

PRELIMINARY REPORT ON THE UNIVERSITY OF SYDNEY'S FOURTEENTH SEASON OF EXCAVATIONS AT PELLA (ṬABAQAT FAḤL) IN 1992¹

by

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Introduction

The 14th season of archaeological excavations at Pella (Fig.1) took place between January 4 and February 21, 1992. There were 18 core staff, and 22 local workmen employed.²

Excavations continued in the main stratigraphic probe into the mound, in Area IIIC/D, with the primary aim of ascertaining the date of construction for the monumental mudbrick wall that encircled the Middle Bronze Age city. As well, the discovery of an earlier, but similarly aligned, Early Bronze Age city wall came as a pleasant surprise.

The investigation of an impressive Early Bronze Age structure on the southern margin of the main mound (Area XXXII), first noted in 1986, and under preliminary investigation between 1988 and 1990, was explored in greater detail, with a new trench (Area XXXIID) opened to sound the depos-

its to sterile soil. After uncovering two phases of Early Bronze Age occupation associated with various of the stone wall lines, an earlier Chalcolithic phase of occupation was isolated below the EB layers.

A large Middle Bronze Age building located on the southwestern margins of the mound (Area XXVIII), first explored in 1984 and reexamined in 1986, was further investigated, with three distinct phases of MBA and MB/LB occupation isolated.

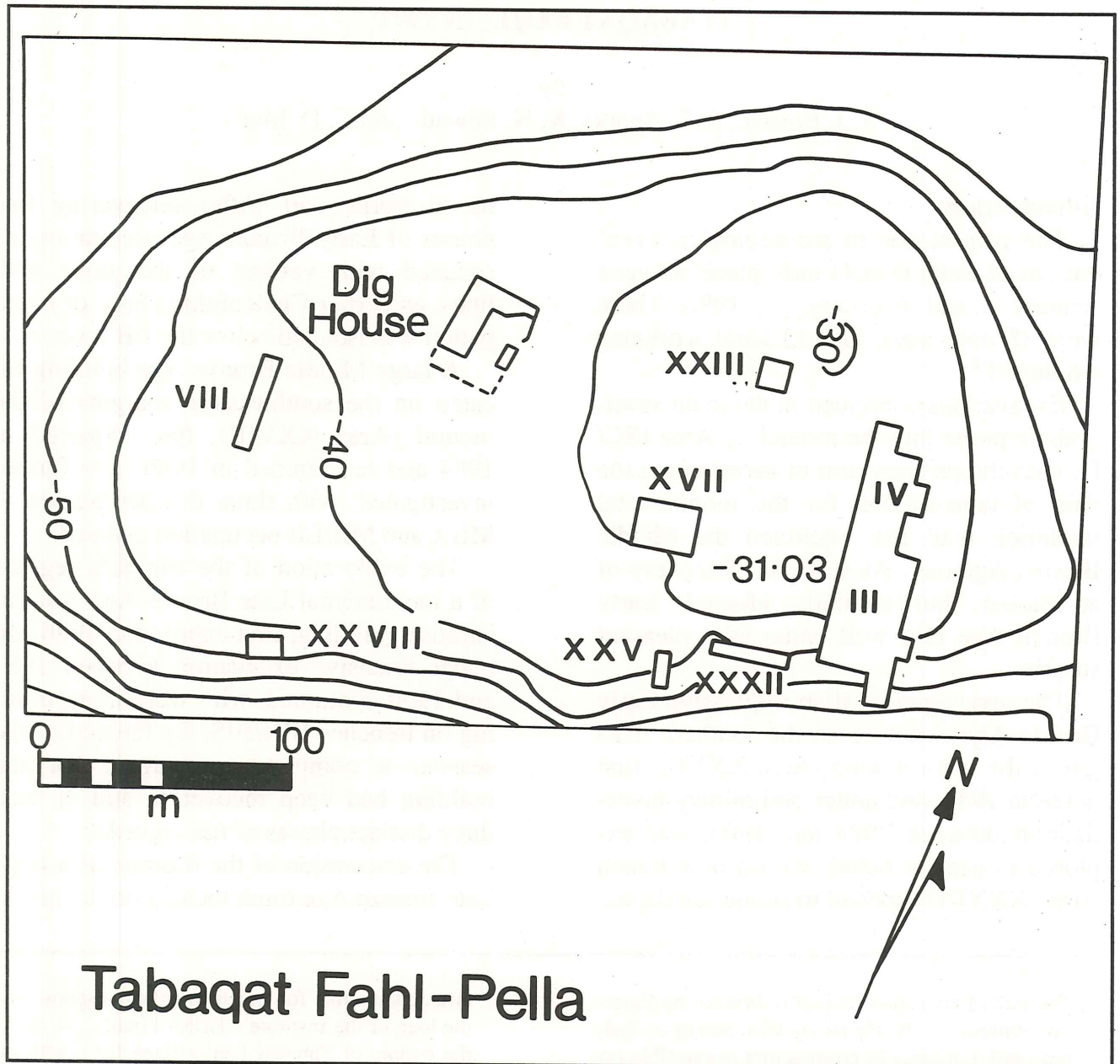
The exploration of the southern regions of a monumental Late Bronze Age Administrative Building, first exposed in 1980 and under intensive excavation between 1982 and 1990 continued, with work concentrating on trenches IIIN/IIIS. By the end of the season, a complete groundplan for the building had been recovered, and at least three distinct phases of use recorded.

The excavation of the dromos of a large Late Bronze Age tomb located on the north-

1. The Pella Excavation Project is directed by Emeritus Professor J. B. Hennessy (University of Sydney) and a number of co-directors responsible for individual periods of study. The 1992 field season was directed by Dr. Stephen Bourke (University of Sydney). Major funding bodies were the Australian Research Council, the Australian National Gallery (Canberra), the University of Sydney, and a substantial private donation. The Project directors would like to thank H. E. Mr. Yanal Hikmat, then Minister for Tourism and Antiquities, Dr. Safwan Tell, Director-General of the Department of Antiquities, and Mr. Wajeeh Karasneh, Curator of the Umm Qais regional museum, for their considerable interest and support. Equally appreciated was the enthusiasm, interest, and assistance provided by H. E. Mr. R. Bowker, then Australia's Ambassador to Jordan. We thank Mr. William Lancaster, Director of the British Institute at Amman, and Dr. Graham Phillip, then As-

sistant Director, for much logistical support and the loan of the Institute's EDM. Finally, we thank the people of Ṭabaqat FaḤl village for continued hospitality.

2. Team members for the 1992 season were Stephen Bourke (director), Wajeeh Karasneh (Department of Antiquities representative, Tomb 106 and XXVIII A), Jodie Benton (IIIN/S), Ben Churcher (IIIC/D and photographer), Maria Schroder (IIIC/D), Dorothy Maniero (IIIC sondage and drafts-person), Karin Sowada and Armon Hicks (Area XXXIIB), Jaimie Lovell (Area XXXIID), Margaret O'Hea (Tomb 106 and glass cataloguing), Rachael Sparks (registrar), Catriona Sparks (photographer), George Findlater and Ralph McGregor-Troup (surveyors), Jo Atkinson (conservator), Catriona Bonfiglioli and Jane Johnson (drafts-people), Maree and Chris Browne (palaeopathology), Abu Issa (foreman), Abu Sami (chief cook), and a work force of twenty-two.



1. Plan of areas of excavation mentioned in report.

ern face of Tell el -Husn (Area XI), first explored in 1990, was continued. It seem likely that the T.106 deposits represent the approach road and dromos of a large tomb excavated by the Department of Antiquities in 1963-64.

Finally, the exploration of Iron Age I-II deposits in Area XXXII, carried out between 1987 and 1990, was completed when a sondage within trench XXXIIB reached sterile layers, after passing through at least

three phases of Iron Age I material.

Detailed reports on each of these excavation areas follow, with descriptions following rough chronological order according to the dominant periods of interest in each area. Specialist studies on stone vessels and objects, ceramic figurines, cylinder seals, scarabs, and faience amulets appear under the appropriate area of excavation, followed by a report on the animal bones excavated in 1992.

EXCAVATIONS IN AREA XXXIID: CHALCOLITHIC AND EARLY BRONZE AGE DISCOVERIES

In the 1986 field season, several east/west wall lines running along the south-central margins of the tell, exposed in recent heavy rains were preliminarily investigated, and suggested to be of Early Bronze Age date. In 1987, newly instituted Area XXXII was laid out immediately to the east of the wall lines, in the hope of recovering a full stratigraphic record of what was hoped to be the Early Bronze Age city wall. However, in spite of recovering a very small (under 1 m) continuation of the main wall line (Area XXXIID Wall 16; see Fig. 2), the 30 m extent of Area XXXIIA-C proved barren of other Early Bronze Age remains. By the end of the 1990 season, it seemed clear that the Early Bronze Age (and earlier) remains were concentrated in the western 4 m of trench XXXIIC, and beyond it to the west.³

Therefore, to sound the Early Bronze Age structure, (as it now seems clear it is not the hoped-for EB city wall), we posi-

tioned a new trench, Area XXXIID, directly over the best preserved portion of the remains exposed in 1986, and opened a 4 x 6 m sondage within the trench to sound the complete sequence to sterile soil. Five distinct phases of architecture were detected:

Phase I: Wall 10, and Stone Platform F.10

Phase II: Walls 11 and 15, and Mudbrick Bench F.11

Phase III: Wall 15

Phase IV: Wall 16

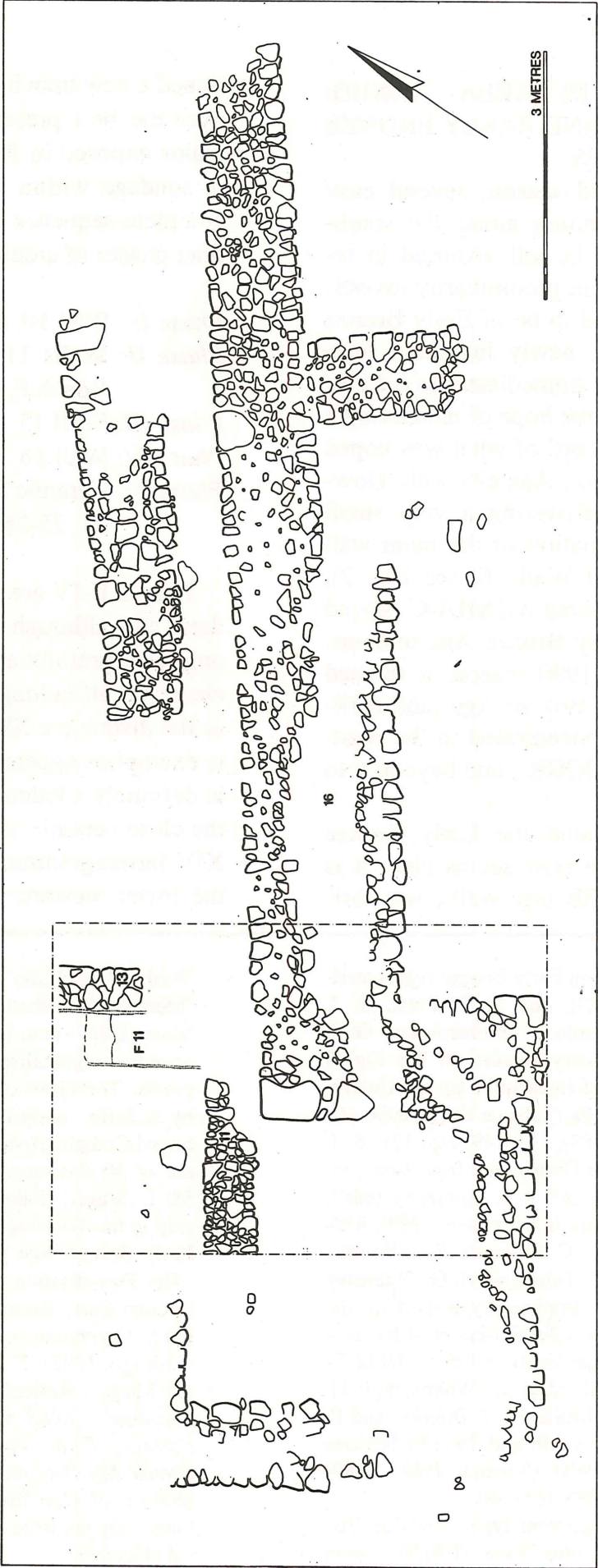
Phase V: Ceramic Silos F.18-19, Pits F.20-21, 25-26

Phases II-IV are all Early Bronze Age in date, and although the ceramic analysis is only at a preliminary stage, it seems fairly clear that all belong to the EBIB-II period, as the distinctive EBIA and EBII-III ceramic exemplars appear to be lacking.⁴ Phase V is definitely Chalcolithic in date, and given the close ceramic similarities with the Area XIV farm/agricultural village excavated on the lower western slopes of Jabal Şarṭaba

3. For previous reports on Early Bronze Age material from Area XXXII, see T. F. Potts, S. J. Bourke, P. C. Edwards, F. Richards and G. J. Wightman, 'Preliminary Report on the Eighth and Ninth Seasons of Excavation by the University of Sydney at Pella (Ṭabaqat Faḥl), 1986 and 1987', *ADAJ* 32 (1988), 115-149, esp. 128; S. J. Bourke, 'Pella in the Bronze and Iron Ages', in: D. Homés-Fredericq and J. B. Hennessy (eds.), *Archaeology of Jordan II.2* (Leuven, 1989), 414-425, esp. 414-416; P. C. Edwards, S. J. Bourke, K. A. Da Costa, J. C. Tidmarsh, A. G. Walmsley and P. M. Watson, 'Preliminary Report on the University of Sydney's Tenth Season of Excavations at Pella (Ṭabaqat Faḥl) in 1988', *ADAJ* 34 (1990), 57-93, esp. 61-62; A. G. Walmsley, P. G. Macumber, P. C. Edwards, S. J. Bourke, and P. M. Watson, 'The Eleventh and Twelfth Seasons of Excavation at Pella (Ṭabaqat Faḥl) 1989-1990', *ADAJ* 37 (1993), 165-240.

4. The value of such apparent type fossils as 'Esdraelon Ware' and 'Jawa Ware' (EBIA), 'Grain

Wash', 'Band-Slip' (EBIB), 'Abydos Juglets', 'Metallic Burnished' (EBII), and 'Khirbet Kerak Ware' (EBIII) is to be questioned as evidence for ceramic regionalism in the EBI-III periods grows. The clear implication of recent analyses by A. Joffe, 'Early Bronze I and the Evolution of Social Complexity in the Southern Levant', *Journal of Mediterranean Archaeology* 4 (1991), 3-58; L. Stager, 'Painted Pottery and its Relationship to the Weaving Crafts in Canaan During the Early Bronze Age I', *EI* 21 (1990), 83-88; id., 'The Periodisation of Palestine from Neolithic through Early Bronze Times', in: R. W. Ehrich (ed.), *Chronologies in Old World Archaeology* (Chicago, 1992), 22-60; D. Esse, 'A Chronological Mirage: Reflections on Early Bronze IC in Palestine', *JNES* 43 (1984), 317-330; id., *Subsistence, Trade and Social Change in Early Bronze Age Palestine* (Chicago, 1991), is that the absence of type fossils from any given assemblage may not necessarily instruct on chronological placement.



2. Area XXXIUD. Plan of Early Bronze Age walling. Phases II and IV.

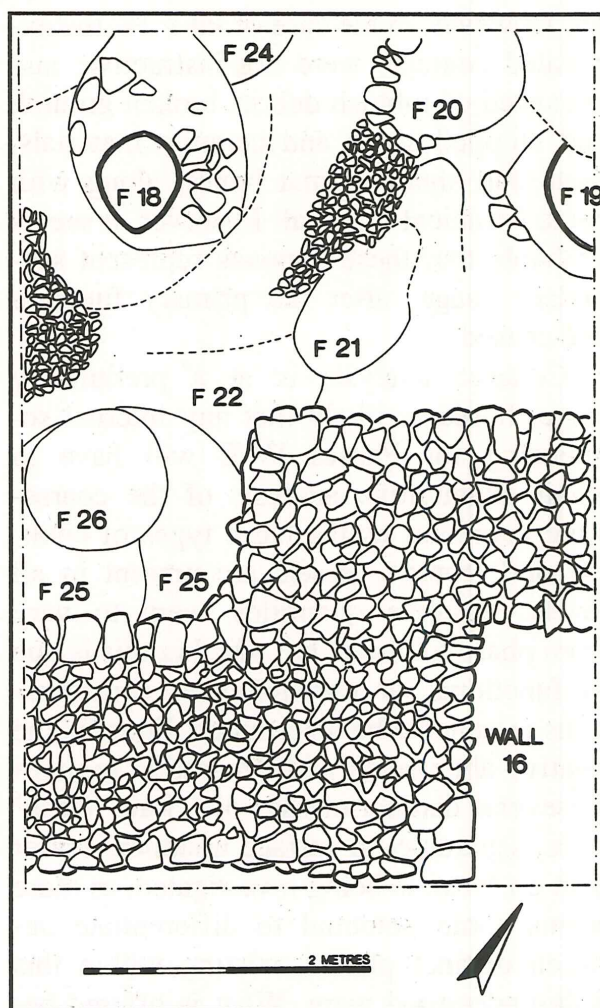
between 1980 and 1983, the occupation is likely to be contemporary.⁵ Phase I is more difficult to date, as a combination of erosion and wash disturbance has stripped the area of many instructive deposits. However, the majority of what seems secure dates to the MBII period, and probably relatively early within the period.

Whilst the Phase I deposits are still difficult to interpret, although probably domestic food preparation areas, Phases II-III are likely to represent parts of neatly constructed Early Bronze Age housing, with the Phase II deposits (Walls 11-15, F.11, Fig. 2) largely seen as a rebuilding of the earlier Phase III (Wall 15) structure.

The Phase IV structure (Wall 16, Fig. 2) seems of a different nature. Foundations are of small and medium field stones, some 2 m wide and between 1-1.5 m deep, topped with neatly laid yellow mudbricks set in brown mud mortar. Whilst only three courses of the mudbricks are preserved in the excavated portion of the wall, the whole construction seems of a monumental character more in keeping with an important civic structure than a simple domestic use.

Although only some 4 m of the wall have been investigated in detail, it seems from the surface indications that the structure may extend beyond 6 m to the east, and continue to form an offset square tower some 2 m more to the west. The exact nature of the building cannot be determined at present, but the offset tower arrangement may suggest a military or fortified residential nature.

Phase V deposits (Fig. 3) are cut into a sterile red-brown stony clay. They consist of the upper halves of two large ceramic storage jars, set over 1.75 m deep pits. The



3. Area XXXIID. Plan of Phase IV EBI-II Civic Building and Phase V Late Chalcolithic period silos/pits.

entire exterior surfaces of the ceramic vessels were overlaid with a thick yellowish-white plaster, some 5-15 cm thick. In the case of the westernmost vessel, which was fully excavated, this yellowish plaster lining (now augmented with small stones) extended some 20 cm down the wall of the pit cut into the sterile red stony-clay. The overall effect was to achieve a neatly defined, securely sealed (probably waterproofed?) silo, for the storage of grain, or perhaps wa-

5. For previous work on the Area XIV settlement, see J. Hanbury-Tenison, 'Chalcolithic (Area XIV)', in: A. McNicoll, R. H. Smith and B. Hennessy, *Pella in Jordan 1* (Canberra, 1982), 31-34, and J. Hanbury-Tenison, 'The Chalcolithic

Settlement on Jebel Sartaba (Area XIV)', in: A. W. McNicoll, P. C. Edwards, J. Hanbury-Tenison, J. B. Hennessy, T. F. Potts, R. H. Smith, A. Walmsley and P. Watson, *Pella in Jordan 2* (Sydney, 1992), 21-27.

ter. However, in the case of Pit F.18, the excavated contents were not instructive, and consisted of rubbish debris, broken ground, and chipped stone and ceramic materials, large and small animal bones, along with some botanical material. However, it seems probable that these deposits represent secondary usage, after the primary function had ceased.

Ceramic analysis is at a preliminary stage. It seems likely that any internal sequencing for Phases IV-II will have to await quantitative analysis of the coarseware ceramics, as the basic types of cooking and storage vessels are present in all levels. Relative quantities seem to vary from phase to phase, but whether this is due to functional or chronological considerations remains to be determined. Equally, the relative abundance and decorative regimes of several distinct classes of 'Grain Wash' ware, separable on surface treatment rather than on form, is being investigated, as there seems some potential to differentiate between distinct phases existing within this little-understood ware. What is offered below is a selection of contemporary forms present in each phase, rather than the detailed analysis of relative frequencies required in any definitive reconstruction; this must await the final publication.

Fig. 4: Pottery from XXXIID Phases II-III (EBI-II)

Fig. 4:1 CN 15056. XXXIID 12.2. Phase II. Bevelled holemouth jar. Moderately levigated clay with many medium to large grey chert, brown stone, some red stone, and a few white lime grits. Fired tan brown throughout. Thick orangey-buff self slip ext./int.

Fig. 4:2 CN 15057. XXXIID 12.2. Phase II. Fine jar. Finely levigated clay with many small and some medium white lime, and a few brown/black stone grits. Fired brownish grey at core and tan brown

at surfaces. Self slipped ext./int. Painted decoration in red-brown. Framed wavy line pattern.

Fig. 4:3 CN 15089. XXXIID 12.22. Phase II-III. Rounded holemouth jar. Coarsely levigated clay, with many small, medium, and some quite large white lime, grey chert, orangey grog, and black stone grits. Fired dark grey at core and orangey buff at surfaces. Self slipped ext./int.

