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**NEW LIGHT ON LATE ANTIQUE PELLA:  
SYDNEY UNIVERSITY EXCAVATIONS IN AREA XXXV, 1997<sup>1</sup>**

*Kate da Costa, Margaret O'Hea, Lachlan Mairs, Rachel Sparks and Pat Boland*

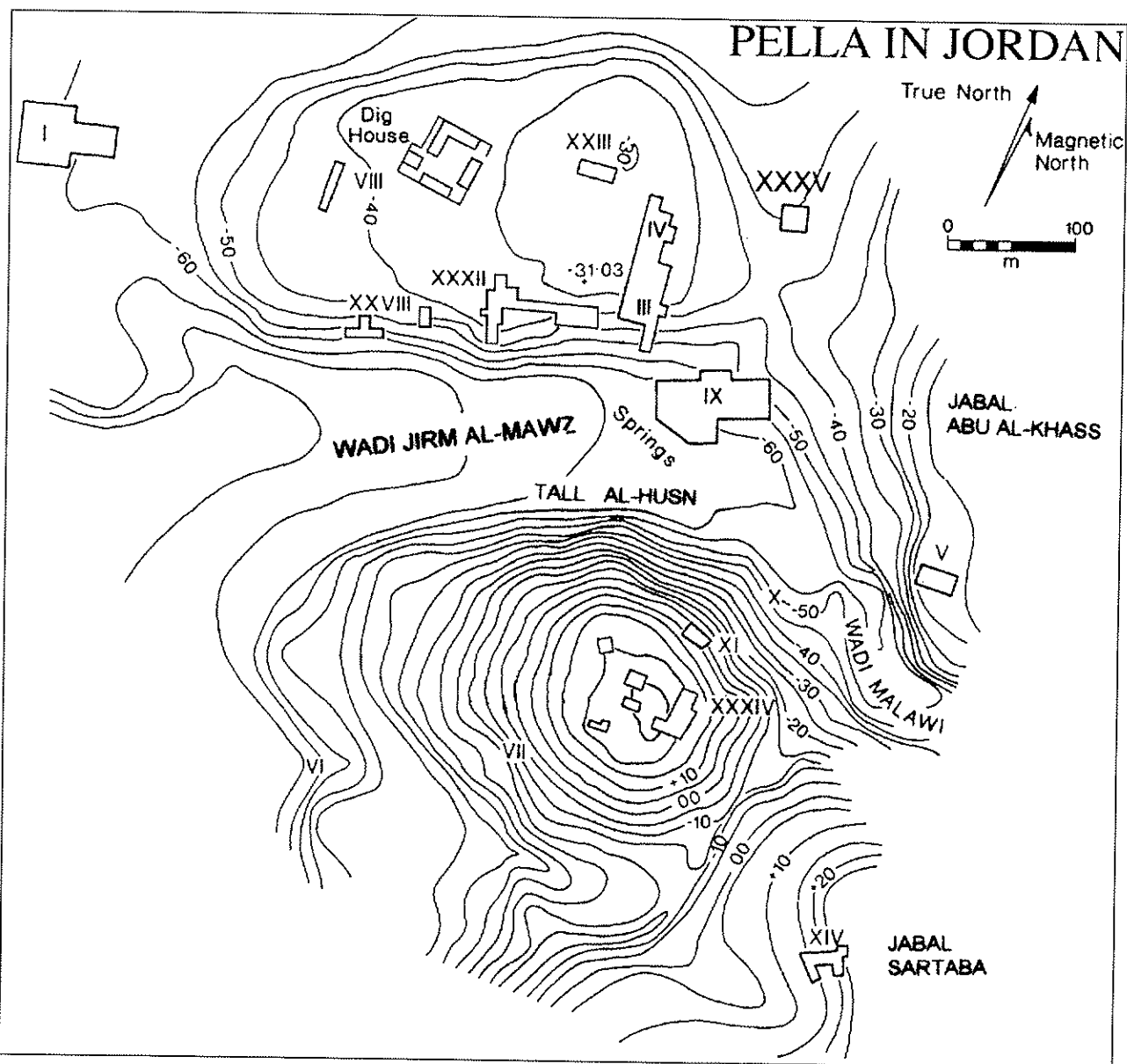
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**NEW LIGHT ON LATE ANTIQUE PELLA:  
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In January to February 1997, six trenches were laid out in a new area of excavations at Pella, Area XXXV, in the saddle between the main *tall* and Jabal Abū al-Khass (جبل أبو الخس) (Fig. 1). The four

main trenches were grouped just inside the Department of Antiquities site fence, at the curve of the modern road, astride an old track down to the springs in the wadi. Surface wall lines appeared to



1. Plan of Pella showing Area XXXV, Trenches A-D.

1. This work formed part of the Nineteenth Season (1997) season at Pella, the main part of which is reported by the Director, Dr. Stephen Bourke. This report would not have been possible without the skilled work of the trench supervisors: XXXVA - Natalie Franklin and Greg Beattie, B -

Amanda Parrish, C - Anna Parker, D & F - Liza Hopkins, E - Bruce McLaren. They were ably assisted by a number of volunteers and the local workmen. Ms. da Costa would also like to thank Dr. Stephen Bourke for giving her the opportunity to join him as a Co-Director of excavations at Pella.

confirm Robert H. Smith's suggestion that a Roman period road had run from the Parvis, north in the saddle, towards the modern road (Smith and Day 1989: 6). The extant walls, and three apparent street paving blocks, suggested a bi- or tri-partite gate, in the manner, though certainly not as grand, as the South Gate at Jarash.

In the main trenches (A-D) excavation soon revealed that the extant wall lines were mainly those of a courtyard house dating to the Byzantine and early Umayyad periods (Fig. 2, phase 3), the three paving stones forming the top steps up from the courtyard to the street. Two other earlier phases and an episode of substantial filling were discovered elsewhere in the area. It is these earlier sequences which form the bulk of the description in this report.

The entire area was affected by years of modern foot and herding traffic, as this was the major accessway for the local Bedouin shepherds to the springs of Wādī Jirm al-Mawz (وادي جرم الموز/ وادي الجرم). It is also partly the track used by motor vehicles to access the *tall*. The natural topography of the area encourages erosion during rainy periods. However, drawing on experience with excavating historical sites in Australia, where the total depth of deposit can be as little as 20cm and also heavily contaminated, we endeavoured to isolate those areas which had been somehow protected from contamination and were consequently able to recover clean sequences of artefacts to associate with the architectural phases. The solidly built walls of phases 1b and 3 seemed to have protected the interiors of the rooms from traffic, and it was mainly the south part of trench C which was the most cut-about.

### Filling Episode (Phase 1a)

A sondage in Trench D, measuring roughly 2m x 2m was begun in order to date the deposits below the warehouse room (see below, Phase 1b). Although excavation proceeded to a depth of 4.6m below topsoil (Fig. 3), only a handful of worn ceramic sherds were recovered each day, and no architecture was encountered. Excavation of the sondage was halted due to safety reasons. The actual depth of the fill deposit therefore is still unknown. Almost all the ceramic sherds were Middle Bronze Age in date (S. Bourke, pers. comm.) and no sherd post-dated the early Roman period. The soil was loose loam with one significant band of large rocks, too large to have floated along, but perhaps tumbled down from the slope to the east. The largely uniform nature of the soil and the lack of artefacts suggested a single episode of substantial in-filling in order to create a flatter area for build-

ing purposes, using material from an uninhabited area in the vicinity of the *tall*. Another possibility is that the deposit was created over a much longer time by natural forces and is composed of eroded soil from the slope of Jabal Abū al-Khass, which therefore could not have been occupied before the fourth century AD. In this case, though, we would have expected an increase in later period ceramics closer to the surface, as the rain water would have washed material down from the slopes in the west as well. Whichever the correct explanation, the area between the main *tall* and Jabal Abū al-Khass was probably a steep gully until the fourth century AD and it seems unlikely that a road ever led north from the Civic Centre in the Roman period as proposed by Smith. The gully would have formed a natural defense for the east flank of the *tall*, though how deep and steep it was before the filling episode has not been determined. Presumably either increasing population, decreasing habitation density or increasing building size (or all three) led to the need to create a new quarter for the city.

### Warehouse Room, Phase 1b

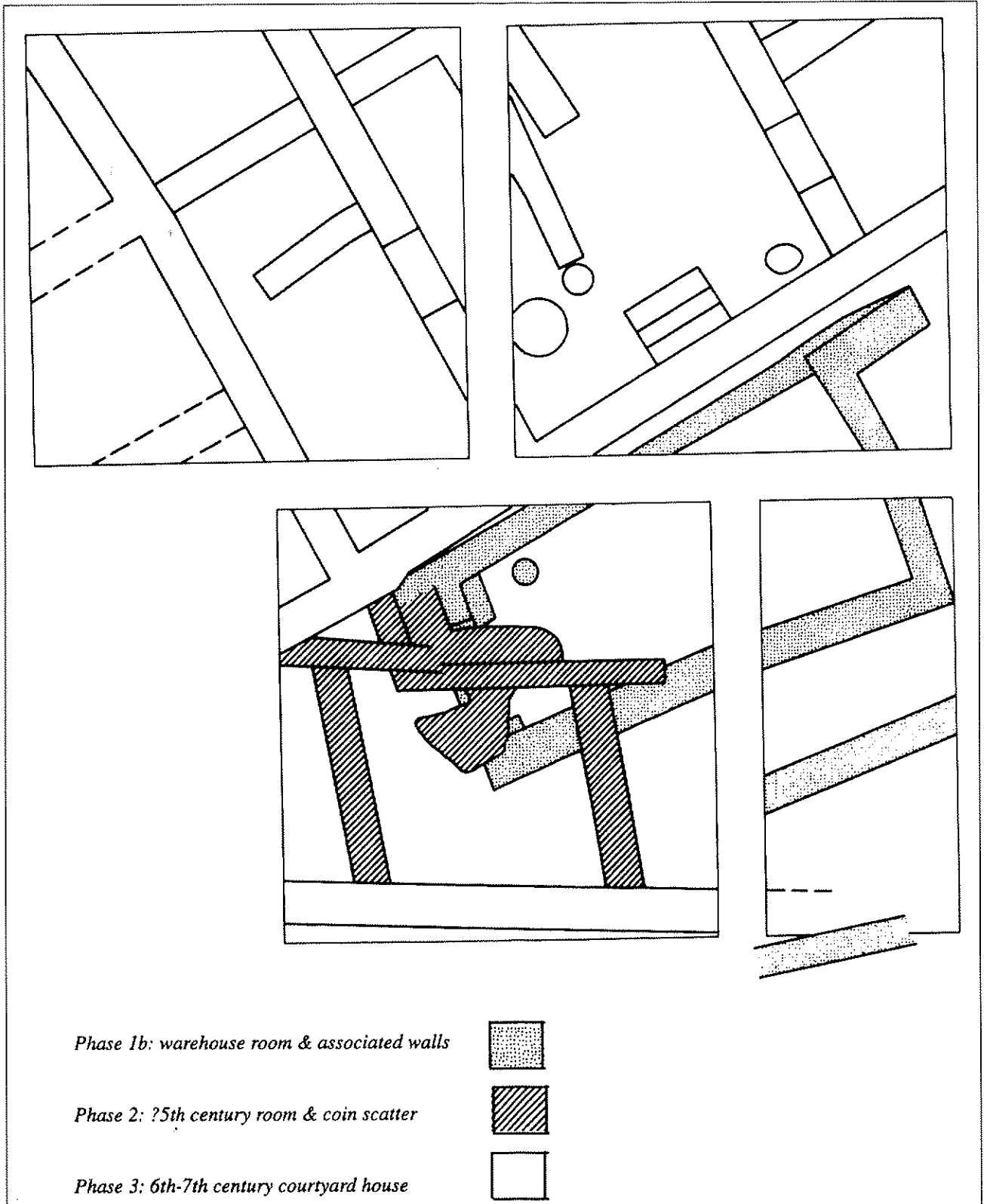
A single large rectangular room was exposed in three of the trenches, built on top of the sterile fill (Fig. 4). In the last day of digging the small area to the east of the room in trench B seemed to show another threshold, and the walls to the south of the room, in trench D, together indicate that there were a complex of rooms in this area.

The complete room (internal dimensions: 8m E-W, 3-4.5m N-S) had substantial stone walls at least 1.3m high and the room itself was filled with considerable mudbrick debris. No access to an upper storey was noted. There was a substantial and well-worked stone threshold for double doors in the short western wall. The room was stone paved, with small stone benches in the NW and SW corners and a column drum reused as a bench some 1.5m along the north wall. No other architectural features were present, noticeably no trace of windows in the south or east walls that were preserved to a height of 1.3m. Similarly, few complete objects were found in the room, though it was full of mudbrick collapse, suggesting that the room had been largely cleared before the upper walls fell in.

Although on the face of it this room is of little archaeological interest, it is the first substantial area of architecture and associated deposits from the fourth century AD at Pella, and there are significant numbers of coins to confirm the ceramic dating.

### Ceramics

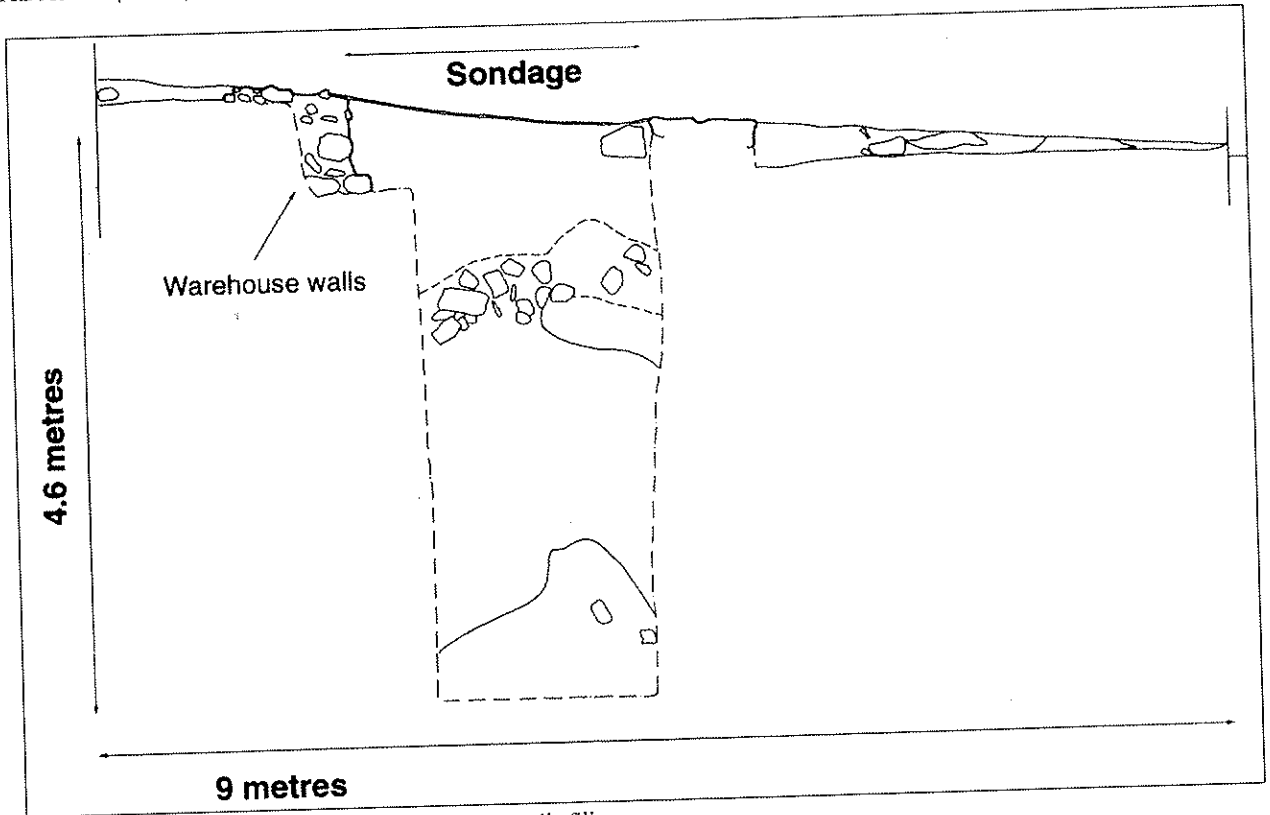
The ceramic material from trench D, which was



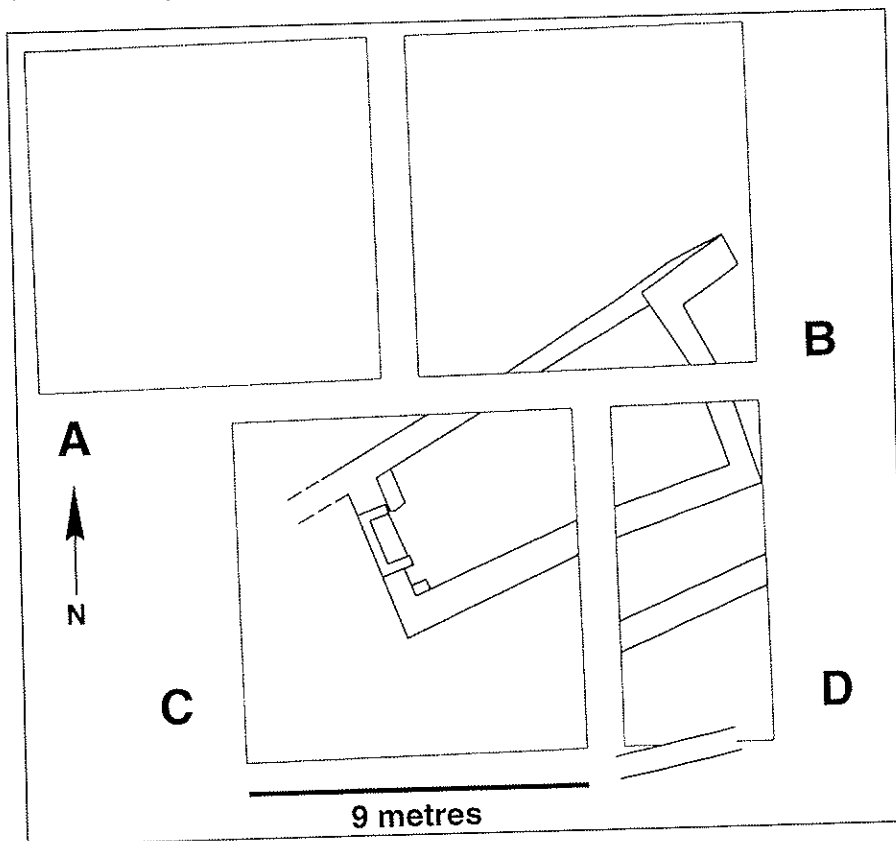
2. Schematic Plan of Area XXXVA-D.

the only sequence which included construction, use and destruction material, is presented here as typical of the material from the room. **Fig. 5** shows the deposit sequence in Locus 3, which is the warehouse

room. Approximately 1.2m of collapsed mudbrick (which of course, although forming the destruction level, dates to the construction phase) lay above a thin layer of soft dark soil on a hard clay surface.



