

A FIRST SEASON OF RENEWED EXCAVATION BY THE UNIVERSITY OF SYDNEY AT TULAYLĀT AL-GHASSŪL

by
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Introduction

After seventeen years the University of Sydney resumed excavations at Tulaylāt al-Ghassūl in January-March 1994.¹ Five weeks of excavation took place within or adjacent to four of J.B. Hennessy's areas of excavation (A, E, G and H).²

Sixty years of research on the urbanisation process in the southern Levant has identified the Jordan Valley as one of the primary centres of urbanisation.³ Since the very beginning of urbanisation research in the Jordan Valley, the site of Tulaylāt al-Ghassūl, located some three kilometres from the north-eastern shore of the Dead Sea, has been recognised as uniquely important in any study of the fifth to fourth Millennium urbanisation episode, culminating in the socio-economic highpoint of the classic Ghassulian culture, first identified and best represented at Tulaylāt al-Ghassūl.⁴

However, many problems centring on the growth and decay of Chalcolithic urbanism remain at issue.⁵ As well, significant questions directly pertaining to the extent, duration and characterisation of occupation at

the type site of Tulaylāt al-Ghassūl are still outstanding.⁶

PREVIOUS RESEARCH AT TULAYLĀT AL-GHASSŪL

Before our investigations commenced there have been two major expeditions working at the site, the PBI and the BSAJ/University of Sydney missions.

The PBI Mission (1929-38, 1959-60)

The PBI expedition, under A. Mallon and R. Koepfel, excavated two large fields over seven seasons at the site (1929-1938). The south field (Tulayl I) was excavated between 1929-31, and the north field (Tulayl III) between 1932-38.⁷ The four-phase delineation of al-Ghassūl (IV-I) pertains only to the south field excavations, which were taken down to sterile soil in one small area. In the more extensively explored north field, only the upper two phases (IV-III) were excavated.⁸ A short continuance under R. North (1959-60) opened a series of small probes (Fields A-E) between the main north and south exposures, seeking to es-

1. The renewed excavations at Tulaylāt al-Ghassūl are under the direction of Stephen Bourke, School of Archaeology, Classics and Ancient History, The University of Sydney. Major funding came from the Australian Research Council. Team members in 1994 were Saad Hadidi (Department of Antiquities representative), Tim Adams, Jaimie Lovell, Rachael Sparks, Ruth Ward (trench supervisors), Peta Seaton (draftsperson and trench supervisor), George Findlater (surveyor and trench supervisor), Jo Atkinson (conservator), Bronwyn Douglas (photographer), Kathryn Swan, Bruce McLaren (flotation), Chantelle Hoppé (archaeobotanist), Lachlan Mairs (archaeozoologist).

Between ten and twenty-three local workmen were employed. We take this opportunity to thank Dr. Safwan Tell, former Director-General of the Department of Antiquities, and his staff, particularly our departmental representative Saad Hadidi, for their particular interest and support.

2. Hennessy 1989: Fig.1.

3. Garfinkel 1993; Joffe 1994: 23-37.

4. Elliot 1978, *passim*; Stager 1992: 26-28; Levy 1993, Joffe 1994: 31.

5. Joffe 1994: 36-37.

6. Levy 1993: 511.

7. Lee 1973: 19-26.

8. *Ibid.* 25.

establish stratigraphic equivalences between the original exposures, whilst further exploring the lower levels in the north field.⁹

Mallon and Koepfel's work documented an extensive architecturally impressive horizon of occupation across the site, later characterised as the classic Ghassulian phase (Ghassul IV). As well, their work suggested that significant deposits of earlier material existed below the upper phases (Ghassul IV-III) in the region of Tulayl I. North established a similar depth of deposit within (Area A) and beside (Area B) the area of Tulayl III, and noted a significant depth of deposit between the two PBI exposures (Areas C- D), whilst recovering further impressive architecture and wall paintings along the northwest slopes of Tulayl I (Area E). However he was not able to establish convincing equivalences between the original Tulayl I/III exposures, and as he concluded that there was no possibility of differentiating the various assemblage groupings, in the absence of direct stratigraphic connections, no comparative stratigraphic relationships for the various PBI exposures across the site could be proposed.

The BSAJ/University of Sydney Mission (1967-77)

The BSAJ/University of Sydney excavations under J.B. Hennessy (1967-77), were of crucial importance to a full recognition of the significance of the site for urbanism studies.¹⁰ The initial season in 1967 concentrated on that small part of the central area of the site between Tulayl I and II not excavated by the PBI or contaminated by their extensive dumps (Area A). The initial aim was to explore the significant depth of deposit noted in both PBI exposures. Results documented the long essentially unbroken sequence of at least

ten major building phases in Area A, and demonstrated significant continuity from Late Neolithic origins, apparently settling any issue surrounding the origin of the Ghassulian culture¹¹ in favour of *in situ* development.¹²

In the return to the site in 1975 Hennessy further explored the lowest levels in two of the original Area A probes, and opened a number of new areas across the site (Areas E-H), seeking to explore horizontal variation and identify special function zones. Work resulted in the identification of the main sanctuary area of the site (Area E), an industrial complex (Area F) and a flint knapping floor (Area A).

Two further seasons in 1977 expanded Area F to the west, linking it and the sanctuary area and isolating another (painter's) workshop in the process. As well, the excavated area within and to the north of the sanctuary Area E was expanded to north and west, identifying what is likely to be storage facilities to the north of the proposed northern temenos wall. Work in Area A concentrated on further exploration of the lowest (Neolithic) levels and the lifting of a unique cultic wall painting.¹³ By the end of the field program, Hennessy's excavations had revolutionised understanding of both the vertical and horizontal occupation at the site.¹⁴

The site is now generally acknowledged as uniquely important for our understanding of the Late Neolithic/Chalcolithic period in the southern Levant.¹⁵

Research Design

The long term objectives of the project are the re-examination of the current explanations for the development of urban lifeways during the Chalcolithic period (c.4500-3500 BC), studied through the relatively disinterested medium of palaeo-

9. North 1961: 3-4.

10. Hennessy 1969, 1977, 1982, 1989 for description of results; Stager 1992: 27, for the significance of Hennessy's excavations.

11. Elliot 1978, Perrot 1984 and refs.

12. Hennessy 1989: 234; Stager 1992: 24-28 and refs; Joffe 1994: 30-37.

13. Cameron 1981: 13.

14. Hennessy 1989 and refs.

15. Stager 1992: 27; Levy 1993: 511.

environmental data (botanical and zoological), in conjunction with multivariate statistical analyses of the ceramic/lithic keys to chronological sequencing.¹⁶

The occupational horizons at most Neolithic/Chalcolithic sites excavated in the last twenty years are predominantly short-lived, discontinuous archaeological 'snapshots' of what is essentially a long-term progression from one mosaic of adaptations to another. The nature of much recent evidence encourages the over-periodisation of the archaeological record, which in turn lends unavoidable weight to studies that seek to characterise processes such as urbanisation as progressing through discrete developmental stages.

It is our contention that only through the detailed consideration of comprehensive, quantitative data sets taken from long unbroken developmental sequences can one hope to overcome the staccato testimony of much recent evidence.¹⁷ Re-examination of the long-lived relatively continuous Tulaylāt al-Ghassūl sequence provides an opportunity to counterbalance testimony from the many single-period or short-lived site analyses that dominate study today.

THE 1994 EXCAVATION SEASON¹⁸

One aspect of the 1994 season was the positioning of a number of small (2 x 1 m)

probes at strategic points across the south/central, western and northern regions of the site (Fig.1). These probes will be carried down to sterile soil, and aim at charting both vertical and horizontal occupational variation, establishing a tentative comparative stratigraphy for the disconnected PBI and Hennessy exposures, and to sample intensively all deposits isolated for archaeobotanical and microfaunal material.

Several probes were placed immediately adjacent to and within Hennessy's deep sounding (Area A), a larger probe was placed within Hennessy's 'Sanctuary Area' (Area E), another close by the far western edge of the site (within Hennessy's Area H), and several were located in the northern region of the site (within and adjacent to the PBI Tulayl III excavations).

AREA A

Introduction

Hennessy opened eight trenches (AI-VIII) between Tulayl 1 and Tulayl 2 and a further trench (A XVI) approximately 100 m to the SE in 1967, aiming to trace the extent of settlement in that direction.¹⁹ Excavations in A II and A III were continued to sterile in 1975-77,²⁰ with all other trenches abandoned (mostly in 1967 in Late Chalcolithic levels) due to the severe earth-

16. Whilst one might consider Hennessy's analyses (1982, 1989) definitive (as Stager 1992: 27, clearly does) it is worth noting that Garfinkel (1993) can refer to al-Ghassūl as a Middle to Late Chalcolithic site (*ibid.* 813), whilst Levy (1993) refers to the Neolithic-Chalcolithic sequence at the site (*ibid.* 507), in separate articles for the single publication (NEAEHL).

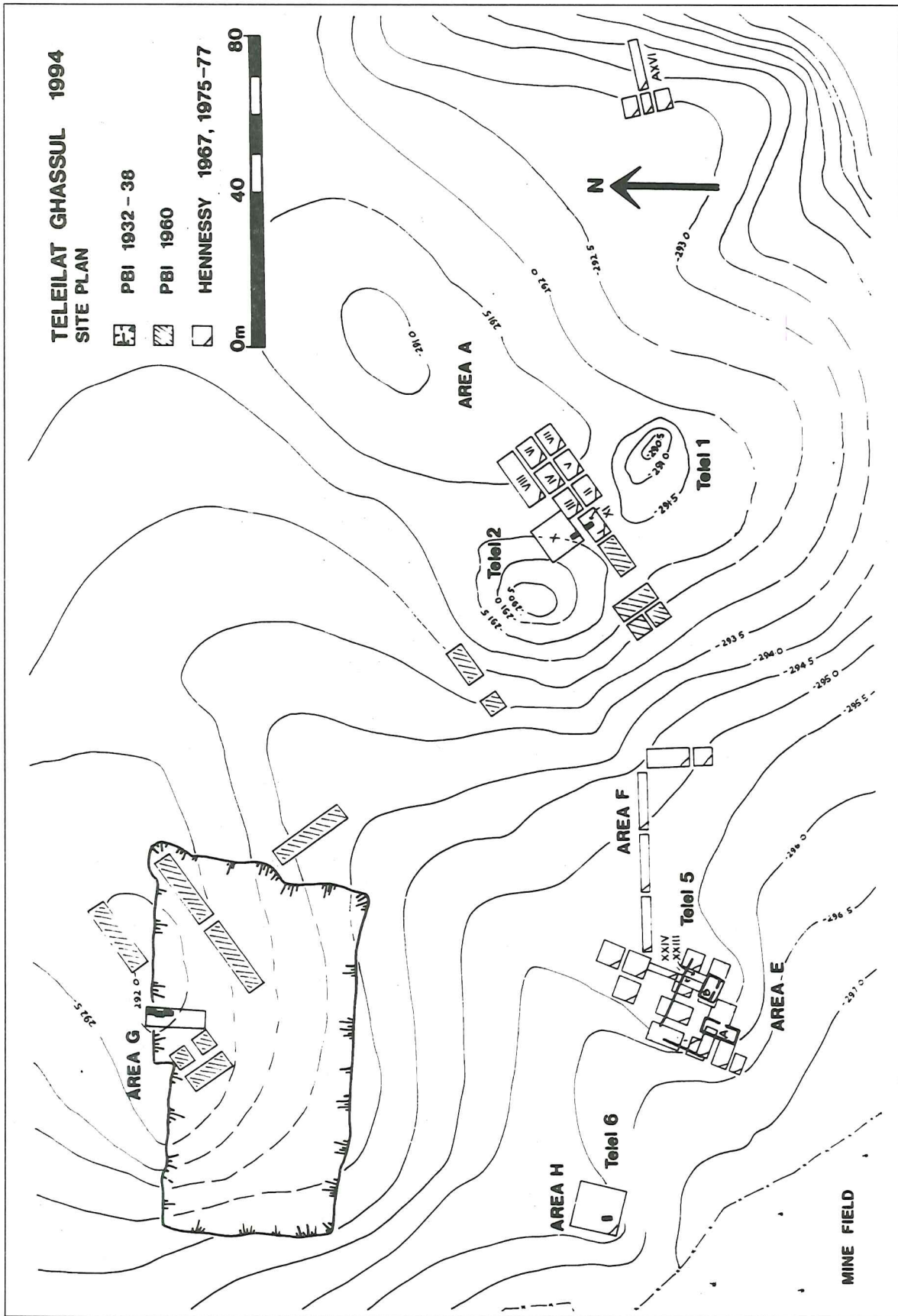
17. Levy *et al.* 1990, Dollfus and Kafafi (eds) 1988, Dollfus and Kafafi 1993 for the two reasonably deep sequences (Shiqmim and Abū Hāmid) currently being studied; Phillip and Baird 1993, on the problem of dealing with single period sites.

