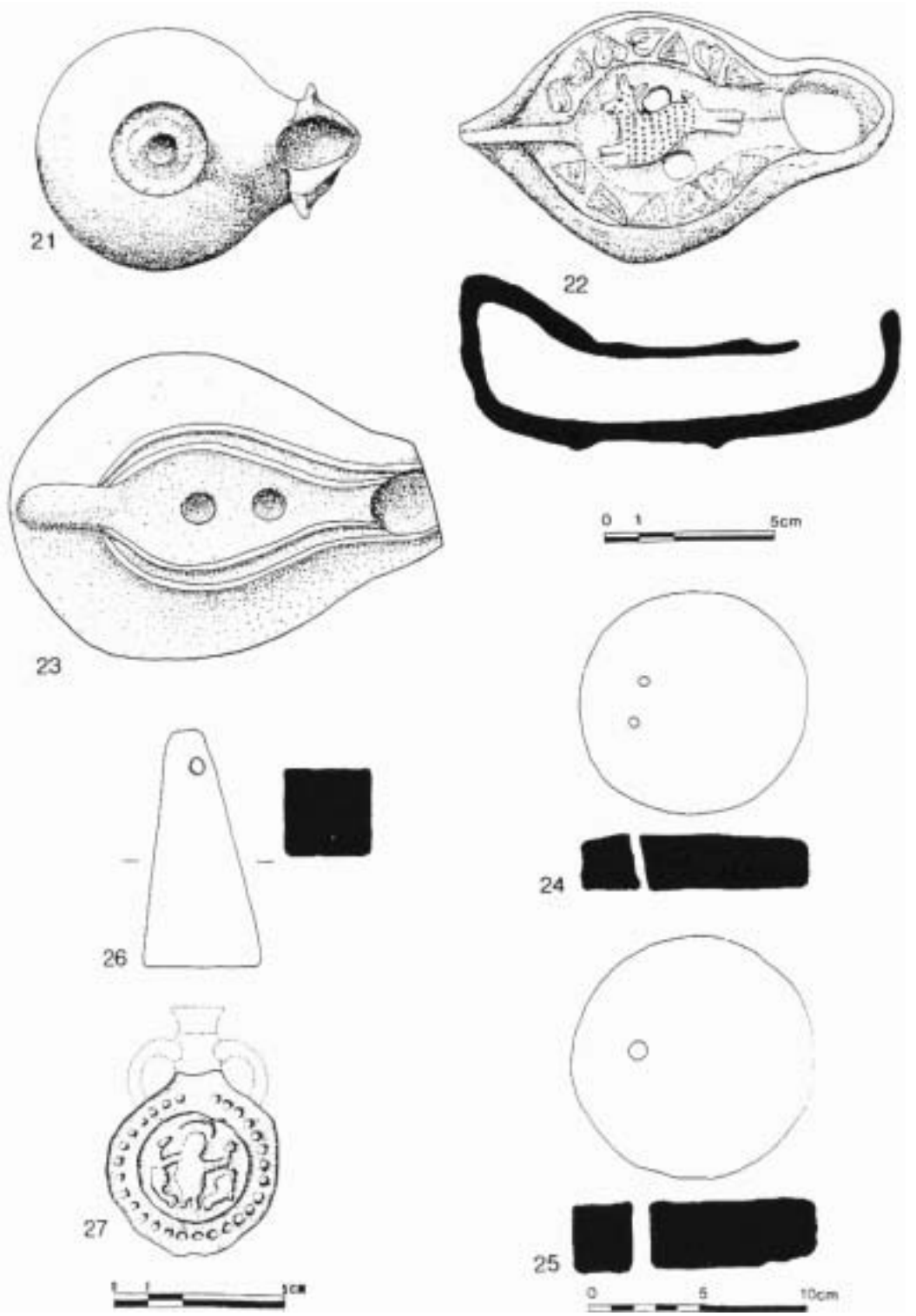


Figure 37. **Lamps** *(21-23), loomweights (24-26),* **and St** *Menas flask (27).*

Slightly hollowed base. This form occurred at Berenice in contexts of the early fifth century AD to about the seventh century AD (Bailey 1985, 112, C782-597). From the underground vaulted soakaway (F.32) in Building A.