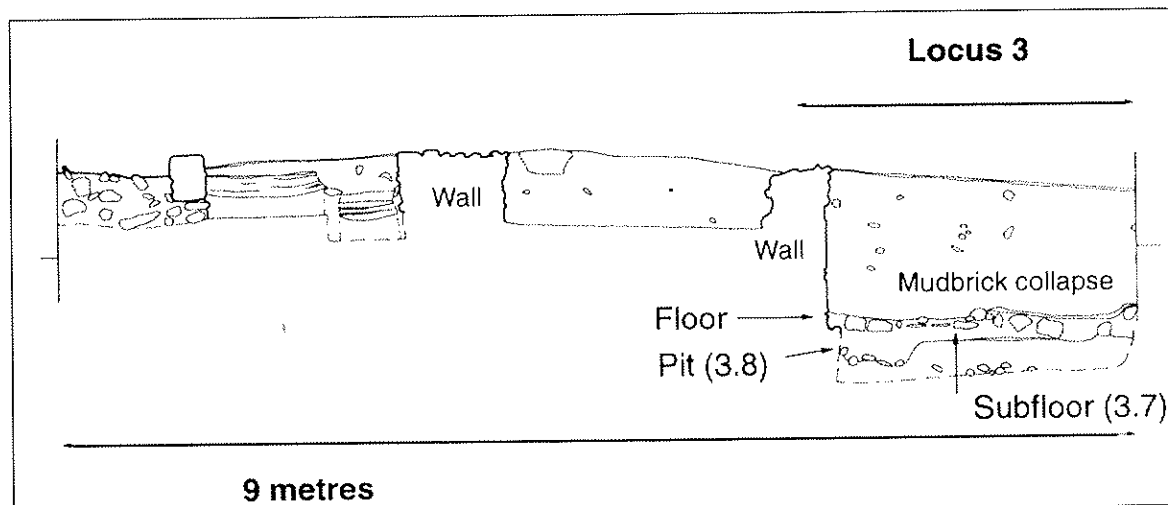
3. East section of XXXVD, showing sondage into sterile fill.



4. Schematic plan of phase 1b, the fourth century warehouse room and contemporary walls.

Stone pavers underneath were irregular and had been evened out by the clay surface. About 0.2m of pottery-rich underfloor deposit was recovered, with

a strange 'pit' like depression in one area, full of pottery sherds. It seems as if this pre-construction deposit was another levelling or perhaps stabilising



5. West section of XXXVD, showing deposits in warehouse room.

fill, above the sterile fill of the gully.

The ceramic material is presented chronologically in **Figs. 6-10**, with the material from the sub-floor construction phase first. The material from the collapse context is sherds which have fallen out of the mudbricks and so also predate the use of the room. Finally the pottery which was lying on the floor is shown. It can clearly be seen that the material is dated to the third to fourth century AD at Pella or other sites, with the exception of one sherd from the floor deposit (**Fig. 10.6**) which will be discussed below. Following the ceramic material, the evidence of the coins and the few objects recovered from within the destruction will be reviewed to demonstrate, with the ceramic material, that the room was constructed and destroyed in the fourth century AD, and was probably in existence from only 350 to 400.

Ware abbreviations follow Pella standard wares where possible, but some new wares and variants were identified:

CTC: Coarse Terracotta

MTC: Metallic Terracotta (= Galilean cooking pot ware)

TC: Terracotta

CR: Coarse Red

GBuff: Green Buff (prob. equivalent to Metallic Buff)

Speckled TC: Terracotta with marked amounts of white inclusions (probably lime)

PBA: Pale Brown, fine (A) levigation (probably a variant of TC)

DensePBA: The Pale Brown fabric seemed sometimes to be so finely levigated that the fabric

had the appearance of caramel

PBB: Pale Brown, medium (B) levigation

BGS: Brown with Grey Spots. This fabric is used for certain groups of *Bowshaped nozzle* lamps (which date from the third to the fifth centuries) and related early forms of *Broad nozzle* lamps (da Costa 2001). A very coarse version may be used for vessels of the same shape as the Coarse Red ware basins

BSP: Brown Slipped, Painted

In the catalogue, the preservation amount refers to the extant amount of rim. Ware descriptions are based on examination of fresh breaks through a 10x hand-lens.

**Construction Deposits (Figs. 6-9):** The cooking pot, CN20101 (**Fig. 6.3**) has been dated to the mid-fifth century Phase I at Pella (Watson 1992a: 172). Watson noted that the cooking pots (her plate 109.9, 10) "appear at this time and seem to have a more restricted life span", meaning they did not appear in the late third/early fourth century or in the late fifth century phases. However, the XXXVD evidence strongly suggests that the form begins in the later fourth century, continuing into the fifth century, providing a more normal life span for a form at Pella.<sup>2</sup>

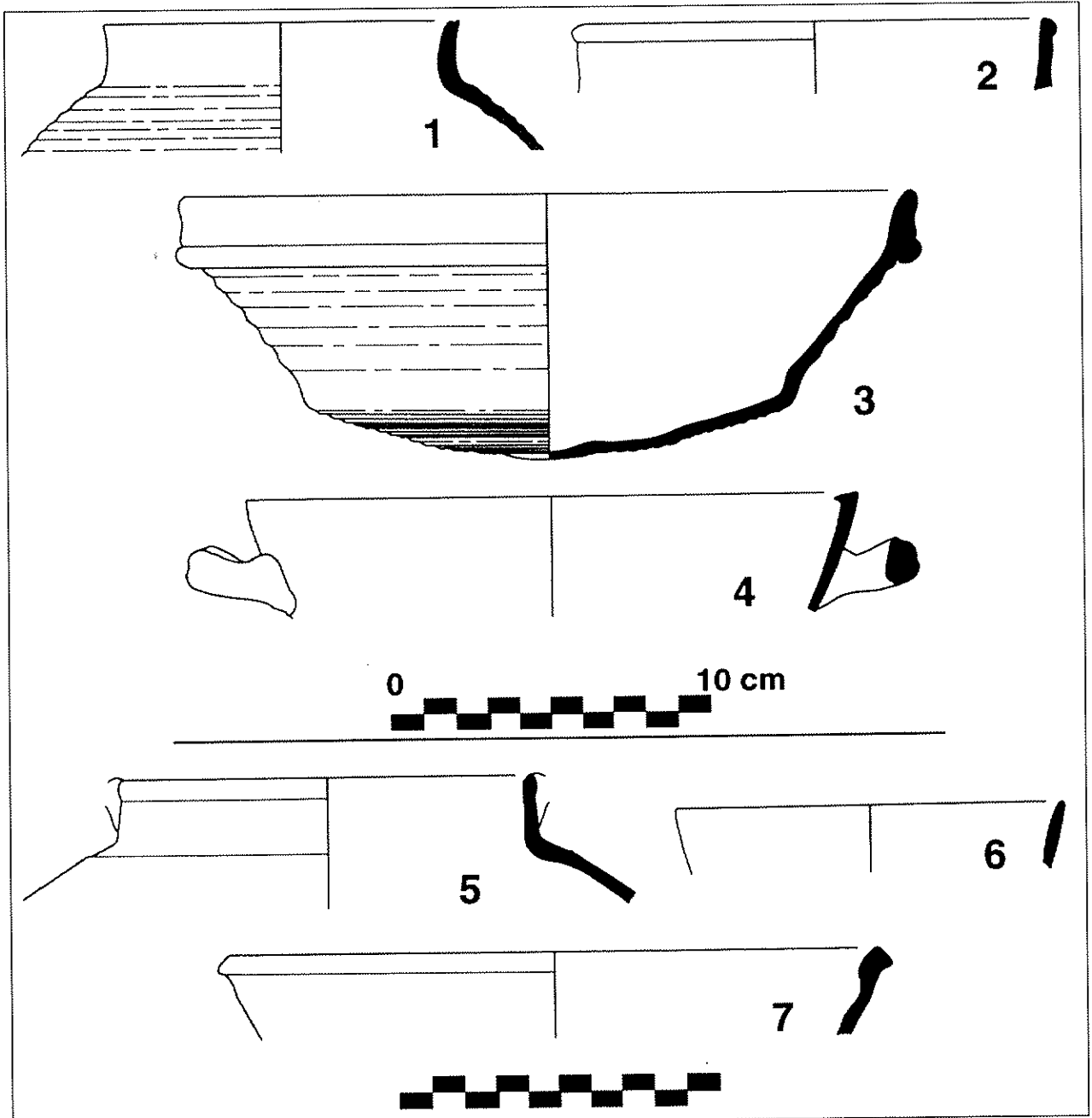
The jar in **Fig. 8.8** (CN20115) may be an unusual example of a separately thrown rim, in a second fabric, attached to the main body of the vessel.

**Fig. 6: Cooking wares from the subfloor area of XXXVD:**

1. CN20093, Jar, Pale CTC, XXXVD 3.7: Globu-

2. In this context, it should be noted that Watson's Byzantine Phase I is not certainly dated to the mid-fifth century, but is placed somewhere between the Late Roman phase, from which is it clearly distinguished, but before Phase II (Watson

1992a: 173). Only two datable coins and one ARS sherd, plus an AE4 of fourth/fifth century date were available to support the dating, and thus Phase I might be earlier in the fifth century than Watson had suggested.



6. 3rd-4th century forms from the sub-floor (XXXVD 3.7) and pit (XXXVD 3.8) of the warehouse room: 1. CN20093 Jar, Pale CTC, XXXVD 3.7; 2. CN20119, Jar, CTC, XXXVD 3.8; 3. CN20101, Bowl, CTC, XXXVD 3.7; 4. CN20090, Bowl/Casserole, CTC, XXXVD 3.7; 5. CN20092, Jar, MTC, XXXVD 3.7; 6. CN20120, Jar, MTC variant, XXXVD 3.8; 7. CN20121, Bowl, MTC, XXXVD 3.8.

lar body walls, 3mm thick, with shallow, close-set, rounded ribbing. Short, plain, basically upright neck, 5-6mm thick. Simple rim, slightly thickened externally, with cut groove on top. External surface slipped or fired brown; burning on rim; Diam: 11cm, 25% preserved; Ware: medium fine levigation, many tiny-large voids, lime, sub-angular and round quartz, red/brown stone, orange and pink grog, lime spalls on exterior surface; Fabric: ca. 7.5YR 7/4, int. surface 5YR 7/6, ext. surface 5YR 6/6.

2. CN20119, Jar, CTC, XXXVD 3.8: Slightly undulating, plain neck wall, 4mm thick, straight up to rim. Simple rim, thickened externally, top inner edge slightly pointy, outer face rounded; Diam: ca. 15cm, <5% preserved; Ware: fine levigation, but cracking, very many tiny-medium rounded and subangular quartz, rare shell and small-medium red-brown stone; Fabric from ca. 2.5YR 5/8 to 5YR brown; ext. surface/slip (?): 5YR 5/2.

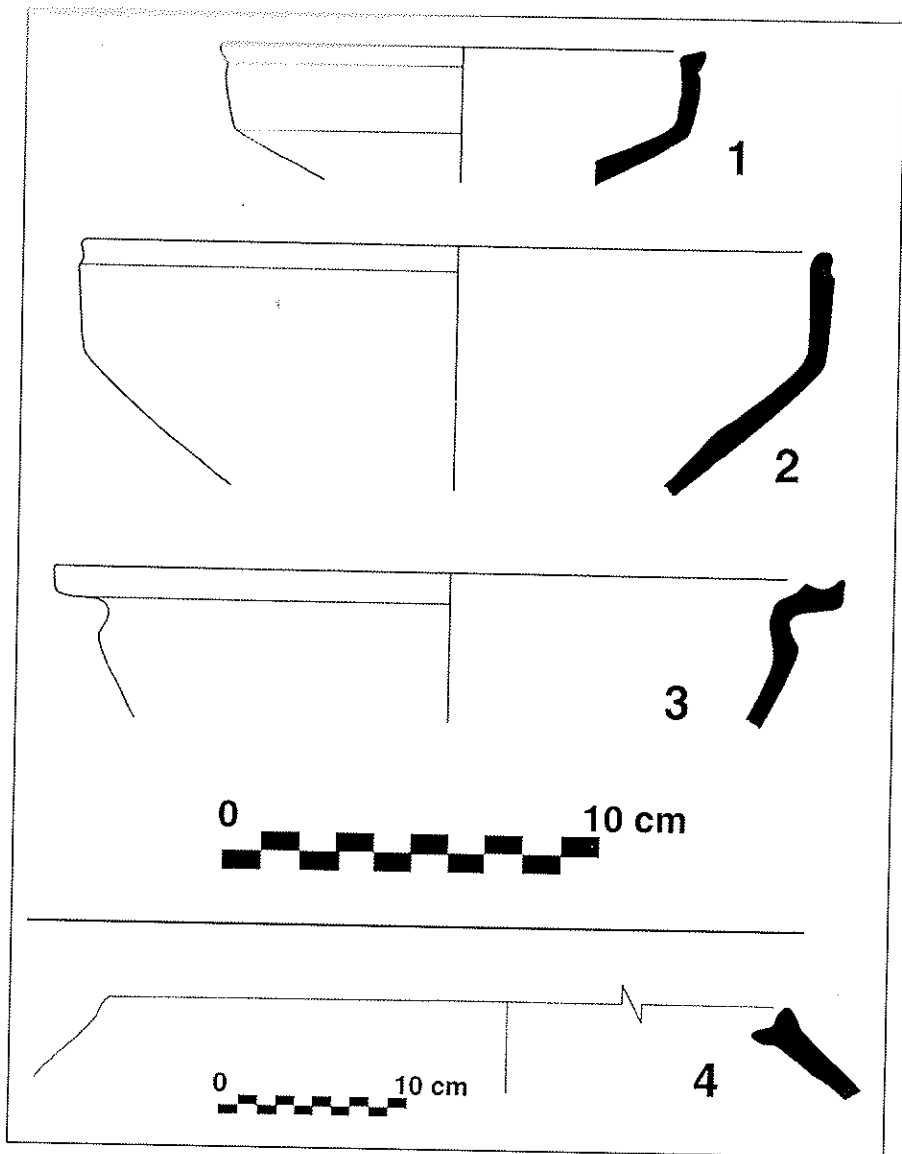
3. CN20101, Bowl, CTC, XXXVD 3.7: Full profile extant: Slightly concave base, 3-4mm thick with close-set, shallow, rounded ribbing. Rounded carination just up from base, where ribbing changes to wide-set, wide, round ribs all the way to rim. Body walls, 4-5mm, flare out from carination to rim. Slight ribbing on interior. Rim thickened and flattened externally, top rounded, thickened and flattened outer edge of rim, outer face has two thin grooves, 1 each side of rib in middle of 2.1cm deep rim; Diam: 22cm, 17% preserved, base complete; Ware: fine levigation, many elongated voids but fabric not cracking, many small-medium subangular quartz, occasional small red-brown stones and small-large yellowish lime; 2.5YR 5/6-8; fire blackened exterior, and interior base; *Parallels*: Watson (1992a: plate 109.10 and ?109.9), Pella: diam. 21.5, Coarse Terracotta, Byzantine Phase I (mid 5th) but see discussion above.
4. CN20090, Bowl/Casserole, CTC, XXXVD 3.7: Plain walls, 3-4mm thick, flares up to rim. Knife cut rim, projecting internally. Small horizontal handle with centre band; Diam: 20cm, 14% preserved; Ware: medium levigation, many elongated voids, much tiny-medium quartz, some tiny-medium red-brown stone; 5YR 7/6; fire blacked interior and exterior.
5. CN20092, Jar, MTC, XXXVD 3.7: Plain globular body walls, 4mm thick, curve into neck with slight ridge on shoulder. Short plain neck, 4mm thick, leans into rim. Simple rim, thickened externally; Handle stub on rim; Diam: 13mm, 12% preserved; Ware: medium fine levigation, very few inclusions, occasional elongated voids and medium lime; int & ext: 2.5-5YR 6/8, 30% dark brown core; ext surface 2.5YR 5/6; Mohs: 3.5; *Parallels*: Adan-Bayewitz 1993: Form 4D: late 3rd-early 5th.
6. CN20120, Jar, MTC variant, XXXVD 3.8: Plain walls, 3-4mm thick, lean in to simple rim. Rim thins to point, in line with exterior; Diam: 12cm, 5% preserved; Ware: medium levigation, some small lime, occasional small-medium red-brown stone (seems like standard MTC/Galilean ware with extra lime and surface is grittier, perhaps the Golan variant); 2.5YR 5/8, surfaces: 2.5YR-10R 4/6; Mohs: 4-4.5; *Parallels*: none in Adan-Bayewitz 1993.
7. CN20121, Bowl, MTC, XXXVD 3.8: Plain walls, 3-4mm thick, curve out to rim. Offset and everted rim, thickened externally to small triangular angle with offset line clear on interior, outer face fairly flat with a slight groove near upper edge; Slipped; Diam: 24cm, 5% preserved; Ware: medium levigation, occasional small black stone,

elongated voids, rare very large quartz; Fabric: 2.5YR 5/8, slip: 2.5YR 5/6; *Parallels*: Adan-Bayewitz 1993: Form 1E.10: mid 3rd-early 5th.