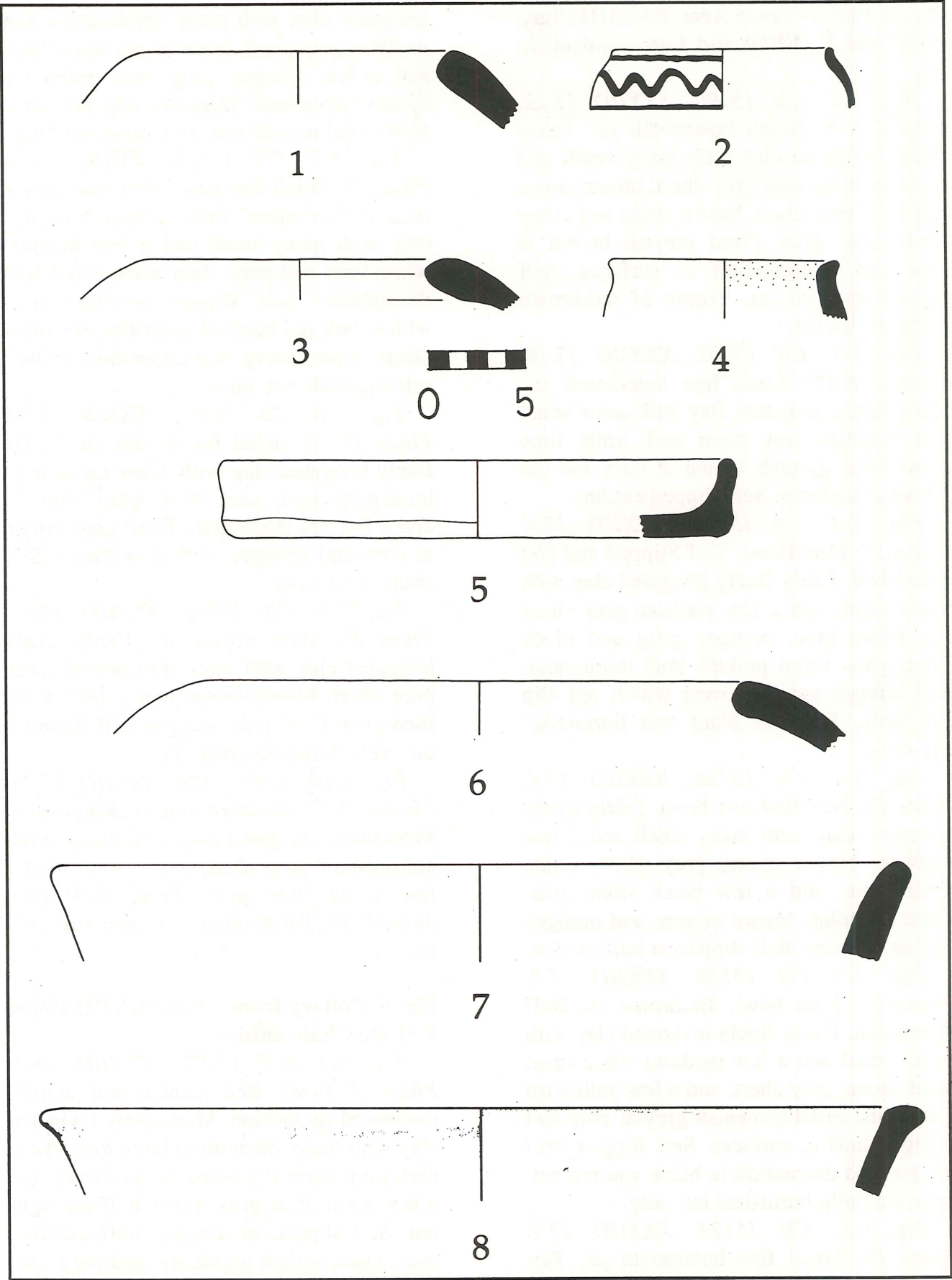
Fig. 4:4 CN 15090. XXXIID 12.22. Phase II. Short-necked jar. Moderately levigated clay with many small and some medium grey chert, white lime, yellow stone, and black stone grits. Fired grey at core and brownish-buff at surfaces. Self slipped ext./int. Band of dark red paint around rim int.

Fig. 4:5 CN 15085. XXXIID 12.11. Phases II-III. Tray. Coarsely levigated clay with many medium to large grey chert, white lime, quartz, and a few black stone grits. Fired greyish buff at core and orangey buff at surfaces. Self slipped ext./int.

Fig. 4:6 CN 15086. XXXIID 12.11. Phase II. Rounded holemouth jar. Moderately levigated clay with many medium to large grey chert, black stone, white lime, and a few yellowish grog grits. Fired greyish buff at core and orangey buff at surfaces. Slipped in buff ext./int.

Fig. 4:7 CN 15201. XXXIID 17.17. Phases III-IV. Storage bowl. Coarsely levigated clay with many medium to large grey chert, brown stone, and some white stone (?) grits. Fired buff throughout. Traces of self slip ext./int.

Fig. 4:8 CN 15203. XXXIID 17.17. Phases III-IV. Storage bowl. Moderately levigated clay with many small to medium grey chert, some orangey grog, and a few white lime, brown/black grits. Fired orangey buff throughout. Thick band of red-brown paint rim ext.



4. Area XXXIID. Early Bronze Age pottery from Phases II-III.

Fig. 5: Pottery from Area XXXIID Phases IV and V (EBIB and Late Chalcolithic)

Fig. 5:1 CN 15190. XXXIID 17.22. Phases IV-V. Small holemouth jar. Fairly finely levigated clay with many small and some medium dark grey chert, brown stone, and light grey chert, brown stone and a few white lime grits. Fired greyish brown at core and orangey-buff at surfaces. Self slipped ext./rim int. Traces of red-brown paint on rim ext.

Fig. 5:2 CN 15202. XXXIID 17.17. Phases III-IV. Small fine holemouth jar. Quite finely levigated clay with some small and medium grey chert and white lime grits. Fired greyish brown at core and tan brown at surfaces. Self slipped ext./int.

Fig. 5:3 CN 15151. XXXIID 17.4. Phase IV. Fine Bowl. Red Slipped and Net Burnished. Fairly finely levigated clay with many small and a few medium grey stone (?), white lime, orangey grog and black stone grits. Fired pinkish buff throughout. Self slipped ext./int., over which red slip ext. only. Irregular hand 'net burnished' ext. only.

Fig. 5:4 CN 15126. XXXIID 17.4. Phase IV. Bevelled fine bowl. Fairly finely levigated clay with many small and a few medium brown stone, grey chert, some white lime, and a few black stone grits. Fired chocolate brown at core and orangey buff at surfaces. Self slipped in buff ext./int.

Fig. 5:5 CN 15150. XXXIID 17.5. Phase IV. Fine bowl. Bichrome on Buff decoration. Fairly finely levigated clay with many small and a few medium white lime, black stone, grey chert, and a few yellowish grog grits. Fired brownish grey at core and orangey buff at surfaces. Self slipped ext./int. Painted decoration in black and red ext. only. Radially burnished int. only.

Fig. 5:6 CN 15124. XXXIID 17.4. Phase IV. Small fine holemouth jar. Red slipped and incised decoration. Quite finely

levigated clay with many small and a few medium grey chert, black stone, white lime, and a few orangey grog grits. Fired tan brown throughout. Dark red slip ext. only. Horizontal incised line decoration ext. only.

Fig. 5:7 CN 15129. XXXIID 17.4. Phase IV. Small fine bowl. Red painted and incised decoration. Fairly finely levigated clay with many small and a few medium white lime and grey chert grits. Fired buff throughout. Self slipped ext./int., over which dark red band of paint rim ext. only. Deep incised wavy line decoration on buff self slip body ext. only.

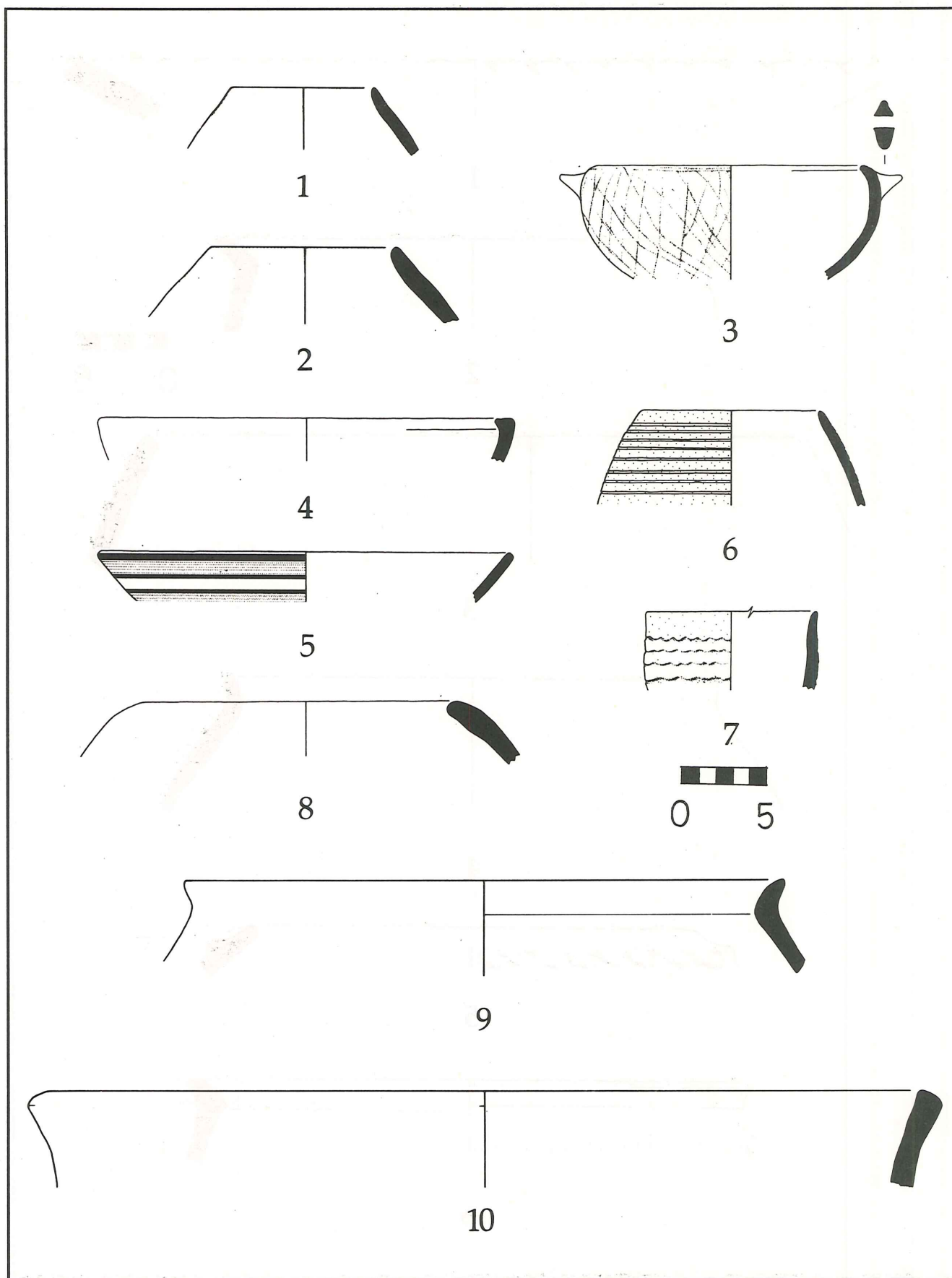
Fig. 5:8 CN 15128. XXXIID 17.4. Phase IV. Rounded holemouth jar. Fairly finely levigated clay with many medium to large grey chert, black stone, white lime (?), and a few red stone grits. Fired grey brown at core and orangey buff at surfaces. Self slipped ext. only.

Fig. 5:9 CN 15205. XXXIID 17.17. Phase IV. Short necked jar. Fairly finely levigated clay with many medium to large grey chert, brown stone, and a few white lime grits. Fired pale orangey buff throughout. Self slipped ext./rim int.

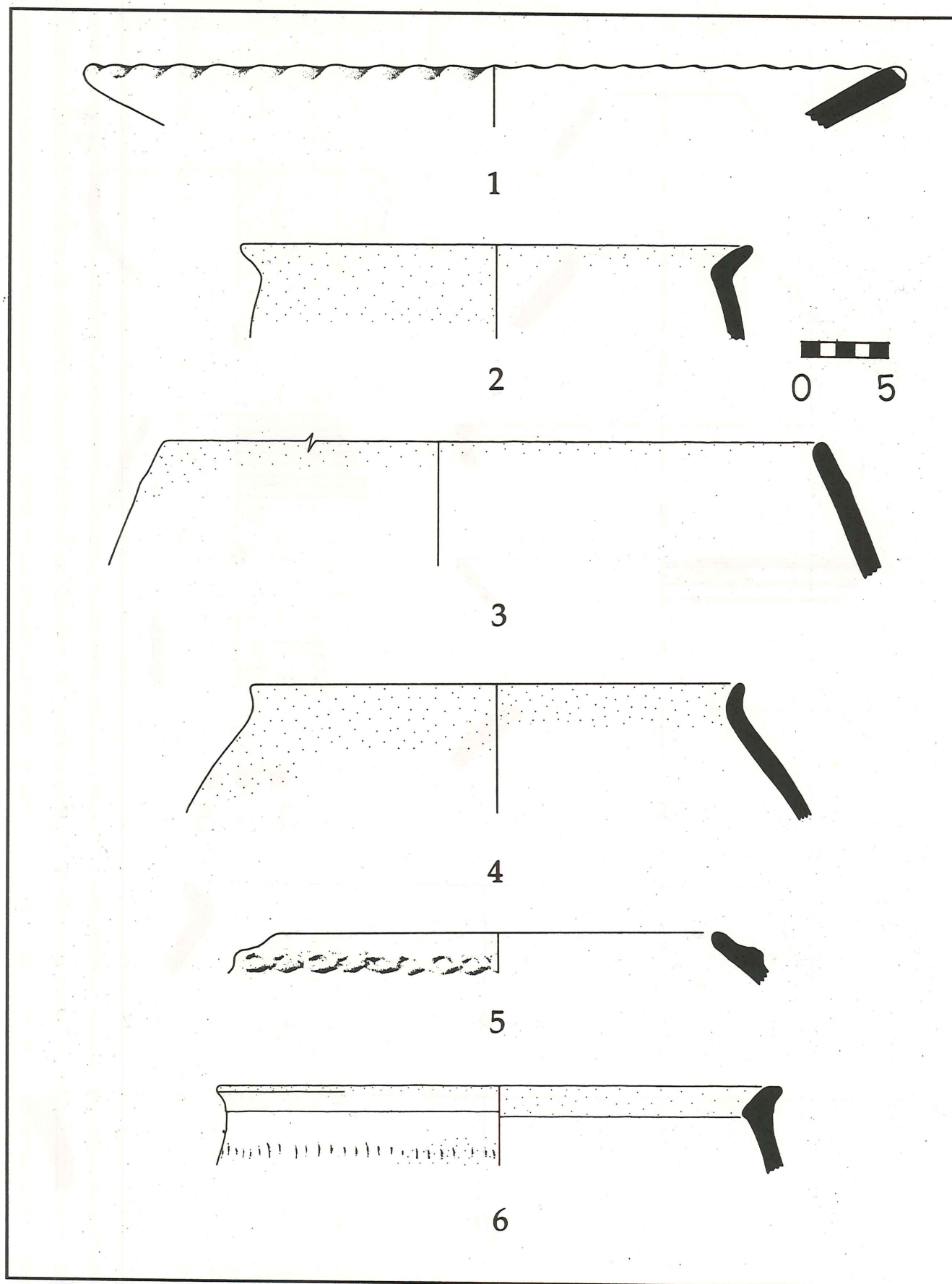
Fig. 5:10 CN 15189. XXXIID 17.24. Phases IV-V. Bevelled rim cooking bowl. Moderately levigated clay with many small and medium grey chert, brown stone, and a few white lime grits. Fired dark grey throughout. Thick orangey brown slip ext./int.

Fig. 6. Pottery from Area XXXIID Phase V (Late Chalcolithic)

Fig. 6:1 CN 15172. XXXIID 18.1. Phase V. Bowl. Red painted and thumb-impressed decoration. Moderately levigated clay with many medium to large grey chert, dark grey stone (?), some brown stone, and a few white lime grits. Fired buff throughout. Self slipped in orangey buff ext./int., over which thumb impressed and red painted decoration rim only ext./int.



5. Area XXXIID. Early Bronze Age pottery from Phase IV.



6. Area XXXIID. Chalcolithic pottery from Phase V.

Fig. 6:2 CN 15169. XXXIID 18.1.
Phase V. Short necked jar. Fairly finely levigated clay with some small grey chert, white lime, and orangey grog grits. Fired buff throughout, over which pinkish buff self slip ext./int. Red painted decoration neck/rim ext., rim int.

Fig. 6:3 CN 15165. XXXIID 18.2.
Phase V. Storage bowl. Fairly finely levigated clay with many small to medium grey chert, brown stone, and red stone (?) grits. Fired buff at core and orangey buff at surfaces. Self slipped ext./int., over which red painted decoration rim ext./int. only.

Fig. 6:4 CN 15162. XXXIID 18.4.
Phase V. Short necked jar. Moderately levigated clay with many small to medium grey chert, black stone, orangey grog, and a few white lime grits. Fired greyish brown at core and orangey buff at surfaces. Self slipped ext./int., over which irregular red painted decoration neck/rim ext. and rim int.

Fig. 6:5 CN 15161. XXXIID 18.4.
Phase V. Holemouth cooking pot. Moderately levigated clay with many small and medium grey stone, brown stone, some white lime, and a few orangey grog (?) grits. Fired buff throughout. Self slipped ext./int. 'Pie-crust' thumb impressed band of decoration below rim ext.

Fig. 6:6 CN 15142. XXXIID 14.11.
Phases IV-V. Storage jar. Moderately levigated clay with many small and medium grey chert, black stone, some white lime, and a few yellowish grog (?) grits. Fired brownish buff at core and buff at surfaces. Thick orangey buff slip ext./int., over which red painted band rim int., and red painted band over thumbnail incised decoration below rim ext.

(SJB)

Small Finds from Area XXXIID

Basalt Bowl (Fig. 7.7)

RN 150036, CN 920498, XXXIID 17.19, P.O. 15.

Basalt rim fragment, decorated with incised hatched triangles pendant from the rim interior. Pres. Ht. 96, L. 155, W. 15 mm.

Although the vessel comes from leveling fills associated with domestic construction dating to the EBI period, this fragment comes from a class of V-shaped bowls typical of the Chalcolithic, and should represent a late survival from that period. It is standard for its type, with pinched rim, incurving sides, and lightly incised decoration on the interior walls. The type has been discussed by Amiran,⁶ who believed it to imitate contemporary ceramic bowl forms.⁷ Dothan argued for the opposite case, with incised decoration on ceramic examples at Gezer seen to be in imitation of stone.⁸

For a range of parallels, see Amiran.⁹ A close parallel was also found in the Area XIV Chalcolithic settlement at Pella,¹⁰ while an undecorated fragment of similar shape was recovered from the main tell in 1992.¹¹

Calcite Macehead (Fig. 7.1)

RN 150020, CN 920277, XXXIID 12.12, P.O. 10.

Calcite macehead fragment, Max. Diam. ext. 62.5, diam. hole 12, Pres. Ht. 41, Pres. L. 44, Pres. W. 43, Th. 22 mm. Moh's 4-4.5, Munsell 2.5Y 8/2 white - 8/3 pale yellow.

Fragment of a spherical or pear-shaped macehead, broken on three edges, with polished exterior and interior surfaces. Partly translucent yellow-white calcite with slight

6. R. Amiran and N. Porat, 'The Basalt Vessels of the Chalcolithic Period and Early Bronze Age I', *TA 11* (1984), 11-19.

7. *Ibid.*, 12-13.