23. Local carinated channel lamp. Almost complete except for the nozzle which is partly broken. Green-buff coarse local fabric. Surviving length 0.125 m, width 0.09 m. Pear-shaped, with an unpierced handle and two filling holes along the slightly concave discus which is flanked by pairs of ridges from the nozzle to the handle. This fonn was common on most of the Cyrenaican sites from the end of the fourth century AD until the Arab conquest. From the cistern (F.5) in Building A.

Loom weights (Fig. 37)

24, 25. Discoidal loom weight. Diameter generally ranges between 0.09 and 0.10 m with one or two holes pierced diagonally or vertically near the border. Unfired dark red to brown fabric. Discoidal loom weights are common in the Aegean until the first century AD; examples were found in the earliest deposits at Euesperides and Berenice (Riley 1979a, 316, fig. 117, D739).

26. Pyramidal loom weight with a hole bored through its flat top. This form is less common in the Aegean than the discoidal type. Stamped examples were found at Euesperides and Apollonia; unstamped examples have been found at Berenice and Tocra (Riley 1979a, 316, fig. 117, D737).

Both types were found in the earliest level directly on the bedrock by the Hellenistic kiln; they also occurred in the Roman levels, where they may have been residual.

St Menas flask (Fig. 37)

St Menas was martyred around the last decade of the third century AD in the desert east of Alexandria; during the fifth century his shrine became a popular place of pilgrimage, and flasks were produced as pilgrims' souvenirs containing holy water from the shrine. This type of flask was produced until the middle of the seventh century AD. St Mcnas flasks are not common in Cyrcnaica, but three complete examples are known from Apollonia and its environs, and two incomplete examples were found at Berenice (Riley 1979a, 364-5, fig. 131, D1036-7).

27. Neck and handle missing. Surviving length 0.055 m. width 0.05 m. Pale yellow fabric. The decoration (very worn) shows St Menas standing between two camels, surrounded by a nng of dots. The form was moulded in two sections and the neck and pierced handles subsequently applied. For this fonn see Rourriau (1981, 198).

***Brazier** lugs* (Fig. 38).

Braziers were common throughout the Mediterranean in the Hellenistic and early Roman periods; they took the fonn of a stand supporting a hollow howl from whose rim three lugs projected vertically. The lugs were used to support cooking vessels and were often decorated with moulded human or animal figures.

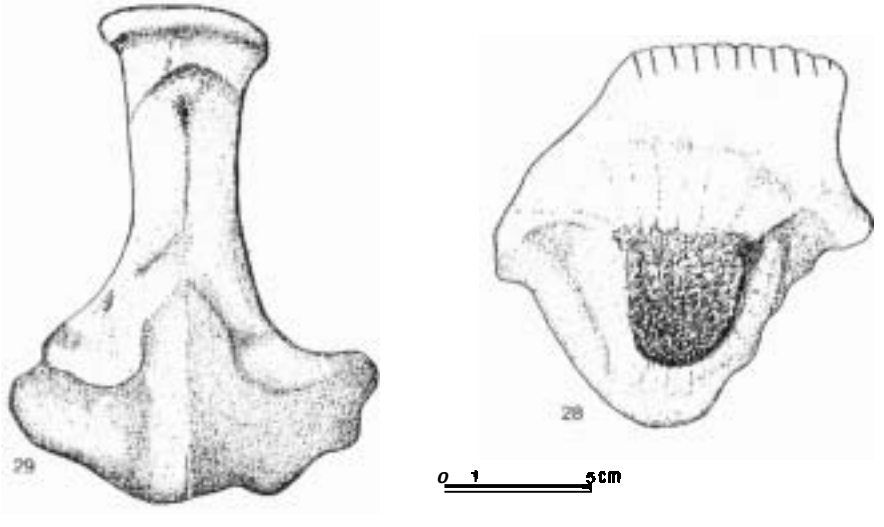


Figure 38. ***Brazier** lugs.*

At Tocra the lugs were found mainly scattered around the Roman oven or kiln (F.22); all the braziers from the excavation were fragmentary, but the lugs could be assigned to two types identified by Riley at Berenice, and paralleled by unpublished examples from Goodchild's 1965 excavations at Tocra (Riley 1979a, 304-6). Soft friable fabric with red-brown core containing limestone, grog and black inclusions; cream-white surface.