*Fig. 7: Presentation and storage vessels from the subfloor of XXXVD:*

1. CN20125, Bowl, Pale GBuff, XXXVD3.9: Plain body walls, 4-6mm thick, carinated about mid-point. Simple rim, thickened slightly exterior, flattened on top with slight groove on interior. Outer face flat to concave. Deep and V-shaped groove on exterior just under rim; Self-slipped; Diam: 13cm, 12% preserved; Ware: medium fine levigation, many specks of red-brown (?grog), quartz, grey and black stones, and voids; Paler than 10YR; Mohs: 2.5.
2. CN20105, Bowl, TC, XXXVD3.7: Plain body walls, 5mm thick, with carination slightly above mid-point. Possible groove around tondo. Simple rounded rim with groove on exterior 6mm below top; Self-slipped with thin band of cream paint on exterior, below carination; Diam: 20cm, 7% preserved; Ware: borderline to Speckled TC - medium fine levigation, many irregular voids, small-large red-brown stone and lime, occasional small black inclusions, rare black organic (?) inclusions; ext.: 2.5YR 6/8, int. (70%) 7.5YR 7/4, int. surface 7.5YR 8/4, ext. surface pale 2.5YR; Mohs: 2-2.5; *Parallels*: Falkner (1984), Jarash: no. 80, red to reddish brown, pinkish slip on ext., diam: 14cm, mid 3rd-early 4th; less good is no. 74, buff to brown, lime inclusions, crumbly fracture, light red, diam 23cm, 3rd century.
3. CN20107, Bowl, Dense TC, XXXVD 3.7: Plain, outflaring body walls, 5mm thick, carinated just under rim. Everted ledge rim with flattened to slightly convex outer face, two grooves separated by sharp ridge on upper face/rim top; Diam at outer point of rim: 20cm, inner diameter 16.5cm, 11% preserved; Ware: borderline fabric - could be Dense Speckled TC or Dense PBA. Very sharp division between int., ext. and 40% core. Very fine levigation, some small lime, red-brown and black stones and quartz. Rare very large quartz; Surfaces, int. & ext.: 2.5YR 6/6-8, core: 7.5YR 7/4; Mohs: 3.5; *Parallels*: Watson (1992a: 170-171, plate 108.11), Pella: diam 30cm, MetBuff, creamy buff throughout, late 3rd/early 4th century; Rasyon-Seigne (1993: 107), Tall Fayçal, Jarash: T.F.19, fig. 11.5, diam 25/30cm, dated to mid-3rd century AD (p. 99); Falkner (1984), Jarash: no. 20, buff, grey core, diam 44cm, occurs only in 5th century contexts but due to similarity with nos. 19 & 21 (both 3rd-5th) must start earlier than 5th.





7. 3rd-4th century forms from the sub-floor (XXXVD 3.7 & 3.9) and pit (XXXVD 3.8) of the warehouse room: 1. CN20125, Bowl, TC ; 2. CN20105, Bowl, TC ; 3. CN20107, Bowl, TC ; 4. CN20118, Storage Jar, CR, XXXVD 3.8.

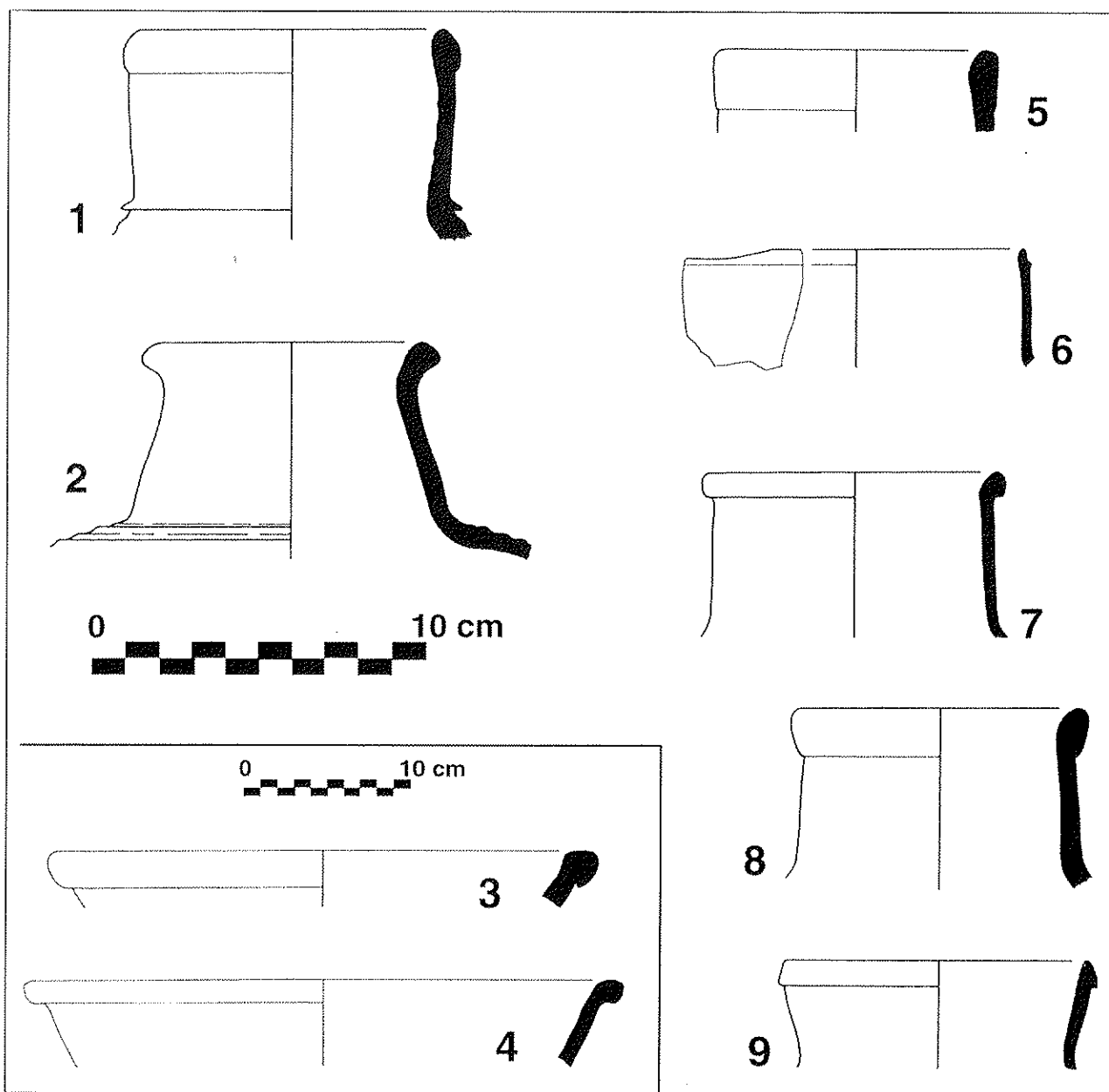
4. CN20118, Storage Jar, CR, XXXVD 3.8: Wholemouth jar; Plain, globular body walls, 10mm thick, curve in to rim. Rim thickened externally and more internally with broad groove along top to form ledge. Inner edge of rim comes to a sharper point than outer edge; Diam very difficult as rim damaged and uneven, ca. 42cm, 7% preserved; Ware: fine levigation, many chaff temper voids, large chert, grey stone, ?basalt, shell, pale brown stone and grey grog; 5YR 5/6; Mohs: 3.5

Fig. 8: Storage jars and large bowls/basins from the sub-floor deposits:

1. CN20111, Jar TC, XXXVD3.7: Globular body walls, 9-10mm thick, with shallow ribbing. Pronounced ridge at neck base. Plain neck walls, 6-8mm thick, curved into rim, ridging on interior. Simple rim, thickened exterior, shaped to point

on top; Diam: 9-10cm, 5% preserved; Ware: very thin dense core, fine levigation, some elongated voids, small gray stone, red/brown grog, occasional medium lime, large brown stone, red/brown grog, rare shell; 5YR 7/6; Mohs: 3.5; *Parallels*: Watson (1992a: 170-171), Pella: generally, jars with folded out rim and collar at base of neck, e.g. plate 108.1,2,3 (all Metallic Buff) late 3rd/4th century; Smith and McNicoll (1992: 139), Pella: RN82034/CN10012, complete bag shaped jar, "Terracotta ware, numerous lime grits, 10R5/8 throughout. Buff mottle on neck", from T64 2.1 (PO 36), which is dated to the late 3rd/early 4th, though RN82034 has "a more general Late Roman horizon".

2. CN20110, Jar, TC, XXXVD3.7+3.8: Globular body walls, 5-7mm thick, with rounded overlapping ribs. Plain neck walls, 5mm thick, curve into rim. Everted rim, thickened on exterior;



8. 3rd-4th century forms from the sub-floor (XXXVD 3.7) and pit (XXXVD 3.8) of the warehouse room: 1. CN20110, Jar, TC, XXXVD 3.7; 2. CN20111, Jar, TC, XXXVD 3.7; 3. CN20103, Bowl, TC, XXXVD 3.7; 4. CN20104, Bowl, TC, XXXVD 3.7; 5. CN20117, Jar, GBuff, XXXVD 3.8; 6. CN20102, Jar, Speckled TC, XXXVD 3.7; 7. CN20109, Jar, PBB, XXXVD 3.7; 8. CN20115, Jar, PBA, XXXVD 3.7; 9. CN20113, Jar, Dense PBA, XXXVD 3.7.

Diam: sherd from XXXVD3.8 - 8.5cm, 50% preserved (cf. sherd from XXXVD3.7 diameter apparently 9cm, from 16% preserved); Ware: fine levigation, many elongated voids, tiny-small lime, occasional small-large red/brown stone, grey stone, lime spalls (borderline to Speckled TC), ?self-slipped; Ext.: 5YR 7/6, int.: 7.5YR 7/4; Mohs: 3.5.

3. CN20103, Bowl, TC, XXXVD3.7: Plain walls, 13mm thick, curving slightly, flaring outwards to rim. Large rim, flattened on top and thickened externally; Diam: 33cm, 7% preserved; Ware:

probably not really TC but burnt/overfired so difficult to decide: Medium levigation, many tiny-huge irregular voids, some tiny-medium subangular and round quartz, occasional small-medium red/brown and grey stone and lime; Surfaces, esp. interior are self-slipped; Fabric: 7.5YR 5/2, int. surface: 7.5YR 6/4-5YR 6/6; Mohs: 2.5.

4. CN20104, Basin, TC, XXXVD3.7: Plain straight walls, 11mm thick, flare out to rim. Simple rim, thickened externally, rounded on top and outer face; Diam: 36cm, 8% preserved; Ware: fine lev-

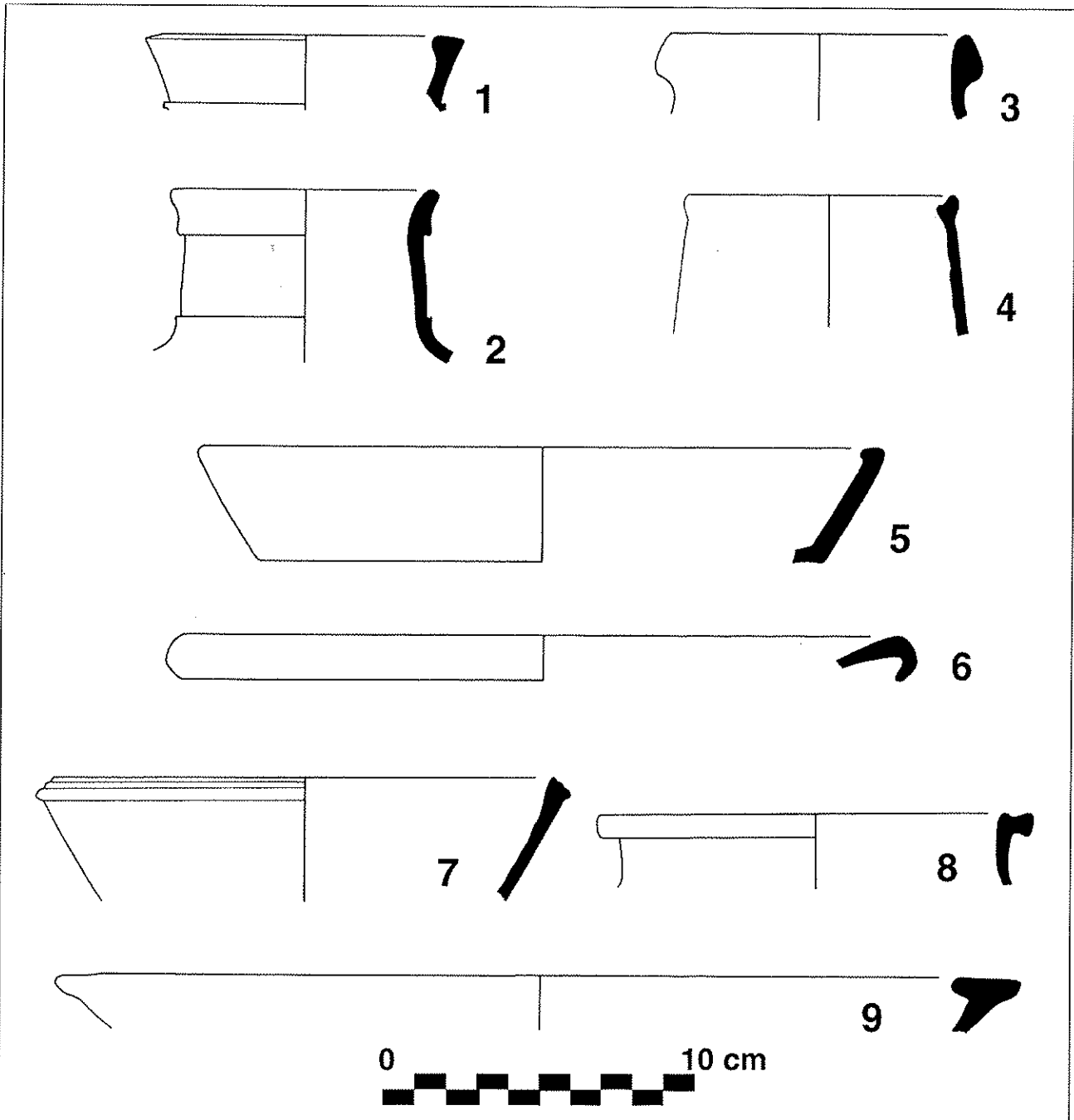
igation, many small-medium slightly elongated voids, occasional small-medium rounded quartz, grey stone, lime, rare large lime (this is very close to the lamp ware PLW1/4); 7.5YR 7/4; Mohs: 2.5.