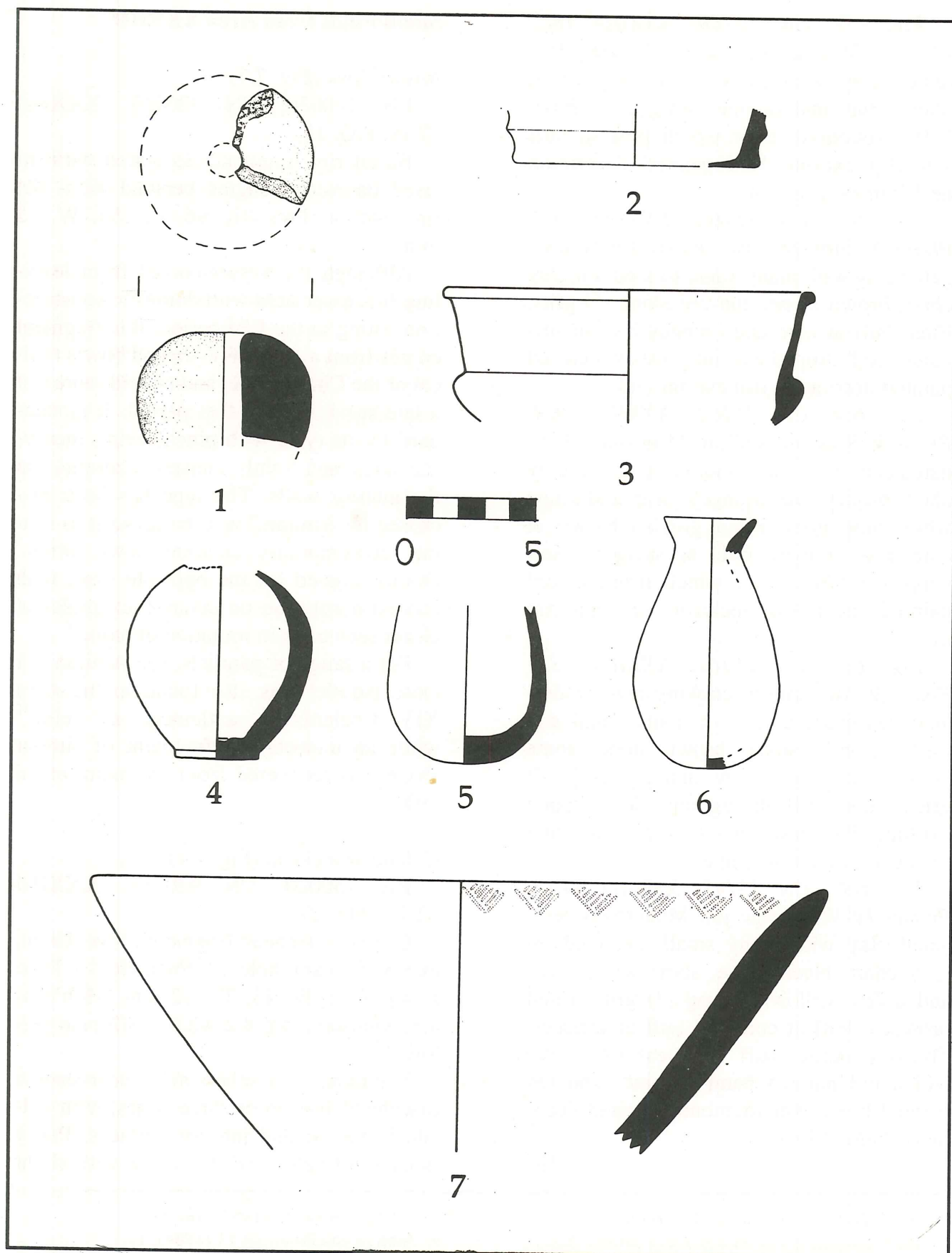
8. M. Dothan, 'Excavations at Horvat Beter (Beer-

sheba)', *'Atiqot II* (1957), 18.

9. Amiran and Porat, *TA 11* (1984), 11.

10. *XIVM 3.3*, RN 60348.

11. XXXIID 18.34, CN 920668.



7. Stone vessels and objects: 1) RN 150020; 2) ~~RN~~ 130034; 3) RN 130057; 4) RN 130086; 5) RN 130138; 6) RN 150040; 7) RN 150036.

banding. The exterior surface is pitted and slightly chipped. There is not enough of the length remaining to determine if the hole was drilled from one, or both ends.

Similar stone and metal maceheads are known in contexts ranging from the Chalcolithic through to the Early Bronze Age. Amongst the many maceheads from the Nahal Mishmar hoard were some bearing traces of wooden shafts, as well as the remains of bituminous adhesives.¹² The function of such maceheads is uncertain; a practical use as weapons, and a more symbolic use as indicators of status or authority have been suggested.¹³ In the case of the Pella macehead, the non-ritual context (an above-floor deposit within a domestic installation) suggests that the macehead was a functional rather than a symbolic object.

While such maceheads are considered to have originated in Western Asia,¹⁴ the pear-shaped variety was adopted into Egyptian repertoires as early as the Predynastic period at Merimde, although neither type is common until the Gerzean.¹⁵ The use of calcite, a material apparently foreign to Palestine, suggests that this example was im-

ported from Egypt.

Numerous parallels are known from Palestine, including some 247 examples from the Nahal Mishmar hoard,¹⁶ a spherical example in alabaster from Jericho Tomb K2,¹⁷ and additional examples from Jawa,¹⁸ Gezer,¹⁹ Tell Qiri,²⁰ Shiqmim,²¹ and Ramat Ha-Nadiv.²²

(RTS)

EXCAVATIONS IN AREA IIIC/D: EARLY AND MIDDLE BRONZE AGE DISCOVERIES

The Middle Bronze Age City Wall and Associated Deposits (Phase XA-B) Fig. 8

Excavations in Area IIIC/D in 1990 had reached the top of the foundation trench for the massive mudbrick city wall (Wall 41, Fig. 9), under excavation since 1980.²³ Our main aim in 1992 was to determine the construction date. Shortly after excavations began, some 16 m of a distinct 0.5 m wide foundation trench was isolated running along the inner face of the green and black mudbrick city Wall 41. Primary surface 53.11 (probably constructional) sealed the

12. P. R. S. Moorey, 'The Chalcolithic Hoard from Nahal Mishmar, Israel, in Context', *World Archaeology* 20.2 (1988), 174.

13. *Ibid.*, 175.

14. See J. B. Hennessy, *The Foreign Relations of Palestine During the Early Bronze Age*, (London, 1967), 33, 43 and pl. XXVI.

15. *Ibid.*, 32.

16. Moorey, *World Archaeology* 20.2 (1988), 174: 6 haematite, 1 limestone, and approximately 240 copper examples.

17. K. M. Kenyon, *Excavations at Jericho Vol. II*, (London, 1965), fig. 5:8.

18. S. Helms, *Jawa, Lost City of the Black Desert*, (London, 1981), fig. B14:1-4 (pear-shaped, 'stone').

19. W. G. Dever, H. D. Lance, R. G. Bullard, D. P. Cole, and J. D. Seger, *Gezer II: Report of the 1967-70 Seasons in Fields I and II*, (Jerusalem, 1974), pl. 39.5 (Field I, Locus 1077, stratum 14, spherical), and pl. 39.8 (Field I, Locus 2075,

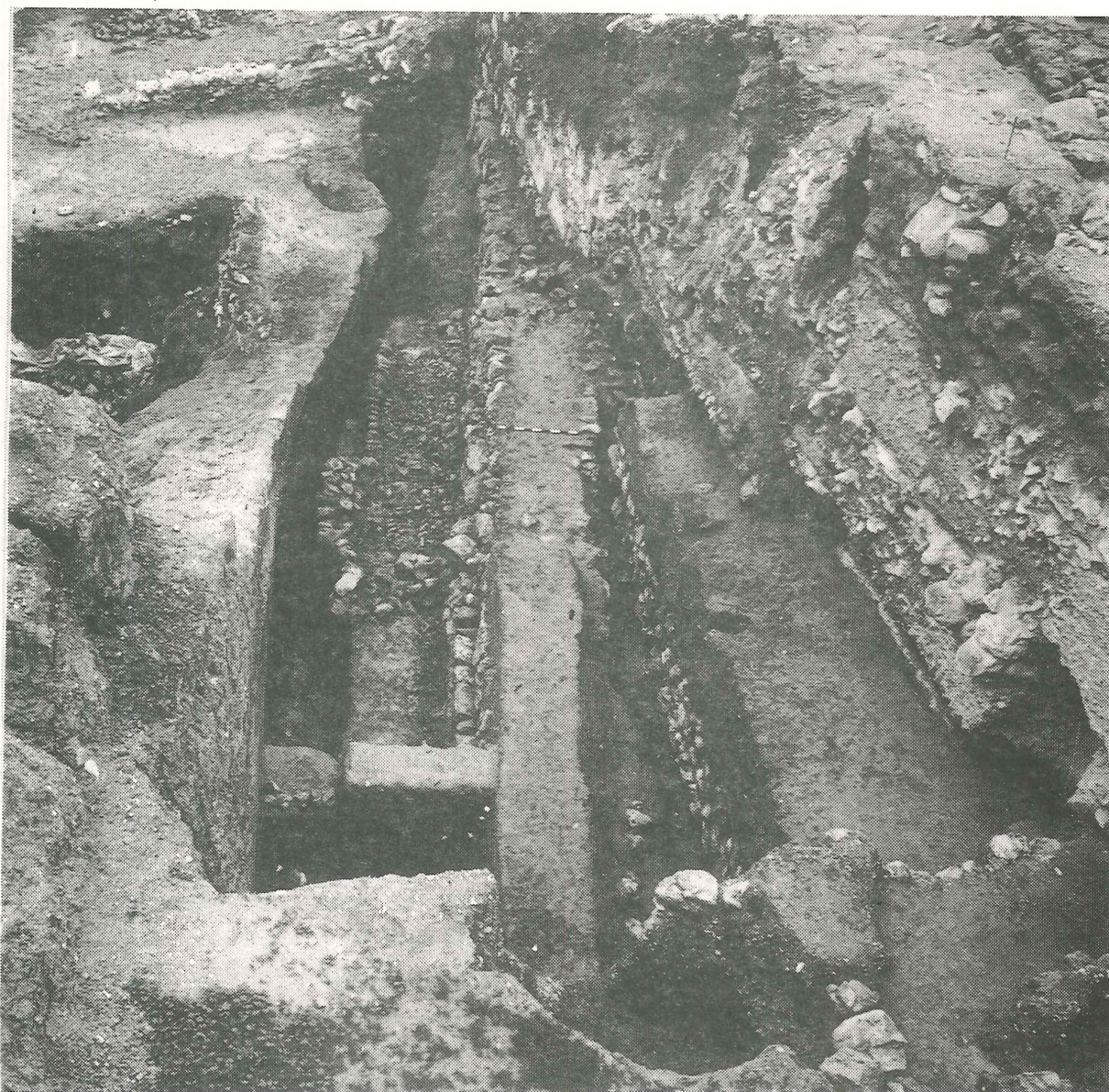
stratum 12, pear-shaped).

20. A. Ben-Tor and Y. Portugali, *Tell Qiri, A Village in the Jezreel Valley*, (Jerusalem, 1987), fig. 71:3-6 (both forms, marble and haematite).

21. S. Shalev, Y. Goren, T. E. Levy, and J. P. Northover, 'A Chalcolithic Mace Head from the Negev, Israel: Technological Aspects and Cultural Implications', *Archaeometry* 34.1 (1992), 63-71 (pear-shaped, Cu alloy).

22. R. Greenberg, 'The Ramat ha-Nadiv Tumulus Field: Preliminary Report', *IEJ* 42 (1992), 129-152, fig. 19.2, Tomb 704 (spherical, haematite). For further parallels, see J. B. Hennessy, *The Foreign Relations of Palestine During the Early Bronze Age*, 32, n. 148-149, 43.

23. For previous work on the Middle Bronze Age city wall area, see McNicoll *et al.*, *Pella in Jordan* 2, 40-44; Potts *et al.*, *ADAJ* 32 (1988), 130-133; Bourke, 'Pella in the Bronze and Iron Ages', 417-420; Walmsley *et al.*, *ADAJ* 37 (1993).

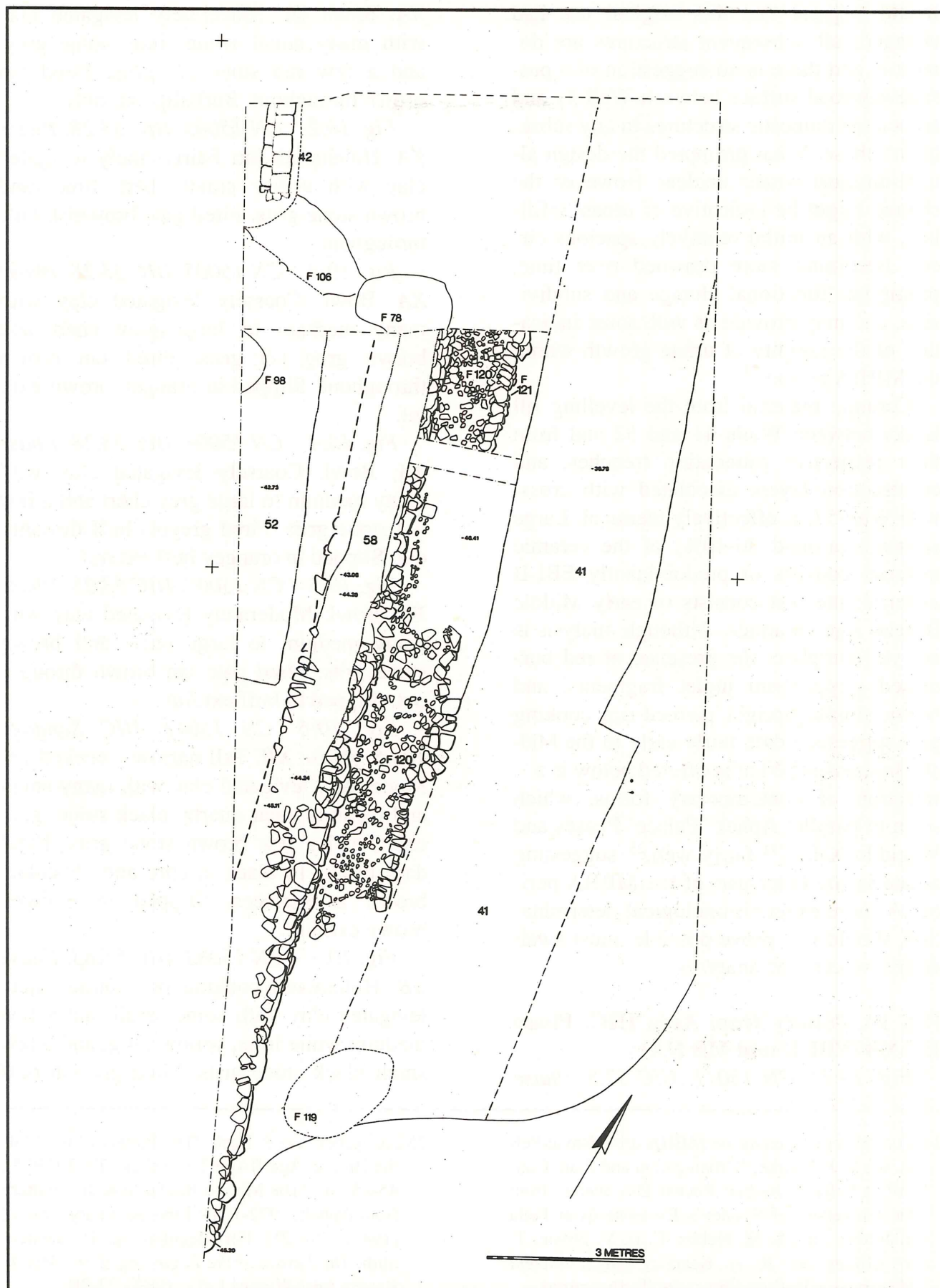


8. Area IIIC/D. View of Early Bronze Age and Middle Bronze Age city walls. Looking south.

foundation trench, and ran across and sealed the foundation trench for dark brown mudbrick Wall 52 (Fig. 9), demonstrating their contemporaneous construction. Many intentional fill layers lie between this wall and the west face of the city wall. They seem to be intended as leveling courses.

At some stage (shortly?) after the construction of exterior city Wall 41 and interior parallel Wall 52, a less substantial, more roughly built mudbrick on stone crosswall, Wall 57, was laid perpendicular to Walls 41/52, forming a pseudo-casemate arrangement. For various structural reasons, this

latter wall, which abuts Wall 41 neatly on its inner west face, should be considered a rebuilding phase (XA), with respect to the original (XB) construction. The exact intent of the ancient builders is not clear, as the proximity of the western baulk complicates interpretation. However, as there is nothing suggesting occupation in or on the surfaces originally spanning the 3 m wide distance between parallel walls 41 and 52, it seems reasonable to favour the interpretation of surfaces between the two as forming a street/passageway along the inner face of the city wall. The building of Wall 57



9. Area IIIC/D. Plan of Early Bronze Age (Wall 58) and Middle Bronze Age (Walls 41 and 52) city walls.

would suggest that this original use had changed; all subsequent structures are domestic, and there is no suggestion of a passageway/road surface between Wall 41 and associated domestic structures in any subsequent phase. What prompted the design alteration must remain unclear. However, the change might be indicative of urban 'infilling', with an initial relatively spacious circuit becoming more crowded over time, prompting functional change and subdivision, and may provide us with some indication of the rapidity of urban growth within the MBIIA period.²⁴

Ceramic material from the levelling fill layers between Walls 41 and 52 and from their respective foundation trenches, and construction layers associated with cross-wall Wall 57, is effectively identical. Large amounts (around 30-40%) of the ceramic material consists of predominantly EBI-II material; the rest consists of early Middle Bronze Age ceramics. Although analysis is not yet complete, the presence of red burnished stepped-rim juglet fragments, and heavy simple upright pierced-rim cooking pots suggests a date fairly early in the Middle Bronze Age. What is offered below is a selection of contemporary forms, which seem to parallel Aphek 'Palace' Phases and Megiddo XIII-XII fairly well,²⁵ suggesting a date in the latter part of the MBIIA period. A more exact chronological determination, should that prove possible, must await definitive ceramic analyses.

Fig. 10. Pottery from Area IIIC. Phase XA-XB (EBI-II and MB IIA)

Fig. 10:1 CN 15011. IIIC 52.5. Phase

XA. Small jar. Moderately levigated clay with many small white lime, some grey, and a few red stone (?) grits. Fired tan brown throughout. Buff slip ext. only.

Fig. 10:2 CN 15003. IIIC 53.28. Phase XA. Holemouth jar. Fairly finely levigated clay with a few small chert, lime, and brown stone grits. Fired pale brownish buff throughout.

Fig. 10:3 CN 15005. IIIC 53.28. Phase XA. Bowl. Coarsely levigated clay with many medium to large grey chert and brown grog (?) grits. Fired tan brown throughout. Slipped in orangey brown ext./int.

Fig. 10:4 CN 15004. IIIC 53.28. Phase XA. Bowl. Coarsely levigated clay with many medium to large grey chert and a few red stone grits. Fired greyish buff throughout. Slipped in orangey buff ext./int.

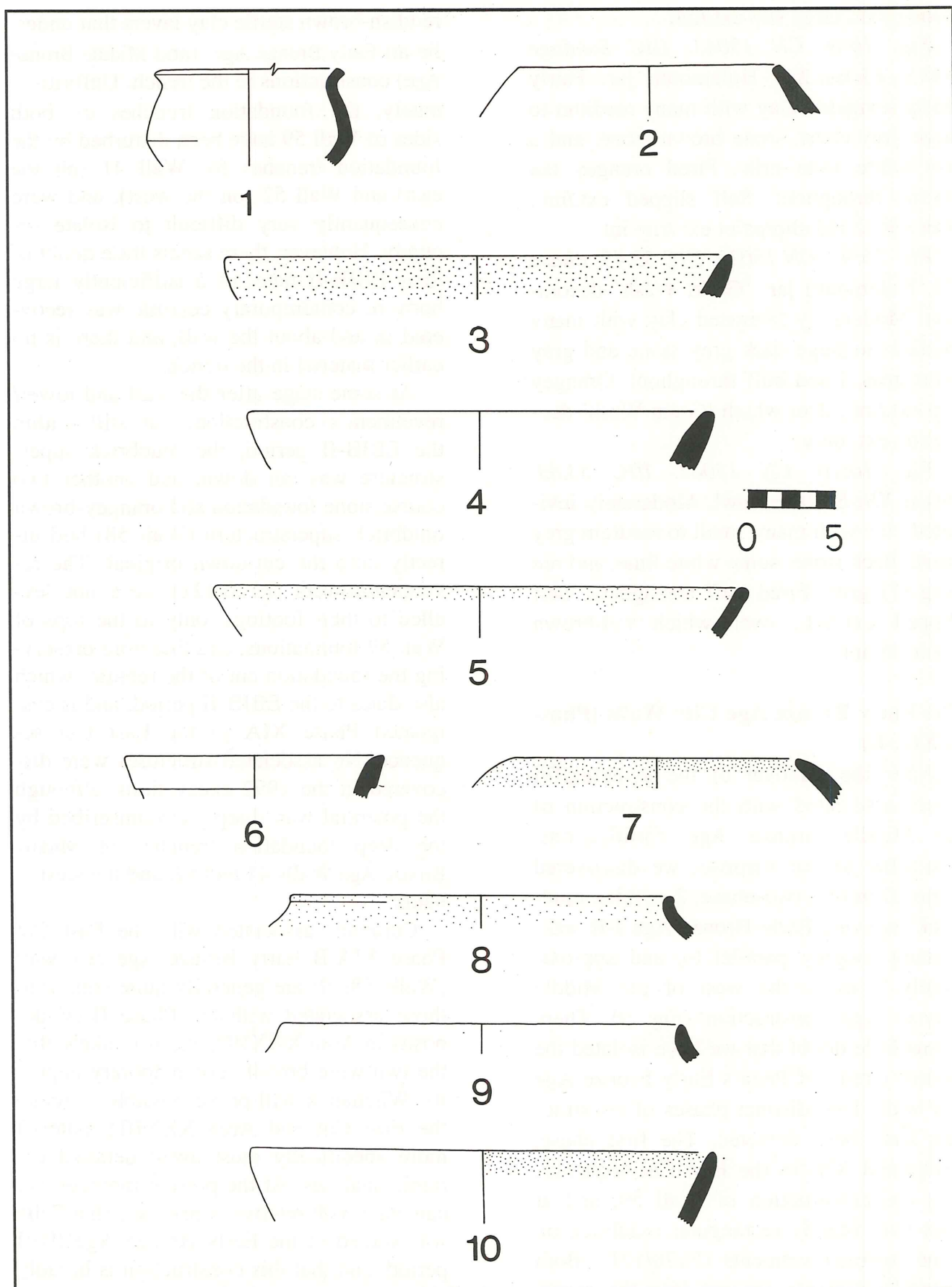
Fig. 10:5 CN 15007. IIIC 53.28. Phase XA. Bowl. Moderately levigated clay with many medium to large chert and brown stone grits. Fired pale tan brown throughout. Slipped in buff ext./int.

Fig. 10:6 CN 15042. IIIC Sondage 100.5. Phase XB. Tall narrow-necked jar. Moderately levigated clay with many small and medium clear quartz, black stone, grey chert, and a few brown stone grits. Fired dark brown to black at core and chocolate brown at surfaces. Slipped in orangey brown ext./int.