28. Type 'B'. Semi-circular lug, projecting vertically from the top of the rim. The top of the lug is grooved with a projecting horizontal ridge on the inside. At Berenice this type was common in the Hellenistic period and very rare in the first century AD. A similar form occurred at Sabratha in late first century AD contexts. (Riley 1979a, fig. 113, D962; Dore 1989, fig. 37, 91.771).
29. Type 'G'. Horn-shaped, without decoration. A similar type was found in the sanctuary of Demeter at Cyrene, from the first century AD; the form declines in the second century AD. Its occurrence in the third century AD may be residual or a late survival (Riley 1979a, 306).

The coins

The coins from the excavations have been catalogued by Bentaher (1988; 1989; 1990). They date from the third century BC to the Islamic period, but all lack close contextual information. A high proportion of the coins consists of issues of Heraclius between AD 610 and 641 (Bentaher 1993). Two unpublished copper coins from Building A, Room III (late Roman/early Islamic periods) are presented here.

The legends of both were identical. Obverse: 'There is no god except Allah alone.' Reverse: 'Mohammed is the messenger of Allah.'

1. Weight: 2.4120 gr. Maximum diam. 21 mm (Fig. 39 a and b).
2. Weight: 2.2009 gr. Maximum diam. 23 mm (Fig. 40 a and b). Apparently overstruck on a Byzantine coin.

The corroded condition of both, especially at the edges, did not permit closer identification.

This kind of copper coin or *fals* (pl. *fulus*) was of unknown date and mint, and based on a Byzantine type. The Islamic style for copper coins was perhaps initiated after the reform of the Umayyad gold dinar (AH 74/77 = AD 694/697), and the two Tocra coins are probably related to the anonymous Umayyadfals whose date has not been closely established. The undated types were presumably issued some time before the earliest dated ones, which were minted at Damascus in AH 87 = AD 707 (Broome 1985, 4-18, nos. 5-18).

In general, Islamic coins are rare in Cyrenaica. A gold dinar of the post-refonn type, issued by the Umayyad caliph al-Walid ibn Abd al-Malik in AH 91 = AD 711, was found at Cyrene (Wanis 1991).

Figure 39. Early Islamic coin.

Figure 40. Early Islamic coin.

Faunal remains

Regrettably, a considerable body of information about agricultural production and animal remains from excavations in Cyrenaica has been neglected; Barker's study (1979) on the animal bones from Berenice will remain fundamental for many years to come. Hitherto archaeology in Libya has privileged the study of epigraphic material, coins, pottery and architectural analysis, at the expense of faunal remains with their hints about the ancient economy. A major reason for this deficiency is the lack of specialists in this field.

Because of this lack the material presented here is a small sample randomly collected from the fill of the underground soakaway chamber (F.32) in Building A (late Roman period). This deposit was not sieved, and no small bones were collected, nor were fish bones, whose presence might have been expected given the coastal location of the city.

Bccause of the small size of the sample, only a basic identification was performed, using comparative collections gathered from the vicinity of Tocra and elsewhere. All the sample was identifiable except for some rib fragments. Age of animals at death was estimated mainly on the basis of fusion evidence and the tooth eruption proposed by Silver (1969) and tooth wear by Grant (1975). The bird bones were mainly complete and were identiiicd using the manual of Cohen and Serjeantson (1986). Since the sample was so small, quantification uses the 'total fragments' method, which counts each bone and tooth fragment once, except for skull fragments and ribs (Grant 1975). As the sample was random, and small, little importance can be attached to this quantification. However, it does provide some insight into the dietary habits of the late Roman period.

Species	Number of bones	%
Domestic **Fowl**	17	63
Ovicaprid	7	26
Cattle	2	7
Pig	*1*	*4*

Table 1: Boric ('total fragments') from the soakaway chamber in Building A.

There is a predominance (by number) of domestic fowl, although the meat yield of birds is limited compared to stock. Analysis of the age at death of the ovicaprids indicated that they were killed at between 13 and 36 months, while the cattle seem to have been killed in their second year. Pig was represented only by a fragment of mandible with one tooth (M1; M2 and M3 unerupted). There was little wear on the tooth, and the pig seems to have been killed before maturity. Butchery marks were not observed, although the species represented would be consistent with the bones being food refuse.