18. In this report, Seaton was particularly concerned with notes on Hennessy's excavations, Sparks for the small finds, Lovell for notes on the al-

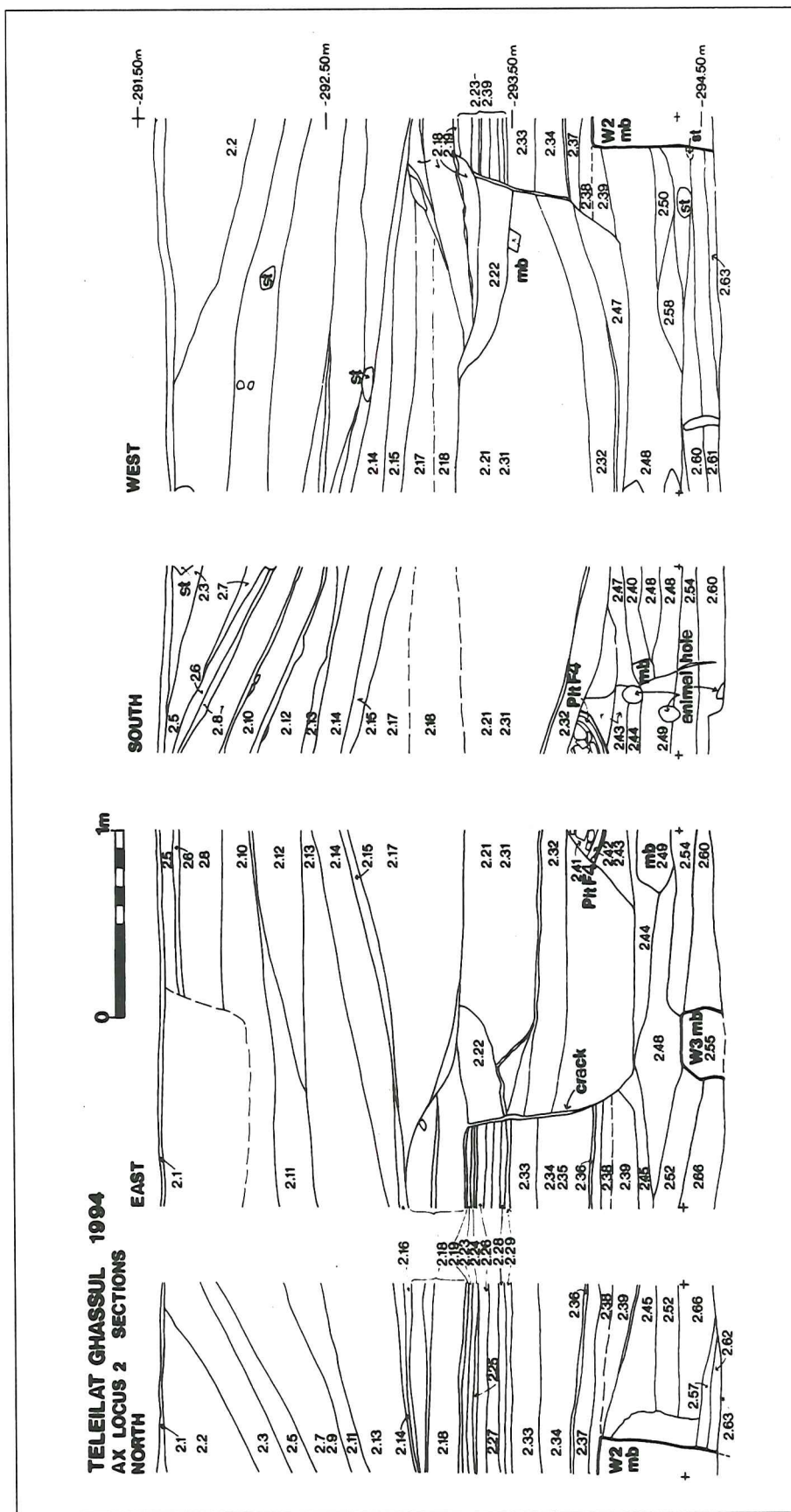
Ghassūl sanctuaries, and Mairs for the archaeozoology. Most plans and pottery were drawn by Seaton, most small finds and some pottery were drawn by Rachel Jackson and Cameron Petrie. Illustrations were prepared by Russell Workman.

19. A XVI is now covered by an orchard.

20. Hennessy took an approximately 5 x 5 m section of A II and a 3x 5m section of A III to sterile in 1977. An intervening area of approximately 6x5 m remains unexcavated below the Phase F room which contained the "Procession" wallpainting excavated in 1977. As this contains the full Neolithic sequence, we hope to explore it intensively in the coming field season.



1. Tulaylät al-Ghassül. Excavated areas mentioned in text.



2. Sondage AX. Sections.

quake/subsidence activity which ruined stratigraphy. Above the two Late Neolithic assemblages²¹ (H-I), the uppermost seven phases excavated (A-G) describe an unbroken sequence of what Hennessy deemed "Chalcolithic" occupation, with the last two phases (A-B) best associated with what one might term 'classic Ghassulian'. All seven Chalcolithic strata consisted of successive building phases of single unit 'long-room' domestic architecture usually built with river stone foundations and mudbrick superstructure. Camp phases consisting of hearths and pits often separated main architectural phases. The earliest Chalcolithic phase (Phase G) produced the famous processional scene wall painting.

Hennessy's main stratigraphic soundings in Area A were carried out before the widespread employment of intensive extraction techniques (flotation and wet sieving)²² needed to produce the quality and quantity of data appropriate for present environmental/subsistence-based research concerns.²³ Our primary aim was to sample Hennessy's entire 5.5 m ten-phase sequence for archaeobotanical and microfaunal material, with a secondary aim of further documenting the 'pre-Ghassulian' Chalcolithic deposits.

21. This needs not mean that the earliest remains at al-Ghassul can be integrated easily within a 'Jerichoan IX/VIII' Neolithic phase. It is more than likely that the earlier deposits at al-Ghassul and 'Jericho IX/VIII' are partly contemporary. However, ceramically at least, they are not particularly similar. Whilst this might seem to pose a problem given the proximity of the two sites, we should note the growing evidence for quite distinctive regional variants in Neolithic/Chalcolithic assemblages in the dissected landscapes of the southern Levant.

22. All archaeological deposits within a given sondage were sampled for wet sieving/flotation. If a deposit was sufficiently extensive (most were not) to necessitate part-sampling, we took 50 litres, dry sieved it through a 5mm mesh, then

The 1994 Probes

Hennessy's deepest explorations in AII (south) and AIII (north) reached sterile soil. Removal of debris and baulk straightening in AIII to just above the estimated limit of excavation (ca 5.0 m) allowed us to link the 1994 excavations with Hennessy's stratigraphy. Our aims were to sample as wide a chronological range of occupational debris as practicable in the 5.5 m of deposit. One new 2x1 m probe (AX) was laid out on the present surface immediately to the north of Hennessy's trench AI. A second 2x1 m probe (AXI) aligned with the first, was placed within A I, on the cleaned surface reached in 1975, some three metres below the surface of AX. AX aimed at sampling the five upper phases of Hennessy's sequence, and AXI the four earliest.

AX (Fig.2)

Four building phases were identified in this probe. At this stage their exact relationship with Hennessy's AIII phases are yet to be determined, although a broad association with Hennessy Phases A-D is proposed.

After the removal of some 50 cm of loose spoil and windborne fill,²⁴ the first of four discrete phases of occupation was uncovered:

1. This phase consists of a series of 10+

wet sieved it through a 1 mm mesh, collecting flotation samples through a 250 micron sieve. A full report on the archaeobotanical sampling procedures and analysis will be published shortly.

23. Hennessy (pers. comm.) did begin a sampling program in 1977 (in his trench AI), but the heavy earthquake/subsidence cracking in the stratigraphy (for an example of which see our Fig. 3:1) forced the abandonment of work.

24. The succession of floors and the fire pit were cut sharply, then filled up with successive levels of windblown sand and waterborne debris. The sounding is located within 10 m of North's 1960 Area E Square 1 (North 1961: Pl. 1), and topsoil included approximately 50 cm of what appeared to be recent spoil, probably from North's investigations.

floors in the north end of the sounding, probably to be associated with a firepit (Feature 4) located in the south. However, association is not assured, as a metre wide cut (ancient washout?) separates the two deposits. One of the northern floors (2.29) contained a sloping post hole (Feature 2) cut at an angle into the floor.

2. The second phase is marked by the construction of what appears to be a mudbrick wall (Wall 1, 2.49) in the southeastern corner of the trench, built on an undulating grey surface (2.54), the makeup of which included many long stalk-like vegetation 'ghosts', and associated soft occupation.
3. An E/W wall or mudbrick feature (Wall 3, 2.65) was built directly on a newly prepared surface (2.66) to institute Phase 3, and is associated with a second phase of use of Phase 4 Wall 2. At the end of Phase 3, both Walls 2 and 3 collapsed, depositing yellow mudbrick on living surfaces, which was then covered by greyish pise (2.58-60).
4. The earliest occupation reached consists of a mudbrick wall (Wall 2, 2.56/64) and small stone facing. This structure has at least two layers of occupational debris (2.61/62) associated. Constructional surfaces had yet to be reached when excavations ceased for the season.

AXI (Fig.3:1-2)

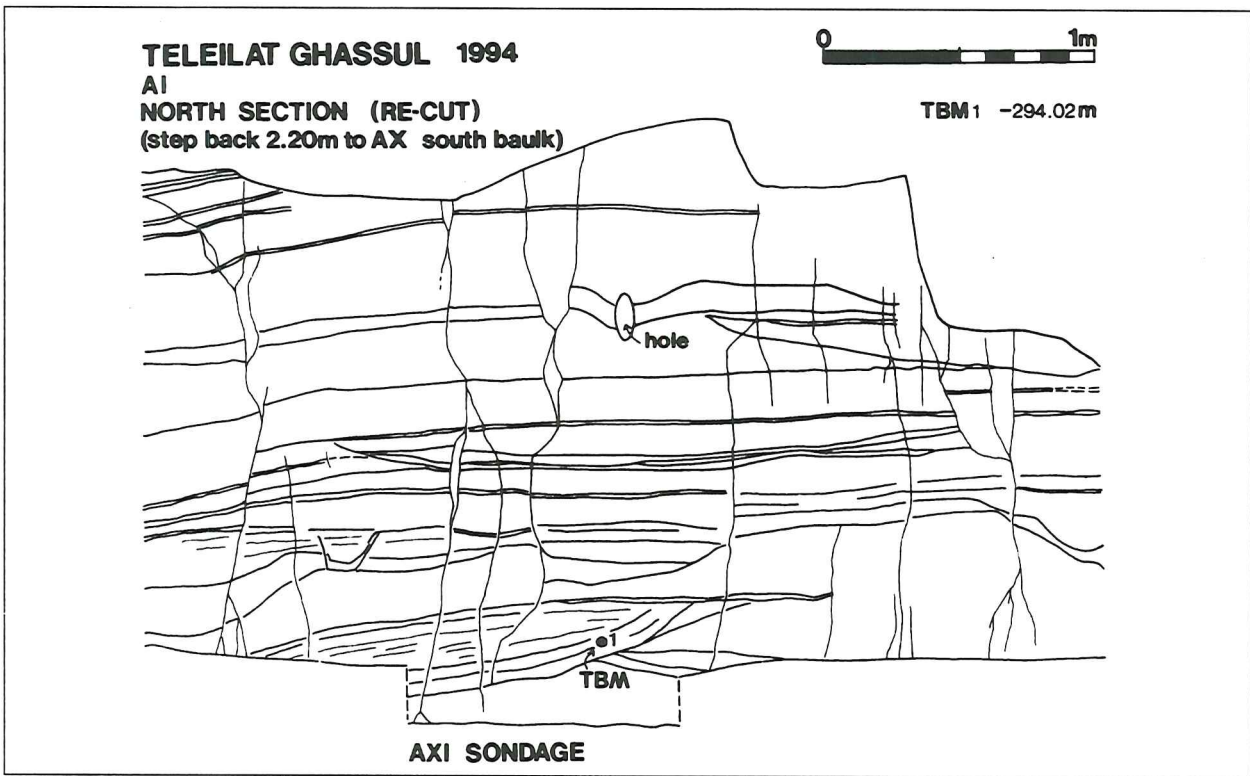
The eastern two-thirds of Hennessy's trench AI was cleaned down to uncontaminated occupation layers (below Hennessy Phase E) and a 2x1m sounding in alignment with AX was opened. As with AX, the exact equivalences of the AXI strata *vis a vis* Hennessy's master stratigraphy are not yet determined, although a broad association with Hennessy Phases F-G is suggested. In AXI, three phases were identified:

1. Below some 25 centimetres of modern baulk collapse and debris, the first phase encountered consisted of two walls (Walls 1 and 2) constructed of a single row of river stones built up against a sloping orange mudbrick slurry deposit. The walls were topped with tan clayey soil and white bun-shaped mudbricks, and set roughly at right angles to each other. Associated with these walls to their east was a series of occupation levels (2.6-9).
2. This phase consists of at least two large pits cut into the preceding Phase 3 Walls 3 and 4. No floors were associated with pit/*tābūn* (Feature 2), which was cut into Phase 3 Wall 4. This pit/*tābūn* contained a large amount of pottery (4.3), with some flat stones covered with plaster at the bottom. A second pit (Feature 3, 3.4) was cut into the west side of Wall 3.
3. The earliest phase reached in the sounding consists of two orangy bun-shaped mudbrick walls (Walls 3 and 4) set roughly at right angles. They are at least two courses high, and possibly built on a row of pebble foundations, but the primary surfaces and constructional features were not reached by the end of the season. A series of fill levels (4.4) are associated with this phase.