Fig. 10:7 CN 15083. IIIC 53.83. Phase XB. Holemouth cooking pot. Quite finely levigated clay with some small and a few medium white lime, yellow grog, and a few small black stone grits. Fired greyish buff

24. For further comments on MBIIA urbanism at Pella, see S. J. Bourke, 'Urbanization and State Control at Pella in Jordan: Recent Discoveries from the University of Sydney's Excavations at Pella in Jordan', in: A. M. Nobbs, C. E. V. Nixon, T. W. Hillard and R. A. Kearsley (eds.), *Ancient History in a Modern University* (forthcoming).

25. For Aphek, see P. Beck, 'The Pottery of the Middle Bronze Age IIA at Tel Aphek' *TA* 2 (1975), 45-85; id., 'The Middle Bronze Age IIA Pottery from Aphek, 1972-1984: First Summary', *TA* 12 (1985), 181-203. For Megiddo, see P. Gerstenblith, *The Levant at the Beginning of the Middle Bronze Age* (Winona Lake, 1983), 23-28.



10. Area IIIC/D. Early Bronze Age and Middle Bronze Age pottery from Phase X.

throughout. Grey slip ext./int.

Fig. 10:8 CN 15043. IIC Sondage 100.5. Phase XB. Holmouth jar. Fairly finely levigated clay with many medium to large grey chert, some brown stone, and a few white lime grits. Fired orangey tan brown throughout. Self slipped ext./int., over which red slip/paint ext./rim int.

Fig. 10:9 CN 15029. IIC 53.45. Phase XB. Holmouth jar. 'Grain Wash' decoration. Moderately levigated clay with many medium to large dark grey stone and grey chert grits. Fired buff throughout. Orangey slip ext./int., over which 'Grain Wash' decoration ext. only.

Fig. 10:10 CN 15082. IIC 53.83. Phase XB. Storage bowl. Moderately levigated clay with many small to medium grey chert, black stone, some white lime, and red grog (?) grits. Fired buff throughout. Self slipped ext./int., over which red-brown wash rim int.

The Early Bronze Age City Walls (Phases XIA-B)

After the removal of the levelling/fill layers associated with the construction of the Middle Bronze Age fortifications, somewhat to our surprise, we discovered some 20 m of a two-phase, 2 m thick mudbrick on stone Early Bronze Age I-II wall, running roughly parallel to, and approximately 2 m to the west of the Middle Bronze Age construction (Fig. 9). There seems little doubt that we have isolated the eastern circuit of Pella's Early Bronze Age city wall. Two distinct phases of construction have been detected. The first phase, designated XIB in the East Cut sequence, sees the construction of Wall 59, and at least two roughly rectangular mudbrick on stone towers/revetments (F120/121). Both towers/revetments are cut into the stony,

reddish-brown sterile clay layers that underlie all Early Bronze Age (and Middle Bronze Age) constructions in the trench. Unfortunately, the foundation trenches on both sides of Wall 59 have been disturbed by the foundation trenches for Wall 41 (on the east) and Wall 52 (on the west), and were consequently very difficult to isolate securely. However, there seems little doubt of their EBIB-II date, as a sufficiently large body of contemporary ceramic was recovered in and about the wall, and there is no earlier material in the trench.

At some stage after the wall and tower/revetment's construction, but still within the EBIB-II period, the mudbrick superstructure was cut down, and another two course stone foundation and orangey-brown mudbrick superstructure (Wall 58) laid directly onto the cut-down original. The revetment/towers (F120/121) were not levelled to their footings, only to the tops of Wall 59 foundations, and therefore preserving the foundation cut of the rebuild, which also dates to the EBIB-II period, and is designated Phase XIA in the East Cut sequence. No associated structures were discovered in the 1992 excavations, although the potential was sharply circumscribed by the deep foundation trenches of Middle Bronze Age Walls 41 and 52, and the west baulk.

Ceramics associated with the East Cut Phase XIA-B Early Bronze Age city wall (Walls 58/59) are generally quite similar to those associated with the Phase II-IV deposits in Area XXXIID, and it is likely that the two were broadly contemporary deposits. Whether it will prove possible to relate the East Cut and Area XXXIID material more specifically must await detailed ceramic analyses. At the present moment, we can state with relative confidence that Pella was walled in the Early Bronze Age IB-II period, and that this construction is broadly contemporary with at least part of the Area

XXXIID sequence, suggesting that the main tell of Pella was extensively occupied during the first half of the Early Bronze Age.²⁶ As yet, no evidence of EBII-III occupation has been recovered from the main tell.

Fig. 11. Pottery from Area IIIC Phase XI (EB I-II)

Fig. 11:1 CN 15112. IIIC 53.87. Phase XIA. Holemouth cooking pot. Moderately levigated clay with many medium to large grey chert, black stone, quartz, and a few brown grog (?) grits. Much chaff temper. Fired dark grey throughout. Thick dark brown slip ext./rim int.

Fig. 11:2 CN 15119. IIIC 53.89. Phase XIB. Fine jar. Red slipped. Fairly finely levigated clay with many small and some medium black stone, grey chert, and some white lime grits. Fired orangey buff throughout. Red slipped ext./int.

Fig. 11:3 CN 15048. IIIC Sondage 100.1. Phase XIA. Storage jar. 'Grain Wash' decoration. Fairly finely levigated clay with many small, medium, and some large black/brown stone, grey chert, and white lime grits. Fired buff throughout. Self slipped ext./int. over which 'Grain Wash' decoration ext. only.

Fig. 11:4 CN 15114. IIIC 53.68. Phase XIB. Fine bowl. Red slipped and burnished. Quite finely levigated clay with a few small black stone and white lime grits. Fired tan brown throughout. Self slipped ext./int., over which red slip ext./rim int., over which

vertical stroke burnished decoration.

Fig. 11:5 CN 15144. IIIC Sondage 100.24. Phase XIB. Short necked jar. Moderately levigated clay with many small to medium grey chert, black stone, some orangey grog (?), and a few white lime grits. Fired dark brown at core and orangey buff at surfaces. Self slipped ext./int.

Fig. 11:6 CN 15102. IIIC Sondage 100.20. Phase XIB. Small jar. Moderately levigated clay with many small and medium grey chert, brown stone, some brown chert, black stone, and white lime grits. Fired chocolate brown at core and dark chocolate brown at surfaces.

Fig. 11:7 CN 15115. IIIC 53.7. Phase XIB. Fine jar. Moderately levigated clay with many medium and some large grey chert, black stone, and a few white lime, and orangey grog grits. Fired greyish buff throughout. Self slipped ext./int.

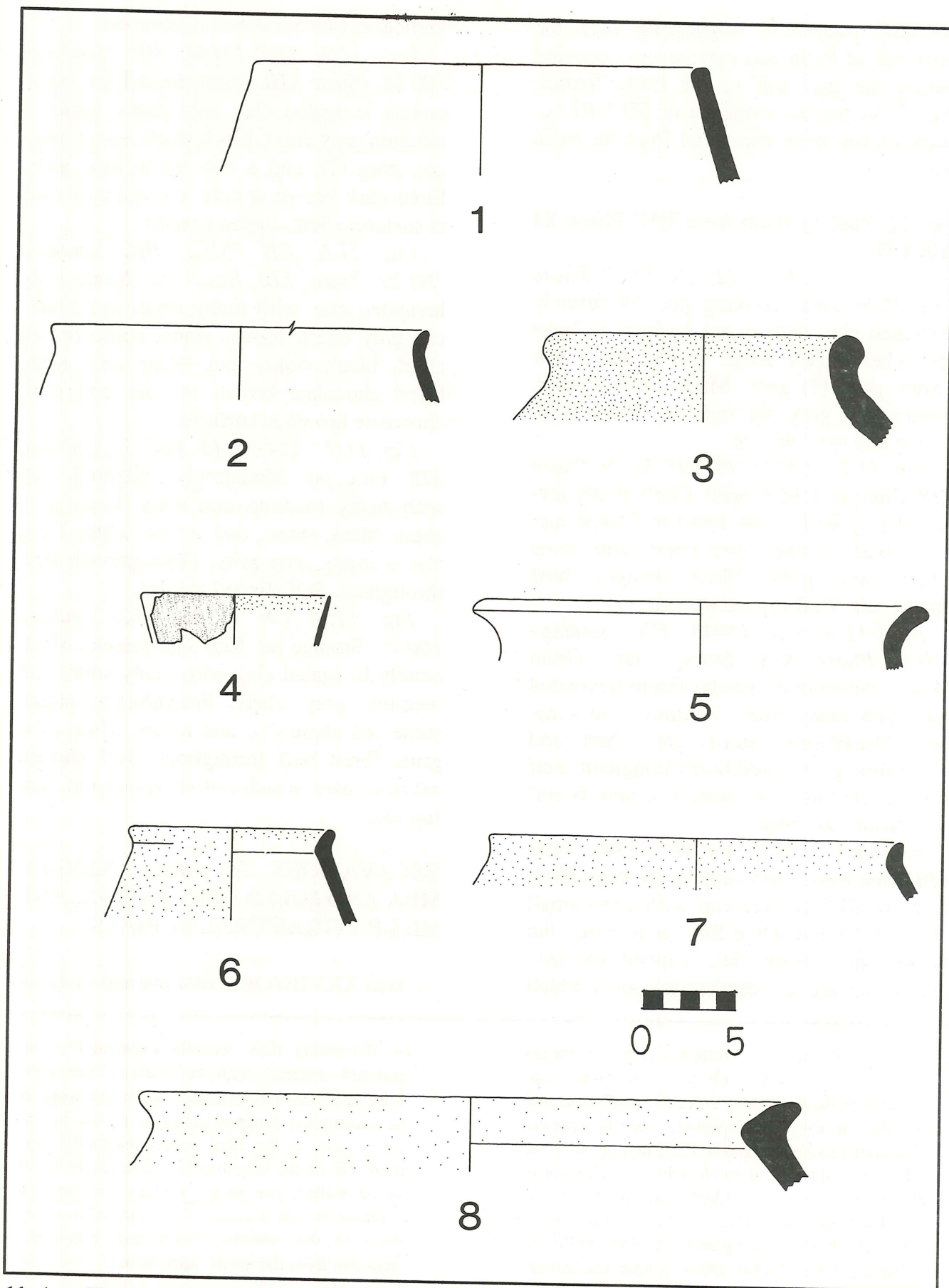
Fig. 11:8 CN 15146. IIIC Sondage 100.25. Storage jar. Red slip/painted. Moderately levigated clay with many small and medium grey chert, brown/black stone, some red stone (?), and a few white lime grits. Fired buff throughout. Self slipped ext./int., over which red slip/paint ext. and rim int.

**EXCAVATIONS IN AREA XXVIII:
MBA AND MB/LB OCCUPATION, AND
MB/LB INTRAMURAL BURIALS**

Area XXVIII was first opened in 1984,

26. In this Pella seems to reflect a common Jordan Valley phenomenon, with walled townships appearing at North Shuna, Tell Abu al-Kharaz, and Jericho in the EBIB period, and destruction/desertions following in the EBII period, with the EBIII period being of much reduced settlement in the region. It seems likely that both Tell as Sa'idiyeh and Umm Hammad have similar occupational histories. I am grateful to Graham Phillip (Shuna), Peter Fischer (Abu al-Kharaz), Alison Betts (Umm Hammad), and Peter Parr (Jericho)

for discussing their recently excavated or re-analyzed material with me [SJB]. That some form of linked circumstance seems at work in the destruction horizon common to the Jordan Valley sites in the EBII seems reasonable and likely. Given the tectonically active nature of the Jordan Valley, one would venture a natural explanation for the horizon of destruction in opposition to the familiar 'wars and pharaohs'/ 'invaders from the north' approach.



11. Area IIIC/D. Early Bronze Age A pottery from Phase XI.

to investigate a monumental five course wall constructed from large field stones. Although separated from Area III by about 100 m along the southern margins of the tell, at the time this had a sufficiently close resemblance to what was then taken as a potential Late Bronze Age city fortification wall (IIIC Wall 3) to warrant investigation, as Late Bronze Age fortification walls were sufficiently rare to be worthy of detailed study. The 1984 season sounding (10 x 5 m) reached the tops of the wall line by the season's end, after disinterring a fine Umayyad stone paved room, ruined in the A.D. 747 earthquake. The Middle Bronze Age remains were immediately below the Umayyad flagstones, and included at least two phases of internal walls, as well as a series of rich MB/LB cist graves. In 1986, the sounding was extended some 4 m to the west to pick up the line of what appeared to be a return wall associated with the original stone line (Wall 1). Poor weather conditions hampered work, which did not advance beyond initial clearance.²⁷ In 1992, work resumed in the 1984-86 trench, with the aim of establishing the sequence and number of Middle Bronze Age phases, and clarifying the nature of the monumental Middle Bronze Age structure. Four main phases have been detected to date. They are:

Phase I: Late Umayyad House Phase (Walls 2, 10, 15, Stone Paving F.2 and Plaster-lined Pit F.3).

Phase II: MB/LB Building (Walls 1, 3-5, 12, F.5).

Phase III: MBIIC Cist Grave F.10, and Graves F.11-14.

Phase IV: MBA Building (Walls 6,

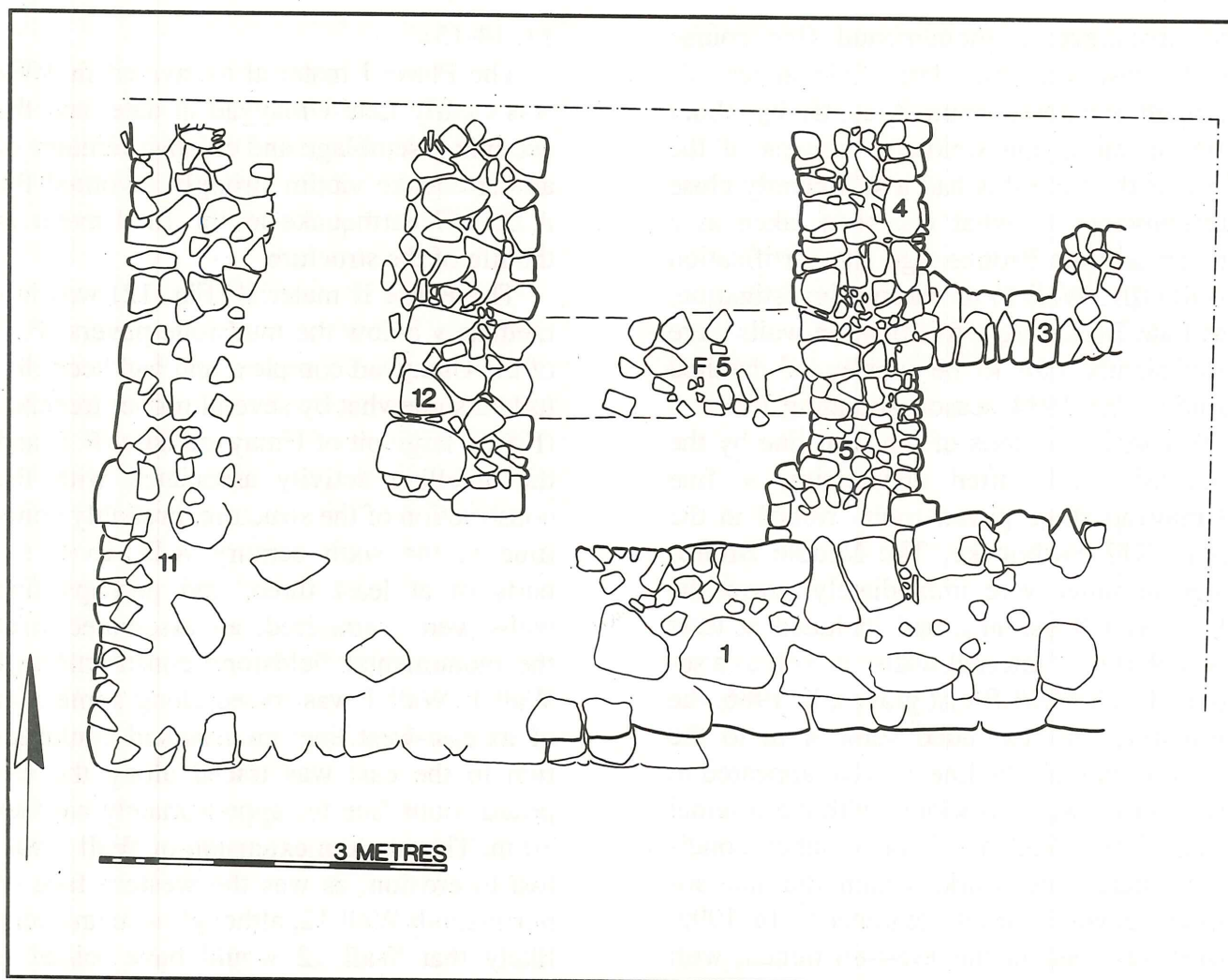
11, 14-15).

The Phase I material excavated in 1984 was clearly Late Umayyad in date, and the ceramic assemblage and crushed remains of an earthquake victim strongly favoured the A.D. 747 earthquake as the final event in the life of the structure.

The Phase II material (Fig. 12) was immediately below the mudstone pavers (F.2) of the Umayyad complex, and had been disturbed somewhat by several robber trenches (F.5), a large pit of Umayyad date (F.3) and the levelling activity associated with the construction of the structure, probably some time in the sixth century A.D. Even so, parts of at least three, and perhaps five walls were disinterring, all associated with the monumental fieldstone construction of Wall 1. Wall 1 was traced along some 5 m of its east-west line; an assumed continuation to the east was traced along the exposed south face for approximately another 10 m. The western extension of Wall 1 was lost to erosion, as was the western face of north-south Wall 12, although it seems very likely that Wall 12 would have joined it perhaps 1 m further to the west. Certainly there is no possibility of a further western extension of Wall 1, as the tell contours veer sharply towards the north in this region (along the line of the earlier Wall 11). It is likely that our trench was placed over the southwestern corner of a structure that seems approximately 15 m on a side, if the exposed southern face of the Wall 1 continuation to the east is any guide. Internal Wall 4/5 abuts Wall 1 on its northern face, with a probable east-west Wall 3 and doorway bonded to its eastern face. A series of robber trenches/pits disturbed the stratigraphy between Walls 4/5 and 12, although it

27. For previous work in Area XXVIII, see T. F. Potts, S. M. Colledge and P. C. Edwards, 'Preliminary Report on a Sixth Season of Excavation by the University of Sydney at Pella in Jor-

dan (1983/84)', *ADAJ* 29 (1985), 181-210, esp. 202; Bourke, 'Pella in the Bronze and Iron Ages', 420.



12. Area XXVIII. Plan of Phase II architecture.

seemed possible that another east-west wall or wall/threshold combination may have been placed between Walls 4/5 and 12, along the line of disturbance/robber trench F.5. A series of good surfaces existed between Walls 1, 3-5, with extensions towards and from Wall 12, although good stratigraphic links proved elusive.

When the surfaces and internal walls were excavated, a series of intra-mural graves were discovered either directly below Walls 4/5 and 12, (F.11-15) or immediately beside Wall 12 to the east (Cist Burial F.10). The graves contained a rich collection of burial goods, including Black Polished flasks, a faience flask, at least two wooden inlay boxes, a tortoise carapace and a fine collection of dipper juglets, storage

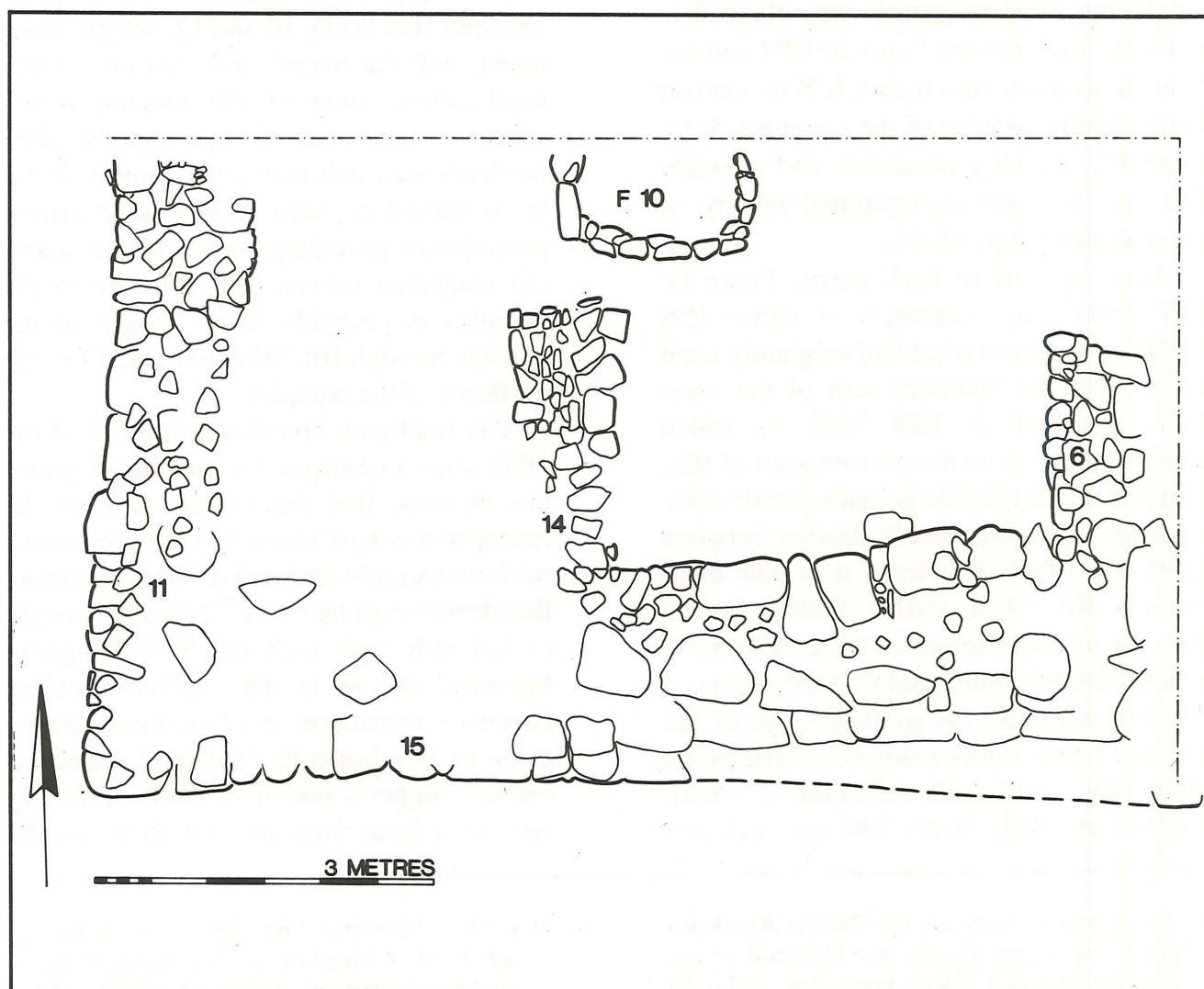
jars, and carinated bowls.