Mortar and plaster analysis

Seven satnples of mortar floor and lining material were analysed to identify their composition and test for possible contemporaneity between the vats from the excavation site and similar vats in the so-called 'Roman villa', about 100 m east of the excavations opposite the Byzantine fort.

The first stage was visual inspection using a ×10 microscope, to establish thickness, colour, the number of layers of mortar and plaster, and whether there were any organic inaterials present (such as hair or plant remains). This was followed by chemical analysis: samples of 100g dry weight were dissolved in dilute (20%) hydrochloric acid. Once all the lime was dissolved, the sample was washed repeatedly in water and allowed

to settle until the water achieved a pH of 7 (neutral). The insoluble residue was then strained and allowed to dry. The sample was then weighed again and the residue sieved through a set of small soil sieves with mesh sizes ranging from 5.6 mm to < 0.15 mm (Table 2). The residue at each mesh size was weighed using an electrical balance and plotted against the total residue weight. The contents of each residue stage were examined under a x 10 microscope.

Descriptions

I. Mortar floor from Building A, Courtyard I. Pale pink; main components tile and vitrified clay. 52 mm thick.

II. Mortar floor from Building B, Room IA. Reddish; main components tile or brick and lime. 55 mm thick.

III. Wall plaster from Building D, Room I. White, mainly lime with mica inclusions. 26 mm thick.

IV. *Opus signinum* floor around the vats in Building **A,** Room IV. Off-white; main components tile or brick, vitrified clay and sandstone. 50 mm thick.

V. ***Opus signinum*** internal lining of the vats in Building A, Room IV. Whitish-pink; main components tile or brick and vitrified clay. 25 mm thick.

VI. Opus ***signinum*** floor around the vats at the so-called 'Roman villa'. Pale white; main components vitrified clay with tile or brick. 52 mm thick.

VII. *Opus signinum* internal lining of the vats at the so-called 'Roman villa'. Whitish-red; main components tile or brick. 40 mm thick.

I	2	3	4	5	6	7	8	9	10	11
>5.6 mm	4.0	2.8	2.0	1.4	1.0	0.71	0.30	0.18	0.15	< 0.15 mm
Gravel					**Sand**				**Silt & Clay**	

Table 2: Correspondence of mesh sizes to metric dimensions.

Sample no.	Type	% Gravel > 2mm	% Sand 2 mm-0.15mm	% Silt % Silt < 0.15mm	% Lime Acid solution
I	Mortar	**23.2**	**72.4**	**3.6**	49.9
II	Mortar	**20.6**	**53.2**	**21.7**	**38.7**
III	**Plaster**	**46.6**	13.0	**42.0**	**76.0**
IV	***Opus signinum***	**19.3**	**46.2**	**34.8**	**54.8**
V	*Opus signinum*	**43.0**	**47.8**	**8.50**	**38.6**
VI	***Opus signinum***	**27.4**	**40.6**	**31.8**	**53.1**
VII	*Opus signinum*	**45.9**	**37.7**	**12.1**	**30.9**

Table 3: Composition of mortar samples

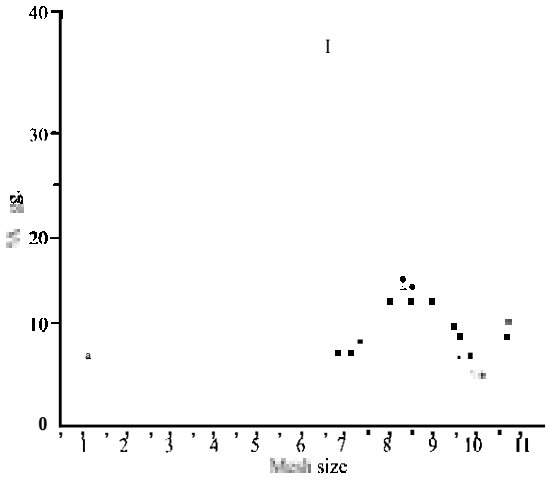


Figure 41. Residue size grading of opus signinum floor samples I. IV, und VI.