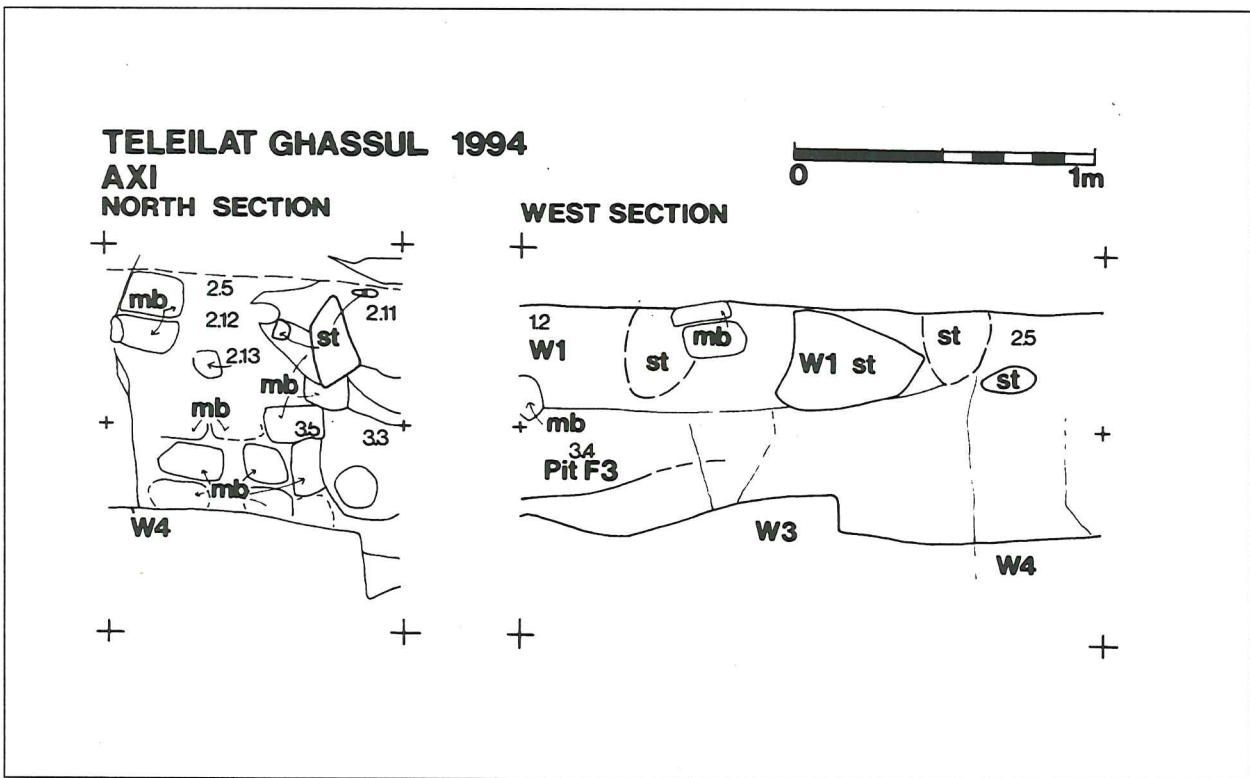
Ceramics From Area AX (Fig.4:1-21)

CN16 Base, flat AX 2.23. Fairly finely levigated clay with many small, medium to large yellowish shell, some red stone and a few grey chert grits. Fired brick red throughout. Self-slipped (?) int. and body ext. only (Fig.4:1).

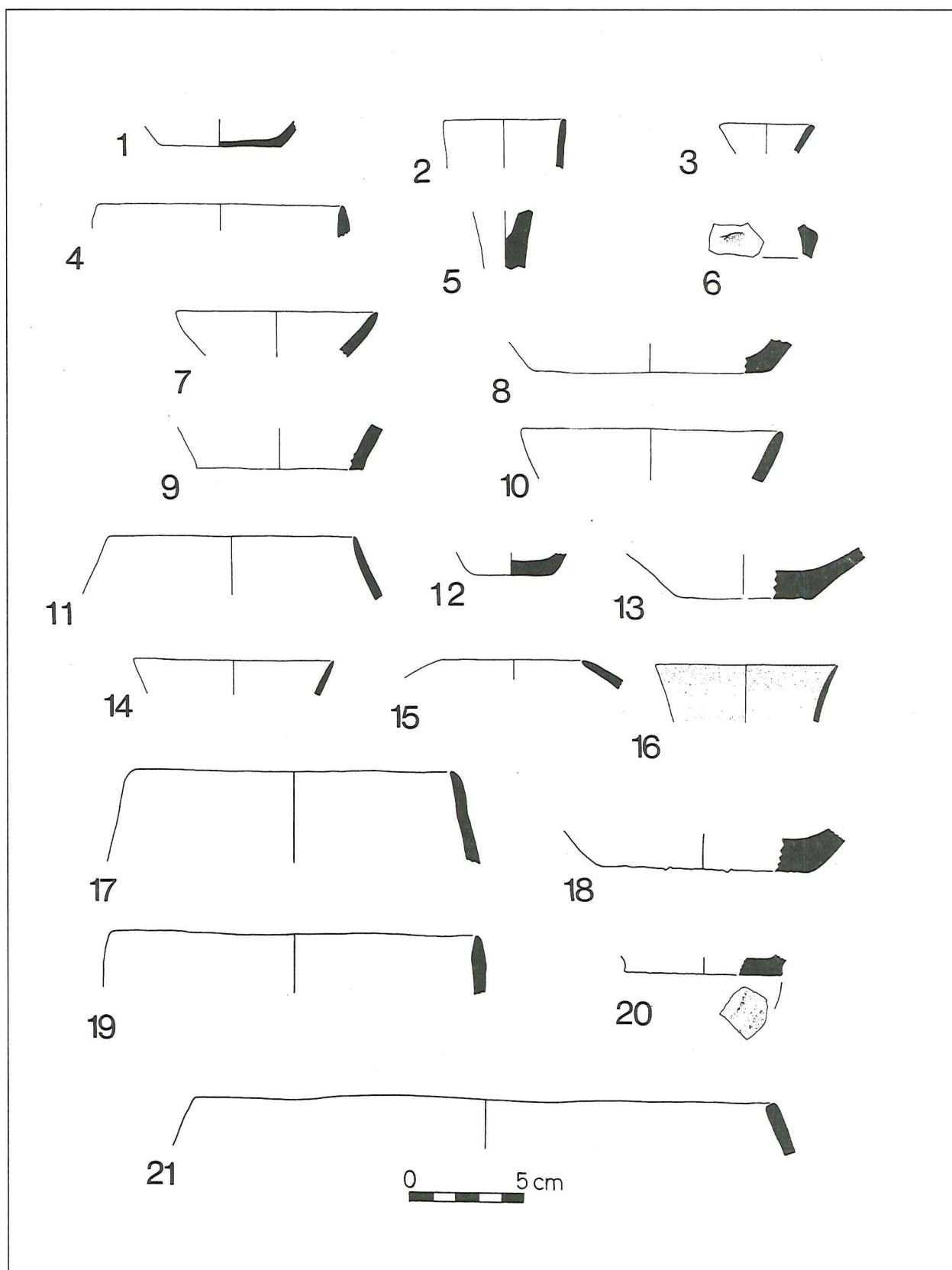
CN2 Cornet, fine AX 2.24. Fairly finely levigated clay with many small, some medium and a few large white grits (shell?), and some large grey grits. Dark grey at core in patches and red at surfaces. Wet smoothed



3:1 Trench AI East. North Section showing extensive earthquake/subsidence faulting.



3:2 Sondage AXI. North and West Sections.



4. Sondage AX Pottery. Middle and Late Chalcolithic. (Hennessy Phases A-D).

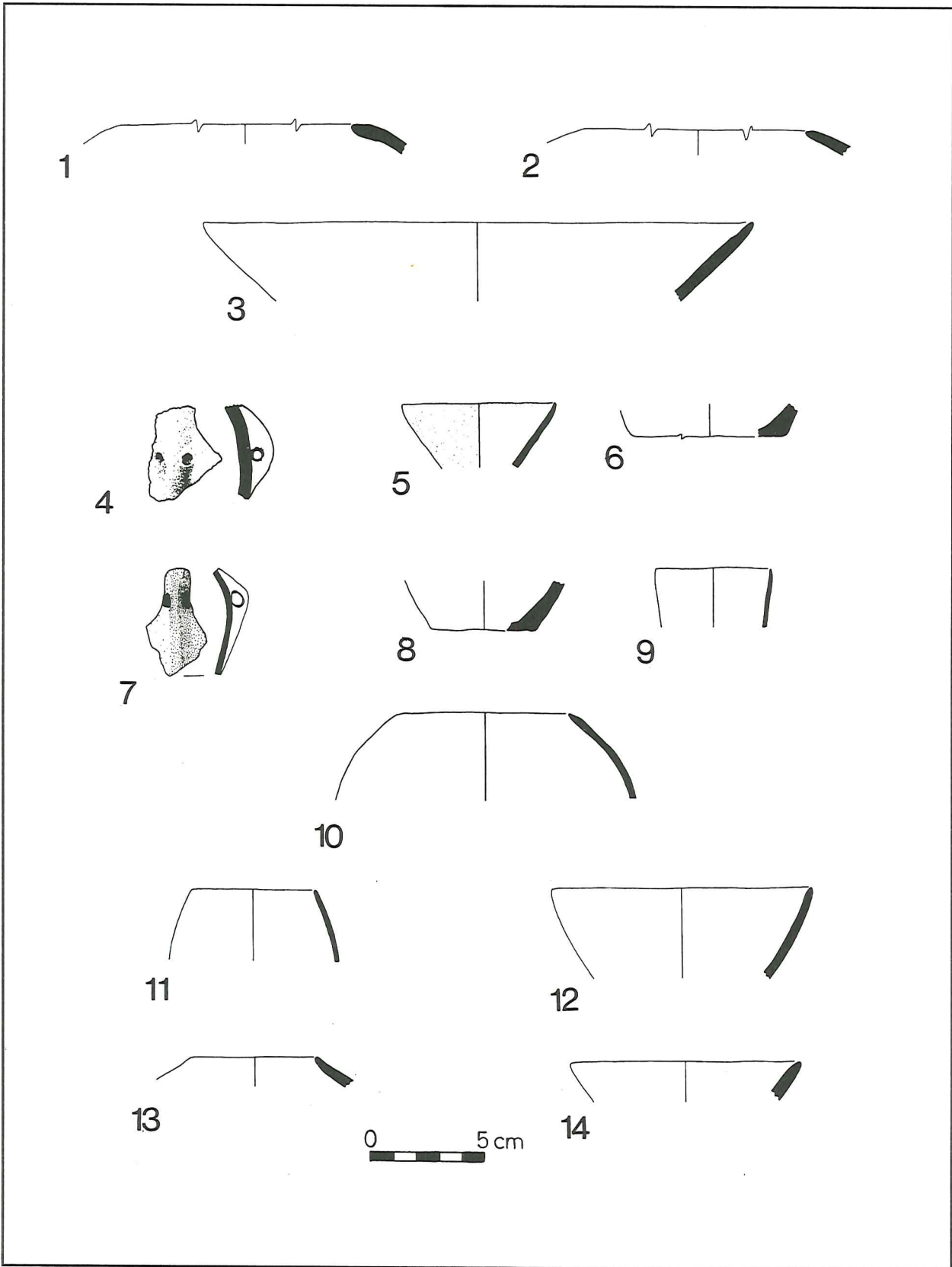
- int./ext. Band of dark red paint rim int., and painted same red over ext. of sherd (Fig.4:2).
- CN4 Cornet AX 2.24. Quite finely levigated clay with some small white and a few medium yellow grits. Fired red grey at core and wet smoothed ext./int. fired red on int. and darker red on ext. (Fig.4:3).
- CN3 Bowl, deep AX 2.24. Moderately levigated clay with some small white (shell?), a few medium grey (chert?), a few large red (stone?) and several small (quartz?) and some brown grey grits. Fired buff throughout. Self-slip and wet smoothed ext./int. Fired to thin orangey red (Fig.4:4).
- CN5 Cornet AX 2.24. Quite finely levigated clay with many small grey and white, and a few medium grey grits. Fired buff throughout, with traces of brown buff self (?) slip in patch, ext. only (Fig.4:5).
- CN6 Lug handle, solid AX 2.24. Fairly finely levigated clay with many small white and grey, a few medium off-white, and a few large white and grey stone? grits. Fired brown-red throughout. Traces of wet smoothing int., fired dark brown on int. surface, and wet smoothing/self-slip (?) to ext., including lug, fired brown to grey brown (Fig.4:6).
- CN1 Bowl, shallow AX 2.24. Fairly finely levigated clay with many small and some medium white, shell (?), many small black and a few small quartz grits. Brick red at core, and orangey red at surfaces. Wet smoothed ext./int. Band of red brown paint rim int. (Fig.4:7).
- CN7 Base, flat. (Bowl?) AX 2.24. Moderately levigated clay with many small white (shell?), grey (stone?), many medium white grits, and evidence of chaff tempering. Fired mottled grey. Wet smoothed int. only, fired buff (Fig.4:8).
- CN15 Base, flat AX 2.25. Moderately levigated clay with many small and medium white lime, grey chert, yellowish stone and a few brown (chert?) grits. Fired dark blue grey at core and buff at surfaces. Thick red brown slip in traces ext. only (Fig.4:9).
- CN9 Bowl AX 2.27. Fairly finely levigated clay with many small and some medium white lime (shell?), buff grog (?) and some grey (chert?) grits. Fired dark brick red at core and brick red at surfaces, dark red self-slip (?) ext./int. (Fig.4:10).
- CN10 Jar, holemouth, fine AX 2.28. Fairly finely levigated clay with many small and medium large red stone (?), buff (grog?), white shell (?) and grey chert grits. Fired orangey buff throughout. Friable self-slip ext./int. Thin red painted decoration ext. and rim int. (Fig.4:11).
- CN8 Base, flat AX 2.29. Moderately levigated clay with many small and medium white (shell?), brown stone (?) and grey chert (?) grits. fired brown buff throughout, self slipped (?) int. only (Fig.4:12).
- CN18 Base, flat AX 2.33. Coarsely levigated clay with many small and some medium grey chert, white lime and a few red (stone) and chaff grits. Fired buff throughout with buff/brick-red colouring int. Uneven grass wiped ext. Surface uneven/rough (Fig.4:13).
- CN19 Bowl, fine AX 2.33. Fairly finely levigated clay with many small to large grey chert, white lime (?) and a few small black (stone?) and red (grog) grits. Fired brick red throughout. Red brown self-slip ext./int.