5. CN20117, Jar, GBuff, XXXVD3.8: Plain neck walls, 5mm thick, straight up to rim. Simple rim, rounded but poorly finished top, thickened externally with 19mm deep outer face, very flat (similar shape to CN20112); Diam: 8cm, 15%; Ware: medium levigation, many tiny voids, black and red specks, some elongated voids, small-medium red/brown stone and grog, pink core; Ext. and ext. surface: paler than 5Y, core: ca. 5YR 8/4, not possible to Munsell interior; Mohs: 3.5.
6. CN20102, Jar, Speckled TC, XXXVD3.7: Slight kick out at bottom of fragment is the basis for the vessel description. Plain neck walls, 3mm thick, poorly finished, straight up to rim. Simple rim, flattened slightly internally to form sharp point on outer edge, uneven groove on outside of rim forms slight lip 3-5mm below rim top; Diam: ca. 12cm, 10% preserved, but very uneven; Ware: fine levigation, very much tiny-medium lime, occasional small red/brown and grey stone and yellow stone/lime; Ext. and ext. surface: 2.5YR 5-6/6, int.: (80% wall thickness) 5/0.
7. CN20109, Jar, PBB, XXXVD3.7. Plain neck walls, 4mm thick, leaning into rim. Simple rim, slightly everted, thickened exterior, rounded top; Diam: 9cm, 20% preserved; Ware: fine levigation, many small-medium grey stones, occasional medium lime, occasional small-very large red/brown stone, lime spalls on surface; Int. & ext: 5YR 6/6, core (30%): grey, ext. surface: pale 5YR; Mohs: 4.
8. CN20115, Jar, PBA, XXXVD3.7. Globular body walls, 6mm thick. Plain neck walls, 5-6mm, straight up to rim. Simple rim, rounded on top, thickened externally; Diam: 9cm, 65% preserved; Ware: ?two wares - rim seems like GBuff, body is PBA:- Rim: medium levigation, much tiny-medium orange-brown and brown grog, some tiny black, white and grey stones, tiny-large lime, spalls on surface but many from grog not lime?; Paler than 10YR 8/2, surfaces white; Mohs: 2.5; Neck: medium fine levigation, few inclusions, occasional tiny-medium red/brown stone, lime, rare small-tiny white, grey, black stone and red/brown ?grog and shell; tiny-small lime spalls; ca. 7.5YR 8/2; Mohs: 1.5.
9. CN20113, Jar, Dense PBA, XXXVD3.7. Plain neck walls, 5mm thick, straight up to rim. Simple triangular rim, thickened on exterior, with rounded top; Diam: 9cm, 15% preserved; Ware: very fine levigation, some irregular voids, occasional

tiny-medium lime, medium quartz, grey and red/brown stone, lime spalls on surface; ?cream coloured slip, fabric: 7.5YR 6-7/4, ext. surface: 10YR 8/2; Mohs: 4.5.

**Fig. 9:** A selection of 3rd-4th century forms from the collapsed mudbrick of the warehouse:

1. CN20072; Jar, TC, XXXVD3.3. Neck only preserved, broken at ridge. Walls, 5-6mm thick, flare slightly out to rim. Simple flat rim, thickened slightly on interior; Diam: 10cm, 15% preserved; Ware: medium levigation, occasional small round and elongated voids, many tiny-small, some medium inclusions, similar amounts of quartz, grey stone and ?grog; Surfaces 10YR 7-8/4, fabric: 5YR 6/6; Mohs: 4.5.
2. CN20056, Jar, Speckled TC, XXXVD3.3: Globular walls, too little preserved to show ribbing, 4mm thick, curve into sharp collar at join with neck. Slightly ribbed neck walls, 5mm thick, lean into rim. Slightly everted rim, thickened on exterior with outer face, 1.6cm deep, smoothed to convex shape, inner face flattened; Diam: 9cm, 16% preserved; Ware: medium levigation, much tiny lime, many tiny round and long, thin voids, tiny-occasionally large pale grey stone and some tiny-small quartz; Int. & ext.: 2.5YR 6/8; core: 7.5YR 6/6; Mohs: 2.5.
3. CN20074, Jar, PBA, XXXVD3.4. Plain walls, 4mm thick, curve into rim. Simple rim, thickened externally, top shaped to point, outer bottom edge of rim grades into neck walls; Diam: 10cm, 28% preserved; Ware: overfired or burnt PBA: medium levigation, occasional small-medium pale grey, rare small bright red stone, no lime in section but some voids, with large voids and some large lime on surfaces; 5YR 6/4 with occasional trace of grey core, surface: 7.5YR 7/2; Mohs: 2.5.
4. CN20055, Jar, BGS, XXXVD3.3: Neck wall slightly undulating but not enough to be called ribbed, 4mm thick, straight up to rim. Simple rim, thickened interior and exterior, groove on tip so that outer edge is higher; Diam: 10cm, 9%; Ware: appears to be very pale version of lamp ware PLW2, also known as BGS, although exterior surface very abraded, medium levigation, some tiny-large grey, irregularly shaped grog, occasional large subangular red/brown stone; 7.5YR 8/4; Mohs: 2.5; *Parallel:* Smith and McNicoll (1992: 135), Pella: RN82014/CN10004, pl. 92.5: jug, T64 2.1, PO 20, Ware: TC (?) "many small to medium dark grits: 2.5YR 5/8" dated to 3rd century.
5. CN20071, Bowl, FTC, XXXVD3.3: Flat base,



9. 3rd-4th century forms contained in the collapsed mudbrick of the warehouse: 1. CN20072, Jar, TC, XXXVD 3.3; 2. CN20056, Jar, Speckled TC, XXXVD 3.3; 3. CN20074, Jar, PBA, XXXVD 3.4; 4. CN20055, Jar, BGS, XXXVD 3.3; 5. CN20071, Bowl/Deep plate, Fine TC, XXXVD 3.3; 6. CN20060, Plate, Fine TC/ETS?, XXXVD 3.3; 7. CN20070, Bowl, MTC, XXXVD 3.3; 8. CN20058, Jar, CTC, XXXVD 3.3; 9. CN20059, Bowl (or Lid?), CTC, XXXVD 3.3.

5mm thick. Diagonally leaning plain walls, 5-6mm thick. Simple rim, rounded on top, thickened on interior. Interior surface smoothed but not slipped and nearly shiny (?burnished), exterior surface less smooth, matt and mottled to dark grey; Diam: 22cm, 7% preserved; Ware: medium levigation, some small-large irregular voids, quartz and small lime; Int. & ext.: dark 2.5YR, perhaps 2.5YR 6/10, core (40%): grey/brown;

Mohs: 4.5; *Parallel*: Watson (1992a: 171), Pella: flat base and general ware: CN544 (pl. 108.10): late 3rd/early 4th centuries:

6. CN20060, Plate, FTC/ETS, XXXVD3.3. Plain wall, 3-7mm thick, thickening up to rim. Everted hook rim, outer edge bevelled flat; Diam: 24cm, 5% preserved; Ware: medium levigation, some long thin voids, small rounded quartz, small red/brown stone, rare medium lime and pale yellow

?grog (or lime); Red/brown matt slip abrading off; 7.5YR-10YR 8/4, slip mottled 2.5YR, ca. 5-6/6-8+.

7. CN20070, Bowl, MTC, XXXVD3.3. Plain walls, 2-3mm thick, curve slightly up to rim, slight undulation on inner surface. Simple triangular rim, thickened externally, with 2 grooves on outer face; Diam: 19cm, 9% preserved; Ware: medium fine levigation, occasional tiny-large quartz, medium black stone, tiny-large lime; 2.5YR 5/8 (ext. surface abraded); Mohs: 4.5; *Parallels*: Adan-Bayewitz (1993): Form 1B.9: late 1st/beg. 2nd-mid 4th century.
8. CN20058, Cooking Jar, CTC, XXXVD3.3. No body walls extant. Short neck, plain straight wall, 4mm thick. Everted rim, thickened on exterior, outer face smoothed flat, top of rim has single deep groove with 2-3 tiny grooves within it from shaping tool. Outer upper edge of rim comes to sharp angle; Diam: 14cm, 5% preserved; Ware: core in rim & upper neck, standard ware, fine levigation, no cracking; 2.5YR 6/8, surfaces 5-2.5YR 5/4; core: pale grey; Mohs: not possible due to amount of quartz.
9. CN20059, Bowl or Lid, CTC, XXXVD3.3. Plain wall, 5mm thick, curves out to rim. Simple ledge rim thickened very much on interior and exterior, interior edge rounded, exterior edge merges into body wall, top of rim very flat and wide; Diam: 31cm, 8%; Ware: standard coarse version of ware (nearly more quartz than matrix) with significant cracking; 2.5YR 5/8, slightly browner core in parts; Mohs: not possible due to amount of quartz.

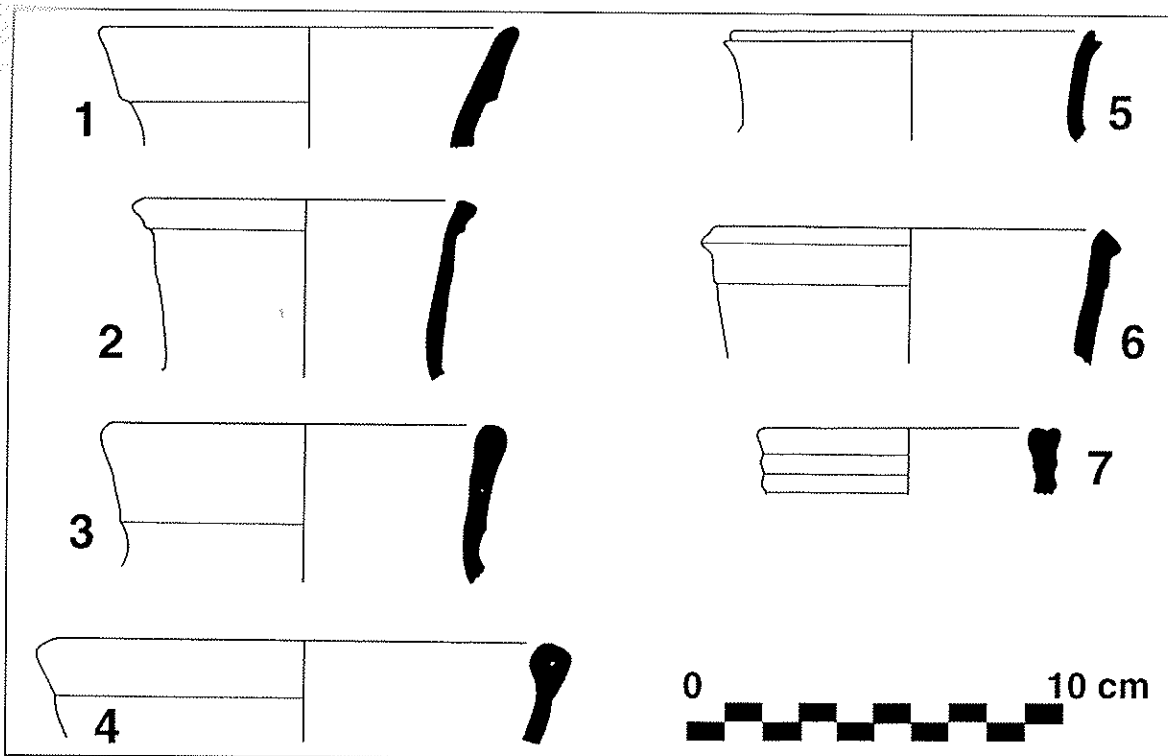
*Room Use (Fig. 10)*: The jar CN20088 (**Fig. 10.2**) most clearly shows the relationship between the GreenBuff and third/fourth century Terracotta (TC) wares. The section of the vessel fired pink would normally be described as TC, the greenish section, with fewer visible inclusions, as GBuff. Not enough is yet known about these wares to combine the two, as fired colour may have been a deliberate feature. Margaret O'Hea and Pam Watson's work on the material from the kiln dump discovered by the Pella Hinterland Survey will help elucidate these issues (Watson pers. comm.)

The most important sherd presented here is the neck fragment CN20082 (**Fig. 10.6**). This is the earliest diagnostic sherd of this ware, Brown Slipped Painted, known at Pella (McNicoll, Smith and Hennessy 1982: plate 139, 5-7, plate 146.3, plate 148.4, 6). The ware is associated with a large bag-shaped storage jar (Riley 1975: 217, Amphora Type 3; Landgraf 1980: 67-80). Body sherds, but only a handful in total, were found in the subfloor

deposits of XXXVD, which would date them even earlier than the late fourth century. Normally the ware is dated to a long-life span at Pella: fifth century to the Abbasid period (Watson 1992a: 172-172, pl. 109.7; 1992b: 238-239, Ware G, nos. 62-74; Walmsley 1995: 664, Ware 12, figs. 7.8-10). There are numerous variations, and this sherd (**Fig. 10.6**) is an early form of this very common storage jar. As with the cooking bowl in **Fig. 6.3**, the excavation of the warehouse room offers an opportunity to extend the date of the form, rather than assume on the basis of this one sherd that the whole context must be dated close to a century later. There is an urgent need for a full study of the class, including the fabrics used to make the various forms. On the basis of CN20082 and other sherds from the Late Byzantine deposits in Area XXXV, at least two fabrics can be distinguished, which, given the lifespan and distribution of the form, is not unexpected.

*Fig. 10*: A selection of forms from the floor of the warehouse, probably dating to the period of use, i.e. late 4th century AD:

1. CN20087, Jar, TC, XXXVD3.6. Probably very short neck. Plain walls, 5mm thick, from a globular body (not extant, but bottom of sherd kicks out). Rim slightly everted, thickened externally but flattened down, 2.1cm deep, rounded top; Diam: 13cm, 7% preserved; Ware: fine levigation, very few visible inclusions, occasional small red/black stone and lime, rare large voids, occasional small elongated voids, rare lime spalls on surface; Smoothed or self-slipped surface; 2.5-5YR 6/8, core (90%): 7.5YR 6/1.
2. CN20088, Jar, GBuff (to TC), XXXVD3.6. Probably globular body (but no walls extant). Straight plain neck walls, 5mm thick. Rim slightly everted, flattened on top, thickened on interior to form small rounded lip, thickened on exterior, outer face convex, smoothing tool has left shallow marks; Surfaces smoothed; Diam: 9cm, 16% preserved; Ware: medium levigation, many tiny-small black, red/black, red/brown stones and pink inclusions, thin elongated voids and occasional medium lime; Int. surface and ext.: 5Y 8/3; ext. surface: 2.5Y8/2; int.: 5YR 7/4; Mohs: 2.5.
3. CN20086, Jar, TC, XXXVD3.6. Probably globular body (but no walls extant). Neck, 6mm thick, straight with 2 wide, very shallow ribs. Simple rim, rounded on top and very slightly thickened on each side; Diam: 11cm, 16% preserved; Ware: medium levigation, very few inclusions, rare small lime, red/brown stone, grey stone; Soft



10. 3rd-4th century forms from the floor of the warehouse: 1. CN20087, Jar, TC, XXXVD 3.6; 2. CN20088, Jar, GBuff, XXXVD 3.6; 3. CN20086, Jar, TC, XXXVD 3.6; 4. CN20081, Jar, TC, XXXVD 3.6; 5. CN20084, Jar, Pale CTC, XXXVD 3.6; 6. CN20082, Jar, Coarse BSP, XXXVD 3.6; 7. CN20078, Jar, BGS, XXXVD 3.5.

gritty texture and more lime visible on surface than in break; 2.5YR 6/6; Mohs: 1.5.

4. CN20081, Jar, TC, XXXVD3.6. No body walls extant (unless this is a very small bowl?). Plain neck wall, 4mm thick, curves into rim. Clearly rolled rim, thickened slightly internally, rounded but carelessly finished top, slightly concave outer face and moulded into neck wall; Diam: 14cm, 7% preserved; Ware: medium levigation, some small voids, quartz, yellow grog, grey stone, red/brown stone and lime; small lime spalls on surface; 2.5YR 6/8, surface darker than 2.5YR 6/6; Mohs: 3.5.

5. CN20084, Jar, PaleCTC, XXXVD3.6. Plain neck wall, 4mm thick, curves slightly into rim. Simple rim, shaped to rounded point on top, thickened externally, with groove cut into upper part of outer face; Brown slip on exterior surface; Diam: 12cm, 7% preserved; Ware: medium levigation, many oval voids, much tiny-large subangular quartz, occasional tiny or large red/brown stone; 5YR 7-8/4, slip: 2.5YR 6/4; Mohs: 7.5; *Parallels*: Falkner (1984), Jarash: no. 339, 3rd century, but is a different ware.