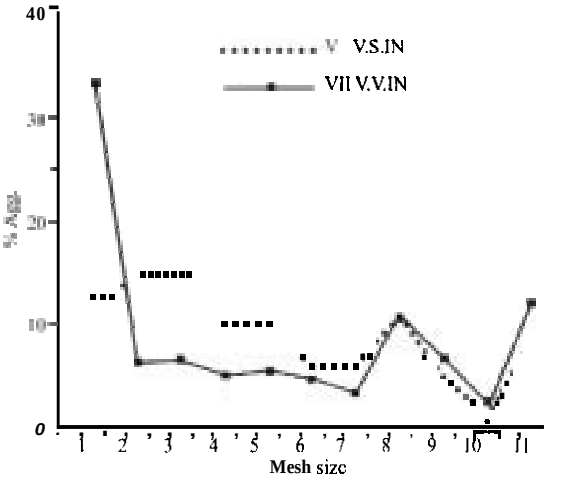


Figure 42. Residue size grading of opus signinum lining samples V and VII.

The composition of the mortar floors (I, IV and VI) shows a high proportion of silt and clay and a secondary peak in sand graded at 0.30 mm; their main components were tile and vitrified clay (Fig. 41). There are very close similarities between the compositions of the floors in Courtyard I and around the vats from the excavation site, and the floor around the vats from the so-called 'Roman villa' site. The ***opus signinum*** linings of the vats from both sites are also similar in their low quantities of sand, silt and clay (Fig. 42). These similarities may imply broad contemporaneity between the floor in courtyard I, the vats of Building A in the excavation site, and the vats of the so-called 'Roman villa'. The similarity between the floor of courtyard I and the floor around the vats is supported by their dating to the same stratigraphic period.

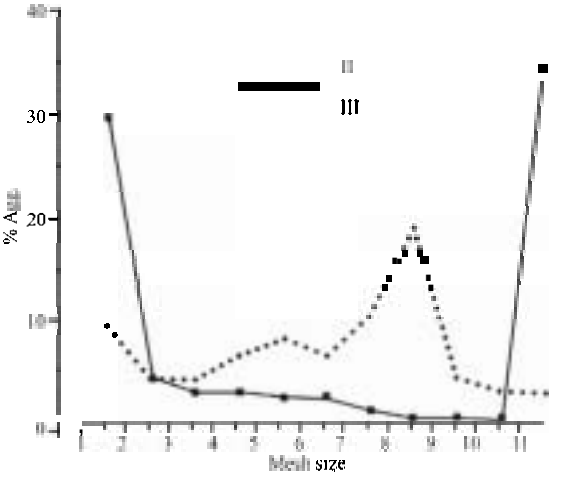


Figure 43. Residue size grading of mortar floor samples II and III.

The graph of constituents from the floor from Building B (sample II) shows a peak in sand graded at 0.30 mm, with little silt or clay (Fig. 43). This floor differed in composition from the other floor samples, and belongs stratigraphically to a later period. The wall plaster (sample III) by contrast had a peak in silt and clay with relatively little sand, as it required a high proportion of lime with a fine aggregate This plaster was not of high quality and the surface was uneven.

Conclusions

The earliest activity on the excavated site is represented by the Hellenistic kiln. It is unclear in this stage of our knowledge whether the Hellenistic kiln was intramural or extramural, as neither the kiln nor the first phase of the city walls is closely dated (Smith and Crow 1998, 40). However, there are clear signs of intramural light industry or artisanal activity on the site in the late Roman and Byzantine periods. This latter development seems to contradict the suggestion of T. Suleiman (1986, 21) who concluded that the site in its early stages was occupied by the agora.

Throughout the site's history the area seems to have been used for light industry, notably pottery manufacture in the Hellenistic period as evidenced by the kiln, which seems to have produced coarsewares including lagynoi, and amphorae. The clay source has not yet been identified, but water was obviously available from the well (F.2).

In the second half of the first century AD Building A seems also to have been involved in some commercial or production process, as suggested by the evidence of the vats in Building A, and the predominance of amphorae in the pottery assemblage. Unfortunately it remains unclear whether the vats were for olive oil or wine, although the latter is perhaps to be preferred, with the vats as fermentation tanks. The vats and Roman oven went out of use around the middle of the third century AD. This may reflect a similar disruption to urban life to that suggested for Berenice in the same period, where similar vats fell out of use around the same time (Lloyd 1977, 143-4).