- (Fig.4:14).
- CN17 Jar, holemouth AX 2.35. Fairly to quite finely levigated clay with many small to medium grey chert (?), white lime and a few red-brown grits. Fired tan brown throughout. Friable.(Fig.4:15).
- CN20 Cornet, fine AX 2.40. Fairly finely levigated clay with many small to medium yellow lime (?), white and a few grey chert grits. Fired brick red throughout. Off-white slip ext./int.(Fig.4:16).
- CN61 Jar, holemouth AX 2.64. Fairly finely levigated clay with many small/medium grey chert, some white lime and a few reddish stone grits. Fired fine faun buff throughout. Orangey buff self-slipped ext./int. (Fig.4:17).
- CN62 Base, flat (large jar) AX 2.64. Moderately to fairly finely levigated clay with many small/medium grey chert, some white lime and a few brown stone grits. Fired dark grey throughout. Thick brownish grey slip ext., brownish red int. Red/brown painted band rim ext./int. Another below ca 1-2 cm? JBH 'streaky wash' ware (Fig.4:18).
- CN59 Bowl, simple AX 2.65. Moderately to fairly finely levigated clay with many small/medium brownish grey chert (?), orangey grog (?) and a few white lime grits. Fired grey brown at core, orangey buff int. and dark grey ext. Red slip ext./int. (Fig.4:19).
- CN60 Base, flat AX 2.65. Fairly finely levigated clay with many small/medium brown (ironstone?), some small quartz and a few white lime grits. Fired dark grey throughout. Red/Brown slip ext./int. (Fig.4:20).
- CN58 Bowl, simple AX 2.65. Fairly finely levigated clay with many small/

medium grey chert, some white lime and a few orangey grog grits. Fired orangey brick red throughout. Self-slipped ext./int.(Fig.4:21).

Ceramics From Area AXI (Fig.5:1-10)

- CN34 Bowl AXI 2.5. Fairly to quite finely levigated clay with many small/medium grey chert, some red stone (?) and white lime grits. Fired buff throughout. Thick orangey-buff self (?) slip ext./int.(Fig. 5:1).
- CN32 Jar, holemouth AXI 2.6. Moderate to fairly finely levigated clay with many small/medium grey chert and a few reddish grog grits. Fired buff throughout. Self-slipped, fired buff int. and dark brown ext. (Fig. 5:2).
- CN33 Bowl AXI 2.6. Moderate to coarsely levigated clay with many small/medium grey chert, some orangey grog and white lime grits. Fired orangey-buff throughout. Friable self-slip fired orangey-buff ext./int. (Fig. 5:3).
- CN31 Handle, lug AXI 2.7. Moderately levigated clay with many small/medium dark brown grog (?) and some small grey chert grits. Fired dark chocolate-brown throughout. Self-slipped/wet-smoothed ext./int. (Fig. 5:4).
- CN56 Cornet, fine, offset AXI 4.4. Fairly finely levigated clay with many small and some medium grey chert, a few white lime (?) and orangey grog (?) grits. Fired buff throughout. Self slipped ext./int., over which red slip ext. (Fig. 5:5).
- CN57 Base, flat AXI 4.4. Moderately levigated clay with many small to large brown grog, brown stone, some small white lime, grey chert and black stone grits. Fired chocolate brown throughout. Chaff tempered. Self-slipped ext. only. (Fig. 5:6).



5:1-14 Sondage AXI and HII Pottery. 5:1-10 Early and Middle Chalcolithic (Hennessy Phases F-G). Area H. 5:11-14 Late Chalcolithic (Hennessy Phases A-A⁺)

- CN55 B/S lug handle, vertical AXI 4.5. Fairly to quite finely levigated clay with small/medium white lime (?), yellowish grog (?) and a few very small black sand (?) grits. Fired buff throughout. Dark red/brown slip ext./int. (Fig. 5:7).
- CN54 Base, flat/irregular ring AXI 4.5. Fairly finely levigated clay with many small/medium white lime (?), some grey chert and a few red-brown stone (sand?) grits. Fired buff? out. Self slipped ext/int., wet smoothed ext. only. Traces of burning int. only. (Fig. 5:8).
- CN53 Cornet, fine AXI 4.6. Quite finely levigated clay with many small grey (chert?), some white lime and a few black stone grits. Fired grey buff at core and orangey buff at surfaces. Off-white self (?) slip ext/int. Band of red paint rim ext./int. and daubs ext./int. (Fig. 5:9).
- CN52 Jar, holemouth, fine AXI 4.6. Fairly to quite finely levigated clay with many small/medium orangey grog (?), light grey chert and a few white lime grits. Fired orangey brick red throughout. Red brown self-slip ext. only. Reddish brown 'streaky wash dec'. (Fig. 5:10).

Small Finds From Area A (Fig. 7)

Worked bone object (Fig. 7:1)

1. Reg. TG 10016, Bk No. TG 940464. AX 2.33. Worked bone fragment. Flattened upper and lower faces, rounded at finished end, body with one straight side, and one shaped side featuring two concave curves. Polished ext. Broken on two edges near the top end. Pres L. 25 x W. 5 x Th. 2 mm.

No exact parallels for this object was found; it is also not clear from the break how much of the object is missing, or what form the complete object took. Other flat-sectioned bone objects with scalloped sides from al-Ghassul have been identified as possible hair or cloak pins, but are larger and not very close in design.²⁵ The shape and surface polish on this piece suggest a decorative rather than practical function.

Ceramic Pierced Disk (Fig. 7:4)

1. Reg. TG 10012, Bk No. TG 940460. AXII+, cleaning. Quite finely levigated clay with some large quartz and brown stone, small grey chert and orange grog inclusions. Hard red fabric with traces of friable self-slip, fired mottled red to dark brown, with large quartz and brown stone inclusions, unevenly fired. Munsel 10 R 5/6 red. Biconical weight or whorl with small hole through length, diam. 6 mm at either end. Surface chipped and pitted on one side; otherwise complete. Ht. 37 x MxD 37 mm.

Similar pierced objects were recovered from earlier seasons at al-Ghassul.²⁶ Other parallels include Neve Ur and Shiqmim.²⁷

Area A : Summary

Two 2 x 1 m probes (AX and AXI) were opened, the first (AX) immediately north of Hennessy trench AI, and the second (AXI) within the eastern half of this trench (Figs. 2 and 3:2). The first probe penetrated 2.9 metres to levels associated with Hennessy Phase D walls before excavations ceased, sampling classic Ghassulian (A-B) and 'pre-Ghassulian' (C-D) levels, whilst taking detailed soil samples for archaeobotanical and microfaunal analysis (Fig. 2).²⁸ The second probe began by cleaning off the re-

25. Lee 1973: Vol. II WB6 a-b.

26. Hennessy 1969: Fig. 11.12 Phase A; Lee 1973: Vol. I, 104, C7822.

27. Perrot 1967: Fig. 16.9-10; Levy 1987: Vol. II, Fig. 6.12: 8-9, Fig. 15.17: 3.

28. Whilst small amounts of microfaunal material were present throughout the sequence, the archaeobotanical remains were disappointingly poor. Similar soil samples, taken from considerably earlier deposits in A XI, barely three=

sidual Phase E remains in a 4 x 4 m area, before instituting another 2 x 1 m probe within AI, in alignment with the northern AX probe.²⁹ This sampled 1.4 m through two architectural phases equivalent to Hennessy's Phases F-G material by the end of the season (Fig.3:2), collecting archaeobotanical and microfaunal samples and recovering earlier assemblages of 'pre-classic' Ghassulian material.³⁰

Towards the end of the season, after detailed checking of the cleaned Hennessy AIII/V north section suggested that architecture and associated occupational deposits within Hennessy's trench AVIII (Fig.1) was likely to be stratigraphically later than the published AIII/V Phase A material (thus Hennessy's 'A+'), the western half of AVIII was cleaned, and preparations made to institute another probe (AXII) in 1995, aiming at sampling these latest occupational deposits in Area A.

AREA E: THE SANCTUARY COMPLEX

Introduction

The hillock of Tulayl 5 was first investigated by J.B. Hennessy (1975-77), where sixteen trenches (EI-X, XV-XVI, XX-XXIII) were opened over a period of three digging seasons. The major discoveries in this area were two sanctuary buildings (Sanctuary A and Sanctuary B) apparently enclosed within a temenos wall, preserved in patches on the north and west sides. These were the first buildings to be excavated at al-Ghassul convincingly attributed to 'cultic' activity.³¹

=metres away, produced excellent material, forcing us to conclude tentatively that soil conditions were not conducive to preservation. Phytolith analysis has commenced, in an attempt to see if the problem is one of preservation, or genuine impoverishment.

29. We aim to join the probes together in 1995.

The 1994 Probes (Fig. 6:1-2)

Obvious from Hennessy's analysis was the multiple phasing of the two sanctuary buildings. Whilst Hennessy suggested that the cultic assemblages were contemporary depositions in what was suggested as a simultaneous destruction, there was no certainty of relationship between the post-destruction occupational phases and the temenos wall and associated structures to its north. Indeed, if the latest constructional phase of Sanctuary B was to be related to the temenos wall, then earlier (cultic) phases might well be related to pre-temenos constructions.

In the current session of excavations, we aim to determine the stratigraphic and chronological parameters of cultic activity in the area, relating the multiple sanctuary phases with apparently associated structures to the north, and to relate the Area E sequence with the stratigraphic succession in Area A. In 1994 we concentrated our investigations in the region immediately to the north of Sanctuary B, initially between it and the adjacent stretch of the temenos wall, seeking first to establish the relationship of Sanctuary B with the temenos wall, before moving on to establish the relationship of both with the apparent storage facilities to the north (Hennessy trenches EXX-XXII).

E XXIV

One main trench (EXXIV) was opened to the north of Sanctuary B, to examine the history of deposits associated with the multi-phase sanctuary and associated structures to its north (Fig. 6:1).

The 2 x 5 m probe uncovered at least

30. These proved rich botanically and zoologically.

31. North did suggest a cultic association for a 'massive stone structure' below the 'Tiger Fresco' from trench A2; North 1961: 6,16. For first comments on specifically Ghassulian religious beliefs, see Elliot 1977 and Cameron 1981: 32-35.

four main phases of occupation in the area between the temenos wall and the north wall of Sanctuary B. These consist of:

1. A final firepit dominated (F.2-3) camp-site occupation above and unassociated with the complex (1.3-9).
2. A badly eroded and much collapsed greenish mudbrick wall (F.5, 1.10, 19-21) possibly a rebuild of the temenos wall, but equally possibly unassociated. This was badly cut about by modern animal burrows and shallow pits. Surfaces associated with this wall overlie the rebuilt temenos wall (1.11, 1.14-15).
3. A flimsy one stone wide rebuild of the temenos wall (E XXIV Wall 1). Surfaces associated with this (1.16-17) are linked to a similar insubstantial rebuild of the Sanctuary B north and west walls (EXXIV Wall 3, 1.25-28, 31).
4. The major constructional phases of the temenos wall (E XXIV Wall 2), associated with the primary construction of Sanctuary B (E XXIV Wall 4, 1.35), and possibly white plaster surface (1.29), makeup (1.36) and a number of fill levels (1.30, 32-34).