6. CN20082, Jar, Coarse BSP, XXXVD3.6. Neck wall slightly curving, 6mm thick. Simple rim thickened externally and flattened, up to 1.6cm deep, inner face and rim top smoothed flat to

form point at top; Diam: 10-13cm, <5% preserved; Ware: very fine levigation with many long thin voids, the distinctive inclusion is a small-large 'greasy' yellow stone, also occasional small red/brown and brown stone and quartz; Whole section has 'shiny' appearance; 5YR 5/6, surfaces (?slipped): ca. 5YR 5/1; Mohs: 7.5 (suggests more quartz than visible); parallels and dating discussed above.

7. CN20078, Jar, ?BGS, XXXVD3.5: Neck walls, 5mm, ribbed with sharp points, straight up to rim. Simple rim, thickened both sides, with single groove on top, closer to outer edge; Diam: ?8cm, <5% preserved; Ware: fine levigation, many tiny-small grey inclusions, too small to check if grog or chert; 5YR 4/6; Mohs: 3.5.

#### Coinage

The 1996/1997 season coins were examined by Mr. P. Boland, Hon. Curator of Numismatics at the Powerhouse Museum, Sydney, including the important material from XXXV. The full listing is not yet available, as many coins have not been cleaned sufficiently for proper identification.

There were no coins in the section of stone paved floor that was removed, nor in the floor packing, nor in the pit beneath the subfloor. A short section of the south wall of the warehouse

room was dismantled for safety reasons and there were no coins in the wall or its foundation trench. Surprisingly few coins came out of the collapsed mudbrick. However, lying in a soft deposit immediately above the floor in XXXVC were five coins, spread over the room (Table 1).

Given the absence of fifth century ceramics in

Table 1: Coin identifications and attributions.

Issuing authority	RN no.	Date
Parthian	RN 200076	2nd c BC
Maximinus	RN 200172	305-308 AD
Galerius	RN 200074	305-311 AD
Gallus	RN 200077	351-354? AD
Gallus	RN 200078	351-354 AD

the room's assemblage — for the implications of the few sherds of Brown Slipped, Painted ware, see above — a date for the use of the room in the second half of the fourth century seems reasonable. It may even also have been in use in the first half of that century, though that is less likely.

Coins in the robber trench (levels 3.17, 3.27, 3.29) created when the northern wall of the warehouse room was robbed out (see Fig. 11) were more numerous (Table 2).

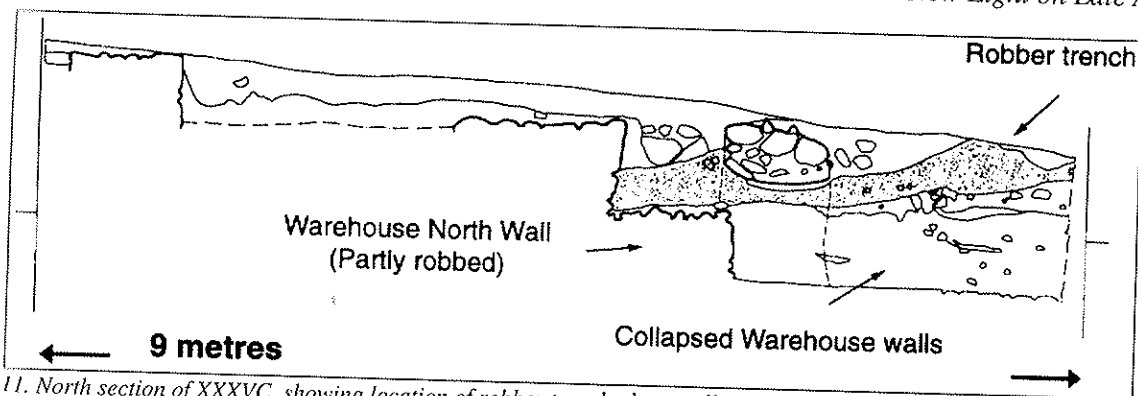
Judging how to interpret the tiny Late Roman coins, which were certainly used from the later fourth, throughout the fifth century, and possibly even after the reform (Magness 1993: 164-165; Bijovsky 1998), is a vexed question.<sup>3</sup> Often they are the only coinage in deposits, and it may be that in some situations, the ceramics date the coins. In this case, where there is a sequence of identifiably fourth century coins and the preliminary cataloguing of the pottery reveals very few clearly fifth

Table 2: Coin identifications and attributions.

Issuing authority	RN no.	Date	Comments
Unidentified	RN200152	?	
Hellenistic city ?	RN200367	2 <sup>nd</sup> /1 <sup>st</sup> c BC	Tyche (could be Late Roman 4 <sup>th</sup> /5 <sup>th</sup> as very difficult to read)
Hellenistic copy ?	RN200373	2 <sup>nd</sup> /1 <sup>st</sup> c BC ?	Herakles?, casting lugs
Constantine I	RN200069	309-323	
Constantius II	RN200173	341-346	
Constantius II & Vetricano	RN200055	350	Siscia
Constantinian ?	RN200370	337-361 ?	fragment, Fallen Horseman (FH) type ?
Roman Imperial	RN200345	350-400	Victories with shield
Theodosius I ?	RN200352	379-395	
Late Roman	RN200371	350-400+	FH elements
Late Roman	RN200372	4 <sup>th</sup> /5 <sup>th</sup>	fragment
Late Roman ?	RN200153	4 <sup>th</sup> /5 <sup>th</sup> ?	broken
Late Roman	RN200130	4 <sup>th</sup> /5 <sup>th</sup>	small disc

3. Gabriella Bijovsky's study of further implications of fifth century coinage (forthcoming) will be a significant contribu-

tion to improving our understanding of this issue.



11. North section of XXXVC, showing location of robber trench above collapse debris of warehouse.

century ceramics, it seems reasonable to suggest that the robber trench was created and filled in, in the early part of the fifth century. This would help confirm the destruction of the warehouse room to the very end of the fourth century AD.

#### Lamps

Corroborating this dating are the two complete ceramic lamps found in the collapse (Fig. 12). Along with the bronze bowl RN200079 (see below in the small finds section; Fig. 21.7), they were the only intact objects found in the debris of the room. All three objects seem to have been in use at the time of the destruction and were probably on shelves or in niches along the wall. A section of decayed wood was found next to the bronze bowl.

The two lamps were made from the same mould, and in addition have an unusual potter's mark on the base, consisting of a series of rosettes. Only one of the lamps has a decoration of impressed chevrons on the shoulders, which implies that these chevrons, so common as decoration on a related type, the 'Balanceolate' lamp, were created using a rouletting tool (Levy 1985), rather than in the mould.

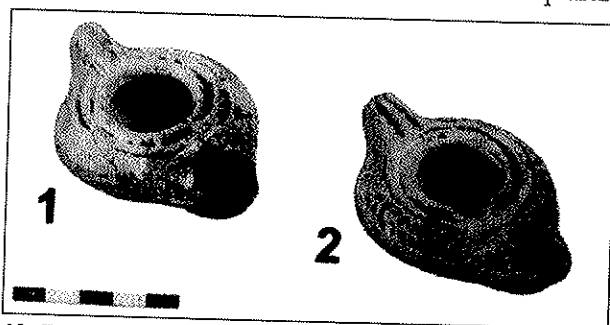
The pair belong to the 'Round bodied, no discus' type. This is a version of the 'Gerasan round with impressed shoulder decoration' of Lapp's (1997: 49-52 and fig. 29) and one of the three related types discussed by Hadad from Baysān: 'Late Roman Type 2' (probably 'Gerasan round'), 'Late Roman Type 3' (also called by her 'Jebel Jofeh' lamps) and 'Late Roman Type 4' (1997: 151-152, figs. 2-4). The two lamps from Pella are quite clearly transitional in form and decoration from the 'Gerasan round lamp', discussed by Lapp,<sup>4</sup> to 'Balanceolate' lamps. The standard date for the 'Round bodied, no discus' type is the second to fourth centuries AD. Numerous examples are known from Jarash in third century deposits (e.g. Rasson 1986: fig. 17.10). They are never found in

fifth century contexts except as fragmentary rubbish survival. Since the derived 'Balanceolate' lamps are dated third to fourth centuries AD, this too indicates that the fourth century is as late as it is possible to date our two lamps.

Both lamps are quite sturdy and might have been contained within mudbricks, thus predating the room. That coincidence would be extreme, and it is much more reasonable to suppose, since they were made in the same mould, and both show soot marks, that they were obtained at the same time for contemporary use.

Fig. 12: The lamps from the warehouse room:

1. RN192002 XXXVD 3.4: Round bodied, no discus, complete: 2 thick rings around filler hole; plain shoulder, stamped flower, made of 7 impressed dots around a centre dot, each side of handle on shoulder; large lug handle lying completely flat with 2 thick grooves on upper face; 8 tiny dashes behind the wick hole; no ridge or border around wick hole in snub nozzle; stamped flower, of 7 dots around a centre dot, under handle, in centre of otherwise plain base and under nozzle; red brown slip, largely worn off; used; L: 8.7cm, W: 6.5cm, H: 2.7cm, Diam filler: 2.4cm; surface mottled from 10YR 10/4 to 7.5YR 8/8, slip: 2.5YR 5-6/6; ware: fine levigation, tiny-small black, gray and red/brown stone and quartz



12. Two lamps found within the collapse of the warehouse: 1. RN192002, XXXVD3.4; 2. RN192003, XXXVC 3.21.

<sup>4</sup> Incidentally the example used by Lapp is a lamp from Pella: RN82005, VIT64 1.2.



inclusions and occasional irregular voids; cannot tell from surface if fired with pinkish core as is often the case with this ware.

2. RN192003 XXXVC 3.21 PO 173: Round bodied, no discus, complete: same mould as RN192002; variations in decoration are: chevrons pointing to handle on each shoulder, though they are misaligned at handle end; stamped flower does not appear under nozzle; Used; L: 8.3cm, W: 6.3cm, H: 2.6cm; Diam filler: 2.4cm; ware ca. 5YR 7/6, slip 2.5YR 5/6; Mohs: 2.5; Ware: Standard Bilanceolate ware, as RN192002.

### *Summary*

Some diagnostic glass forms are discussed below by Dr. O'Hea. She points out that previously at Pella the forms in question have been associated with later pottery and thus dated to the fifth century. However, since the types are also known from late fourth century contexts elsewhere, they fit well within the proposed date range for the XXXV warehouse room.

The combined evidence of the ceramic sherds from the construction phase, the coins from the use phase of the room, the subsequent robbing phase of the already destroyed room, and the evidence from the ceramic lamps in use in the room all point to a short time span for the warehouse room: the fourth century generally, probably the second half only. There is no evidence for what caused the destruction of the room, though since it was almost completely empty, perhaps it was purposely demolished rather than destroyed by a natural catastrophe.

### **Late Byzantine to Umayyad Courtyard House (Phase 3)**

Trenches A and B contained in the upper levels a large courtyard and parts of surrounding ground floor rooms, all part of a single complex. Finds from this phase have not been fully catalogued, so all statements here are preliminary. It appears that the house was built in the late fifth or early sixth century AD. The street or lane off which the house opened rose in height compared with the house, necessitating the building of a short flight of steps. Similar stairs are known from houses in Area III/IV at Pella. Collapsed mud brick and some stone tumble in the 'kitchen' (locus 7) of the house suggests destruction in an earthquake and the preliminary assessment of the ceramics indicates that the 660 earthquake, which definitely substantially affected the houses in Area III/IV, is likely to be the cause. However, the courtyard of the house seems to have remained fairly clear, or was cleared, perhaps in the

same episode that saw the tumble in the 'kitchen' cleared from the doorway, and a hole punched through the wall to reach a bench on the inside of the room — actions presumably made by people who were very familiar with the interior layout, most probably the owners or occupiers. However, unlike the houses in Area III/IV, the XXXV house was never rebuilt. Although based on the evidence of half a house, and thus needing confirmation from further excavation, the remains suggest a date for the change in size of the city. It appears that after the 660 earthquake, along with the incorporation of former streets into private house areas and other significant urban reconfigurations (Walmsley 1982: 152-153; Watson 1992a: 168; Walmsley 1996), the outlying suburbs of Pella were abandoned. One can imagine a settlement which, over the course of a century or more before 660, had increasingly become less densely occupied. However, the inhabitants may not have felt the need to change house or town plans until a massive destruction necessitated substantial rebuilding anyway.

### *The 'Pig Pit'*

Overlying the yellowish surface of the original house courtyard was a layer of dark mudbrick collapse, containing considerable quantities of artefact debris. A depression in this layer, some 3m by 4m, but no more than 0.8m deep, contained vast quantities of large pieces of broken pottery, animal bone and glass, all within a dark mudbrick collapse matrix. Since the depression was not a constructed pit, initial digging (8.2) found it difficult to establish the extent of the context and thus some contamination with the underlying, almost contemporary, level occurred. A small Abbasid pit was also dug into the southwest corner of the depression (8.4). Topsoil lay almost immediately above the depression and rubbish levels in the courtyard, so that dating depends entirely on internal evidence. The importance of the context lies in the animal bone profile.

Initially, the depression was thought to contain rubbish from the clean-up of a single catastrophic event, such as the 660 earthquake. However, discussion with Dr. Lachlan Mairs suggests that the courtyard acted as a convenient rubbish dump, especially for the discarded body portions of butchered animals (see Archaeozoological report below).

The coins recovered from the 'pit' were in very poor condition, although if RN200154 is indeed a coin of Constans II, this helps with the dating (**Table 3**). As preliminary assessments of the ceramics indicate no certain eighth century material, the depression context (and the similar rubbish level be-

Table 3: Coin identifications and attributions (by Mr. Pat Boland).

Issuing authority	RN no.	Date	Comments
Unidentifiable	RN200156		
Parthian, ?Vologases V	RN200057	?191-208 BC	
?Roman	RN200155	?mid 4th	fragmentary coin, attribution very tentative
Roman	RN200157	?early-mid 4th	coin + two fragments
Roman	RN200056	mid-late 4th	
?Constans II	RN200154	?641-668	fragmentary

neath it) are considered to date between AD 660 and 700.

Other artefacts are described below in specialist reports, including the boar-shaped stopper/pestle which was found in the layer immediately above the 'pit'. The discarding of this intact object in the immediate vicinity of high levels of pig bones is intriguing, but little can be said of the association due to the disturbances in the context in which the stopper was found. Discussion of the glass types in the 'Pig Pit' is in the Glass report. The author and Dr. O'Hea diverge in their interpretations of the evidence for the dating of the deposit. On the one hand the single solid-stemmed glass lamp fragment is definitely mid-eighth century, but as such is so far the only object that can be definitely dated after AD 700 in the 'Pit'. On the other hand, the numerous hollow-stemmed goblets occur, as Dr. O'Hea points out, from deposits of the 660 earthquake through to the late Umayyad period, and may well therefore date to the period suggested here for the 'Pig Pit'. Until final definitive publication of the ceramics has been made, the date of the 'Pig Pit' should be considered provisional.

(K. da Costa)

### Glass from 1996-1997 Excavations at Pella<sup>5</sup>

#### Byzantine Period

Purely late fourth or early fifth century glassware was retrieved from XXXVB loci 3 and 4, including wheel-incised or grooved beakers and particularly carinated and tubular-ringed bowl types which at Jalame in the Galilee were dated to the second half of the fourth century (Weinberg 1988: 46, figs. 4-6 No 51; figs. 4-15 Nos 111-112 respectively). Comparable examples of both types of bowls from XXXIIA at Pella have been attributed to a fifth century rather than late fourth century

context on the basis of associated pottery. Since there is no reason to believe that these bowls ceased to be made when Jalame ceased to be occupied, it is likely that their production did indeed continue from the fourth well into the fifth century (cfs to GN 11646, 14134).

Likewise, there is no good stratigraphic evidence yet produced anywhere in the Levant against the continuation of lightly grooved and faintly hued or decolourised bowls and beakers into the fifth century AD (GN 13001-2). Although the lower body is missing from bowl GN 13001, it is likely to belong to a series of hemispherical, footless bowls, many variants of which have been identified from a variety of contexts at Pella and elsewhere; another upcast from XXXVB loc. 8 is probably close in date (GN 13011). None exhibit any indications of use as a bowl-lamp at Pella — no suspension holes, or abrasion around the rim from a metal lamp holder — despite the use of at least some of the figured, wheel-incised bowls of the same period as lamps (O'Hea 2001: 373-374). It must be assumed, therefore, that these bowls may have served as drinking vessels, along with the tall and often flat-based beakers also found in the same contexts at Pella.

A late version (GN 13003) of the trailed saggy beakers which were a feature of mid-late Roman glassware in the Eastern Mediterranean also came from Area XXXVB; it resembles one with higher kicked base from Hanita which is fourth century (Barag 1978: 26-28, fig. 14, No 65). A grooved saggy beaker rim upcast in XXXVB loc. 8 is also typologically fourth-early fifth century (GN 13010). Also present were body fragments of a pruned beaker, probably from a semi-conical or bowl-shaped vessel (GN 14110). These blue-pruned beakers, usually also wheel-polished or grooved (Weinberg 1988: 87-93 with ample bibliography) were produced in fairly large numbers

<sup>5</sup> Dr. O'Hea would like to thank Dr. S.J. Bourke and Ms. K. da Costa for making this material available for study. All draw-

ings are by the author, except for GN 14126-9, which were drawn by Mr. P. Donnelly.