It is clear that in the late Roman period Building A remained in use but underwent substantial alterations: courtyard I was divided into two, creating an additional room II, while the southern range of the building was incorporated into the later Building B. Later development was clustered around Building A in a haphazard, organic manner, the builders evidently being concerned less with neatness of construction or planning than with functionality. These late buildings were humble and crudely constructed; floors were mainly of beaten earth and mortar floors were rare, while mosaic pavements were completely absent although scattered loose tesserae were occasionally found. Internal decoration was scanty and of low quality; wall plaster was found only in Building D, Room II; marble was absent (Harrison 1985 concluded that in late antiquity the use of marble was confined to churches).

A characteristic feature of the late structures was the use of stubs of walling matched in pairs mid-way along either side of a room, and either straight-jointed or bonded against the inner walls. Usually they were no more than a metre high. The same practice was discernible in House G at Ptolemais, where it was suggested that their function was to support a cross-vault or form a doorway between two rooms (Ward-Perkins *et al.* 1986, 121). Another example from Berenice (Building W, third century AD) is thought to have served as the foundation of a pillar (Lloyd 1977, 157). At Tocra, the absence of any columns, capitals, bases or voussoirs, even of mud brick, within the debris inside the buildings suggests that these wall stubs provided support for the roof, and possibly buttressed the walls internally. As roof tile was very rare the roofs may have been of wooden beams with poles or planking sealed with mud or plaster mixed with seaweed.

There was no indication of the original height of the walls and whether their upper parts were constructed of stone or of mud brick. The insubstantial nature of these walls and the absence of staircases precludes the existence of an upper storey. Nothing could be deduced about the placement or nature of windows.

Two buildings were equipped with underground soakaway drainage chambers, as a solution to the prohlem of drainage or waste disposal in an area of the city without under-street drains (although the *decumanus* some distance to the south did have a collector drain). Soakaway drainage was also used at Sidi Khrebish, on a somewhat smaller scale (*e.g.* Lloyd 1977, 105, pl. VIIb).

The excavations demonstrated a sequence of occupation stretching from the Hellenistic period to the Islamic period. Coarse pottery in Cyrenaica underwent little change following the Arab conquest, and the same basic cookware types (with horizontal lugs with finger indentations) remained in use from the late/Roman Byzantine period well into the twelfth century AD (Riley 1979a, 268). Although no pottery was found that, on its own, need necessarily be attributed to the Islamic rather than the Byzantine period, the attribution of some of the cookwares to the Islamic period relies on the finds of two Islamic coins, probably minted in the earlier eighth century AD, in Room III of Building A. The poor straight jointing of the later walls parallels that noted by Ward-Perkins *et al.* (1986) at Ptolemais for the Islamic period, and may be taken as a further reason for assigning some of the structures to the post-Byzantine period. In this connection it is worth recalling the Arabic inscription and a type of green glaze lamp of the tenth century AD found respectively in the bath and fortress of Tocra (Jones 1983; 1984; 1985). On this evidence Jones suggested that urban life continued for some time after the Arab conquest. Lloyd (1977, 33) reached a similar conclusion for Berenice on the basis of a late tenth-century AD coin and domestic occupation of the former church. The discovery at Ptolemais of an Arab inscription in the North-East Quadrant and a radiocarbon sample from one of the rooms of House G, with a date given by Little (1990) as AD 680-780 indicated that there too occupation continued beyond the end of Byzantine rule (Ward-Perkins *et al.* 1986; Little 1990).

The evidence from Tocra reinforces and complements the indications from the other Cyrenaican cities of continued urban occupation after the coming of the Arabs c. AD 642. What remains obscure is the extent of Islamic occupation of these Cyrenaican cities. In the case of Tocra there is no evidence for the date of the final abandonment. Clearly the greater part of the buildings in the city were very thoroughly dismantled and looted of their stone after they fell out of use. The deserted city served as a ready source of stone and the ruins of the old market of the new village (immediately to the south, outside the ancient perimeter wall) were built entirely of this stone, including column drums, lintels and voussoirs. A characteristic of the later Islamic settlement of Cyrenaica is a tendency to inhabit new sites close to earlier ones which were used as quames and cemeteries (as at Euesperides and Berenice). Similarly, many prominent ancient forts and *gsur* along the coast were used as cemeteries, often marked on the top by a standard and named after local holy men (marabouts).

It is hoped that ongoing excavations by the University of Garyunis, of a building immediately to the north of the site discussed here, will shed light on social and economic aspects of later stages of city life at the site, and clarify some of the questions relating to the final abandonment of Tocra.

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