Excavations in EXXIV ceased at this point, but sections suggested that early deposits abutting the Sanctuary B north wall were cut by the foundations of the temenos wall. These levels, although interrupted by the foundations, seem likely to be associated with an earlier brown mudbrick wall on the same alignment as, but below and slightly to the north of, the stone temenos. To further investigate these earlier layers we cleaned and re-opened the southern six metres of Hennessy's trench EXXIII,³² which had conveniently removed all the

upper levels in the area considered.

E XXIII

In 1977, Hennessy cut a long (20 x 1 m) N/S trench linking the storage facility area to the north of the temenos (EXX-XXII) with the stone temenos and the north wall of Sanctuary B. Towards the end of the 1994 season, we re-opened the southern third of the trench, adjacent to EXXIV (immediately to its south), to re-examine the earliest deposits in the area, and link these with the later EXXIV layers.

1. Initial cleaning (E XXIII 50.1-4) fully exposed the 'pre-temenos' phase E/W mudbrick wall, built of neatly laid brown mudbricks, on a similar alignment to the stone temenos wall, and cut by its foundations. As the southern face is disturbed by the temenos wall, it is difficult to associate surfaces with it. However, surfaces at the appropriate level did exist to the south of the temenos (51.1-5), and it seemed likely that these surfaces did originally link this wall to Sanctuary B.
2. Below both Sanctuary B and 'pre-temenos' constructions, banded layers of sterile ash and stony clay overlay a small plaster-lined pit (E XXIII F.1, 52.3) and an ashy pit/gully (E XXIII F.2, 52.7) cut into ashy clayey deposits (52.2).³³ The banded layers (52.4-5) above a dense brown clay (52.6) were sterile, suggesting that the first major occupation in the area saw the construction of the Sanctuary B building, and the 'pre-temenos' complex.

Small Finds From Area E³⁴

Stone plaques or burnishers (Fig. 7:2-3)

1. Reg. TG 10013, Bk No. TG 940461.

32. The southern four metres of (20 x 1 m) E XXIII is immediately east of E XXIV.

33. This is at the level of the 'fire pit' phase (Hennessy 1977:15) isolated below the stratified debris and banded clay layers (Hennessy's 'corky

layers'), which are, in turn, below all architecture in and about Sanctuary A.

34. The ceramics from EXXIII/XXIV are still to be catalogued.

EXXIII 51.5, Plot object no. 2. Limestone, Munsel 10 YR 7/4 'very pale brown', and 10 YR 6/2 'light brownish grey'. Rectangular plaque with rounded ends, flat upper and lower surfaces and flattened side edges. Smoothed all over. Complete except for slight chipping on one corner, intact. L. 42 x W. 21 x Th. 8 mm. (Fig. 7:2).

2. Reg. TG 10014, Bk No. TG 940462. EXXIII 51.5, Plot object no. 3. Limestone, Munsel 10 YR 6/2 - 6/3 'light brownish grey' to 'pale brown'. Slightly asymmetrical oval plaque with rounded ends, flat upper and lower surfaces and flattened edges. Smoothed all over. Complete except for chipped edges, intact. L. 37 x W. 23 x Th. 10 mm. (Fig. 7:3)

Pierced stones of similar shape and size are usually interpreted as pendants or amulets.³⁵ However, the lack of holes in these examples, along with smoothing on all faces and occasional surface striations suggest they may have functioned as burnishing stones. Similar examples were recovered during the 1977 season and earlier.³⁶

Area E: Summary

Although much has been made of the similarities between the En Gedi and al-Ghassul complexes, it should be noted that the al-Ghassul buildings enjoyed at least

three distinct phases of occupation, associated with internal rebuilding and replastering, and that the relationship of the two sanctuary buildings to each other, and to the various phases of stone and mudbrick walls to the north is still to be clarified. Whether the al-Ghassul 'complex' was occupied contemporaneously still has to be determined; it is assumed but not assured. As well, the existence of a 'pre-temenos' brown mudbrick wall, apparently associated with the earliest phase of Sanctuary B, may imply that cultic activity and some form of a 'temple complex' may have existed on Tulayl 5 over a considerable length of time.³⁷

We have only just begun to understand the development of architectural tradition at al-Ghassul. The main Area E structures seem best associated with the later phases of occupation in Area A (Hennessy A-D). They appear to have been occupied over an extended period of time, with gradual additions to and expansion of particular buildings. Both construction technique and individual groundplan can be paralleled in apparently domestic structures at al-Ghassul itself, and on other sites.³⁸ It is the specific combination of features (courtyard, temenos wall, and position of broadroom structures) which underscore similarities with En Gedi and Gilat.³⁹ The Area E complex differs from cult structures at Gilat and

35. Mallon *et al.* 1934: pl. 37. 7, 9; Lee 1973: Vol. II, 278, LB73d, green stone.

36. Lee 1973: Vol. II, 280 LB9d (1938 no. 1054); Unpublished (Hennessy 1977) Area FV, Level 402.11 no. 291 SF 53, L. 40 x W. 22; Area FV +, cleaning level, no. 254, L. 52 x W. 36; another from AII 107.3, no. 203, a fragment which could be from either a burnisher or an amulet, pres. L. 23 x W. 25; a larger example, EXX level p. 3.1, no. 35, L. 80 x W. 51 - all in limestone.

37. EXXIV will be extended to the north in 1995, to link with the apparent storage facilities detected in Hennessy's 1975 trenches EXX-XXII. These storage facilities will be explored in greater de-

tail, and integrated with the Sanctuary B/temenos phasing to the south. As well, the area between Sanctuaries A and B will be explored to clarify the phasing between the two structures, and associations with temenos walling to the north and west (E XXV-XXVI).

38. The basic features can be seen in domestic buildings from al-Ghassul IV levels (Mallon *et al.* 1934: 33; cf. Hennessy 1969: 5, Fig. 4 and Pl. IVb; and Fasa'el (Porath 1985).

39. For En Gedi, see Ussishkin 1980: 4-6 and Figs. 3-6; for Gilat, Alon and Levy 1989: 167-178 and Figs. 2-3. For similarities with EBA secular and sacred architecture, see Ottoson 1980 and Amiran 1981.

En Gedi in its location within the major settlement of the region. Seen from either an Egyptian or a Mesopotamian perspective, this first close association of sacred and secular establishments would be of significance in any discussion of state formation processes. Investigating whether such a perspective is warranted when discussing the origin and nature of Ghassulian urbanism, and charting the relationship of al-Ghassul and the Ghassulian with the 'pristine states' of Egypt and Mesopotamia will be one of the ultimate concerns of renewed excavations at al-Ghassul.

AREA G

Introduction

The most instructive architectural remains and coherent town plan at al-Ghassul came from the extensive PBI Tulayl III exposure. From here most of the famous wall paintings and impressive architecture originated, during the six year campaign (1932-38). However, whilst a large Ghassul IV exposure was achieved, little investigation of earlier strata occurred. North recognised that this question required deeper probing into the Tulayl III sequence than the original PBI excavators achieved.⁴⁰ The most significant result of North's return to the site was the documentation of an approximately 5.5 m depth of deposit at two points beside⁴¹ and within⁴² the original PBI exposure, suggesting a similar depth of deposit at both locations. However, two significant points remained at issue.

North accepted the phasing details and equivalences originally proposed by Mallon

and Koepfel for Tulayl I as essentially correct for the Tulayl III sequence as well. However, as he felt that there was no significant assemblage phasing throughout the depositional sequence at al-Ghassul this opinion carries little weight, as the latter point has been demonstrably false with respect to the Tulayl I sequence since the first season of Hennessy's BSAJ excavations.

It therefore seemed worthwhile to explore the Tulayl III sequence in detail in the hope of recovering what promised to be a long-lived closely stratified sequence similar to that from Hennessy's Area A, so as to be able to determine the relative stratigraphic relationship of the PBI Tulayl I/III and Hennessy Area A sequences.

The 1994 Probes

One main step trench (GII)⁴³ was opened against the irregular north section of the PBI Tulayl III trenching, between North's trenches A1 and A6. The trench is 5 x 16 m in extent, laid out to straddle the irregular north section of the PBI exposure, and to examine what North deemed the 'optimal stratigraphy' of the Tulayl III sequence. The trench samples undisturbed material below modern topsoil (1.1) to the north of the original PBI trenching, and then descends to the limit of the 1938 PBI workings⁴⁴ through two (2 m wide, 1 m deep) steps (the first 1.30 m and the second 1.4 m in depth) to a total depth some 2.70 m below the modern surface. This strategy allows maximum vertical sampling with the least removal of overburden. After cleaning, and the isolation of major earthquake/slippage splits,⁴⁵ two of what are planned to be a se-

40. North 1961: 3.

41. B2, North 1961: 10.

42. A7, North 1961: 6.

43. Hennessy opened a 4 x 4 m probe to the north of the PBI exposure in 1975, which he called Area G. Our trench G II is approximately 5 m SW of Hennessy's original probe (Fig. 1).

44. For which, see North 1961: 4-10, Lee 1973: 21-

24.

45. Lee (1973) would seem to deny the existence of significant faulting in the Tulayl III exposure (*ibid.* 384d), even though North 1961: Figs. 11-12, published sections with splits clearly indicated. Our work left little doubt that significant faulting existed, with both vertical and horizontal slippage demonstrable. Most splits=

ries of 2 x 1 m probes were cut into the steps to sample archaeological deposits visible in the cleaned sections.⁴⁶

Material from the two step samples (GII loci 1-3 and G II locus 20) are equivalent to the deposits phased as al-Ghassul IVA-B by PBI excavators.⁴⁷ Finds were minimal but include worked bone, spindle whorls and several fine flint tools.

1. Phase of small pits (Features 1 [1.3] and 7 [1.9]) and wash gullies cut into first major phase of architecture (Phase 2 Wall 1 [2.7]), and sealed by topsoil layers.
2. E/W Wall 1/Feature 2 (2.7/2.17), hearth (Feature 3) and posthole (Feature 4) connected by a series of ashy occupation layers 2.5/6, 2.8/9, 2.11/12, sealing small pits (Features 5 and 6) cut into plaster floor 2.15 and into makeup 2.16.
3. Series of thick ashy fill layers (3.1-3.3) associated with brick floor (3.4-lex) associated with mudbrick wall Locus 20 Wall 1 to its south.

In locus 20, the first phase of architecture, E/W Locus 20 Wall 1 (20.4), associated doorsocket Feature 1 (20.5) and fragmentary white plaster floor (excavated with 20.3) is in phase with locus 3 deposits from Step 1. These Step 1 fill deposits seal plaster floor 20.3.

4. Fill layer 20.6/20.15, floor 20.7, makeup 20.8, and E/W Locus 20 Wall 2 (20.11) are the next phase of occupation.
5. Collapse/debris layers 20.9-10, pit fill 20.12, stone lined pit (Locus 20 Feature 2 [20.14, 16]), surface 20.13, plaster lined pit (Locus 20 Feature 4 [20.17]) and surface 20.18, makeup 20.19 all make up the fifth phase of occupation.

Small Finds From Area G

Shuttle needles/Spatulae (Fig. 7:5-6)

1. Reg. TG 10029, Bk No. TG 940932. GII 20.14. Ovi-caprine rib. Flat sectioned fragment, with slightly curved end and straight sides forming rectilinear body of even thickness and width. Slightly convex upper face. Large hole bored through body near complete end. Highly polished on both sides. Incomplete, broken at one end and with part of one side missing. Mended from two joining fragments. Pres.L. 42 x W. 14 x Th. 3, diam. hole 5 mm. (Fig. 7:5).

This fragment could have functioned as some sort of spatula; however, this does not take into account the purpose of the hole at one end. If the complete object was short, it could have been a pendant; if longer, it would fall into the category of object usually identified as

= seemed to run E/W, or N/W to S/E through the GII sondages.