At first, the position of the graves led to the suspicion that they might have been connected in some way with the foundation of the Phase II building, but it now seems more likely that they form a specific burial-phase in the Area XXVIII sequence, although sections are not instructive. There is still some difficulty with this interpretation, as all fill/debris layers cut into by Graves F.10-15 are associated with the earlier Phase IV Middle Bronze Age structure, and some association between this architecture and the burials is still possible, although unlikely. As Phase IV walls were only just beginning to be uncovered towards the end of the 1992 season, clarification will have to await the 1994 field season. What seems

relatively clear is that the Phase III burials are earlier than, and not associated with Phase II building activity. At present it seems likely that they are a distinct phase of intra-mural burial, to be dated to the late Middle Bronze Age, and succeed the earliest construction in the trench, described by the Phase IV architecture of Walls 6, 11, and 14-15.

The Phase IV building (Fig. 13) seems likely to be an earlier precursor of the Phase II structure, positioned some 2-3 m to the west. Walls 11 and 15 form the southwestern corner of a large MBA building. As much of the equally grand Wall 1 still overlies the eastward extension of Wall 15, the

exact association between Walls 6, 14, and 15 is unclear, although present indications are that they abut the inner north face of Wall 15. What is much more interesting is that they do not appear to extend beyond approximately 2-3 m north of Wall 15, which seems to suggest that this earlier structure may well turn out to be extensive terracing, preparatory to some major construction, as the terracing (if that is what it is) is monumental and extensive. Whatever the event, Walls 1 and 15 are two distinctive phases of MBA architecture, although the latter seems to be a reconstruction of the former; indeed, the Phase II architecture could be characterized as an MB/LB re-



13. Area XXVIII. Plan of Phase IV architecture.

build of an original MBA (Phase IV) structure. Exactly how the intermediate burial horizon (Phase III) relates to this is still unclear, and will be the subject of further investigation in the 1994 field season.

EXCAVATIONS IN AREA IIIN/S: THE LATE BRONZE AGE PALATIAL RESIDENCE

For the past decade the eastern (IIIC) and northwestern (IIIN) quarters of a large Late Bronze Age Palatial Residence (Fig. 14) have been under excavation.²⁸ During the 1990 season, the primary floors in trench IIIN were reached, but not excavated. In the 1992 season, it was planned to excavate the primary floors in IIIN and extend excavations into trench IIIS to uncover the southern portions of the structure, to recover the overall groundplan, and to establish the complete occupational history of the complex (Figs. 15-16).

After removal of LBII period Phase IV IIIS Walls 2-4, excavation in trench IIIS rapidly uncovered what had originally been taken to be the southern wall of the complex, recorded as IIIS Wall 7, which seemed likely to be the continuation of IIIC Wall 28 (although this is made problematic by severe IIIC west baulk erosion between 1986 and 1990). However, it is now clear that the IIIC Wall 28/IIIS Wall 7 line is only the southern return of the courtyard. A series (certainly three and probably four) of small rooms flank the southern edge of the courtyard in a similar manner to those on its north side, with well executed, if small, north-south (IIIS Walls 8-9 and 11) and

east-west (IIIS Wall 12) walls enclosing quite narrow magazine-like structures, one of which contained a stone-lined lavatory (F.18) over 2 m deep. A further clarification of the overall plan revealed the southern entrance to the courtyard to be located at its southwestern corner, with the doorway positioned between IIIS Wall 7 and IIIS Wall 5 (the southern continuation of IIIN Wall 74). This wall continued south for approximately 5 m before being met by the massively built southern return wall IIIS Wall 10. A stone-lined and covered drainage ditch (F.21) runs along its southern face, until both are cut by (Late Bronze Age) erosion gullies to the east. This creates a gap only a little over 1 m in width between IIIS Walls 10 and 12, which, when taken with the overall tell contours at this southeastern point of the mound, would seem to suggest that this passageway does not lead to an exit from the complex. Rather, it should be seen simply as a narrow passageway providing access to the southern magazine rooms. The entrance to the complex is probably to be sought in the passage through IIIC Walls 31 and 17 in the northeast of the complex.

The final plan revealed at the end of the 1992 season confirmed a surmise of previous seasons, that the overall plan of the complex was best likened to the architectural form recently codified as the 'Governors Residence' type by Oren.²⁹ Oren has sought to link this type with the New Kingdom Egyptian empire in the southern Levant. However, consideration of the local antecedents of this basically 'enlarged courtyard house', suggests that it is more profitably seen as a local form derived from Middle

28. For previous work on the Palatial Residence (East Cut Phase VA-B), see McNicoll *et al.*, *Pella in Jordan 1*, 50-51; Potts *et al.*, *ADAJ* 29 (1985), 198-200, McNicoll *et al.*, *Pella in Jordan 2*, 47-64; Walmsley *et al.*, *ADAJ* 37 (1993).

29. E. Oren, 'Governors' Residences in Canaan under the New Kingdom: A Case Study of Egyptian Administration', *JSSEA* 15 (1985), 37-56, for the definitive study.



14. Area IIIN/S. View of Phase VB Governor's Residence. Looking south.

Bronze Age predecessors. The type, as presented by Oren, is not particularly homogeneous in any case.³⁰

The Pella Residence was constructed in the LBI period and it remained in use throughout the LBIIA period, finally going out of use sometime early (?) in the LBIIB period. There are three distinct phases of use. They are:

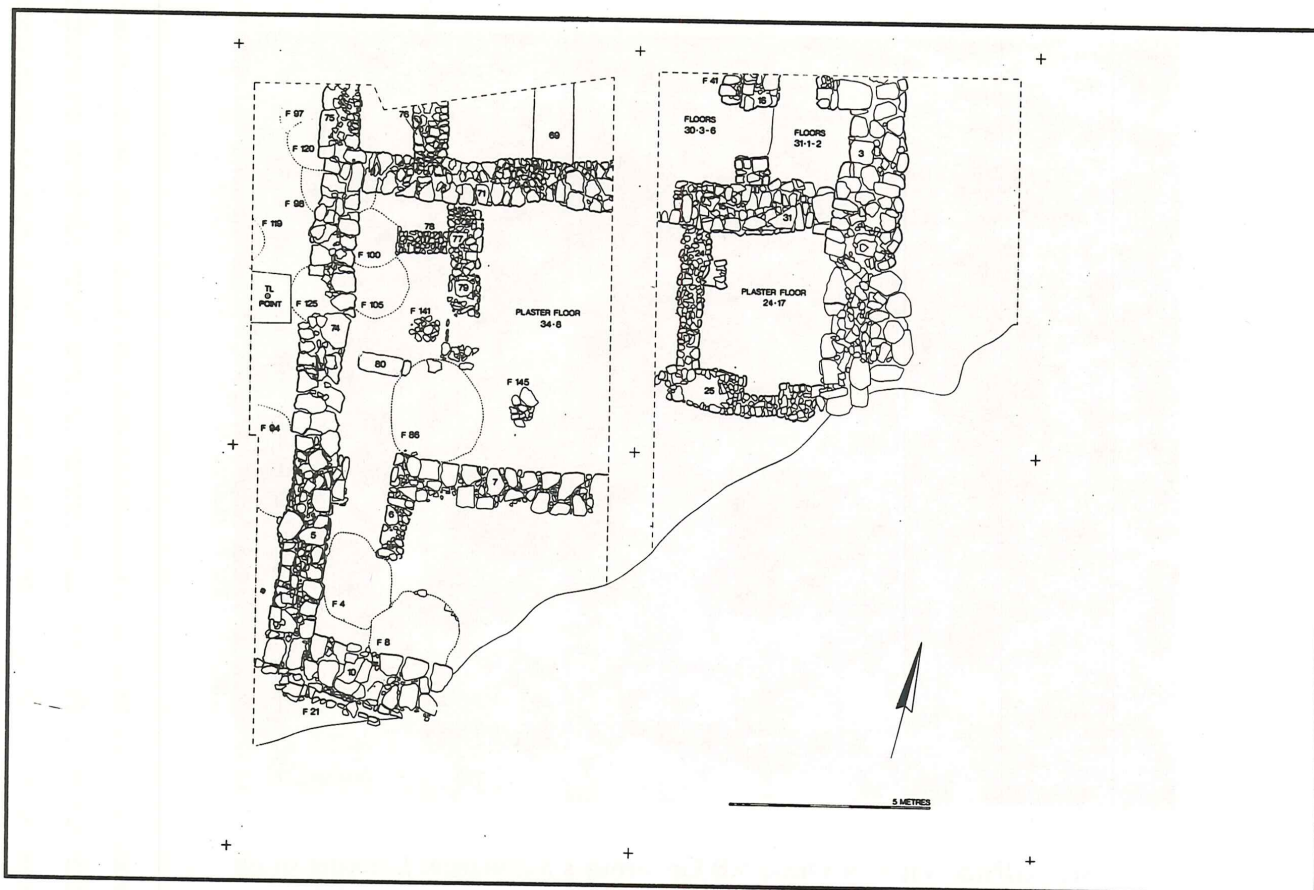
Phase VB2: Construction of palace walls (IIIC Walls 3, 15-17, 28, 31/IIIN Walls 69, 71, 74-76/IIIS Walls 5, 7-12, and IIIS lavatory F.18 and drain F.21, Fig. 16), along with thick reddish-yellow plaster floors in the courtyard (IIIC 36.7/IIIN 69.1) and ad-

jacent rooms. Associated pottery from the street which flanks the complex to the west (IIIN loci 60 and 70) includes a fair amount of Chocolate on White ware, a reasonable LBI exemplar, although the street-fill context should be noted.

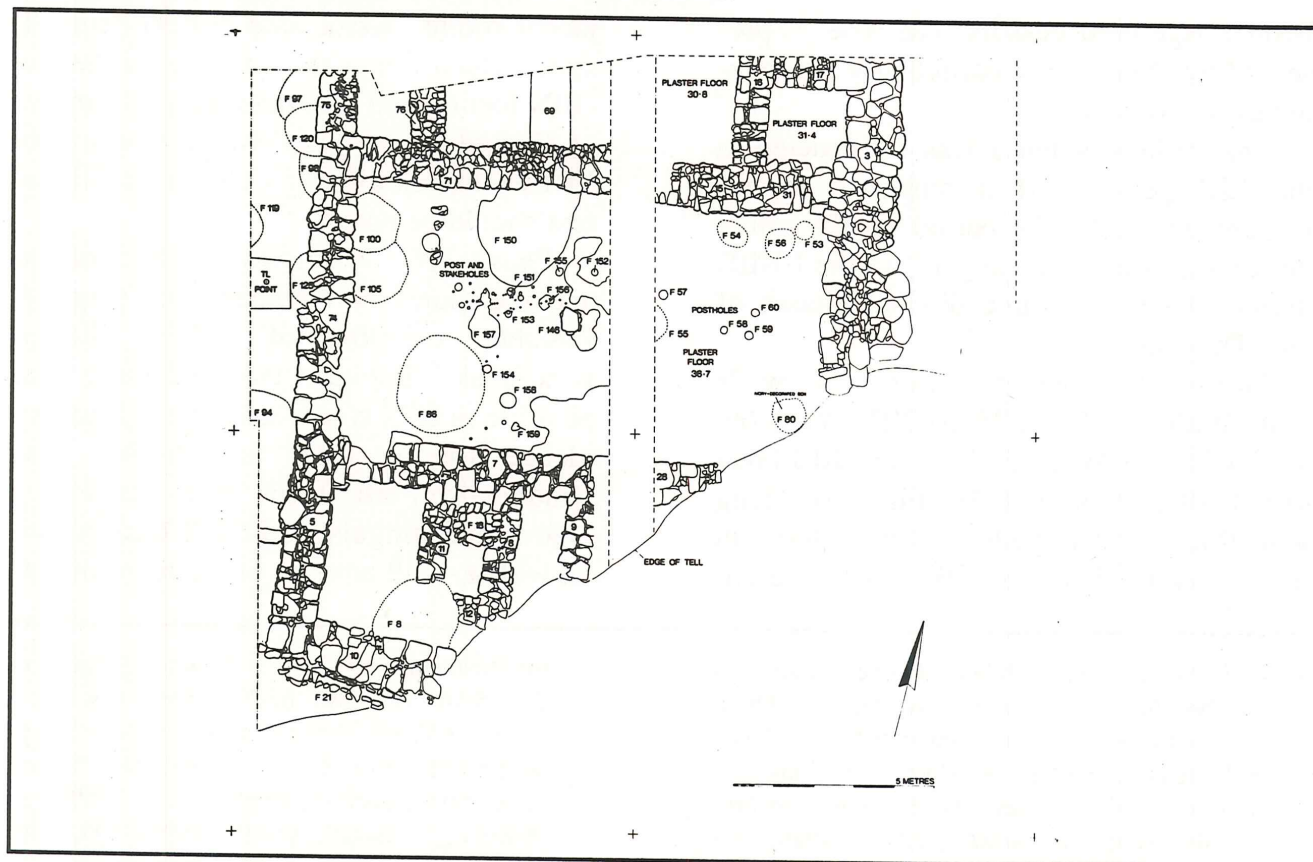
Phase VBI: Postholes cut into plaster, and stakeholes cut between them (Fig. 16). Possible erection of ovoid shelters/windbreaks. Between two and three seem possible in IIIN courtyard locus 69, and evidence for at least one further wall/windbreak in IIIC locus 36 exists. Pottery here is undistinguished LBI-II local material, with a small amount of the more distinc-

30. Ibid., fig. 2 for groundplans of several buildings ascribed to this type either by Petrie or Oren. The confusion over what constitutes a Residency building is highlighted in recent discussions concerning Gezer. I. Singer, 'An Egyptian "Governor's Residency" at Gezer?', *TA* 13 (1986), 26-31, and S. Bunimovitz, 'An Egyptian "Govern-

ors Residency" at Gezer?- Another Suggestion', *TA* 15-16 (1988-89), 68-76, propose two completely different building types at Gezer as potential additions to Oren's general class. Dever's recent investigations published in S. Wolff, 'Archaeology in Israel', *AJA* 95 (1991), 509, would seem to favour Bunimovitz's suggestion.



15. Area IIIN/S. Plan of Phase VA Governor's Residence.



16. Area IIIN/S. Plan of Phase VB Governor's Residence.

tive Chocolate on White and White Slip wares.

Phase VA: Erection of small stone and mudbrick walls (IIIN Walls 77-80, IIIC Walls 24-25, Fig. 15) within IIIN locus 34/IIIC locus 24 courtyard, probably associated with the sealing of the IIIS lavatory (F.18) and the construction of IIIS Wall 6. A series of grey ashy floors are associated with the additional construction, which has the effect of adding two or three small rooms against the eastern and western margins of the courtyard. Sherds of Mycenaean IIIA2/IIIB pottery are found in reliable occupational contexts associated with this phase.

Whilst one might wish to gainsay any generic Egyptian links with the Pella Residence, the Beth Shan Residency is closest to that from Pella in overall groundplan (i.e., approximately 15 x 15 m extent, central courtyard with flanking 'magazine' rooms to the north and south), and the Beth Shan structure does contain unequivocally Egyptian features, although these are largely confined to secondary structural features (doorframes, lintels, etc.), whilst the building techniques do not seem to betray necessarily Egyptian execution.

The first point in any comparison between Beth Shan and Pella should note that the Pella building was constructed during the LBI period (although possibly towards its end), at least two centuries before the Beth Shan residency was erected. There are no Egyptian features obvious in the construction of the Pella residence. Walls are

trench-built, footings are of massive field-stones, topped with neatly-laid yellow-brown mudbricks, showing no signs of added wooden beams or separation of mudbrick courses with matting.³¹ However, whilst it is unnecessary to view the Pella residence as the abode of an Egyptian governor, there is enough archaeological evidence (the decorated ivory boxes, the cuneiform tablets, and the scarab seal impression)³² to support the suggestion that it was the abode of the local ruler. The Pella Residence seems likely to have functioned in its civic capacity from the late 15th and during the first half (at least) of the 14th centuries B.C. (c. 1420-1350).

Fig. 17: Pottery from IIIS Palatial Residence Phase VA-VB (LBI-IIA)

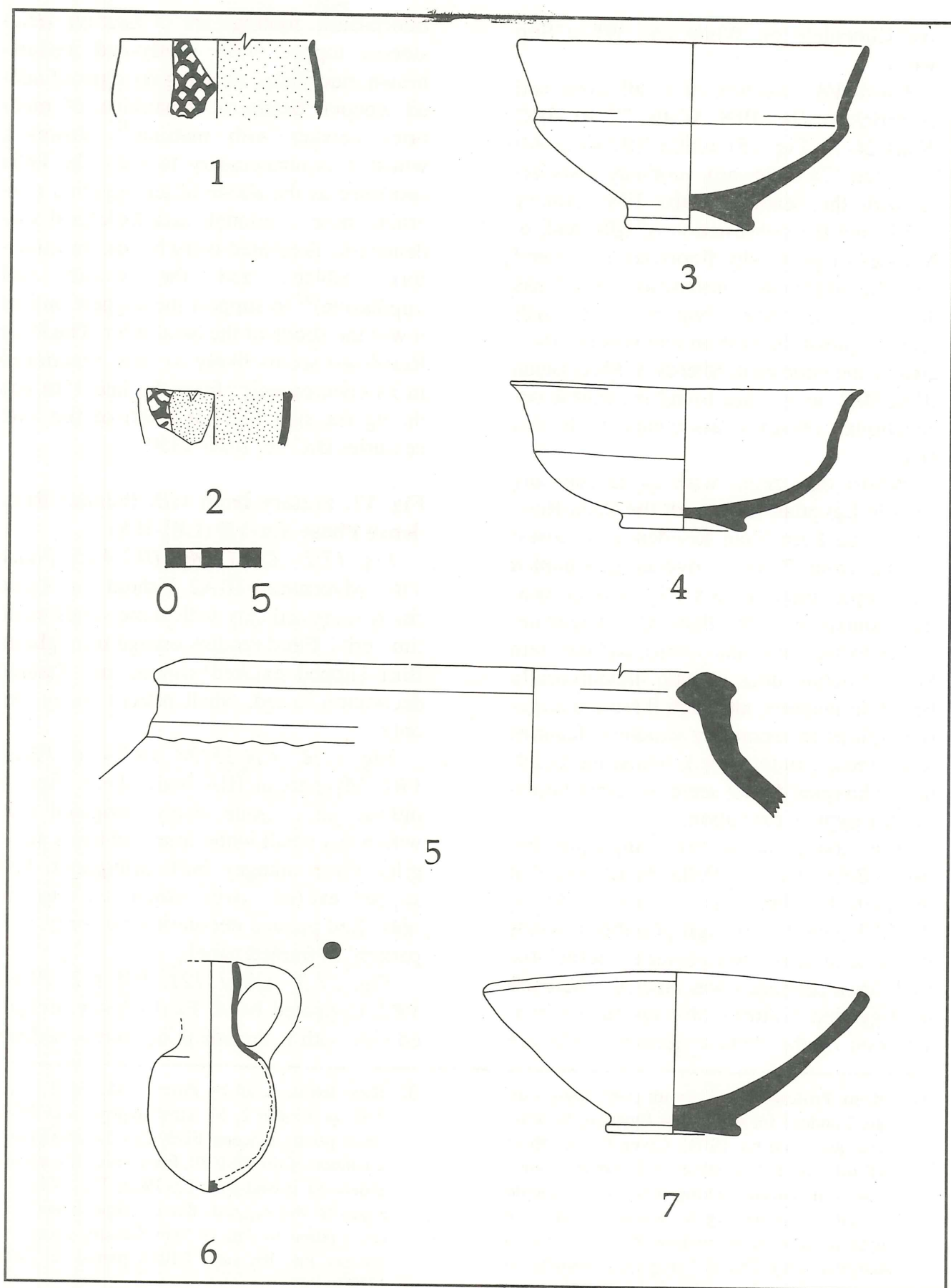
Fig. 17:1 CN 15040. IIIS 4.16. Phase VB1. Mycenaean IIIA2 Pithoid jar. Quite finely levigated clay with some small white lime grits. Fired reddish orange throughout. Buff slipped ext./red slipped int. Painted decoration in red, 'shell pattern' body ext. only.