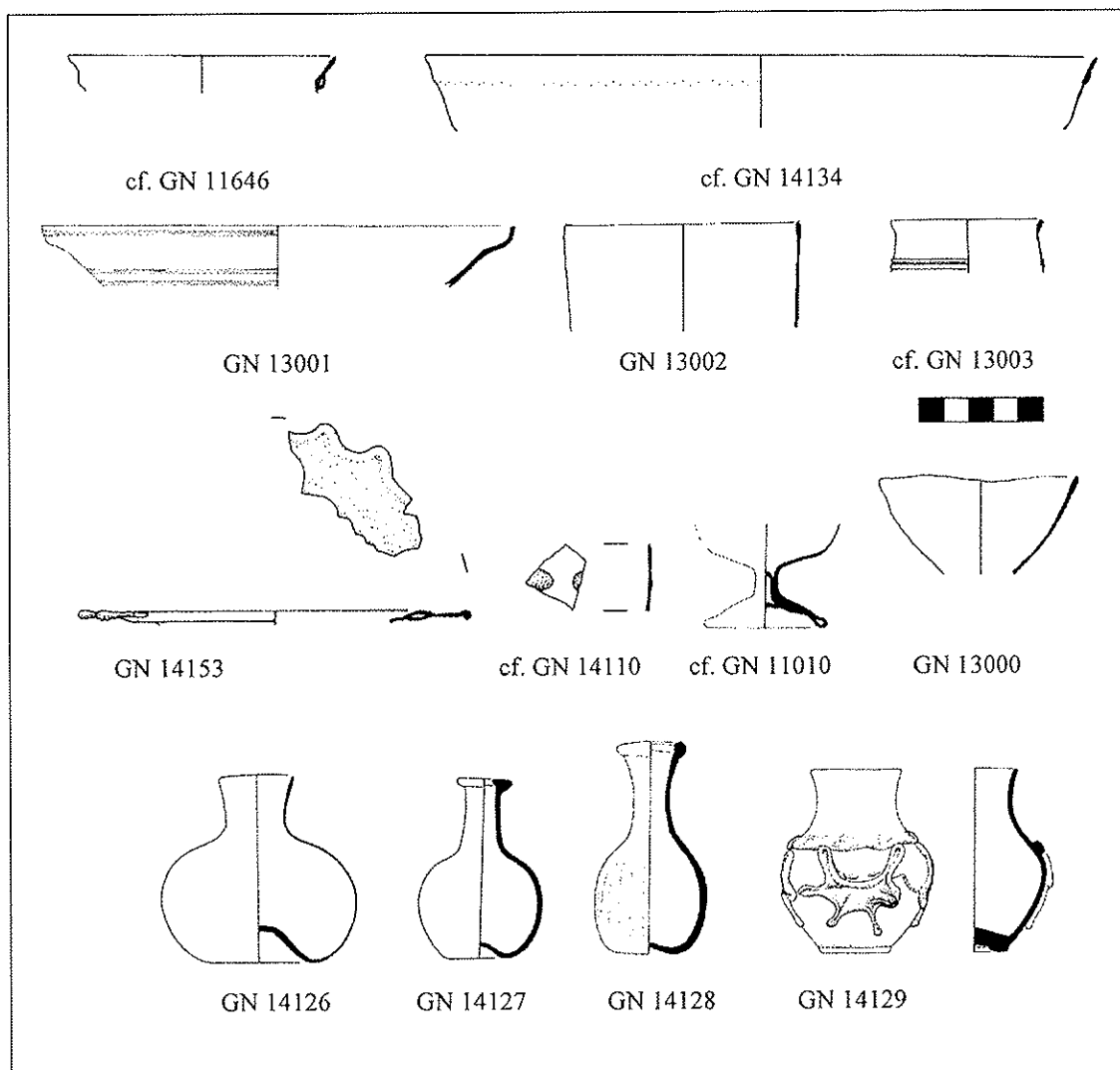
throughout the empire in the fourth-fifth centuries. At Pella, only three of these prunted beakers been found. All have only a single line of prunts rather than triangles of three or lozenges of four prunts around the mid-body, and this seems to be typical of the thicker-walled sub-group (von Saldern *et al.* 1974: 251 No 728). There is as yet no apparent regional pattern for any sub-group in Syro-Palestine — compare the Balkans/Black Sea distribution in Sazanov (1995: fig. 2).

A bowl rim with added scallop-handle from XXXIIG is so far unique at Pella (GN 14153) and may be a rare form, unlike the much more common early-late Imperial bowls with crimped trail-handles. It belongs to a series of bowls which imitate metal-prototypes and which began in the late first-second century AD (Simoni 1981-83: 41-42, fig. 3). The lack of Early Roman occupation in or near this trench, makes it possible that this is also

an early Byzantine type.

**Selected Byzantine types (Fig. 13)**

- Cf. GN 11646 (XXXVB 8.17) Tubular-ringed bowl rim. Rd 10cm. Simple flaring rim, curving in to deep, almost upright wall; rest missing. Wall folded to hollow tube below rim. Medium-thin walled. Faintly bluish.
- Cf. GN 14134 (XXXVB 4.6-9) Tooled bowl rim. Rd 25cm. Simple rim on straight wall sloping in; rest missing. Thickened tooling below rim. Thin walled. Faintly blue-greenish.
- GN 13001 (XXXVB 3.1) Wheel-incised bowl rim. Rd 19cm. Upright cupped rim, curving in above very shallow slightly convex wall; lower body missing. Narrow, lightly wheel-incised band below rim exterior, and pair of narrow lightly-incised bands around upper body. Thick walled. Yellowish with greenish tinge; no bub-



13. Fourth-fifth century glassware and Umayyad glassware from Areas XXXII and XXXV.

bles. Four fragments, three rejoining; some iridescent patches.

- GN 14153 (XXXIIG 108.5) Bowl rim with scallop-handle. Rd 12cm. Flat rim, folded to exterior and folded again, then edge pulled out to form flat scalloped handle. Thin wall, curving in to missing body. Greenish, bubbly, with iridescent patches.
- GN 13002 (XXXVB 3.1) Wheel-incised beaker rim. Rd 10cm. Simple, upright rounded rim on almost vertical wall. Wheel-polished on interior and lightly incised bands around exterior below rim. Medium-thick walled, thinning towards base. Strongly blue-greenish, no bubbles; some iridescent patches.
- Cf. GN 13003 (XXXVC 3.12) Trailed saggy beaker rim. Rd 6cm. Flaring rim, slightly thickened, above straight, slightly sagging wall, with two embedded trails on upper body. Faintly greenish.
- GN 14110 (XXXVB 8.18/19) Prunted beaker fragment. Body fragments; medium-thick walled. Blue-greenish, each with single extant mid-bluish prunt on exterior. Two fragments, non-joining; iridescent patches.

#### *Umayyad Period*

*Umayyad Glass from Area XXXV:* The 'kitchen' area in XXXVB loc. 7 yielded fairly nondescript terminal Byzantine/Umayyad glassware, including a single fragment of window pane, perhaps from the same period, and an unusually large flask or carafe, of typically late Byzantine and early Umayyad unevenness. It might be made from recycled glass, as indicated by the grittiness of the fabric (GN 13000), and could be early seventh century.

A pit in XXXVB loc. 8 which yielded copious amounts of pig bones also contained a large number of very badly hydrated, typically late Umayyad glassware, including many flasks, at least twelve goblets (all hollow-stemmed, see cf. 11010 for type), two hollow-stemmed lamps and a single solid-stemmed lamp. Only one glass fragment showed clear heat-distortion from within the pit, but heat-distorted Umayyad glassware also came from debris elsewhere within this feature, indicating a widespread but incomplete cleanup after a fire. The hollow-stemmed goblet form first appears at Pella in collapse of ca. AD 630/660 (Watson 1993: 204) but the form seems to have persisted to the mid-eighth century catastrophe. However, the solid-stemmed glass lamp form also occurs elsewhere at Pella in houses which collapsed in the AD 749/750 earthquake, but not in much earlier contexts, suggesting that the 'pig pit' was largely filled by mate-

rial at some point within the early to mid-eighth century.

*Umayyad Glass from Area XXXII:* Remarkably complete was a Late Umayyad small globular flask from XXXIIG, which is dated to the late Umayyad period (GN 14127), and a group of three flasks all of which follow conservative Byzantine-Umayyad forms (GN 14126, 14128-9). The most decorated is a small tall-mouthed flask with trailed open four-pointed stars or crosses, which is found from the Lebanon to Mesopotamia and across to the Mediterranean coast. Exact parallels elsewhere are uniformly Umayyad, including one from Jabal ad-Drūz (al-'Ush 1964: 58, fig. 48) and another from a grave at Mesopotamian Umm Kashm (al-Haditti 1995: 228, fig. 22). The decoration might well be intended to be Christian. The type appears common in Palestinian collections; the star or cross-like trails occur on variant but clearly contemporary forms (Hasson 1979: 7, fig. 6). Variant decorations on the same form reached a tomb near Xi'an in China, which was sealed in AD 741 reinforcing an Umayyad *floruit* for Pella's type (Moore 1998: 81, fig. 19.5), but the form itself may have continued into the ninth century, as at Susa (Lamm 1931: 358-367; Lacam 1961: 26-27, illustrated 19).

#### *Selected Umayyad types (Fig. 13)*

- Cf. 11010 (XXXVB 8.2) Goblet base. Bd 4.5-5cm. Probably wide bowl (missing) on short, thick walled hollow stem, splaying to low folded foot with tubular edge. Concave plug at top of stem and partially plugged by folded foot at base. Medium walled; indeterminate fabrics. Minimum number estimate (MNE): 6 (illustration is of type).
- GN 13000 (XXXVB 7.2) Large funnel-mouthed flask rim. Rd 8cm. Uneven, rounded rim, curving convex in to wide cup mouth; rest missing. Thick walled. Bubbly with occasional grits. Strongly blue-greenish; slight iridescence.
- GN 14126 (XXXIIG 8.1) Squat tall-mouthed flask. Ht 7 Rd 2.7cm. Simple rounded rim on short tall mouth, on wide globular body; simple base. Medium-thick walled. Light olive greenish; black on iridescent patches.
- GN 14127 (XXXIIG 2.7) Small globular flask. Ht 7 Rd 2cm. Small everted rim, folded flat on top, on long neck, swelling to globular body, tapering slightly to sharp heel; base highly domed. Very thin walled. Greenish; iridescent patches.
- GN 14128 (XXXIIG 8.1) Ribbed flask. Ht 8.5 Rd 2.5cm. Everted rim, rolled in, on slightly flaring mouth, tapering to short neck, swelling to slop-

ing shoulders on tall body, tapering to rounded heel; kicked base. Light vertical ribbing on body below shoulders. Strongly mid-bluish; gritty fabric; unweathered.

- GN 14129 (XXXIJJ 8.1) Trail-decorated squat tall-mouthed flask. Ht 8 Rd 3.7cm. Simple, slightly flaring rounded rim, on upright tall and wide mouth, tooled and slightly sunken into rounded shoulders on pomiform body. Irregular short trailed crosses added around upper body. Medium walled. Faintly olive greenish, almost brownish; black on iridescent patches.

#### *Abbasid Period*

*Abbasid Glass from Area XXXV:* A distinct and unweathered small group of mature Abbasid glassware also came from XXXVB. Pincer-decorated beaker fragments parallel those already published from Area XXIX (O'Hea 1993: 227, fig. 25) but a saggy-bodied bowl/large beaker rim with vertical combed lines above a row of relief "pomegranates" is in a brightly emerald greenish fabric not previously known at Pella (GN 13008). Plain tall-mouthed flask fragments likewise repeat Abbasid types from Area XXIX. However, the absence of nipped beakers or flasks — which in Area XXIX seem to be very early Abbasid in date — suggests a ninth century date for this discrete but small corpus of domestic tableware in XXXVB.

This group also includes types not previously recorded at Pella. Fragments of a mould-blown blue-greenish large beaker or bowl (GN 13005) with abstract, flowing swirling pattern in very light relief on the exterior may be either Umayyad or Abbasid by context, but most closely resembles Abbasid and Fatimid vessels found elsewhere (Lamm 1935: 11, pls. 25-26). Another, small bowl rim (GN 13004) with light but regular tool marks below the rim has an Abbasid parallel from 'Ana (Bamber 1988: fig. 52, No 1); the unusual tooling is repeated on a fragmented funnel-mouthed flask with large mouth (Rd 8cm) and of unusual decolourised and bubble-free fabric — perhaps an import — from the same trench (GN 13006/7).

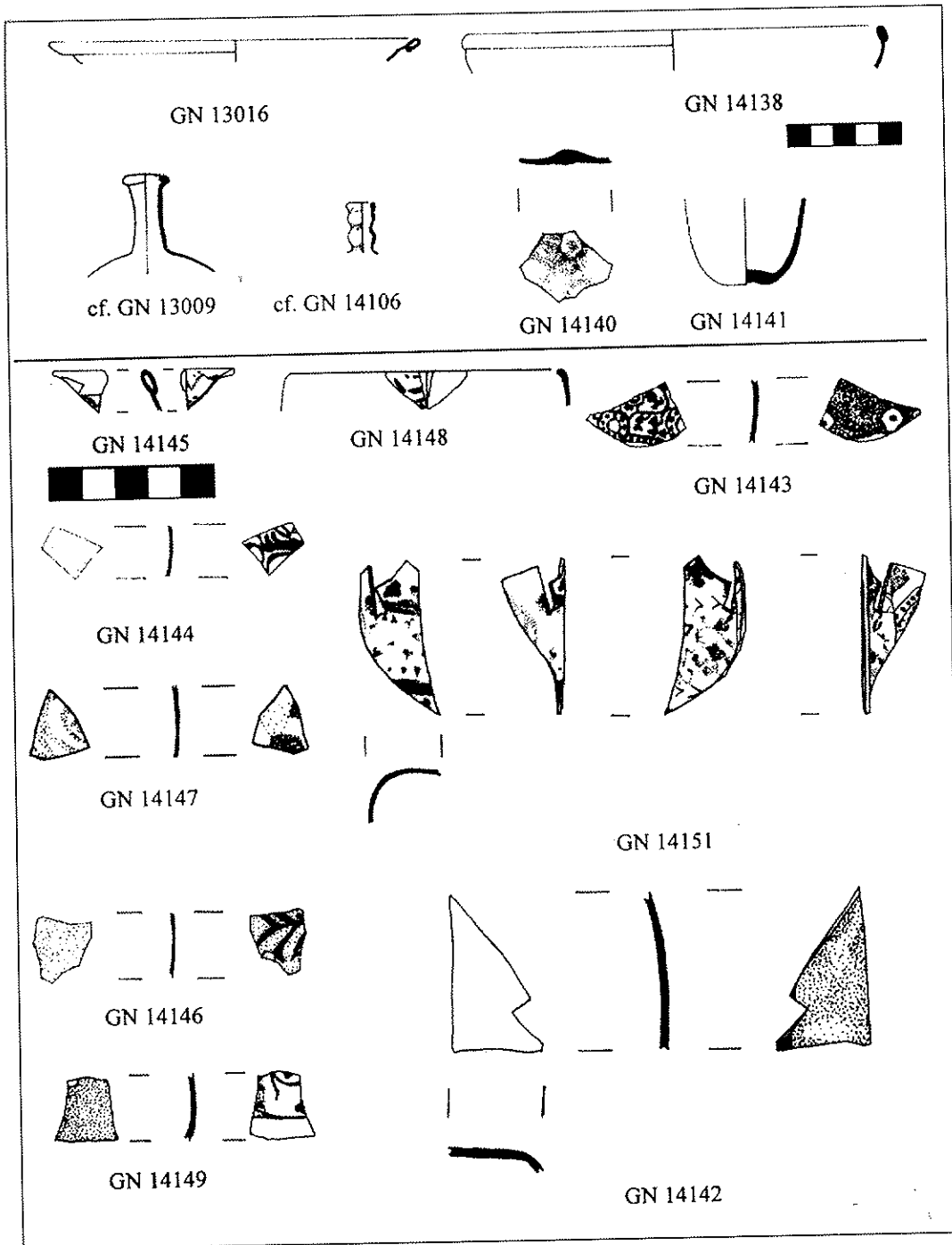
*Abbasid Glass from Area XXXII:* In XXXIIH loc. 2, immediately below topsoil with washed-in Mamluk glass, was yet another pit yielding purely Abbasid glassware. Thirteen glass vessels from the same context are diagnostically Abbasid, including nipped beaker body fragments and tall-mouthed flasks with spike-handles; six examples of tall-mouthed flasks from here parallel one from the 'pig-pit' of Area XXXVB (GN 13009), and another

from Abbasid Area XXIXH. The absence of any pincer-decorated glass from this pit, however, suggests an early rather than late Abbasid dating, following the dating suggested for the glass from Area XXIXH. The cobalt blue amphoriskos (GN 13015) has the distinctive spike-handle of the very late Umayyad and Abbasid periods; only the absence of its mid-body makes it impossible to tell if it belonged to the form of nipped flask found, again, in early Abbasid Area XXIXH. It is likely to have been a local, or at least, regional, product. Also close to examples from the Abbasid complex in Area XXIX were small tall-mouthed flasks and flasks with beaded rims (cf. GN 14106).