46. Whilst it would have been ideal to position all probes along one N/S axis, diagonal earthquake splits frustrated the desire, and as the initial aim here was environmental sampling, the often extensive splits had to be avoided or their effects minimised wherever possible. This precluded optimal alignment.
47. North 1961: 3-4 notes that the 1932-38 Tulayl III excavations ceased at some stage within the al-Ghassul III phase. Whilst North took A5 to sterile in 1960, there was no clear differentiation of material culture according to his analyses (*ibid.* 16). Lee (1973) noted that several of the original PBI probes had penetrated below Phase III (*ibid.* 19-24), but when one attempts to col-

late assemblage groups (based on absolute height equivalences) from the corpus published sherds catalogued by Lee, almost all the deepest are either non-diagnostic or bases. So it is impossible to gauge the various phases reached from the material offered. However, it seems likely that Phase IVA-B had been removed, and that by the end of the 1938 season, al-Ghassul III deposits were more or less generally exposed, and in places 'upper III' removed across the area. Therefore we would suggest that our five phases comprise one very late pit phase, two phases associated with al-Ghassul IV and two associated with al-Ghassul III. A very preliminary assessment would suggest that the ceramics are best associated with Hennessy's Area A Phase A-D material.

shuttle needles. One such example from Nahal Mishmar had fragments of thread preserved in the eyelet, reinforcing the suggested link to weaving.⁴⁸ Complete examples were also found during earlier excavations at al-Ghassul;⁴⁹ other parallels include Shiqmim, Beersheba and Tall Abū Hāmid.⁵⁰

2. Reg. TG 10028, Bk No. TG 940931. GII 20.14. Ovi-caprine scapula. Worked bone fragment, curved at one end, with flat upper and lower surfaces. Small neat hole bored through centre of body at one end. Fairly brittle. Incomplete, broken on one edge and mended from two fragments. Pres.L. 15 x W. 16 x Th. 1, diam. hole 1.5 mm. (Fig.7:6).

This piece is much thinner than No. 1 (above), and is pierced by a narrower hole. Consequently it was probably too fragile for use as either a spatula or shuttle needle, and may have been a pendant.

Pierced Disc (Fig. 7:7)

Numerous discs with central holes have been found during the course of excavations. The larger, heavier examples of these were usually designated as 'weights', although their exact function is uncertain. The smaller and lighter examples were generally under 60 mm in diameter, and may have functioned as spindle whorls, net sinkers or small weights. Circular discs generally seem to be more common than ovoid examples.⁵¹

1. Reg. TG 10015, Bk No. TG 940463. GII 20.7. Sandstone, Munsel 19 R 5/6. Pierced disc. Slightly asymmetrical

shape, with flattish base, and sides convex in towards top making a slightly conical form. Medium sized hole through centre, drilled from both sides leaving an hourglass-shaped perforation. Fine grained sandy textured stone. Half preserved. Ht. 17 x dia. 27 mm.

Unidentified tool (Fig. 7:8)

1. Reg. TG 10026, Bk No. TG 940928. GII 20.14. Unidentified stone, Munsel 10 YR 4/1 'dark grey'. Graving tool? Broad convex end with nearly round section, sides tapering in to form a chisel point at the other end. Polished ext. with many fine tool marks. Complete and intact. L. 42 x W. 13 x Th. 12 mm.

The function of this piece is uncertain. The chisel edge might imply use as some sort of graving tool; however this edge is not particularly sharp, and shows signs of use-wear polish.

Stone Vessel (Fig. 7:9)

1. Reg. TG 10025, Bk No. TG 940927. GII 2.16. Fine grained grey-black stone (phosphorite?). Munsel 7.5 YR N4/3. Bowl rim fragment, undecorated. Pinched rim thickening towards base (missing). Sides angled straight down in V-shaped profile; interior contour turns out at bottom of fragment, flattened out for base of bowl int.

V-shaped bowls are the most common stone vessel profile during the Chalcolithic, usually in basalt or phosphorite.⁵² It has been suggested that the latter were produced in south-central Palestine.⁵³ Rims

48. Bar-Adon 1980: ill. 50.2; other parallels, ill. 50.1, 3-6.

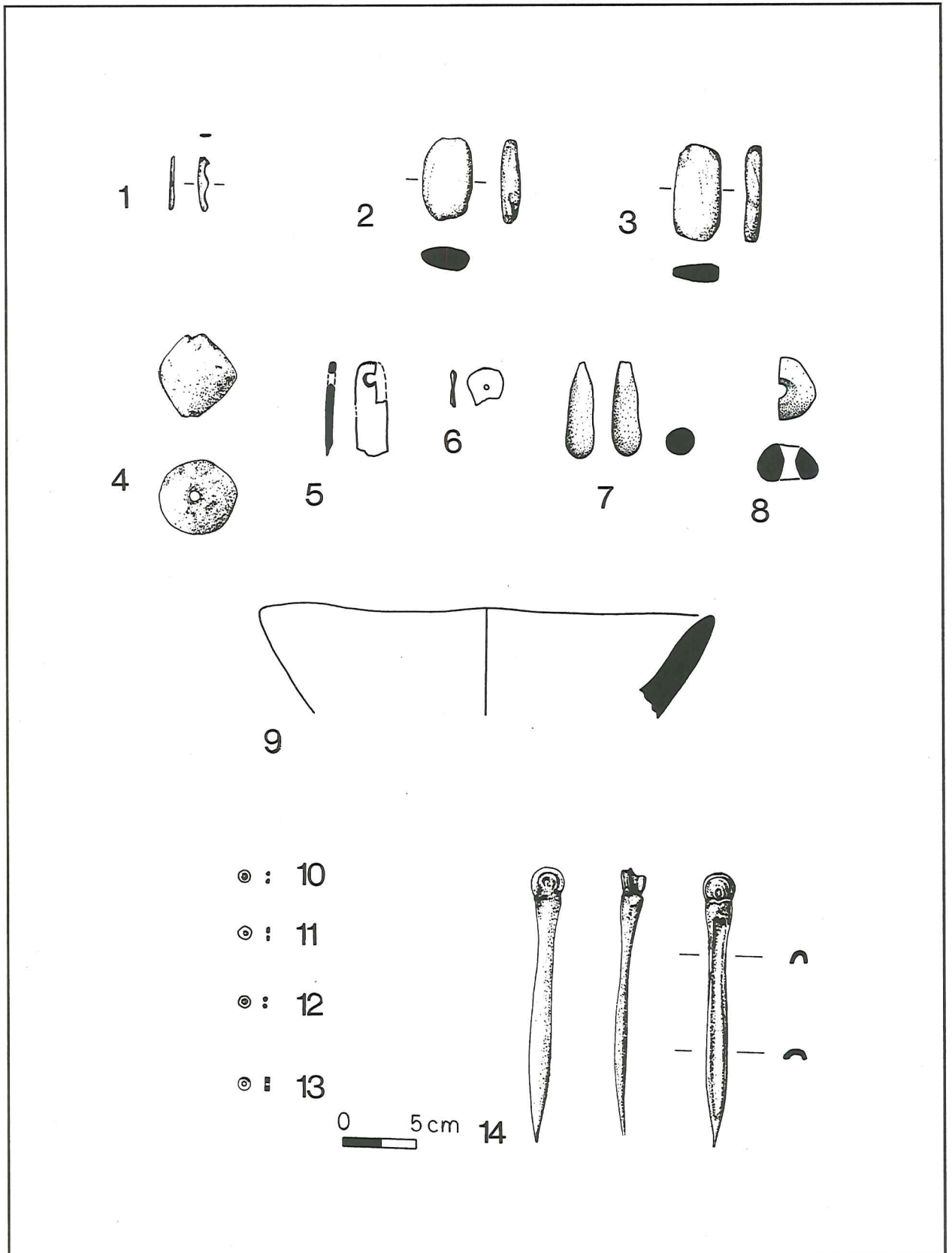
49. Lee 1973: Vol. II, 286-287, WB2 Ill.s a-b; Mallon *et al.* 1934: Fig. 31.6-7, 12-15; note Lee's comment (*ibid.* 287) that these were made from cattle ribs; this seems to also have been the case for an example from Tell Abu Matar (Perrot 1955: 80).

50. Levy 1987: Vol. II, fig. 6.11.6; Dothan 1959: Fig. 18.44, stratum III; Dolfus and Kafafi 1993: Fig. 3:1.

51. Lee (1973) Vol. II, 276 LB513A-b.

52. Amiran, and Porat 1984: 11-19; Gilead and Goren 1989: 5-14; Phillip and Williams-Thorpe 1993: 51-63.

53. Goren 1991: 102-111, esp. 108.



7:1-14 Small Finds from various areas: 1 and 4 (Area A); 2-3 (Area E); 5-13 (Area G); 14 (Area H).

may be pinched, as here, or rounded.⁵⁴ They occur in conjunction with flat bases,⁵⁵ a cordon above a flat base,⁵⁶ fenestrated pedestal stands⁵⁷ and occasionally feature ribbing at the base of the bowl, or between the junction of foot and bowl.⁵⁸ All these types have appeared at al-Ghassūl. Parallels include examples at Beersheba, Gezer and Pella.⁵⁹

Beads (Fig. 7:10-13)

1. Reg. TG 10007, Bk No. TG 940293. GII 20.3. Dark grey stone, Munsel 5 YR 2.5/1 'black'. Disc bead with small thread hole drilled from both sides, deliberately chipped around upper part of hole down to centre on one side. Polished ext., including side edges. Complete and intact, weathered on one face. Diam. 5 x Th. 1, diam. hole 1.5 mm. (Fig. 7:10)
2. Reg. TG 10008, Bk No. TG 940294. GII 20.3. Calcite, Munsel 10 YR 8/3 'very pale brown'. Disc bead with small thread hole bored from both sides. Polished ext. Complete except for small chip from one edge. Diam. 5 x Th. 1, diam. hole 1.5 mm. (Fig. 7:11)
3. Reg. TG 10027, Bk No. TG 940930. GII 2.16. Dark grey stone, Munsel 7.5 Y N3/ 'very dark grey'. Disc bead with small thread hole drilled from both sides. Complete but chipped on one edge and weathered on one side. Polished on upper face and edges. Diam. 5.5 x Th. 1,

diam. hole 1.5 mm. (Fig. 7:12)

4. Reg. TG 10030, Bk No. TG 941028. GII 2.12. Faience. Munsel 10 YR 7/3 'very pale brown' (surface), 2.5 Y N8/ 'white' (core). Small disc bead with off-centre medium thread hole. Polished ext. Complete and intact, but the surface has flaked off in several places. Diam. 3 x Th. 1 mm, diam hole 1 mm. (Fig. 7:13).

A handful of beads were recovered. The most common form was that of a flat disc bead in stone (Nos 1-3 above). These were all very close in size, with a diameter ranging from 5 to 5.5 mm, a thickness of 1mm and a hole width of 1.5 mm. Calcite⁶⁰ beads and pendants are known from previous seasons at al-Ghassūl, and other Ghassulian sites such as Beersheba.⁶¹ Calcite is not known in Jordan and therefore represents foreign trade in either the finished product, or the raw material. Numerous calcite sources are known in Egypt throughout the Eastern desert, including a quarry in the Wādi Gerrawi which was worked from the Old Kingdom. None of these sources are known to have been worked from as early as Predynastic times.⁶² However, it is likely that naturally occurring calcite pebbles would have been sufficient to produce small objects such as beads, and thus quarrying as such would not have been necessary. Calcite also occurs in the Sinai, although this source may not have been utilised in antiquity.⁶³

54. Lee 1973: Vol. II, 264, LBR2 (pointed rims), LBR4 (rounded rims).

55. Hennessy 1969: Fig. 12.1.

56. Lee 1973: Vol. II, 263, LBIIa.

57. *Ibid.* Vol. II, 266 LB12b.

58. *Loc. cit.* LB12 a, c, e-f.

59. Dothan 1959: Fig. 11.19; Seger and Lance 1988: Pl. 5:10; McNicoll *et al.* 1982: Pl. 105.9 reg. 45031, Area XIV; and unpublished examples from Pella, reg. 60348 XIV M 3.3, reg. 60478 XIVM 4.1 and Bk No. 920668 XXXIID 18.34.

60. This material is often erroneously described as 'alabaster'. Geologically this should be limited to the material gypsum, Greene 1989: 109-110,

121. Calcite is used here to describe the stone composed of calcium carbonate, which is also known as travertine limestone. The actual mineral, calcite, was also used for beads (*Ibid.* 106-108).

61. Hennessy 1969: Fig. 11:19 (AIII 204.11), an unpublished cylindrical bead from AVI 500.4 (1967 season) and an alabaster disc from KI 1.1, (1975); Dothan 1959: Fig. 19:29 (pendant). Calcite maceheads are also imported during this period, Hanbury-Tenison 1986: 164.

62. Lucas and Harris 1962: 59-60.

63. *Ibid.* 59.

A similar, but smaller faience disc bead was also found (No. 4, Fig.7.13). Faience objects are relatively rare on Chalcolithic sites; at least one bead from the 1967 season at al-Ghassul was supposedly made of this material,⁶⁴ as might be an example from Nahal Mishmar, Cave 1A.⁶⁵ While the origin of this piece is not certain,⁶⁶ the small number of parallels in the region suggest that it was probably an import. Egyptian faience beads had been produced since predynastic times,⁶⁷ where disc beads of this type were probably made by coating a perishable central core with paste, rolling this into a cylinder, and cutting it into sections to form individual beads.⁶⁸ The last step is consistent with the sharp edges seen on the example from al-Ghassul, while the regularity of the thread-hole and lack of drill marks suggest the object was made with a hole, rather than drilled after firing.