Fig. 17:2 CN 15138. IIIS 4.16. Phase VB1. Mycenaean IIIA body sherd (from a pithoid jar?). Quite finely levigated clay with a few small white lime and black stone grits. Fired orangey buff throughout. Self slipped ext./int., over which red slip int. only. Red painted decoration ext. only, 'net pattern' in framed panels.

Fig. 17:3 CN 15121. IIIS 6.2. Phase VB2. Carinated bowl. Fairly finely levigated clay with many small and some medium

31. I thank Professor H. S. Smith (University College, London) for discussing Egyptian building techniques with me [SJB]. Given the dearth of well documented examples of Egyptian domestic and small-scale building activity, one should be cautious in seeking to define the range of Egyptian building techniques with reference to examples from Tell el-'Amarna, especially as the status of the Amarna period within Egyptian architectural canons remains problematic.

32. Reported in detail by Potts in McNicoll *et al.*, *Pella in Jordan* 2, 50 (stratigraphy), and 59-64 (description). It seems likely that the stratigraphic context of the Pit F.80, from which the material derived, is best placed in Phase VB1. Chronologically, this suggests that the depositional (as opposed to date of manufacture) should be lowered into the early LBIIA period (c. 1400/1350 B.C.).



17. Area IIIN/S. Late Bronze Age pottery from Phase V.

to large black stone, grey chert, some white lime, and a few reddish stone (?) grits. Fired orangey buff throughout. Self slipped ext./rim int.

Fig. 17:4 CN 15147. IIS 6.3. Phase VB2. Carinated bowl. Fairly finely levigated clay with many small and some medium white lime, grey chert, and orangey grog grits. Fired buff at core and orangey buff at surfaces. Self slipped ext./int.

Fig. 17:5 CN 15137. IIS 4.16. Phase VB1. Storage jar. Moderately levigated clay with many small and some medium black stone, white lime, grey chert, and a few orangey grog grits. Fired greyish buff at core and buff at surfaces. Off white to buff slip ext./int.

Fig. 17:6 CN 15148. IIS 6.3. Phase VB2. Dipper juglet. Fairly finely levigated clay with many small and a few medium white lime, black stone, and grey chert grits. Fired brick red throughout. Slipped in white, ext./rim int. Hand burnished ext. only.

Fig. 17:7 CN 15062. IIS 4.9. Phase VA. Bowl. Fairly finely levigated clay with many small and medium white lime, brown stone, grey chert, and a few red stone grits. Fired buff throughout. Self slipped (?).

(SJB)

Small Finds

Stone Vessels

RN 130034, CN 900211, IIIQ 117.13. Fig. 7.2

Gypsum tazza fragment. Pres. Ht. 18, Est. Base Diam. 70,³³ Th. 2-5 mm (thinnest at base). Moh's 2-3, Munsell 10YR 8/2 white. Small fragment, preserved from just below rim to the edge of the base. The underside is flat, with sides concave to a single midrib.

RN 130057, CN 900386, IVE 110.52. Fig. 7.3

Serpentine tazza fragment. Est. Rim Diam. 135, Frag. L. 48, Max. W. 33, Th. 1-8 mm. Moh's 5, Munsell 7.5Y 7/2 light grey - 10Y 7/2; and 7.5Y 3/2 olive black-10Y 4/2. Olive grey-green and black speckled serpentine. Small portion preserved from rim to lower body, representing less than a quarter of the original object. Flat topped everted rim, sides sloping slightly in to abrupt, slightly rounded shoulder with convex underside. The lower body and base are missing. The exterior is highly polished; the interior surface severely weathered.

The tazza appears in early 18th Dynasty Egypt, possibly in imitation of metal forms, and remains popular until the late 19th Dynasty.³⁴ Variation occurs in the treatment of the foot which can take the form of a simple flat base, a low ring base, a tall trumpet-shaped stem, or a separately-made stand. These four varieties represent the subdivisions of the type (Ben-Dor Types I-IV) and would appear to have chronological and geographical significance.³⁵ Type IV in particular, the one-piece tazza with tall stem, would appear to be a Levantine type found

33. This can only be approximate, as only a small portion of the base has survived; it is also dependent on the possibly incorrect assumption that the tazza was round, rather than oval in plan view.

34. C. Clamer, 'Alabaster Vessels', in: J. D. Seger and H. D. Lance (eds), *Gezer V: The Field I Caves*, (Jerusalem, 1988), 108-109.

35. I. Ben-Dor, 'Palestinian Alabaster Vases', *QDAP* 11 (1945), 105-106. See Clamer, *Gezer V*, 109, for a discussion of the chronological de-

velopment of the form.

36. For example, Tell Far'ah South Tomb 914 and 934 [E. Macdonald, J. L. Starkey, and L. Harding, *Beth Pelet II*, (London, 1932), pls. XLVIII.20 and LIII.182]; Beth Shan Level VII, Locus 1087 [A. Rowe, *The Four Canaanite Temples of Beth Shan*, (Philadelphia, 1940), 10 (not illustrated); as well as a group of unpublished tazze from tombs excavated at Pella by the Department of Antiquities in 1964.

at sites such as Tell Far'ah South, Beth Shan, and Pella.³⁶ In addition, the profile of the tazza can vary from simple concave sides (as in RN 130057), to sides with a single, or more rarely, double midrib.

In both fragments, the centre of the base has not been preserved and so there is no clear indication of the foot types of these tazze. However, the fact that RN 130034 is made of gypsum suggests that it belonged to Ben-Dor's Type IV, as Types I-III are usually made in calcite or serpentine. RN 130057 probably belongs to one of Types I, II, or III for the same reason;³⁷ the slight curvature of the preserved part of the underside would seem to rule out Type I. Suggested parallels for RN 130057 include examples from Beth Shan, Tell el-'Ajjul, Gezer, Ras Shamra, and Minet el-Beida.³⁸

Serpentine vessels are generally rare in Palestine. Only one other example has been

excavated at Pella.³⁹ Other examples occur at Beth Shan,⁴⁰ Megiddo,⁴¹ Hazor,⁴² Jericho,⁴³ Lachish,⁴⁴ Tell el-'Ajjul,⁴⁵ and the Amman Temple,⁴⁶ in a variety of shapes dating mostly to LBII.⁴⁷ An Egyptian source for this material seems likely,⁴⁸ considering the Egyptian form of the vessel. Egyptian craftsmen had been using serpentine for stone vases from the Middle Predynastic period onwards,⁴⁹ and numerous sources are attested throughout the eastern desert.⁵⁰

Ceramic Figurine (Fig. 18:1)

RN 150006, CN 920029, IIIS 3.3, P.O. 10.

Ceramic Astarte figurine fragment, L. 105, Max. W. 36, Th. 45 mm. Moh's 2.5-3, Munsell 10R 4/6 red. Fairly well levigated buff clay with grey core, covered in a worn red slip. Grey chert, black stone, white lime, and some red stone grit inclusions.

37. To my knowledge, Type IV appears only in gypsum [RTS].

38. Beth Shan, a close parallel in serpentine from Tomb 29 A-C (E. Oren, *The Northern Cemetery at Beth Shan*, (Leiden, 1973), fig. 40:5); Tell el-'Ajjul Tomb 1037, "alabaster" [W. M. F. Petrie, *Ancient Gaza II*, (London, 1932), pl. XXIII. 33]; Gezer, Locus 10079, calcite, (Clamer, *Gezer V*, pl. 13.10); Ras Shamra, Room 1258, "alabaster", and Minet el-Beida, depot 213, 'alabaster' [A. Caubet, 'Répertoire de la vaisselle de pierre, Ougarit 1929-1988', 243, pls. II:13, IX:14, in: M. Yon, *Arts et industries de la pierre* (Ras-Shamra-Ougarit VI), (Paris, 1991), pls. IX:5 and I:15].

39. Fragment of a footed jar of Late Bronze type, RN 150037, IIIN 12.4.

40. In addition to the tazza listed above (n. 38), there are two unpublished pieces in the Philadelphia University Museum collection from Levels IX and VIII.

41. G. Loud, *Megiddo II. Season of 1935-39*, (Chicago, 1948), pls. 231 and 262.10, both from stratum VIII.

42. Y. Yadin *et al.*, *Hazor III-IV* (Plates), (Jerusalem, 1961), pl. CLX.31, Area A locus 2546.

43. P. Bienkowski, *Jericho in the Late Bronze Age*, (Warminster, 1986), fig. 47:7, Tomb 4.

44. O. Tufnell, *Lachish IV: The Bronze Age*, (London, 1958), pl. 26:36, T.216.

45. Petrie, *Ancient Gaza II*, pl. XXII:23; id., *Ancient Gaza I*, (London, 1931), pl. XXV:5; id., *Ancient Gaza IV*, (London, 1934), pls. XXII: 247, XXXVIII: 36, 46.

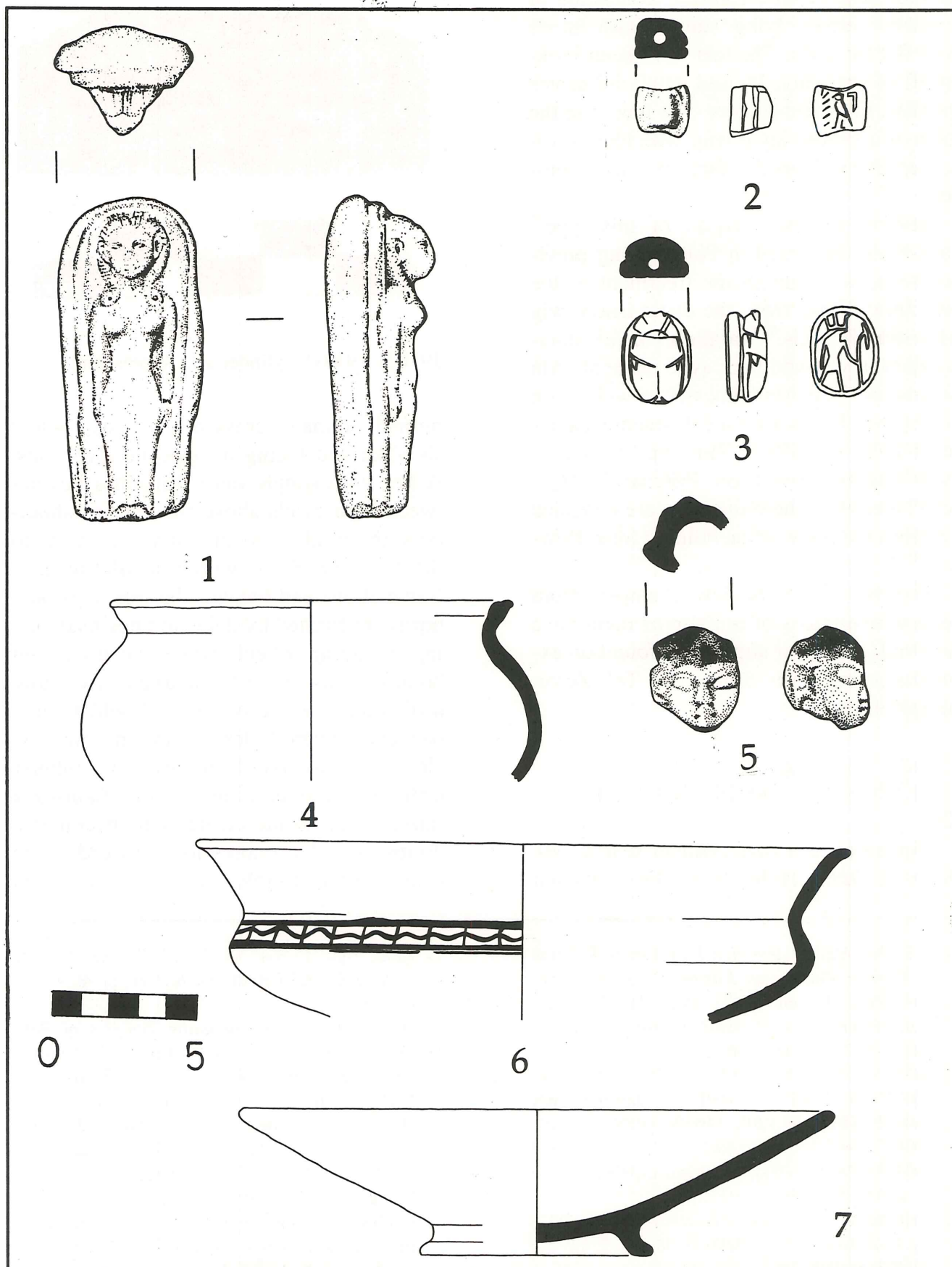
46. V. Hankey, 'A Late Bronze Age Temple at Amman', *Levant* 6 (1974), numerous examples in figs. 1-2. The number of vessels from this deposit is disproportionately large, compared with other sites in Palestine, with over 15 vessels indicated, including unpublished fragments.

47. These include footed jars, and a related form of jug imitating Cypriote base-ring. Possible exceptions are the cylindrical jars from Jericho, Tomb 4 which could belong with other MBII material from the tomb on the basis of shape.

48. Serpentine also occurs in outcroppings around the Ras Shamra area, for which see C. Elliott, 'The Ground Stone Industry', in: Yon (ed.), *Arts et industries de la pierre*, 11 and fig. 1.

49. A. Lucas and J. R. Harris, *Ancient Egyptian Materials and Industries*, (1962), 421-423. Although considerably less common than calcite, serpentine was relatively soft and utilized more often than some of the harder stones such as granite or diorite.

50. *Ibid.*, 420-421.



18. Ceramic figurine: 1) RN 150006 (scale 1:2); scarabs and amulet (scale 1:1):2) RN 130129,3) RN 150027,5) RN 150007. (Scale 1:2). Area XI. Tomb 105. MB/LB pottery nos. 4, 6-7 (Scale 1:3).

Mould-made Astarte figurine, consisting of a naked female lying supine with hands held flat by sides. The feet have been broken off in antiquity. Incised detail delineates the hair, face, and fingers. The hair is in the form of a Hathor-style wig, with locks curling up away from the face on each shoulder.

Several Astarte plaques of this type⁵¹ have been recovered at Pella during previous seasons, although the treatment of the hair here differs from the usual heavy wig with straight ends.⁵² Parallels for this combination of wig and body type occur at 'Ain Shems and Tell Abu Hawam, as well as on one of the elements on a cult stand excavated at Pella in 1984.⁵³ This type of hair is more usually found on Pritchard's "Qadesh" plaques, where the arms are extended out from the body, often holding lotus flowers.⁵⁴

This is one of the few examples from Pella where traces of red slip or paint have survived. A similar slip is also found on examples from Beth Shan and Tel Zeror, among others.⁵⁵

Cylinder Seal (Fig. 19)

RN 130004, CN 900010, IIIQ 113.6, P.O. 209.

Pierced rock crystal cylinder seal. L. 20, Diam. 8, Diam. Hole 2 mm. Two rampant



19. RN 130004, cylinder seal impression.

horned animals, crossed over just below shoulder and facing in opposite directions. A tree with simple linear branches lies between their heads above the crossed shoulders, the trunk or stem extending below to the base line. Scene within parallel lines as frame above and below. The tree, legs, and horns are formed by delicate lines made using a cutting wheel, while the elongated bodies are more plastic, marked by circular drill holes at nose, eye, shoulder, and haunches. Some holes feature an outer circle which may have been made by a tubular drill, with a second inner circle featuring a raised bump in the centre. This becomes a dimple on the impression. According to Collon, such dimples arise from wear on

51. J. B. Pritchard, *Palestinian Figurines in Relation to Certain Goddesses Known Through Literature*, (New Haven, 1943), Type III, "Nude female figurines with arms hanging down to sides", 5, 14-18; nos. 106-150.

52. RN 70052 (IIN 15.12), 70198 (IIN 31.3), 100070 (II T.89); as well see figurines, RN 130115 (IVE 110.120), 110508 (IIN 45.13A), 130053 (IVE 110.43), 130071 (IVE 110.71), and 130092 (IVE 110.93), discussed in Walmsley et al., *ADAJ* 37 (1993).

53. Pritchard, *Palestinian Figurines*, 15, nos. 112, 114; McNicoll et al., *Pella in Jordan* 2, pl. 71; RN 72066, IVE 21.2.

54. Parallels include: Pritchard, *Palestinian Figu-*

rines, figs. 1, 3-4, all from Tell Beit Mirsim Stratum C; and Tufnell, *Lachish IV*, pl. 49:4, Locus 4034.

55. Rowe, *The Four Canaanite Temples of Beth Shan*, pl. 35:14, Level VII = Pritchard, *Palestinian Figurines*, no. 134; M. Tadmor, 'Female Cult Figurines in Late Canaan and Early Israel: Archaeological Evidence', in: T. Ishida (ed), *Studies in the Period of David and Solomon and Other Essays* (Winona Lake, 1982), pl. 9, 157. Tadmor (p. 156), suggests that it was a feature of all such plaques, although the large number of examples known without any trace of red slip or paint makes this unlikely.

the centre of the drill bit over time.⁵⁶ Rock crystal is a transparent macrocrystalline quartz with a hardness of 7 on the Moh's scale.⁵⁷ It had been used for seals since the fourth millennium, its hardness notwithstanding, and continued to be used well into the Iron Age.⁵⁸ Rock crystal is available in small quantities in Jordan,⁵⁹ and from a variety of sources in Egypt.⁶⁰

The motif of two rampant animals crossing each other is found on seals from the Early Dynastic period,⁶¹ through to the later Iron Age, when this theme became very popular.⁶² A contemporary example to the Pella piece appears on a seal impression from Nuzi.⁶³ It is more common to find animals as the sole motif in scenes on Palestinian provenanced seals than it is in examples provenanced further east.⁶⁴

The rendering of the two horned animals, particularly with the sketchy treatment of the legs, and the use of the multiple drill sizes to delineate haunches, eye, and nose connects this piece with a particular sub-group of small Mitannian seals dating

to the second half of the 14th century.⁶⁵ This class made extensive use of different-sized drills and the cutting wheel on a series of hard stones, including haematite and many varieties of quartz, such as jasper and chalcedony. However, in the case of the Pella example, the scene is simpler, without the usual filling motifs in the field, and with less obvious use of the tubular drill.

(RTS)

Scarab Seal (Fig. 18:2).

RN 130129, CN 900974, IVE 106.39.

Fragment of a small scarab seal of grey-green steatite.⁶⁶ L. 7, W. 7, Th. 5 mm. Moh's 3.0. Pierced longitudinally for suspension. The head and tail of the amulet have worn away; the surface is also smooth and worn. Back: Rounded and polished to a smooth finish (perhaps naturally), with a shallow worn nick on the left delineating the thorax from the elytra. Sides: Simply carved curving legs lift the scarab's body slightly from the base. Base: Along the length of the base is carved a Horus hawk

56. D. Collon, *First Impressions: Cylinder Seals in the Ancient Near East*, (Chicago, 1987), 100.

57. Lucas and Harris, *Ancient Egyptian Materials and Industries*, 402; M. Sax and A. P. Middleton, 'A System of Nomenclature for Quartz and its Application to the Material of Cylinder Seals', *Archaeometry* 34.1 (1992), table 1 and fig. 1.

58. Collon, *First Impressions*, 100; although never in great quantities – see Sax and Middleton, *Archaeometry* 34.1 (1992), fig. 4. Until the later third millennium, it was the only variety of quartz used for seals; during the LBA use of other types of quartz increased substantially (ibid).

59. F. Bender, *Geology of Jordan*, (Berlin, 1974), 167. It has yet to be established whether these sources were exploited in the Bronze Age.

60. Lucas and Harris, *Ancient Egyptian Materials and Industries*, 402-403.

61. For example, Collon, *First Impressions*, nos. 82-83, 91; B. Buchanan, *Early Near Eastern Seals in the Yale Babylonian Collection*, (New Haven,

1981), nos. 243, 247-251 (EDII), nos. 269-279, 290-294 (EDIII).

62. D. Collon, 'Some Cylinder Seals from Tell Mohammed Arab', *Iraq* 50 (1988), 76; id., *First Impressions*, no. 773; B. Buchanan, *Catalogue of Ancient Near Eastern Seals in the Ashmolean Museum*, Vol. I: Cylinder Seals, (Oxford, 1966), no. 657.

63. D. L. Stein, 'Seal Impressions on Texts from Arapha and Nuzi in the Yale Babylonian Collection', in: D. I. Owen and M. A. Morrison, *Studies on the Civilization and Culture of Nuzi and the Hurrians*, Vol. 2, (1987), nos. 57, 288 (with parallels).

64. D. Collon, *The Alalakh Cylinder Seals*, (Oxford, 1982), 715.

65. Collon, *Iraq* 50 (1988), 69; id., *The Alalakh Cylinder Seals*, 108-109.

66. My thanks to Dr. Kingsley Mills, Department of Geology and Geophysics, University of Sydney, for his advice on the identification of this material and his assistance generally [KNS].

facing left, behind which is an angular *ntr* sign. The hawk faces five short diagonal strokes (the remains of a palm?). A line parallel to the outer edge is visible on the top left hand corner.

The scarab was found in an LBII context. However, distinctive features of the seal suggest an earlier date. The simple carving of the legs and back, with a single nick dividing the thorax from the elytra,⁶⁷ and the scarab's small size,⁶⁸ point firmly to the Second Intermediate Period. Although some of the base design has since worn away, the Horus *ntr* pattern belongs to Tufnell's Class 3A4, which reached its floruit during the 12th and 13th Dynasties and did not continue beyond the 15th Dynasty.⁶⁹ The best parallels for this simple style come from Jericho,⁷⁰ Shechem,⁷¹ and Megiddo,⁷² and a scarab noted by Petrie.⁷³ More complex versions of the design are also known from other sites in Palestine. On typological and stylistic grounds, the Pella scarab fragment should be dated no later than mid-15th Dynasty.⁷⁴ Close examination of the apertures shows that the stone is worn rather

er than broken. This wear pattern is the result of prolonged suspension, indicating that the scarab was strung as an object of adornment for a considerable period of time. The scarab's heirloom value may have been due to the unusual colour of the stone. If the Second Intermediate Period date is accepted, then the scarab was in circulation for several centuries before coming to rest in an LBII deposit at Pella.