Two honeycombed mould-blown flask bases (of type GN 14140) of typically Abbasid and later form came from contexts of mostly Fatimid-Ayyubid date. A long cylindrical flask base (GN 14141) of the same typological dating also came from a context containing lustre-painted glass, as does an incurved bowl rim (GN 14138) and an undecorated polygonal or lentoid flask base (GN 14150).

#### *Selected Abbasid types (Fig. 14)*

- GN 13016 (XXXIIH 2.5) Flaring bowl rim. Rd 17cm. Flaring, almost flat rim, folded to exterior; curving in to deep, sagging convex bowl, mostly missing. Medium-thin walled. Blue-greenish; unweathered. MNE: 3, others with rim diameters 20cm.
- GN 14138 (XXXIIL 1.5) Folded bowl rim. Rd 18cm. Incurved rim, folded out, on very convex wall bulging above steep body; rest missing. Medium-thick walled. Strongly blue-greenish, almost bluish.
- Cf. GN 13009 (XXXIIH 2.6) Flask rim. Rd 1.5cm. Everted rim, rolled unevenly in, on narrow long neck, swelling towards wide, rounded shoulders on large body, mostly missing. Medium-thin walled. Strongly blue-greenish and very bubbly; unweathered.
- Cf. GN 14106 (XXXIIH 2.2) Beaded flask rim. Rd 1cm. Thickened, rounded rim on narrow tall neck, lightly tooled to three ridges, carinated sharply to narrow high shoulder; rest missing. Strongly blue-greenish, unweathered.
- GN 14140 (XXXIIL 1.5) Mould-blown flask base. Bd <5cm. Centre of base extant; flat, thickened base with solid pontil mark. Light honeycombed pattern over entire base. Dark amber.
- GN 14141 (XXXIIL 1.5) Cylindrical flask base. Bd 2.5cm. Lower body of narrow, cylindrical flask or beaker, with rounded tapering base, thickened. Small solid pontil. Thick walled. Strongly blue-greenish.



14. Abbasid glassware from Areas XXXII and XXXV.

*Early Islamic Lustre-Painted Glass from Area XXXII*

Excavations in 1996-7 produced Pella's first lustre-painted glass. Indeed, only one other fragment from the entire Decapolis has been recorded, in desultory fashion, at Jarash (Baur 1938: 515, along with equally scant mention of an enamelled bowl), and so this important material deserves some brief discussion here.

The most distinctive glass from the XXXIIH pit was an amber fragment of a cylindrical bowl/beaker

with early lustre-paint of thick applied yellow and dark brown (GN 13014 - not illustrated). This fragment is also discussed more elsewhere (O'Hea 2002: forthcoming). The earliest datable use of dark brown lustre-paint (also called staining) is early Abbasid. Combinations of opaque yellow or orange on dark brown lustre-paint are all, when datable, ninth to tenth centuries (Kröger 1998: 8-9). Ours is, however, very unusual in its amber base fabric, for examples from north-eastern Syria, Persia, Egypt or exports beyond the Near East, are all painted on

greenish or blue-greenish glass. Of published examples so far, the closest parallel to the pattern of slender lanciform leaves on the Pella vessel is on a glass bowl found in China, although the overall pattern must differ, as do both shape and underlying fabric. Since the Chinese bowl has a *terminus ante quem* of AD 874 (Kröger 1998: 9, fig. 19.1), this however supports the general contextual dating of the Pella fragment to the Abbasid period. A similar ninth-tenth century dating was attributed to the more heart-shaped leaves on a footed cup from Ayyubid packing in Jerusalem, again painted on faintly greenish glass (Hasson 1985: 140). The other glass from Pella's XXXIHH pit is purely Abbasid, with good parallels from a rubbish-filled room in Area XXIXH which should post-date AD 750 but predate the appearance of pincer-decorated glass at Pella, and thus is perhaps early rather than late Abbasid (O'Hea 1993: 221-227).

At least nine lustre-painted vessels were retrieved, in fragments, from the one trench (XXXIIL 1.5/13); two were rectangular or square-sectioned flasks (GN GN14142, 14151), the rest small bowl-like beakers or bowls with folded rim. The two flasks were paddled rather than mould-blown, and thus are highly unusual.

These fragments vary from appearing as if mostly dark red-orange — with and without gilding or yellowish overpaint — to having a delicate orange-brown wash design on their natural blue-greenish fabric. Arabic sources discussing contemporary gilding date from the tenth-eleventh centuries; an anecdotal reference to eighth century gilding on a cup might well be anachronistic and cannot be relied upon (Lamm 1941: 30 n. 48 and 16, n. 12). None closely resemble those cited by Lamm as having an Egyptian origin, nor do they resemble those in the Damascus Museum from Abbasid Raqqa (al-'Ush 1964: 60-61). None are truly polychrome, although the use of a dull yellow and of gilding add tonality to some; all are painted on both sides of the vessel walls. None are anything like complete, and the contexts are wash levels, but the co-appearance of these vessel fragments here and nowhere else at Pella suggests at least a rough contemporaneity in their original location. But of what date?

Thirty three percent (33%) of the diagnostic glass from these interrelated wash-levels were new types at Pella [Minimum number estimate (MNE): 47 vessels *in toto*, but only 31 identifiable types]. Whilst the glass assemblage from XXXIIL certainly contained late Umayyad types, the latest datable material is Abbasid. Noteworthy, however, is the absence of either the early Abbasid "nipped" beakers, or any pincer-decorated glass, which is so com-

mon elsewhere in ninth/early tenth (?) century contexts at Pella. As it might safely be assumed that pincer-decorated glass was, like lustre-painted ware, an élite item, its absence in this odd group cannot be explained by a socio-economic difference; and both groups are predominately drinking or tableware (bowls/beakers). All of this hints at a chronological difference between the two groups and, if anything, suggests a later Abbasid or perhaps even early Fatimid phase than has previously been identified at Pella.

Carboni reconstructs a decorative development in lustre-painting that starts in the late Umayyad period with double-sided, often monochrome decoration, moving to double-sided, polychrome patterns in the Abbasid/Tulunid period, and then to single-sided, light brown designs in the Fatimid/Ayyubid period (Carboni 2001: 52). Independent contextual evidence at West African Gao (Insoll 1998: 81-82) and at Caesarea Maritima (Pollack 2000: 241) certainly reinforces an eleventh-twelfth century dating for this later monochrome, one-sided patterning. The Pella fragments as a group do not fit exactly into any of these general trends. Neither the outlined and often dotted patterns of the earliest well-dated lustre-painted beaker from al-Fustāt (AD 779-780) nor a roughly contemporary beaker at Corning are really comparable to the solid arabesques on the Pella fragments (Carboni and Whitehouse 2001: 208, No 102; also cf. al-'Ush 1964: 175). Closer to the complex pattern on polygonal flask GN 14151 is the decoration on a bowl fragment in Kuwait (Carboni 2001: 57, Cat. 11), dated only by parallel to the two above-mentioned beakers, despite a clear stylistic difference. The overall impression is perhaps closer to a tenth-eleventh century fragment in the same collection (Carboni 2001: 68, Cat. 2.4h).

The solid vegetal patterns, solid orange wash on one side and the use of a dull yellow which appear on Pella fragments GN 14147-8 are however found on a group of more contrastingly-decorated vessels, perhaps all from al-Fustāt. They are dated, admittedly on rather dubious comparative grounds, to the ninth or tenth centuries (Lamm 1941: VI.2, VII.2; Carboni 2001: 60, Cat. 13), as is the appearance on Pella fragments GN 14147-9 of a dark red solid wash on one face (Carboni 2001: 52, 67, Cat. 2.2d, g-h).

It is difficult to see the technique or style of lustre-painting on GN 13014, associated with early Abbasid glass, overlapping in date with those lustre-painted vessels from XXXIIL whose decorative style seems a little removed from those seen in Mesopotamia or Egypt. An admittedly tentative

late Abbasid date is therefore suggested for the latter, whilst further excavation, and fine-tuning of the ceramic phasing, is awaited.

*Lustre-Painted types (Fig. 14)*

- GN 13014 (XXXIII 2.2) Lustre-painted bowl. Int.d 12cm. Cylindrical body fragment; external thick painted opaque yellow ground with dark opaque brown horizontal olive wreath below single extant line border; rest missing. Medium walled. Honey-amber fabric; iridescent patches.
- GN GN 14145 (XXXIII 1.5/6) Lustre-painted bowl rim. Rd indeterminable. Everted rim, folded to exterior on straight wall sloping in. Two fragments; blue-greenish. Fine pattern in washy orange-brown on interior, from rim down, with dotted borders; more dotted pattern on exterior.
- GN 14148 (XXXIII 1.5) Lustre-painted beaker rim. Rd 8-10cm. Incurved simple rim; faintly blue-greenish. Internal light wash of translucent dark red-orange lustre paint; external opaque yellow-orange linear pattern.
- GN 14144 (XXXIII 1.5) Lustre-painted and gilded bowl/beaker. Medium walled, faintly blue-greenish. Internal solid dark translucent red-orange wash; external gold calligraphic or vegetal design.
- GN 14147 (XXXIII 1.5) Lustre-painted and gilded bowl/beaker. Convex body fragment; medium walled, faintly blue-greenish. Internal solid red-orange translucent wash with thick gilded curving lines; external opaque yellow-orange spiral, probably a tendril.
- GN 14143 (XXXIII 1.5) Lustre-painted bowl/beaker. Cylindrical body fragment, interior and exterior finely painted in translucent orange-brown: interior design panels of fine arabesques with small lanciform leaves within dotted borders; exterior, solid wash in same, with reserved circular "eyes".
- GN 14146 (XXXIII 1.5) Lustre-painted bowl/beaker. As above, but with internal solid wash of translucent orange lustre paint; external yellow-orange opaque frond.
- GN 14149 (XXXIII 1.2) Lustre-painted bowl/beaker. As above, but with internal solid wash of translucent dark red-orange lustre paint; external orange-brown arabesque tendril.
- GN 14151 (XXXIII 1.5/6) Lustre-painted large polygonal flask. Upright body/rounded corner fragment; square/rectangular-section; medium walled, faintly blue-greenish. Internal and external surfaces equally finely painted in very washy translucent brown lustre-paint; together forming horizontal band with chevron-borders, within which are very fine tendril arabesques with tiny

lanciform leaves and buds on one face, and part of medallion with vegetal or dotted border on adjacent face.

- GN 14142 (XXXIII 1.5) Lustre-painted and gilded polygonal flask. As above, two non-joining fragments, faintly bluish and very bubbly. Internal solid dark red translucent wash with very worn traces of thick linear gilding, perhaps with opaque white; external surface undecorated.

(M. O'Hea)

## **Archaeozoology Report for an Umayyad Rubbish Pit in Trench XXXV.B**

### *Introduction*

During the 1997 excavation season at Pella, faunal analysis was performed on the Umayyad rubbish 'pit' in Trench XXXVB (locus 8.2 and locus 8.4). The dietary habits of the Pella inhabitants during this early Islamic period is interesting because of the high reliance on pig meat. Since Islamic proscriptions against the pig were enforced from the very beginning, the family or families using this rubbish 'pit' were most likely Christian.

### *Methodology*

Analysis was carried out using techniques previously published (Mairs 1994; 1995).

The bone counts for the individual animal categories and the site as a whole are represented by NISP (number of identified specimens) figures, with the minimum number of individuals (MNI) identified calculated using the maximum distinction method. Meat equivalent ratios (Sheep/Goat Equivalents or SGE) are also presented in **Table 4**.

### *Discussion*

Six hundred and twelve (612) elements were analysed with 208 being identifiable to species level (an identification rate of 34%): 53% of the bones were from pigs, 42% from sheep and goats, 3% from cattle and 2% from Galliforme birds (grouse, pheasant, quails, turkeys and chickens) (see **Table 4** and **Fig. 15**).

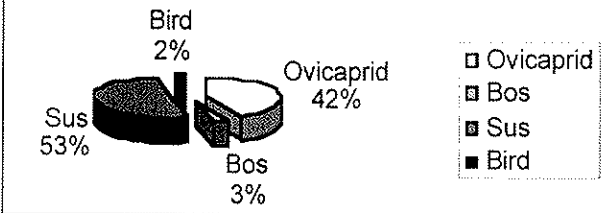
Leaving the proscription of pig meat by Islamic teaching aside for one moment, the high reliance on this source of protein in this particular context needs to be addressed. Up until recently there have been three main ways of interpreting pig utilisation on a site. Grigson's environmental determinism model (Grigson 1989: 112) (which is based largely on studies of European pig rearing) was one of the first and probably most obvious reasons for finding pigs in greater or lesser numbers on any given site.



**Table 4:** Relative proportions of species represented in XXXVB 8.2+8.4, Pella (1997 season).

Species	NISP	%NISP	MNI	%MNI	SGE	%SGE
Ovicaprid	88	42.3	11	37.9	11	16.2
Bos	7	3.4	3	10.3	36	52.9
Sus	108	51.9	14	48.3	21	30.9
Bird	5	2.4	1	3.5		
Totals	208	100	29	100	68	100

**Chart 1: Relative proportions of animals represented based on NISP values, XXXVB 8.2+4 (Pella, 1997)**



15. Relative proportions of animals represented based on NISP values.

Later Redding (1991) linked pig utilisation inversely to the degree of agricultural intensification (and to the use of cattle!). Zeder (1995: 307-309) tied pig production with non-nucleated, self-sufficient communities and also with lower status areas within a site. Pigs, according to Zeder, are meant to be less common on a site during times of greater integration within a regional urban economy — they act as a ‘bell weather’ of social change, a measure of economic and social cohesion. It is likely that combinations of all of these theories, in fact, played varying roles.

I have discussed the use (or more appropriately the relative non-use) of pigs on Near Eastern sites previously (Mairs 1994; Bourke *et al.* 1998; 2000) and the pattern of this use remains somewhat enigmatic. In general the use of pigs at Pella has been relatively low right from Neolithic times (see Bourke *et al.* 1998; forthcoming). No one theory can explain the general paucity of an animal that is arguably the greatest meat production machine of any of the domestic creatures. Pigs produce ten or more young in a litter and farrow two and a half times a year. Their growth rate and energy conversion efficiency are well ahead of any other domestic animal. One sow can therefore produce 25 offspring each year, each of which grows faster than any sheep, goat or head of cattle. Cattle only produce one young a year, and sheep or goats on average only slightly more, due to a low percentage of twinning. The relatively limited use of pigs throughout millennia at Pella is difficult to compre-

hend from a purely economic point of view, particularly since pig use seems so high during the Umayyad period when proscriptions on pig use were presumably in place. The situation seems counter-intuitive.

Factors such as climate, social and religious strictures, economic strategies and trade all played a role in the determination of animal species use. On sites with low pig use the perceived bad habits of pigs (which often lead to the belief that they are ‘unclean’) are frequently highlighted by other analysts. However, those habits only arise when they are crowded and stressed in ‘modern’, intensive piggeries. Under normal circumstances pigs are exceptionally clean and display intelligence in the most surprising ways. Indeed, the ancient Greeks, including Aristotle, referred to the pig as *synanthropeuomenos* [i.e. living together with humans, like the dog] (Isager and Skydsgaard 1995: 93), and it would seem that the material from Trench XXXVB may well represent a microcosm of just this type of scenario: pigs raised and slaughtered in a domestic setting. The majority (82%) of the pig specimens represented were cranial in origin and a large proportion of the non-cranial elements were from the distal limbs. Even allowing for differential survivability this strongly indicates that these deposits represent a primary butchery site.

No wild animals are represented.

There were only 29 individual animals represented in these deposits and the MNI values are given in **Table 4** and **Fig. 16**. Proportions remain very similar for both NISP and MNI values.

*Age-at-Death*

The age-at-death has only been roughly examined, however there were no neonatal or aged individuals represented in the sample. The age-at-death ratios are presented in **Figs. 17-19**. Most of the animals represented in these levels were mature and in the case of pigs over 20 months of age.

*Conclusion*

The pit from Trench XXXVB has presented to us a picture of domestic refuse from one or perhaps several domestic households in Pella during the Umayyad period — a picture that is not typically

pits. The meat from mature animals was preferred over that from young animals.