Area H (Fig. 8)

Introduction

Hennessy opened four 5 x 5 m trenches in Area H during the 1975 season, but they did not advance below 10 cm in depth, as it became clear that a complex sequence of well preserved structures existed immediately below the surface silt, requiring considerably more resources than were available in what was originally envisaged as a small probe. What resources that did exist were soon switched to the Sanctuary (Area E), industrial (Area F) and Neolithic (Area A) areas. In the short time that Area H was excavated in 1975, the exceptional preservation in this area allowed Hennessy to

isolate a number of structures immediately below the surface. It was the exceptional preservation in this area, and the apparent existence of agglomerative multi-cellular architecture that prompted our renewed interest in the area.

The 1994 Probe

One 2 x 1 m probe (HII locus 2) was opened within the southwestern quadrant of Hennessy's original trench H, abutting a two-phase stone and mudbrick building evident from surface scraping. In this HII sondage, five main stratigraphic phases were present:

1. Topsoil (1.1), the exposed stones of HII Wall 1 (which cuts HII Wall 2 and should probably be regarded as a rebuild), and patches of ashy surfaces make up the first phase. These are to be associated with a series of ashy courtyard surfaces in the main trench, and probably represent the last phase of occupation in the area.
2. HII Wall 2 and associated deposits, pit (HII Feature 1), fill/occupation debris layers 2.1, surface 2.3/5, laminated occupational debris layers 2.6-9, and floor 2.11.
3. Large rubbish pit (HII Feature 3) and associated deposits (2.10, 12, 14, 17), which cut through most Phase 3 deposits.
4. Occupational debris layers 2.13, 15-16, 18-21/23 associated with small fire pit (HII Feature 5 [2.22]), and plaster-sealed (?) shallow pit (HII Feature 4)
5. Mb debris/collapse layer 2.24/25 overlying mb feature (a likely wall which is now HII Feature 6), which had not been

64. Area AV locus 401.1, diam. 6 mm (unpublished).

65. Bar-Adon 1980: ill. 22.

66. The problems in placing the origins of early faience technology and the tendency to attribute all early faience products to Egypt because of a lack of research in other areas has been well outlined by Peltenburg 1987: 11-12. Egypt is sug-

gested as a probable source for this example because it is a rare occurrence within the al-Ghassul assemblage, and other material suggests contact existed.

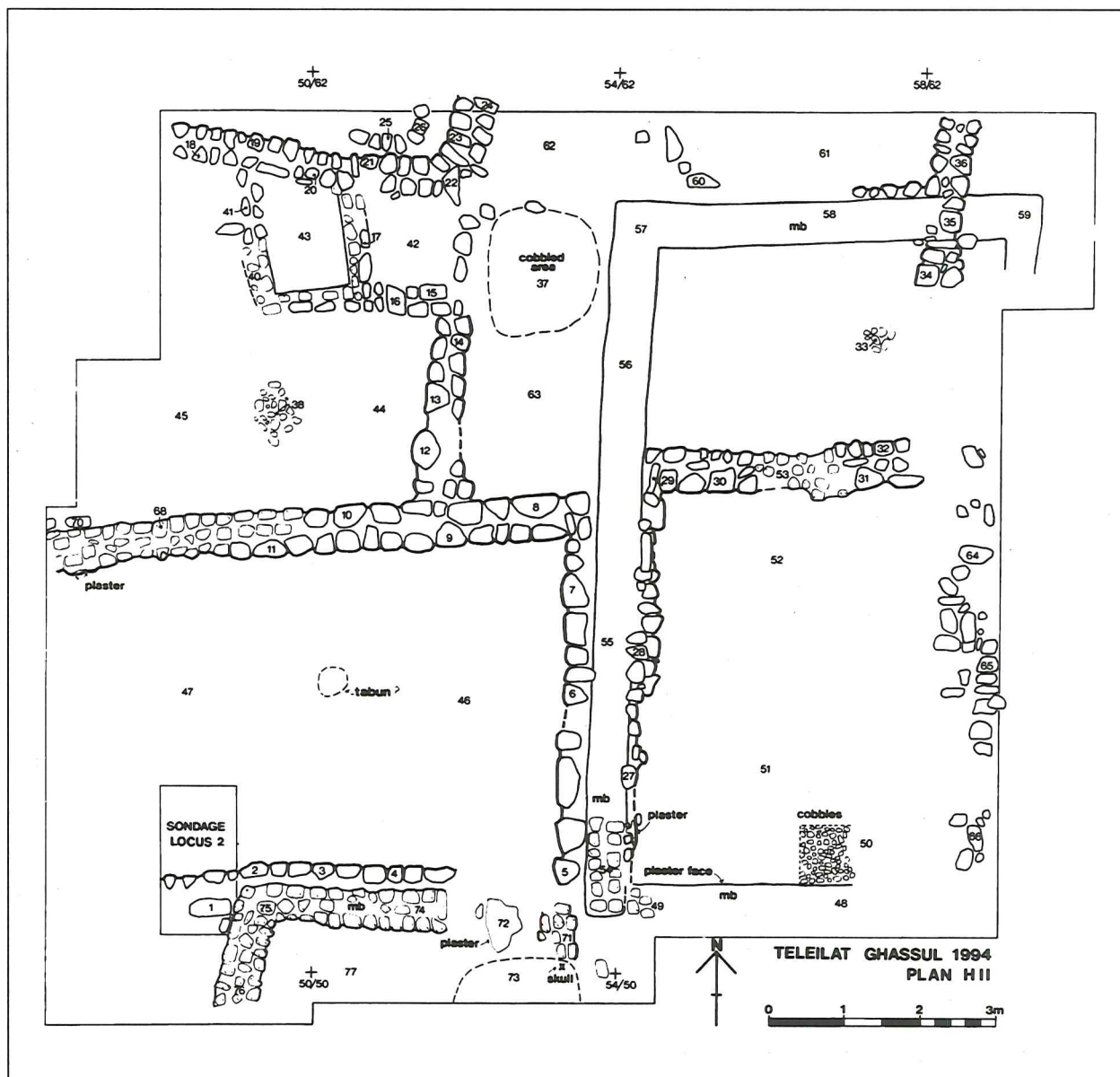
67. Lucas and Harris 1962: 44.

68. *Ibid.* 45.

fully exposed by the end of excavations.

Ceramics From Area H (Figs. 5:11-14; 9:1-20)

- CN27 Cornet, fine HII 2.9. Quite finely levigated clay with many small/medium white lime, grey chert and a few small black stone grits. Fired brick red throughout. Wet smoothed int./ext. Traces of red/brown painted band ext. (Fig. 5:11).
- CN30 Cornet, fine HII 2.9. Fairly finely levigated clay with many small/large yellowish stone, some white lime and a few orangey grog grits. Fired brick-red at core and int., dark grey ext. Thick red-brown slip ext., rim int. Very gritty ware.(Fig. 5:12).
- CN26 Jar, holemouth HII 2.9. Fairly finely levigated clay with many small/medium white lime, some grey chert and a few orangey grog grits. Fired yellow-buff at core, orangey-buff at surfaces. Traces of red slip int., below rim (if holemouth). (Fig. 5:13).
- CN28 Bowl HII 2.9. Coarsely levigated clay with very many medium to large grey chert, some reddish (grog?) and a few white lime grits. Fired pale brick red throughout. Wet smoothed (?) ext./int.(Fig. 5:14).
- CN22 Jar, holemouth HII 2.10. Fairly finely levigated clay with many small to large white lime (?), some grey stone (?), chert, grog and a few orangey grog grits. Fired throughout, slightly red-brown int. Wet smoothed (grass-wiped?). (Fig. 9:1).
- CN47 Cornet HII 2.10. Fairly finely levigated clay with many small/medium brown chert, some grey chert, a few reddish stone and a few quartz grits. Fired buff throughout. Wet smoothed ext. only. Very chalky fabric. (Fig. 9:2).
- CN48 Base, jar HII 2.10. Coarsely levigated clay with very many medium to large white lime, yellow stone, grey chert and a few reddish grog grits. Fired brick-red at core and orangey brick-red at surfaces. Orangey wash ext./int. (Fig. 9:3).
- CN25 Handle, lug HII 2.10. Fairly finely levigated clay with many small/medium grey chert, some yellowish grog and a few white lime grits. Fired grey brown at core and dark brown at surfaces. Self (?) slipped ext./int.(Fig. 9:4).
- CN24 Base, Jar HII 2.10. Moderately levigated clay with many small/medium white lime, some dark grey stone/chert (?) and a few reddish grog (?) grits. fired pale brick-red throughout. Very friable int./ext.(Fig. 9:5).
- CN45 Jar, holemouth, v.small HII 2.13. Fairly finely levigated clay with many small/medium grey chert, some white lime (?) and a few reddish stone (?) grits. Fired greyish buff at core and orange buff at surfaces. Self-slipped ext., rim int.(Fig. 9:6).
- CN46 Base, Jar HII 2.12. Fairly to quite finely levigated clay with many small/medium white lime (sand?), some yellowish grog (?) and a few grey chert grits. Fired ashy grey-buff at core and grey at surfaces. Self-slipped in grey-brown ext./int.(Fig. 9:7).
- CN42 Jar, holemouth HII 2.13. Fairly finely levigated clay with many small/medium black sand, some grey chert and a few red grog grits. Fired buff throughout. Self-slipped ext./int. (Fig. 9:8)
- CN43 Jar, holemouth HII 2.13. Moderately to fairly finely levigated clay with many small/medium yellowish (grog?), grey chert and a few black stone grits. Fired grey at core and



8. Area H, showing surface architecture and position of Sondage H II.

- brick red at surfaces. Self-slipped in grey-brown ext./int. (Fig. 9:9).
- CN44 Jar, holemouth HII 2.13. Moderate to fairly finely levigated clay with many small/medium yellowish (grog?), some brown stone and a few reddish stone grits. Fired ash grey at core and dark grey at surfaces. Self-slipped in grey-brown ext./int. Grass wiped ext./int. Import?(Fig. 9:10).
- CN36 Handle, ledge HII 2.14. Moderately levigated clay with mall small/large

- yellowish lime (?) orangey grog and a few grey chert grits. Fired brick-red throughout. Slef-slipped in buff ext. to orangey buff int. (Fig. 9:11).
- CN41 Base, flat HII 2.14. Moderately levigated clay with many small/large yellowish stone, some grey chert and a few buff grog grits. Fired brick red throughout. Slipped in thick off-white/buff ext./int. Grass-wiped (and grass tempered?)(Fig. 9:12).

- CN40 Base, flat HII 2.14. Fairly finely levigated clay with many small/medium white lime, a few orangey grog and grey chert (?) grits. Fired dark grey at core and surface ext., brick red at surface int. Slipped in reddish brown ext. only.(Fig. 9:13).
- CN38 Base, flat HII 2.14. Fairly finely levigated clay with many small/medium grey chert, some medium red stone and a few small white lime grits. Fired tan brown at core, brown buff ext. and brick red on interior surface. Thick orangey-brown slip ext./int. (Fig. 9:14).
- CN35 Jar, holemouth (large) HII 2.14. Coarsely to moderately levigated clay with many small/medium grey chert, some reddish grog (?) and a few white lime grits. Fired buff throughout. Self-slipped in mottled orangey to buff self slip ext./int.(Fig. 9:15).
- CN37 Bowl HII 2.14. Fairly finely levigated clay with many small/medium and some large reddish stone, some grey chert and white lime grits. Fired orangey-buff throughout. Buff self-slip ext./int. Red-brown painted band (zigzag) int., red-brown horizontal band below rim ext. (Fig. 9:16).
- CN21 Cornet, Fine HII 2.19. Moderately to fairly finely levigated clay with many small to medium white lime, very fine grey stone, black stone (sand?), grey chert and a few red stone grits. Fired buff throughout. Patches of fine red-brown wash/slip body ext. (Fig. 9:17).
- CN49 Cornet, fine HII 2.19. Fairly finely levigated clay with many small/medium black (sand?), some oran-

gey grog and a few white shell grits. Fired brown buff throughout. Orangey-brown self-slip ext./int. (Fig. 9:18).

- CN51 Bowl, simple HII 2.20. Fairly finely levigated clay with many small/medium grey chert, some orangey grog and a few white lime grits. Fired grey-buff at core and orangey-brown at surfaces. Self-slipped in brown buff ext./int.(Fig. 9:19).