(KNS)

EXCAVATIONS IN AREA XXXIIB: IRON AGE I STRATIGRAPHY

Consideration of the Area XXXIIA-B ceramic material at the end of the 1990 season suggested that Area XXXIIA/B Phase E was to be dated to the Iron I/IIA transition. As these strata had been extensively sampled in the East Cut between 1979 and 1986, it seemed better to direct resources elsewhere if further excavation in XXXIIA/B was likely to lead to simple duplication of effort.⁷⁵ To ensure that this was the case, a 2 x 2 m sondage set against the northeast-

67. O. Tufnell, *Studies on Scarab Seals. Vol. 2. Scarab Seals and their Contribution to History in the Early Second Millennium B. C.* (Warminster, 1984), 34 ff.

68. *Ibid.*, 28.

69. *Ibid.*, 118. The Horus *ntr* design is also known from the reign of Thutmosis III, and appears again on Egyptian scarab seals during the 25th Dynasty (ca. 750-657 B.C.) and later periods: B. Jaeger, *Essai de classification et datation des scarabées Menkhéperre* (1982), 56, fig. 68; W. M. F. Petrie, *Scarabs and Cylinders with Names* (London, 1917), pls. liii:1-4, lvii:b.

70. Kenyon, *Excavations at Jericho II*, figs. 292:7, 299:4. The latter is from Tomb J42, dated to Kenyon's Group V (early MB IIC). Note the parallels from Jericho with the Horus *ntr* design in conjunction with other motifs: figs. 282:7, 282:18, 292:9, 293:6; A. Rowe, *A Catalogue of Egyptian Scarabs, Scaraboids, Seals and Amulets in the Palestine Archaeological Museum* (Cairo, 1936), 45, pl. v:170, dated to the 15th

Dynasty.

71. See the seal impression on a pottery handle in S. H. Horn, 'Scarabs and Scarab Impressions from Shechem II', *JNES* 25 (1966), 50f., fig. 1:46, pl. VI:46.

72. O. Tufnell, 'The Middle Bronze Age Scarab-Seals from burials on the Mound at Megiddo', *Levant* 5 (1973), 70f. and 74, figs. 1:1, 8 and 3:125.

73. W. M. F. Petrie, *Buttons and Design Scarabs* (London, 1925), 19, pl. xi: 260.

74. A Horus *ntr* scarab seal appears in Level B1 at Tell el-Far'ah dated to the early MB IIC period, (ca. 1650 B.C.): J. Mallet, *Tell el-Far'ah. Le Bronze Moyen, Vols 1 and 2*, (Paris, 1987), 98, pl. lxxxiv:4.

75. For earlier work on Iron Age material in Area XXXII, see Potts *et al.*, *ADAJ* 32 (1988), 139-145; Bourke, 'Pella in the Bronze and Iron Ages', 424; Edwards *et al.*, *ADAJ* 34 (1990), 62-63; Walmsley *et al.*, *ADAJ* 37 (1993). For the East Cut Iron Age material, see Potts in McNicoll *et al.*, *Pella in Jordan* 2, 85-101.

ern baulks of trench XXXIIB was excavated in 1992. This sondage proceeded through 3.4 m of occupational/fill deposits before bottoming out into natural red-brown gravelly clays. The entire deposit excavated in 1992 was to be dated to the Iron I period. At least three main phases of occupational debris seemed present (Area XXXII Phases E-G), approximately equivalent to the East Cut Phase Oc-IB material. However, as architecture was not encountered in the sondage, this assessment must remain tentative until all pottery is processed.

(SJB)

Faience Amulet (Fig. 18:5)

RN 150007. CN 920030, XXXIIB 32.12, P.O. 87.

Fragment of a head belonging to a moulded faience figurine. Ht. 16, W. 13, Th. 4 mm. The worn exterior surface is glazed turquoise blue, to which was applied a brownish-black matt pigment on the forehead and the top of the head, resembling a skull-cap. The grey/white faience core is coarsely grained and the surface finish rough. The back and sides of the head have broken away, and the interior surface is smooth and concave behind the face. The features are shallow and worn; large bulging, almond-shaped eyes are framed by broad eyebrows, which dominate the chubby face. The nose is flat and broad, and the lips are full, yet puckered. On the right side is a convex protrusion which extends down the side of the head; there are possibly trac-

es of black-painted lines under the blue glaze. This can be reconstructed as part of a wig, possibly a sidelock. Behind the protrusion is a plain blue-glazed surface curving back towards the rear of the head.

Although little remains of the fragment to identify it with certainty, the head could form part of a figurine representing a human-headed Egyptian god. The youthful, chubby features and possible presence of a sidelock points to a figurine of the god Ptah-Sokar, or Harpocrates, the infant Horus. A sidelock, designating youthfulness, is part of the standard iconography of Harpocrates, and sometimes also of Ptah-Sokar; Harpocrates is often shown with a finger in his mouth. It may be possible to reconstruct this latter feature on the Pella fragment.

Amulets of Harpocrates, and especially Ptah-Sokar, are found with some frequency on sites in Syria-Palestine during the Late Bronze Age and Early Iron Age.⁷⁶ A sidelock is present on a small faience amulet of Ptah-Sokar at Tell Qiri, dating to the Iron I period.⁷⁷ Of a slightly later date is the larger faience figurine of a flautist from Tell el-Far'ah, dating to the 10th century B.C.⁷⁸ This figurine features a skullcap, brown-painted hair on green faience, and a cylindrical cavity inside the figurine 14 mm in height. A blue faience Ptah-Sokar amulet from Lachish has traces of black paint on the hair, and is Iron II in date.⁷⁹ Another Iron I, rough "blue and sepia glaze" faience example from Megiddo is comparable in

76. The major studies on figurines and religious amulets are still those of W. M. F. Petrie, *Amulets* (London, 1914), and G. A. Reisner, *Amulets Vols. I and II* (1907 and 1958). Another important work is M. G. Daressy, *Catalogue général des antiquités Égyptiennes du musée du Caire: statues de divinités, Vols. I and II* (Cairo, 1905 and 1906). A useful recent study on religious symbolism of the Third Intermediate Period is

B. L. Goff, *Symbols of Ancient Egypt in the Late Period; the Twenty-First Dynasty* (New York, 1979).

77. Ben-Tor and Portugali, *Tell Qiri*, 86, fn.3.

78. A. Chambon, *Tell el-Far'ah I. L'Age du Fer* (Paris, 1984), 75, 234, pls. 63:6, 84.

79. O. Tufnell et al., *Lachish III. The Iron Age* (London, 1953), pl. 35:44.

size to the Pella fragment.⁸⁰ Other good Iron I parallels are also known from Megiddo⁸¹ and Lachish.⁸² A very close parallel of an earlier date also comes from Lachish. A "paste" head of uncertain identity has been dated to the reign of Rameses II.⁸³

Two distinctive features of the fragment are worthy of note. Firstly, the head is hollow inside, suggesting the figurine was moulded on a wooden core.⁸⁴ Secondly, the faience fabric is gritty and coarse, with quartz, sand grains, and impurities clearly visible in the matrix.⁸⁵ The soft and friable texture indicates that the figurine was fired at a low temperature. The Pella fragment is either part of a figurine of Ptah-Sokar, or more likely, Harpocrates. Regional parallels point to an Iron Age I date; however its worn condition may indicate a date of manufacture earlier than its archaeological context, probably close to the beginning of the 11th century B.C.

(KNS)

EXCAVATIONS IN AREA XI TOMB 105: MB/LB CEMETERY MATERIAL

Tomb 105 was excavated in 1990,⁸⁶ and further investigated to clarify several stratigraphic points in 1992. The tomb material should now be seen as predominantly Middle Bronze Age in date, but with a short MB/LB continuance. It is likely that the tomb went out of use in the MB/LB period, but its positioning, in the centre of the north face of Tell el-Husn, indicates that MB and MB/LB cemetery use spread further west

across the northern face of el-Husn than had previously been thought.

Fig. 18:4, 6-7. Pottery from Area XI Tomb 105 (MB/LB)

Fig. 18:4 CN 15036. XI T.105 1.4. Cooking pot. Moderately levigated clay with many small, medium, and large brown stone, grey chert, white lime, and a few red stone grits. Fired greyish buff throughout. Orange-buff slip ext./int.

Fig. 18:6 CN 15035. XI T.105 1.4. Carinated bowl. Chocolate on White ware. Quite finely levigated clay with many small and medium brown stone, grey chert, and white lime grits. Fired buff throughout. Off white to buff slip ext./int. Red-brown painted decoration around shoulder ext. Wheel burnished ext./rim int.

Fig. 18:7 CN 15034. XI T.105 1.4. Platter bowl. Fairly finely levigated clay with many small medium and large brown stone, grey chert, black stone, and white lime grits. Fired grey at core and buff at surfaces. Self slipped (?).

EXCAVATIONS IN AREA XI TOMB 106: LBIIA CEMETERY MATERIAL

At the end of the 1990 season, it had been suggested that the deposit excavated in that season as T.106 was related to the very large Department of Antiquities Tomb 1 excavated in 1963-64. At the time it was thought that the deposit formed a part of an approach road to the assumed entrance to the DAJ Tomb 1 some 10 m to the west.

80. R. S. Lamon and G. M. Shipton, *Megiddo I*, (Chicago, 1939), pl. 74:17, from Stratum V.

81. *Ibid.*, pl. 74:13, a blue and sepia glaze Ptah-Sokar amulet; pl. 74:14, a green and sepia glaze Ptah-Sokar amulet. Both are from Stratum V and date ca. 1050-1000 B.C.

82. From Lachish, a rough Ptah-Sokar amulet of green-blue/black faience, and a green faience Harpocrates amulet from Tomb 218, dating ca.

900 B.C.; Tufnell *et al.*, *Lachish III*, pl. 34:11, 22.

83. Tufnell *et al.*, *Lachish III*, 89, 287, pl. 29: 64.

84. Lucas and Harris, *Ancient Egyptian Materials and Industries*, 159.

85. The fragment was examined under a microscope at 0.8 x and 2.0 x magnification.

86. For previous work on T.105, see Walmsley *et al.*, *ADAJ* 37 (1993).

Exact attribution was hampered by the very heavy overburden of rock strata, which had laminated off the north face of Tell el-Husn, compressing and churning the archaeological deposits. In 1992 it was decided to expand the trench further to the east and west, with particular attention being paid to delineating original rockface from subsequent slippage.

Further excavation, involving considerable cutting back of the rock face/surfaces led to the realization that the 1990 T.106 deposit sat immediately outside the original dromos entrance to the tomb, and detailed inspection of the DAJ Tomb 1 interior revealed that the assumed entrance some 10 m to the west was merely where the Department of Antiquities excavators had broken into the tomb. Our 1990 deposit, including the "Shackled Man" is to be located within the outer 0.5 m of a 2 x 1.4 m dromos passageway cut into the rock, leading into the first of two large chambers of this tomb. The dromos opens out to the north, where a series of prepared surfaces and occupational debris layers suggest the presence of a road, with the addition of a small covered (?) structure built against the western rock slope. Within the structure, a number of burnt cooking vessels and animal bone debris suggest the presence of the remains of a funerary (?) meal.

Further investigations within the dromos passageway recovered enough diagnostic local and a small amount of imported Cypriot pottery to date the deposit, and therefore the final sealing of the tomb, to the LBIIA/B (c. 1300 B.C.) transitional period. This appears to be consistent with the dating of the contents of the two large chambers (DAJ Tombs 1-2), which lead off the

'Tomb 106' dromos deposit.⁸⁷ Further investigation of the T.106 deposit was halted towards the end of the very wet 1992 field season by several tonnes of rock and overburden collapsing into the excavated dromos passageway from above. Although all archaeological deposits of value have been removed from the dromos, we plan to continue excavations in a future field season, concentrating on re-planning the original chambers of DAJ Tombs 1-2.

Fig. 20. Pottery from Tomb 106 (LBIIA)

Fig. 20:1. CN 15010. XI T.106 1.1. Cypriot White Slip II bowl. Fairly finely levigated clay with many small and medium white lime and some grey stone grits. Fired dark grey at core and brick red at surfaces. Off white slip ext./int. Painted decoration in dark chocolate brown ext. only, 'framed hooked chain' pattern.

Fig. 20:2. CN 15037. XI T.106 1.10. Cypriot Base Ring II bowl. Fairly finely levigated clay with many small and some medium white lime, grey stone, and a few reddish grog (?) grits. Fired pale brick red throughout. Dark grey slip ext./int.

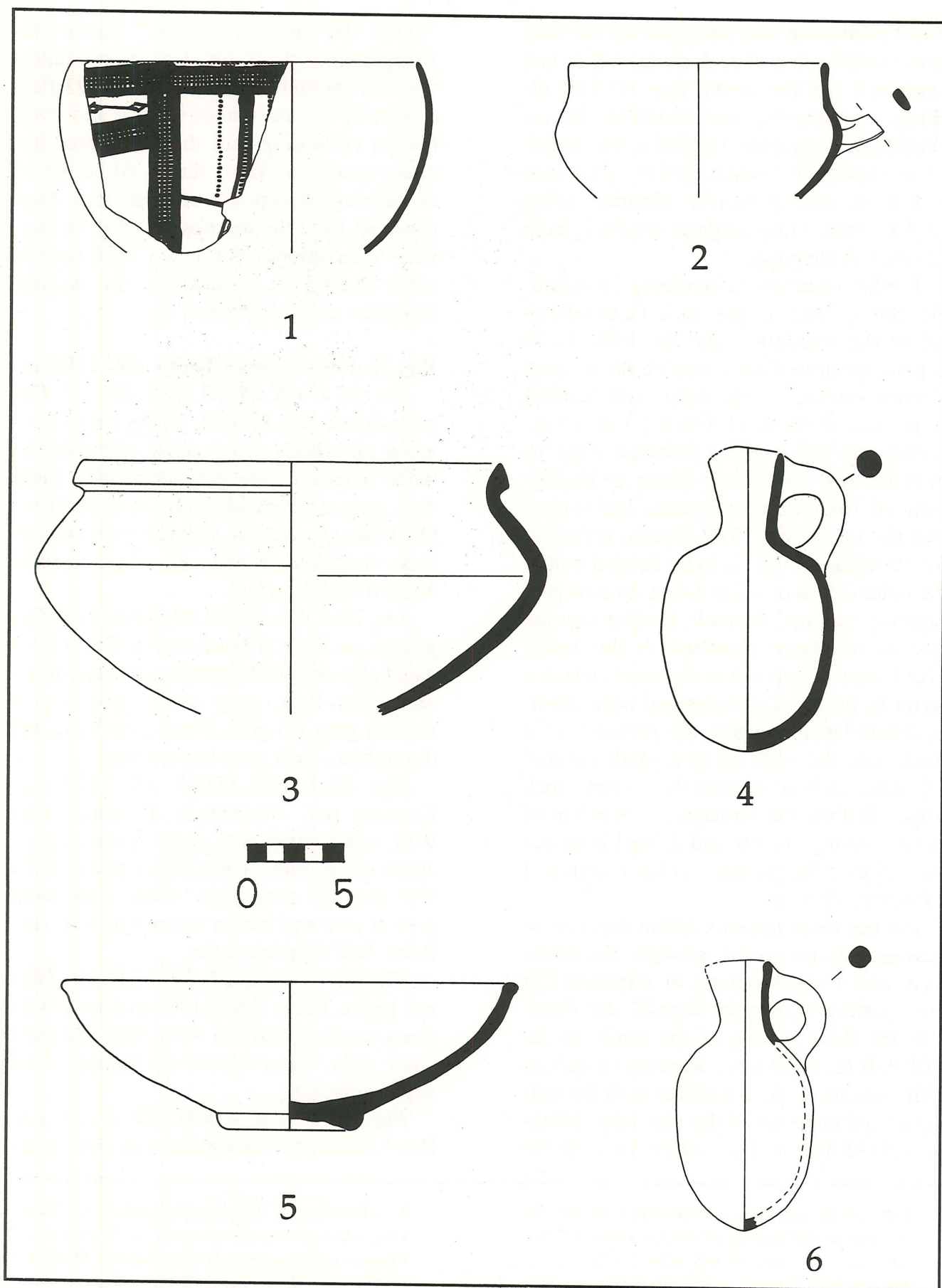
Fig. 20:3. CN 15154. XI T.106 3.6. Cooking pot. Moderately levigated clay with many small and some medium grey chert, white lime, quartz, black stone, and a few orangey grog grits. Fired dark ashy grey at core and brown to orangey buff surfaces. Self slipped ext./int.

Fig. 20:4 CN 13926. XI T.106 1.1. Dipper juglet. Fairly finely levigated clay with many small to medium white lime and grey chert grits. Fired brown throughout. Self slipped ext./int.

Fig. 20:5. CN 13999. XI T.106 1.4. Bowl. Moderately levigated clay with many

87. For a more extensive consideration of the Department of Antiquities of Jordan Tomb 1-2 material, and its relationship with Sydney Tomb 106, see S. J. Bourke and R. T. E. Sparks, 'The DAJ Excavations at Pella in Jordan 1963/64', in:

S. J. Bourke, J-P. Descoeudres and A. G. Walmesley (eds.), *Trade, Contact and the Movement of Peoples in the Eastern Mediterranean: Studies in Honour of J. B. Hennessy* (forthcoming).



20. Area XI. Tomb 106 dromos. Late Bronze Age pottery.

small and medium grey chert, brown stone, and a few white lime grits. Fired greyish buff at core and brownish buff at surfaces.

Fig. 20:6. CN 15149. XI T.106 1.11. Dipper juglet. Fairly finely levigated clay with many small and a few medium black stone, white lime, and grey chert grits. Fired orangey buff throughout. Self slipped ext./rim int.

(SJB)

Small Finds

Stone Vessels

RN 150040, CN 920422, XI T.106 1.11. *Fig. 7:6*

Gypsum alabastron. Found between burials F.3 and F.4 at rock face. Ht. 91, Max. Diam. 48-50, Rim Diam. 32, Neck Diam. 23, Diam. Hole 14 mm; Moh's 1.5-2.0; Munsell 2.5Y 8/2 white - 8/3 pale yellow. Everted rim with funnel-shaped mouth and convex base. Smoothed exterior with some tooling marks; clear chisel marks on interior walls. Mended from several fragments, with small sections of body missing.

RN 130138, CN 900537, XI T.106 1.1. P.O. 1. *Fig. 7:5*

Incomplete gypsum alabastron. Pres. Ht. 47, W. 50-52, Th. 1-6 mm. Moh's 1.5-2.0, Munsell 2.5Y 8/2 white. Convex base fragment, with upper body and rim missing but probably of the same type as RN 150040. Polished exterior; chisel marks on interior walls.

This type of alabastron with convex base, constricted neck, and everted pinched rim has numerous parallels in shape, material, and technique throughout Middle Bronze Age Palestine. Close parallels include examples from Beth Shan Level X,⁸⁸ Pella Tomb 19,⁸⁹ Megiddo Tomb 3111,⁹⁰ and several of the Middle Bronze Age tombs at Jericho.⁹¹

Vertical and oblique tool marks on the interior walls of both examples attest to the use of the chisel in their manufacture. This technique, combined with the use of gypsum, places this shape with others believed to be manufactured locally.⁹² Both Jericho and Beth Shan have been suggested as possible centres for such an industry.⁹³ In the case of the round-based alabastron, it seems likely that the original inspiration is to be found in Egyptian calcite examples of 12th Dynasty,⁹⁴ which occur in local repertoires from early in the Middle Bronze Age.⁹⁵

88. Philadelphia University Museum, unpublished.

89. McNicoll *et al.*, *Pella in Jordan I*, pl. 106.11-12.

90. Loud, *Megiddo II*, fig. 258:5.

91. For example: Kenyon, *Excavations at Jericho I* (London, 1960), fig. 118:3 (Tomb G37), 118:12 (Tomb A38), and fig. 144:1 (Tomb A34).

92. Ben-Dor, *QDAP* 11 (1945), 93-112. It is therefore important to distinguish between the calcite and gypsum examples of this type, as one would appear to represent the Egyptian or Egyptianising industry, for which there is as yet no evidence of manufacture in Palestine, while the other is likely to represent local production. For a full description of the differences between the two materials, *ibid.*, 94-95. All examples listed above as close parallels are gypsum and chisel-made.

93. *Ibid.*, 96, 111-112; C. Clamer, 'The Local Manufacture of Bronze Age Gypsum-Alabaster Vases

in the Jordan Rift Valley, with an Emphasis on the MBII Finds from Jericho', *Abstract for the Fifth International Conference of the History and Archaeology of Jordan*, (1992), 2.

94. Ben-Dor, *QDAP* 11 (1945), 104. Although Ben-Dor mentions only the ridged-neck variety, plain versions also occur; for example, W. M. F. Petrie, *The Funeral Furniture of Egypt with Stone and Metal Vases*, (London, 1937), pl. XXIX. 658; B. Kemp and R. S. Merrillies, *Minoan Pottery in Second Millennium Egypt*, (1980), fig. 14 (Harageh T.354). According to Petrie (p. 10) this drop-shaped form is more marked in contemporary pottery and the shape may well have originated there.

95. In Palestine, Egyptian or Egyptianising calcite alabastera have been found at many sites, including Jericho Tomb J1 (Kenyon, *Excavations at Jericho I*, fig. 171.8), and Gibeon Tomb 13 [J. B. Pritchard, *The Bronze Age Cemetery at Gibeon*, (1963), fig. 18.4].