There is also a significant statistical variation between the two deposits within the 'pit' ( $p = 9.96E-07$ ). However, regardless of this there is still a huge amount of pig bone in both deposits (see **Tables 5, 6**).

There has been some discussion concerning the nature of the pit. From the amount of pottery that came out of the pit the excavators considered that it represented a post-calamity clean-up (such as after an earthquake, say in AD 660), which may have taken place over a fair amount of time. The faunal analysis could be interpreted to support this hypothesis. Whilst whole animals were not found in the pits there is an indication that a major shift in husbandry practices occurred at this time. In all other periods from the Late Neolithic on juvenile pigs far outweigh mature pigs at the site (Mairs forthcoming) so that a shift to the consumption of mature pigs during the Umayyad is reasonably significant. Also, as a rule, older, potential breeding pigs are not normally eaten. The most likely explanation is that something occurred at this time that required a radical shift in animal use. A collapse of the normal domestic economic processes seems the most plausible explanation. Whether this happened because of some calamity such as an earthquake, or because of other factors remains to be ascertained. As well as all the broken pottery, glass and bone, a basalt pestle or stopper carved as boar was found immediately above the 'pit' (see Small Finds Report, below). The association of such an unusual object and the large amount of pig bone is highly interesting.

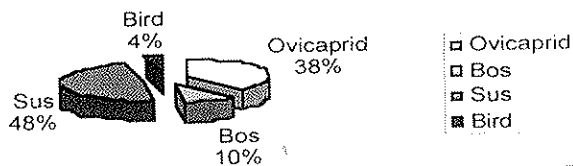
(L. Mairs)

### Small Finds from Area XXXV

*XXXVA-B Byzantine or Umayyad House Rooms and Courtyard: loci with concentrations of finds were: 8.7, 8.9, 8.12 and 12.2*

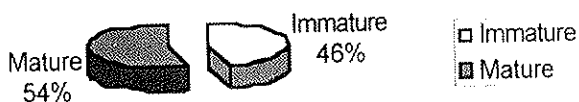
- (**Fig. 20**) Reg. no.: 200070, book no.: 971127, area XXXVB 6.1, plot object no. 6. Sculpted jar stopper, featuring a boar-shaped head, thick neck and cylindrical body tapering to a rounded stoppered base. The features of the animal are carved in low relief, and include short ears, large eyes, short upcurving tusks and snout, with a slight raised ridge on the back of the neck. Folded front legs are indicated on the upper body. It is suggested that this object is a stopper, rather than a pestle, as there are no signs of use-wear around the base or sides. Fine grained light grey basalt. L. 140, w. 62, th. 60mm. Present location: Jor-

**Chart 2: Relative proportions of animals represented based on MNI values, XXXVB 8.2+4 (Pella, 1997)**



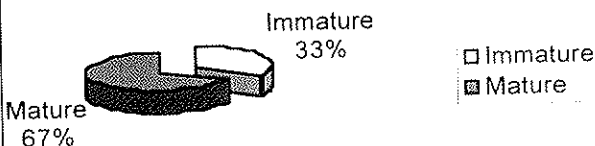
16. Relative proportions of animals represented based on MNI values.

**Chart 3: Ovicaprid age-at-death ratios based on MNI values, XXXVB 8.2+4 (Pella 1997)**



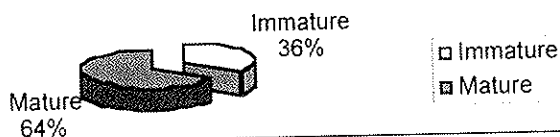
17. Ovicaprid age-at-death ratios based on MNI values.

**Chart 4: Bos age-at-death ratios based on MNI, XXXVB 8.2+4 (Pella 1997)**



18. Bos age-at-death ratios based on MNI values.

**Chart 5: Sus age-at-death ratios based on MNI values, XXXVB 8.2+4 (Pella 1997)**



19. Sus age-at-death ratios based on MNI values.

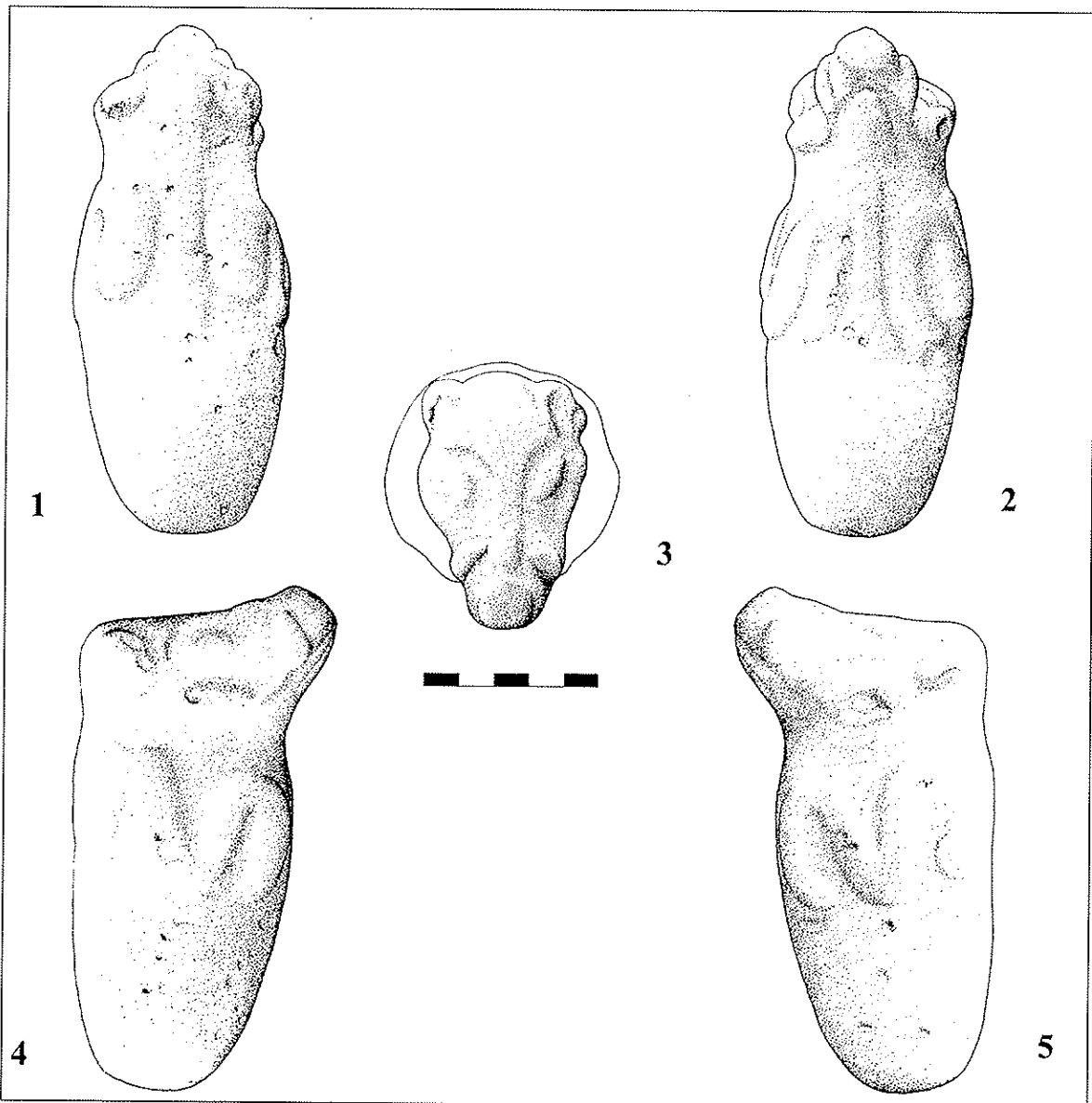
Islamic. The animals were probably slaughtered close to where the deposits were found. The pigs may well have lived within the proximity of the

Table 5: Figures for Trench XXXVB 8.2.

Species	NISP	%NISP	MNI	%MNI	SGE	%SGE
Ovicaprid	40	31.5	5	27.8	5	11.4
Bos	6	4.7	2	11.1	24	54.5
Sus	76	59.8	10	55.6	15	34.1
Bird	5	3.9	1	5.5		
Totals	127	99.9	18	100	44	100

Table 6: Figures for Trench XXXVB 8.4.

Species	NISP	%NISP	MNI	%MNI	SGE	%SGE
Ovicaprid	48	59.3	6	54.5	6	25
Bos	1	1.2	1	9.1	12	50
Sus	32	39.5	4	36.4	6	25
Bird	0					
Totals	81	100	11	100	24	100



20. RN200070, Basalt jar stopper, XXXVB6.1: 1. Back view; 2. front view; 3. top view and section; 4. right side view; 5. left side view.

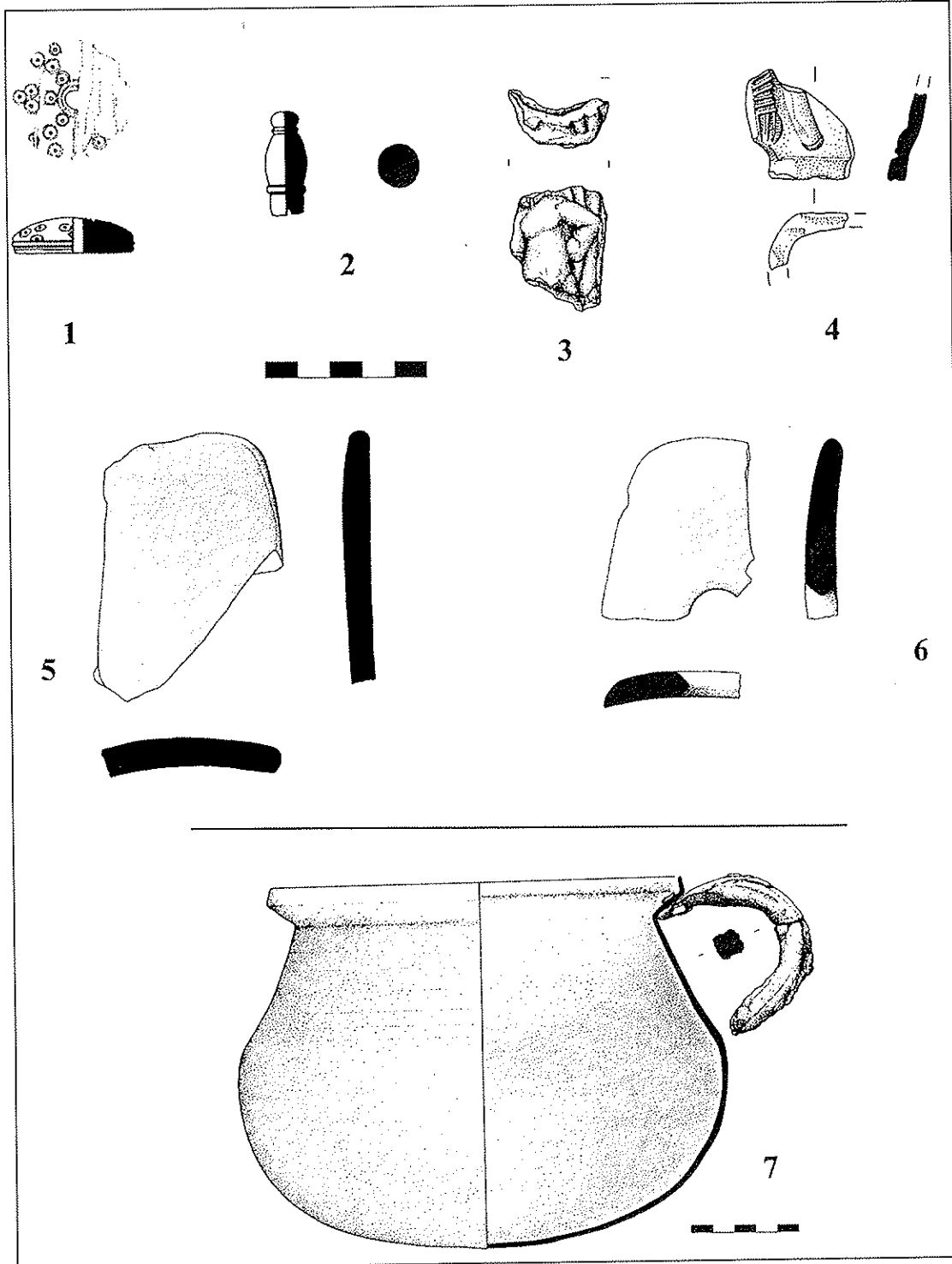
dan, Irbid Antiquities Office.

2. (Fig. 21.1) Reg. no.: 200019, book no.: 970088, XXXVB 6.1. Circular bone spindle whorl with flat base and convex upper surface, pierced through centre. Upper surface decorated with dot-circle motif in alternating lozenge and Y-shaped pattern around circumference. 2 concentric incised lines around hole, also 2 parallel in-

cised lines around outer edge. Polished ext. Ht 9.5, diam. 37, diam. hole 7, diameter of circle decoration 4mm. Present location: Australia, University of Sydney.

XXXVC-D: *Fourth Century AD Room*

1. (Fig. 21.2) Reg. no.: 200018, book no.: 970086, area XXXVC 2.2, plot object no. 6. Complete



21. Selected small finds from area XXXV.

- and intact worked bone piece, either a complete gaming piece, or a small part of a larger composite object. The body is carved into several sections, consisting of a knob-shaped top with raised collar below, elongated segment with convex sides and flat collar, then straight sided, slightly tapered lower portion to a flat underside with shallow depression drilled in the centre. Polished surfaces. L. 26, w 10.2, th. 9.7, diameter depression 2.5-3mm. Present location: Jordan, Irbid Antiquities Office.
2. (**Fig. 21.3**) Reg. no.: 200040, book no.: 971401, XXXVC 1.6. Male or female figurine fragment, consisting of slightly bent torso with belly button marked by circular depression. Left arm broken above elbow, upper part straight; right arm bent and resting on hip, possibly holding a circular object such as a ball. Head and legs missing. Concave, rough back surface. Finely levigated orange fabric. L. 37, w 30, th. 10mm. Present location: Jordan, Irbid Antiquities Office.
  3. (**Fig. 21.4**) Reg. no.: 200047, book no.: 970277, XXXVC 3.2. Hollow figurine fragment with part of flat base preserved, apparently with a large hole in the centre. The subject is not very clear; there is a thickened collar at the base, then above this an oblique object, moulded, convex, possibly a limb but with no clear foot or hand at the end of it. To the left of this is a vertical object, with one flat outer face, and a side face decorated with vertical moulding then a series of slightly oblique parallel lines. Traces of red pigment ext. Buff, finely levigated fabric, no visible inclusions. W. 30.5, th. 5, ht 33.6mm. Present location: Jordan, Irbid Antiquities Office.
  4. (**Fig. 21.5**) Reg. no.: 200071, book no.: 970155, XXXVD 1.2. Modified ceramic sherd, very slightly curved ext., so probably originally from body of a large vessel. Worked at one end to form a rounded, curved working edge, either deliberately smoothed or worn smooth through use; the other two edges are broken, and taper in to a rounded point at the other end. Possibly a potter's tool, such as a scraper or burnisher. Moderately well levigated with medium and small grey and brown stone inclusions, fired buff int. and orangey buff ext. L. 89.4, w 61, th. 7mm. Present location: Australia, University of Sydney.
  5. (**Fig. 21.6**) Reg. no.: 200072, book no.: 971400, XXXVC 3.28. ceramic, Orange buff, fired grey at core, with some large white lime and red stone inclusions. potters tool. Modified sherd, slightly convex ext. One corner preserved, with two straight edges joining in a rounded corner. Smoothed at this edge, probably through use-wear, forming a markedly bevelled edge on the long side. Broken on two other edges. Part of large hole through centre preserved, hole bored after the sherd was fired, from both sides. Probably potters tool, or burnisher. L. 58, w 42.7, th. 8, diam. hole 14mm. Present location: Australia, University of Sydney.
  6. (**Fig. 21.7**) Reg. no.: 200079, book no.: 971491, XXXVD 3.3, P.O. no.: 6. Bronze bowl made from hammered sheet metal, featuring simple upright and slightly inturned lip, sharply carinated in around 6mm below rim to form a broad inner neck. This has the effect of leaving a downward sloping but flattish inner edge to rim. Upper body then slopes out concavely to slightly carinated shoulder; lower part of vessel hemispherical with convex base. Upper body above shoulder features a series of horizontal grooves or shallow flutes around circumference, fairly irregular, possibly tooling marks or rough decoration. One nonjoining fragment of rim has two circular lumps with iron staining/fragments attached that look like the base attachments for an iron handle; several fragments of iron were found with the object but unable to be attached. This handle would probably have been some kind of loop; it is not clear if the patches represent rivets through the body, although this is likely. This loop would have been attached to the flat inner portion of the rim. Th. 0.8, diam. RD pres 182mm. Present location: Jordan, Irbid Antiquities Office.

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