- CN50 Base, flat HII 2.23. Fairly finely levigated clay with many small/medium grey chert, a few brown stone and white lime grits. Fired buff throughout. Orangey-red slip ext., buff int. Friable.(Fig. 9:20)

Small Finds From Area H

Worked bone point (Fig.7:14)

1. Reg. TG 10001, Bk No. TG 940002. HII 1.1. Ovi-caprine metapodial. Sharpened to a point at one end, interior surface flattened. Complete, mended from two joining fragments. Polished ext. L. 122 x MxW 13 x Th. 10 mm.⁶⁹

Comparable bone points are known from other Chalcolithic sites, such as Nahal Mishmar, Beersheba and Tall Abū Hāmid,⁷⁰ as well as at al-Ghassūl itself, from previous excavations.⁷¹

Architectural Planning In Area H (Fig.8)

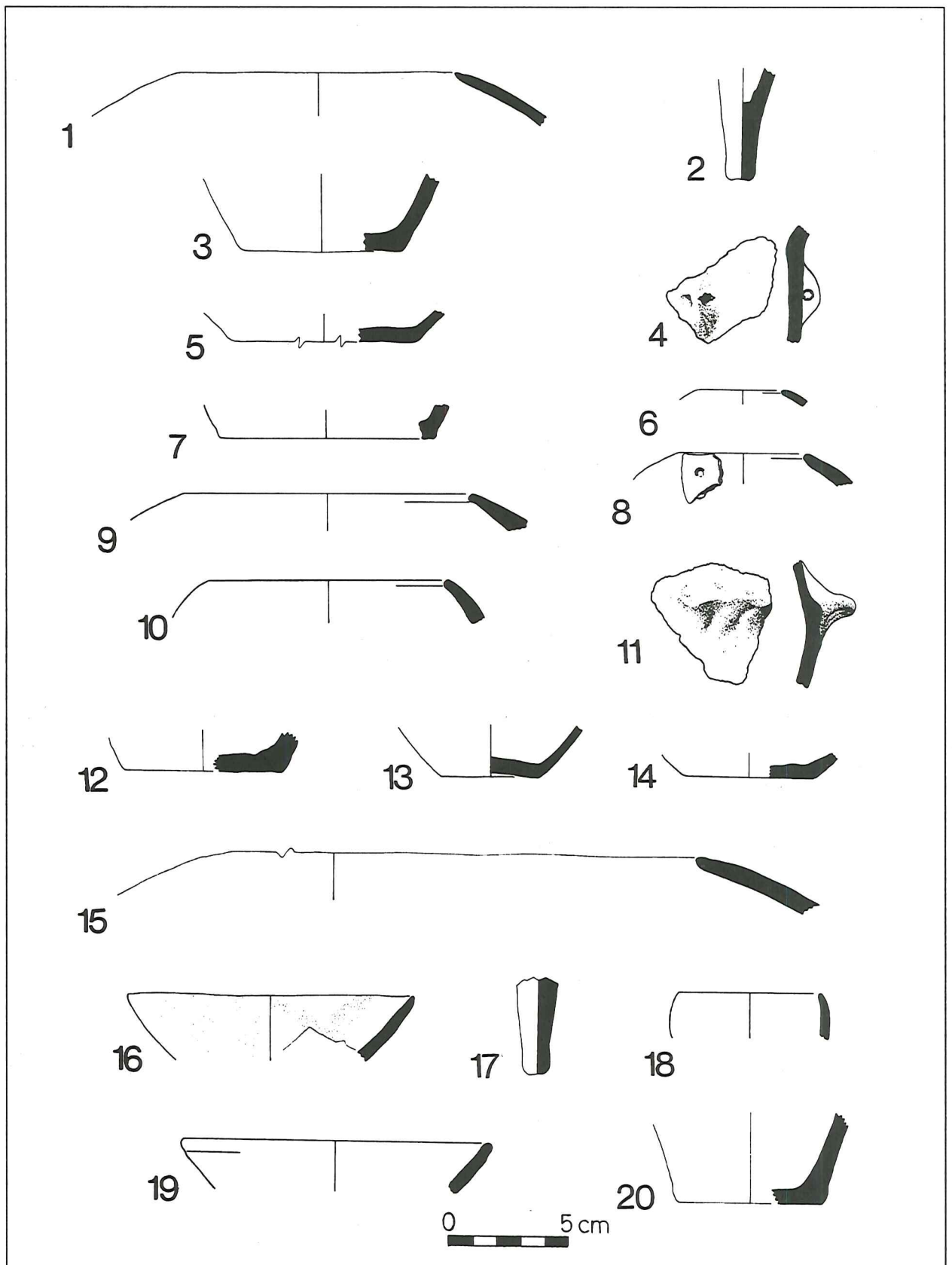
As well as the stratigraphic probe of H II Locus 2, an approximately 11 x 11 m area was cleaned to allow detailed planning of what on first examination appears to be a number of contiguous multi-cellular structures, consisting of a number of square and rectilinear rooms and storage bins built around a series of squarish courtyards. Dolfus has observed that multi-cellular room ar-

69. To this can be added similar examples from HII 1.1 (TG 940001, TG 941027) and HII 2.19 (TG 941029). In all cases, similar types of bones have been used (ovi-caprine metapodials).

70. Bar-Adon 1980: Fig. 51:1-11, Cave 1; Dothan

1959: Fig. 18.45-6, Stratum II-III; Dolfus and Kafafi 1993: Fig. 3:12.

71. Lee 1973: Vol. II, 290, WB1 b; Hennessy 1969: Fig. 11:1-2, 8.



9. Sondage H II. Late Chalcolithic (Hennessy Phases A-A+).

range becomes general in the latest Chalcolithic levels at Abū Ḥāmid (Dollfus and Kafafi 1993; Ibrīhim (ed.) 1987), sometimes suggested to be 'post-Ghassulian' in date. Until now, well stratified architecture at al-Ghassūl was exclusively of the single long-room variety.⁷² The latest architecture in Area A is still of the 'long-room' type. The latest deposits Hennessy excavated in Area H contained stone tool and ceramic material consistent with a very late, quite possibly 'post-A' phase of occupation.⁷³ The point at which the use multi-cellular architecture becomes common demands further exploration. It seems possible that the multi-cellular architecture in Area H represents at least one later building phase than the sequence exposed in Area A. Whether the al-Ghassūl sequencing can lend support to Dollfus' suggestion that multi-cellular architecture is exclusively Late Chalcolithic in date will depend on successfully integrating the Area H deposits with the Area A master stratigraphy. At present, all that can be observed is that the five depositional phases excavated are all very late Chalcolithic in date (Hennessy A, and possibly

'A+'). It is possible that evidence is beginning to suggest that at least some of the deposits in the northwestern region of the site preserve occupation of a date later than the latest deposits Hennessy excavated in Area A.⁷⁴ This will be further examined in coming field seasons.

REPORT ON THE FAUNAL REMAINS FROM AL- GHASSŪL

Introduction

This study concentrates on the faunal remains of the larger mammals recovered from the Tulaylāt al-Ghassūl during the 1994 season, but some preliminary comments will be made on the smaller remains recovered during flotation and wet sieving.⁷⁵

Findings

Concentrating on the main food-producing and draught animals, we see a different picture to that at Pella during the Chalcolithic, and indeed other contemporary sites in the southern Levant. Working with MNI's, pigs only represented

72. The two Neolithic phases at the base of Hennessy's Area A excavations were sunken roundhouse construction. All phases above these Neolithic levels consisted of single long-room structures. Each phase isolated in the PBI excavations, whether in Tulayl I or III, seem to consist of long-room structures, although the presentation of PBI stratum-plans, which seem to contain multiple subphases represented as one (Lee 1973: 339-340), are perhaps not the best exemplars of Ghassulian urban design. Our ongoing aim to clean and plan the uppermost phase in an extended Area H, supplemented by strategic sondages as necessary, seeks to investigate urban design in the latest Chalcolithic levels. Should conditions be suitable, it is hoped that a similar attempt will be launched in the extensive trenching in base of PBI Tulayl III, allowing one to compare designs for latest (Area H) and middle (al-Ghassūl III) Ghassulian spatial organisation.

73. These include fine elongated and intricately

painted white slipped cornets, fine brick red holemouth jars, and quantities of 'elephant ear' scrapers. We thank Em. Prof. Hennessy for discussing the 1975 Area H finds with us at length.

74. Hennessy was aware of this possibility when he spoke of at least one full architectural phase missing from the top of the Area A sequence, Hennessy's oft quoted 'A+'. It seems likely that the latest strata in areas G and H are best seen as 'A+' in date. However, one should not assume that this evidence suggests that settlement in any way 'shrank' in this latest phase of occupation. As Hennessy noted, it is more likely to be a preservation problem rather than one of horizontal settlement variation, although one must admit that the latter cannot yet be ruled out.

75. Material identifiable to species level was recorded on bone recording sheets and data subsequently analysed. Non-diagnostic specimens were discarded. Sheets recorded provenance details, species, anatomy, aspect (dorsal, ventral, proximal, distal etc), percentage of the bone, =

9.74% of the faunal remains at Ghassul, but 21.9% at Pella. However, this variation is not unusual, as in the southern Palestinian Besor-Beersheba cultural complex, coastal Besor sites record 33.8% pig with the inland Beersheban sites recording none at all.⁷⁶ Such variations have been used as indicators of local micro-environments during the Chalcolithic period but using a single species for such diagnosis is unwise, as it tends to discount intrasite variation and the more generic cultural and chronological unknowns. It would be far better to compare complete faunal (including microfaunal) profiles along with botanical remains before registering far reaching conclusions.

Table 1 gives the relative numbers and percentages of the large food-producing and draught species from al-Ghassul. As with other sites in the Levant, wild species drop to very low numbers, although one would be unwise to presume that there were no gazelle remains in those catalogued as sheep/goat (S+G). Sheep and goat remains are

the most prevalent.⁷⁷ To give one example, sheep/goat teeth fragments from Area A.X, 2. 29 numbered 30 in all. However, the fragmentation patterns shows that each fragment represented ten percent or less of a tooth. Therefore, the total number of teeth represented need only be three, and these could easily come from one individual. With regard to cattle remains, only distal limb bones and teeth are found, the latter often highly fragmented. Only one deer bone was found and that was a second phalanx, most likely from a small to medium sized deer (possibly *Rusa*). Other remains classified as cattle or deer (C+D) were from immature animals and could have come from either. Pig bones recovered were either skull (particularly maxillae and frontal bones), or distal limb elements.

DNA Analysis and the Wild/Domestic Dichotomy

The seeming failure to exploit wild spe-

Table: 1

	S+G	Cattle	C+D	Deer	Pig	Total
NISP	223	14	3	1	29	270
% NISP	82.59	5.19	1.11	0.37	10.74	100
MNI	83	11	3	1	15	113
% MNI	73.45	9.74	2.65	0.89	13.27	100
SGE	83	132	12	4	22.5	253.5
% SGE	32.74	52.07	4.73	1.58	8.88	100

=body part (general area of the body), handedness, relative age, modifications, number of items, whether a bone articulated with another, whether the bone had been kept out for any reason, and the botanical Dafor Score (relative richness) for each context. The number of individual specimens (NISP), the minimum number of individuals (MNI) using the maximum distinction method, and the number of sheep/goat equivalents (SGE) with their relative percentages have all been calculated. For a more complete explanation of the techniques used, see Mairs in

Bourke *et al.* 1994, on the Pella zoological material. Much of the present short discussion will compare and contrast the al-Ghassul/Pella Chalcolithic faunal assemblages, in line with overall research concerns, viz. comparing differing economic exploitation through time.

- 76. For a short discussion, see Grigson 1989: 111-114.
- 77. See Mairs in Bourke *et al.* 1994 for further comments on the prevalence of sheep/goat in the assemblage.

cies during the Chalcolithic period has been interpreted as an indication of greatly increased domestication and perhaps secondary product utilisation. Whilst this seems likely, the archaeological evidence is slight, and largely circumstantial, and the assumption that wild species were not being used more than minimally is dangerous and likely to be erroneous.⁷⁸ Reliance on mere physical form cannot overcome such difficulties. To try to overcome some of these difficulties we have been taking samples of bone for DNA analysis. We have been successful in recovering, amplifying and sequencing DNA from some of the Pella material. Whilst the programme is very much in its infancy, it is looking very promising for producing reliable data bearing on the wild/domestic dichotomy, and progressive secondary product utilisation.⁷⁹

Microfaunal Analysis

Most of the bones so far analysed from

the flotation and mesh samples come from murine-sized rodents and fish, although there are some larger rodents and even crabs are represented.⁸⁰ When fully analysed, the remains from these smaller animals will afford us a good picture of the total faunal assemblage at al-Ghassül. In conjunction with study of the botanical remains, we will be in a much better position to comment on microclimatic change during the Chalcolithic period.⁸¹

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78. Third Millennium Mesopotamian texts suggest that it was common to exploit wild sheep and cattle to promote hybrid vigour in domestic flocks and herds, and there would seem to be little reason why such a strategy could not have been employed in earlier times.

79. A full report on this is forthcoming.

80. However, some doubt remains over the microfauna from GII 20.6, as a large earthquake split disturbs stratigraphy in this context.

81. Direction for the future include a full and comprehensive analysis of the mesh and flotation samples and further DNA work to build up sequence libraries, initially to determine species and later breed variation, and ultimately to assemble the basic data necessary to examine the central hypothesis surrounding the 'secondary products revolution' - directional selection for high milk/wool yields.

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