This period represents the main floruit of the gypsum varieties, although they continue into LBI.⁹⁶ The calcite version may survive for longer as sporadic examples of the type have appeared in LBII contexts.⁹⁷ The Pella examples are among the latest gypsum examples of this type.⁹⁸

RN 130086, CN 900599, XI T.106 1.5, P.O. 9. Fig. 7:4

Incomplete calcite piriform jar. Pres. Ht. 70, Max. Diam. 66, Pres. Diam. Neck 26, Base Diam. 30 mm. Calcite jar, missing rim and neck. Moh's 2.5-3.0 Munsell 2.5Y 8/3-7/3 pale yellow. Piriform jar with low disc base and convex sides, broken at the base of the neck. The interior has been drilled out, leaving circular drill marks on the walls and a depression at the centre of the base from removal of the drill core.

It is likely that this belongs to the class of footed jars produced in Egypt during the 18th and 19th Dynasties.⁹⁹ Our example is not typical of this form, as it displays a narrower neck than usually found; the solid disc base is also less common than the ring or trumpet-based varieties. A good parallel is seen in an example from Ras Shamra.¹⁰⁰

(RTS)

Scarab Seal (Fig. 18:3)¹⁰¹

RN 150027, CN 920380, XI + [Surface Find].

Scarab Seal. L. 12.5, W. 9.5, Ht. 6 mm. Small off-white scarab seal of steatite, pierced longitudinally for suspension. Complete. The surface is rough; traces of yellow-white glaze visible. Back: Well-made rounded form with details lightly incised. The trapezoidal clypeus with a serrated edge is flanked by a parallel line on the right, and possibly also the left side. The simple lunate head is delineated from the thorax by a single line; two nicks are visible on either side of the thorax. The thorax and the elytra are split by two curved lines; a short perpendicular line down the centre of the back divides the elytra. Parallel to the outer edge of the elytra is a lightly incised line which on the left side merges with a short line defining the suspension hole; on the right side of the elytra, these two lines are separated. Humeral callosities are indicated by two small, shallow triangles filling the top outer corner of each wing. Sides: Legs are not indicated; a simple incised line separates the body from the base, which curves up slightly to meet the scarab. Base: A well executed scene is incised along the length of the base, enclosed within an oval

96. For example, McNicoll *et al.*, *Pella in Jordan I*, figs. 106.11-12, from Pella Tomb 20, and an unpublished alabastron, RN 42058 from Tomb 27.

97. For example, Hankey, *Levant* 6 (1974), fig. 1.3; Dominus Flevit, S. J. Saller, *The Excavations at Dominus Flevit II – The Jebusite Burial Place*, (Jerusalem, 1964), figs. 60.5, 10.

98. The fragmentary example, RN 130138, comes from a level near the surface, and it is possible that it could have been washed in from further up the slope. This cannot be the case for RN 150040, which was in a good deposit near the rock face, underlining the fact that stone vessels can remain in circulation for a long period of time.

99. Petrie, *Funeral Furniture of Egypt*, pl. XXXIII:846-859.

100. Caubet, *Arts et industries de la pierre*, centre de la ville, fosse 1237, pl. II:13, IX:14.

101. For previous work on scarabs at Pella, see most importantly, F. V. Richards, *Scarab Seals from a Middle to Late Bronze Age Tomb at Pella in Jordan*, (Göttingen, 1992); as well, see also A. McNicoll *et al.*, *Pella in Jordan I*, 84; 103, pl. 111, fig. 27; Richards, in Potts *et al.*, *ADAJ* 32 (1988), 147-149; R. H. Smith and T. F. Potts, 'The Middle and Late Bronze Ages', in: A. McNicoll *et al.*, *Pella in Jordan 2*, 58, RN 70425; 64, RN 71999, pl. 40:3; 77, scarabs 1-4; 78f. pls. 39 and 60; 80f.

border cut away from the outer edge. In the centre is a striding deity with a zoomorphic head, possibly Re, facing right. It wears an double-plumed headdress with a uraeus, and a short kilt. A streamer extends from behind the head to the incised border. The extended left arm holds a sceptre; the right arm hangs beside the body.

The back design features lightly incised humeral callosities, which cannot date the scarab much earlier than the very beginning of the 18th Dynasty.¹⁰² However, the simple flat sides and back design consisting of three individual lines separating the thorax and elytra strongly recall scarabs of the Second Intermediate Period, where these elements are suggested by nicks, rather than incisions right across the back, although these features sometimes appear in the New Kingdom.¹⁰³ Good Second Intermediate Period and 18th Dynasty parallels from Tell el-Far'ah (South) exist for the back and side design of the Pella scarab,¹⁰⁴ especially in relation to the carving of the head and clypeus. The simple base design is boldly carved in a strongly Egyptianising style, pointing to a New Kingdom date.¹⁰⁵ How-

ever, the motif is related to Tufnell's Class 10A which appeared late in her sequence.¹⁰⁶ The deity should be compared to examples from Tell el-Far'ah (South) dating to the New Kingdom,¹⁰⁷ where this design was popular,¹⁰⁸ and Lachish.¹⁰⁹ Examples from the 18th Dynasty are known from Tell el-Yahudieh,¹¹⁰ Saft (Goshen),¹¹¹ and Gurob;¹¹² a good 19th Dynasty parallel comes from Matmar.¹¹³ A very good, but unprovenanced, parallel in the British Museum is a small steatite plaque with a crowned zoomorphic deity on its long sides, which bears the name of Amenhotep II.¹¹⁴ Several parallels for the base design date to the 19th and 20th Dynasties; the deity wearing a sun-disk seems to have been a favoured motif during the Ramesside era. The combination of early and late stylistic features suggest a possible late 18th Dynasty or early 19th Dynasty date for this scarab.

(KNS)

ANIMAL BONES FROM THE 1992 FIELD SEASON: PRELIMINARY REPORT

102. Tufnell, *Studies on Scarab Seals*, 34f; R. Givon, *Egyptian Scarabs from Western Asia from the Collection of the British Museum*, (London, 1985), 14.

103. For example, see the range of "Hyksos" scarab seals from Tell el-'Ajjul, published in Givon, *Egyptian Scarabs*, 76-83, 94-99.

104. S. H. Horn, 'Scarab and Scarab Seal Impressions from Shechem III' *JNES* 32 (1973), 284f., fig. 1:64, dated to the reign of Amenophis III; Givon, *Egyptian Scarabs*, 24-25: L.627, described as Hyksos; *ibid.*, 52-53: L.672, dated to the New Kingdom; *ibid.*, 54-55: L.605, New Kingdom. Also note the back of scarab L.610, possibly dating to the reign of Tuthmosis III, *ibid.*, 42-43. Another good parallel for the back design is from Gezer, no. 104906, dating to the reign of Tuthmosis III, *ibid.*, 124-125.

105. Givon, *Egyptian Scarabs*, 19.

106. Tufnell, *Studies on Scarab Seals*, 135.

107. *Ibid.*, 46-47: L.647, said to date to the reign of Rameses II; MacDonald *et al.*, *Beth Pelet II*, pl. lvii:346, possibly 20th Dynasty.

108. Tufnell, *Studies on Scarab Seals*, 135.

109. Tufnell, *Lachish IV*, 121, pl. 36: 242, dating to the 19th Dynasty.

110. W. M. F. Petrie, *Hyksos and Israelite Cities* (London, 1906), pls. iva:K5 and xi:228. This piece was probably purchased locally.

111. *Ibid.*, the scarab from Tomb 151, described by Petrie as 18th Dynasty, may of a later date: 38, pls. xxxvii:36 and xxxviib: second row, third from left.

112. Petrie, *Scarabs and Cylinders with Names*, pl. xxvii:65, dated to the reign of Tuthmosis III.

113. G. Brunton, *Matmar* (1948), pl. xlviii:27.

114. H. R. Hall, *Catalogue of Egyptian Scarab Seals in the British Museum, Vol. I* (London, 1913), 163, no. 1656.

Procedures

All samples had been sieved, which suggests that a more balanced sample has been collected than that afforded Köhler-Rollefson.¹¹⁵ All bones were recorded initially by species where this was possible. If not, then they were classified according to size (i.e., small, medium, and large mammal), or by class (i.e., birds) or by life form (i.e., fishes), or as unidentified, where identification was impossible due to the extremely small size or the highly eroded state of the fragments. As other researchers have found, the separation of Ovines (sheep) and Caprines (goats) using modern reference data has proved to be unsuccessful in this sample. Consequently, the two species have been recorded as a single entity. The bones have been further divided by:

Anatomical structure (e.g., femur, radius, etc.),

Handedness,

Fragmentation pattern (e.g., percentage of total bone, and whether it was proximal, midshaft or distal),

Relative age (only four categories were recorded: neonate, immature, mature or aged),

Modifications (whether the bone had been worked, butchered, burnt, eroded or gnawed—usually by either rodents or canids).

Any articulations were also recorded.

Whilst all this has been recorded, only the species and age groupings have been tabulated. However, all the data has been used in calculating the Minimum Number of Individuals (MNI) for each period, using the maximum distinction method (i.e., the number of individuals was calculated for every unit, level, and feature, taking into account the handedness, size, and age

groupings). The total bone count has been recorded, although at this stage no attempt has been made to tabulate the percentage body parts. The reason for this is that, as would be expected, there is simply a much higher proportion preserved of the denser bones of the body.

Because very few entire bones were found, and many of those were crystallised, burnt, or very dirty, bone weights were not recorded and hence allometrical studies not attempted. However, some attempt has been made to rationalize the relative worth of each faunal group to the diet of the Pella inhabitants over the time spans already indicated. The need for more material from all levels, and in particular, the Chalcolithic, will be obvious from studying the tables. Although allometry has not been attempted, even to the uninitiated it would be clear that one steer has more food value than one sheep. Therefore, to try to redress the imbalance and emphasis on sheep and goat husbandry that might be otherwise indicated by simple perusal of the MNI figures, I have attempted to weight each individual in terms of sheep/goat equivalents.

It could be easily argued that there is no accurate way in which we can know the average live-weight of each animal group at slaughter in the past, given the above difficulties. However, at least some indication can be gained from present day usage, in terms of relative, if not absolute, figures. Even if the weight of cattle has been overestimated by a factor of two, it becomes obvious that cattle played a major role in the husbandry practices at Pella from the Chalcolithic period onwards, with some apparent decline in that role during the Late Bronze Age. In determining the relative worth of each group, the live weight at

115. I. Kohler-Rollefson, 'Appendix 6. Animal Remains from the Iron Age', in: McNicoll *et al.*, *Pella in Jordan 2*, 243-251. For further comments on desirability of appropriate sampling

strategies, see K. Reilly, in: Walmsley *et al.*, *ADAJ 37* (1993).

116. J. Hammond Jnr, I. L. Mason and T. J. Robinson, *Hammond's Farm Animals* (1974).

slaughter has been taken from Hammond:¹¹⁶

Sheep/goats 30 kg
Pigs (porkers) 45 kg
Cattle 350 kg.

As a consequence, each pig has been given a value of 1.5 sheep/goat equivalents (SGE), presuming that no pig was raised to bacon weight (90 kgs), and each head of cattle given a value of 12 SGE. Each deer and deer/juvenile cattle has been arbitrarily assigned a value of 4 SGE. The 'deer/juvenile cattle' category was introduced because a number of the larger artiodactyl specimens were immature, highly fragmentary, and eroded.

Findings

The total bone count from all periods are relatively small as can be seen from Table 1.

Table 1. Total bone counts.

Chalcolithic	498
Early Bronze Age	835
Middle Bronze Age	1887
Late Bronze Age	869
Total	4089

Table 2. Bone counts, SGE and relative percentages for each category during the Chalcolithic period.¹¹⁷

	S/G			P			C			SM	MM	LM	DJC	D	E	DOG	F	UN	TOTAL
	I	M	A	I	M	A	I	M	A										
BC	4	25	3	42	14	-	31	20	-	111	45	78	3	-	-	1		110	498
MNI	4	7	2	6	1	-	4	6	-				3	-	-	1	-	-	32
SGE	4	7	2	9	1.5		48	72					12						155.5
%		8.3			6.8			77.2					7.7						100.0

117. Key to Tables 2-5: S/G Sheep/goat, P Pig, C Cattle, SM Small Mammal (sheep sized), MM Medium Mammal (large pig, or medium-sized deer), LM Large Mammal (cattle, equid, or large deer), DJC Deer/Juvenile Cattle, D Deer, E Equid, DOG Dog, F Fish, B Bird, UN Un-

Of the 4089 bones, 804 were unidentifiable, and 2263 could only be assigned a small/medium/large mammal category. This left only 1022 (or 25%) that could be further classified.

The Chalcolithic Period Area XXXIID Loci 18.1-35 and 14.15-20

During this period, it would appear that sheep/goat, pig, and deer/juvenile cattle were equally utilized, but that cattle made up the mainstay of the diet. All age groups of sheep/goat were utilized. For pigs, the majority were immature, and the cattle were nearly equally divided between mature and immature individuals. The deer/juvenile cattle were by definition all immature. A canine (dog) premolar was found in 14.15.

The Early Bronze Age Area XXXIID 14.6-12, and Loci 15-17

A similar picture to the Chalcolithic is presented, except that the importance of pigs is somewhat reduced and sheep/goat utilization is increased. One burnt shell was recovered from 17.23, along with 15 highly fragmented burnt bone fragments, mostly from a small mammal. The single equid re-

identifiable, I Immature/Juvenile, M Mature, A Aged, BC Bone Count, MNI Minimum Number of Individuals, SGE Sheep/Goat Equivalents., % Percentage, (expressed as a percentage total of SGE, with all age groups combined for each species).

main was recovered from 17.9, and consisted of approximately 25% of a very worn molar, presumably from an aged individual.

The Middle Bronze Age: Area XXXIID 14.1-5, 12-13, and Area IIIC Loci 52-56, 101

During the Middle Bronze Age, sheep and goat husbandry holds its own, pigs gain somewhat in popularity, cattle utilization decreases slightly, and deer is still hunted, but contribute only minimally to the diet. A single worn lower molar from an equid was recovered from IIIC 101.4 and a single unidentified bird bone from IIIC 53.44. The largest number of bones from any period is represented in the Middle Bronze Age with a total of 1887, of which 440 of these have been identified.

Middle Bronze Age Remains from Two Burials in XXVIII A

XXVIII A 26.1: A number of rib, long bone, and vertebral fragments from a small mammal, a burnt immature sheep/goat metapodial, and two right sheep/goat astragali were recovered. There was no evidence of butchery marks on any of the material. These were found in association with the remains of a child approximately 10-12 years old.

XXVIII A 25.6: A canine tooth, incisors, a humerus, a radius, an ulna, a fibula, a calcaneus, an astragalus, three metatarsals, and numerous fragments from a middle aged dog weighing about 20 kg were recovered. These were in association with the jar burial of a young child less than five years old.

Table 3. Bone counts, SGE, and relative percentages for each category during the Early Bronze Age.

	S/G			P			C			SM	MM	LM	DJC	D	E	DOG	F	UN	TOTAL
	I	M	A	I	M	A	I	M	A										
BC	17	84	3	3	2	-	80	55	1	310	57	137	6	1	1	-	-	77	835
MNI	7	27	2	3	2	-	6	12	1				3	1					64
SGE	7	27	2	4.5	3	-	72	144	12				12	4					287.5
%		12.5			2.6			79.3					4.2	1.4					100.0

Table 4. Bone counts, SGE, and relative percentages for each category during the Middle Bronze Age.

	S/G			P			C			SM	MM	LM	DJC	D	E	B	UN	TOTAL
	I	M	A	I	M	A	I	M	A									
BC	21	302	2	28	2	1	5	69	-	786	20	154	3	5	1	1	497	1887
MNI	15	45	2	15	1	1	4	25	-				3	4		1		116
SGE	15	45	2	22.5	1.5	1.5	48	300	-				12	16		?		463.5
%		13.4			5.5			75.1					2.6	3.4				100.0

* As the bird species was not identified, no calculations have been attempted for SGE.

The Late Bronze Age: Area IIIN Loci 69-71

In this period, a change in husbandry practices is evident. Cattle, whilst still the preeminent animals used (accounting for 68% of the total meat production), continue their decline. Deer drop out of the picture altogether, pigs retain a relatively low profile, whilst sheep/goat husbandry doubles in importance. The only evidence for fish utilization in this report comes from 70.3 and 70.5-6. Locus 70.6 also revealed two eroded canine metacarpals or metatarsals, and an upper right juvenile first molar from a young equid that was worn, and likely to have been lost normally. An equid incisor was recovered from 70.1.

Conclusions

In this analysis, I have attempted to overcome some of the problems associated with bone counts that ignore fragmentation patterns, and with MNI' that ignore the food worth of each individual. In doing so, even if the weighting system that has been adopted is slightly inaccurate, hopefully major trends have become apparent (see Fig. 21). In many cases, the total bone count (especially for sheep/goats) is high. However, fragmentation patterns have not been tabulated, although these would have indicated that the great numbers are due more to the highly fragmentary nature of

the material than to large numbers of intact bones.

Also, it may appear that with the exception of pig, the majority of the material came from mature animals. This is not necessarily the case as this classification is mainly based on the fusion or lack thereof of the epiphyseal growth plates. Since some growth plates fuse at a relatively early age, it would not be appropriate to assume that all the material classified as mature came from older animals. It is also entirely possible that a great deal of the material from very immature animals has been lost entirely due to lack of density.

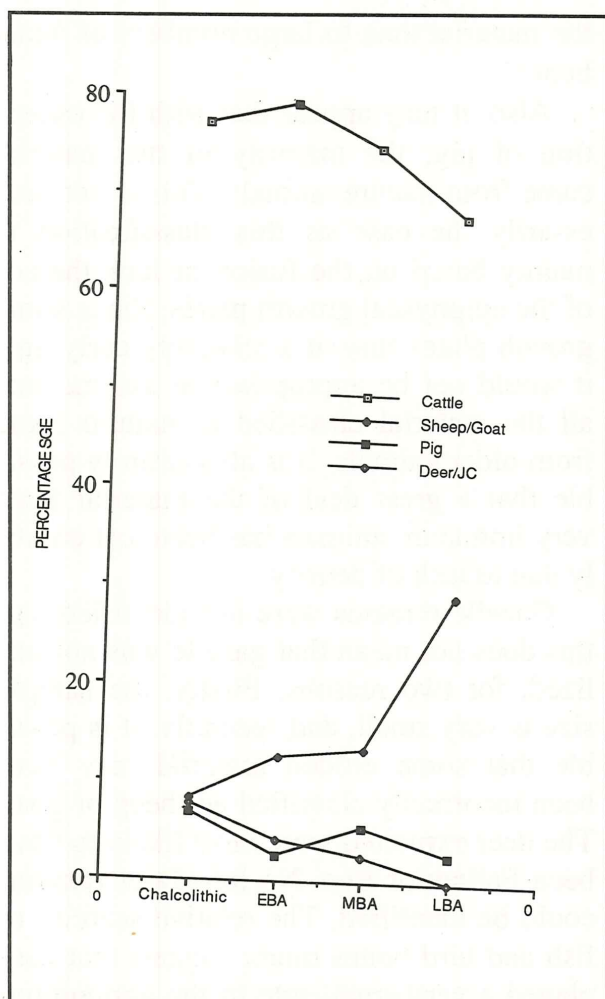
Gazelle remains were not identified, but this does not mean that gazelle was not utilized, for two reasons. Firstly, the sample size is very small, and secondly, it is possible that some eroded material may have been incorrectly classified as sheep or goat. The deer exploited were most likely to have been Fallow or Roe. No Red Deer remains could be identified. The relative scarcity of fish and bird bones might suggest that they played a very small role in the agricultural economy of Pella.

Butchery patterns were probably as could be expected. Apart from the skull, few axial (i.e., spine and ribs) remains were recovered. This may be a reflection of survivability or dietary preferences. However, since phalanges, metapodials, hock, and

Table 5. Bone counts, SGE, and relative percentages for each category during the Late Bronze Age.

	S/G			P			C			SM	MM	LM	DJC	D	E	DOG	F	UN	TOTAL
	I	M	A	I	M	A	I	M	A										
BC	24	130	-	1	1	-	1	12	-	482	21	62	-	-	2	2	6	125	869
MNI	10	21	-	1	1	-	1	5	-						2	1	3		45
SGE	10	21	-	1.5	1.5	-	12	60	-								?		106
%		29.2			2.8			68											100.0

* As the fish species was not identified, no SGE was calculated.



21. Graph of comparative animal use at Pella: Chalcolithic through Late Bronze Ages.

other dense bones were freely represented, it would appear that the former was the case. No evidence was found of any saw or chop marks, although cut marks, whilst not prevalent, were present on a number of specimens. One may presume that butchery consisted mainly of soft tissue cutting, disarticulation, and de-boning.

A few specimens have been gnawed by dogs, others by rats. However, no rat remains were recovered. Apart from the burial in XXVIII A, dog remains were limited to isolated teeth. A similar picture appears with equid remains. This would tie in with their non-utilization as a food source.

Whilst some of the material found in association with the burials from the Middle Bronze Age could have been accidentally interred, the canid bones from XXVIII A 25.6 and the sheep/goat from 26.1 indicate that a degree of thought had gone into the appropriateness of providing companionship/materials for the next life.

The question of secondary product (i.e., milk and wool) exploitation cannot be adequately addressed from the morphological appearance of the material presented in this sample. The recovery of DNA from the bones will be attempted within the next twelve months. If this is successful, then variations in the gene pool over time, and particularly between the Neolithic-Early Bronze Ages, may be the only way to address the question of when this exploitation first became significant. It would also be possible to distinguish sheep, goat, and gazelle, which would be a major advance over present morphological techniques.

(LDM)

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