

## THE 1989 SEASON AT 'AIN GHAZAL PRELIMINARY REPORT

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### Introduction

The sixth season of excavations at 'Ain Ghazal lasted for seven weeks in June and July of 1989. The principal goals of the season were 1) to sample previously uninvestigated areas of the site that were to be bulldozed by the Municipality of Amman (plan now abandoned); 2) to explore two conspicuous features (a large stone-block construction and a small cave) to determine potential relevance to Neolithic activity; and 3) to continue excavations in areas of demonstrable importance for interpreting cultural developments at 'Ain Ghazal in the aceramic and ceramic Neolithic periods (Fig. 1).

Excavation of a combined area of ca. 350 m<sup>2</sup> made it possible for us to achieve all three objectives.<sup>1</sup>

### The Stone-Block Feature: Sq. 7876

A large (ca. 5 x 5 m) square structure made of enormous (ca. 0.7 x 0.4 x 0.2 m) blocks of stone was situated near the western-most (uphill) limits of the site. Only one course of the walls was visible in the northeast, southeast and southwest corners, and the interior of the structure was filled in and piled high with field stones, an activity that evidently took place in relatively recent times. Trenches both within and outside the feature produced abundant potsherds of both Byzantine and

Early Islamic periods. The ceramic evidence stopped abruptly at the base of the walls, and "subflooring" of the interior to a depth of ca. 25 cm produced only rolled chipped stone artifacts of indeterminate age.

It appears that the structure was an outbuilding built in late Byzantine times that continued in use into the Early Islamic period. Certainly there is nothing to suggest that the building had any relationship to the Neolithic period. Supporting evidence for this interpretation includes a small Byzantine farmstead on the extreme southern edge of 'Ain Ghazal, and there are indications of a small Umayyad settlement at the top of the hill some 150 m west of the stone structure.

### The Cave: Sq. 7704

A small opening visible in a limestone outcrop near the northwestern limits of the site (Fig. 1) indicated a cave of potential special use by the Neolithic residents of 'Ain Ghazal.<sup>2</sup> The northern half of the cave was excavated, which revealed that the karstic cavity extended some seven meters into the hillside; approximately four meters wide at its maximum extent, some 1.7 m of deposits had accumulated in the cave.

The excavation proved to be disappointing, for metal and organic artifacts

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1. The fieldwork was a joint project of Yarmouk University, San Diego State University, and the Desert Research Institute of the University of Nevada System. In addition to support from these three institutions, major funding was provided by the National Geographic Society (Grant No. 4069-89); the National Endowment for the Humanities (Grant No. RO-21633-88); AMOCO Corporation; The Royal Jordanian Airline; The Cobb Institute of Archaeology, Mississippi State University; and Earthwatch. The project was also supported and facilitated

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2. Cf. O. Bar-Yosef and D. Alon, 'Nahal Hemar Cave', *Atiqot* 18 (1988), p. 1-81.

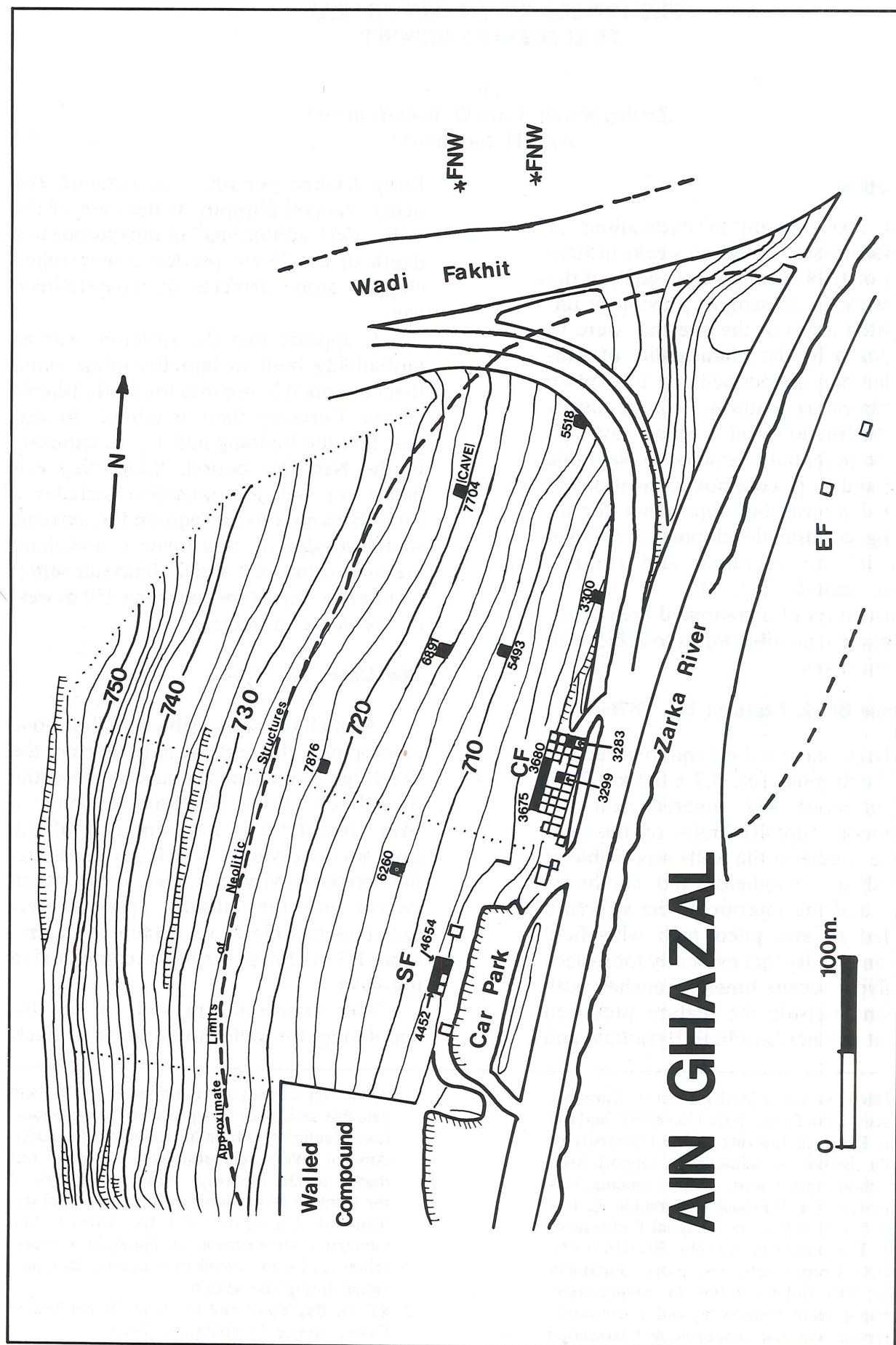


Fig. 1. Site map of 'Ain Ghazal showing the location of excavated trenches in the 1989 season (black squares and rectangles) and previous excavated areas (open squares and rectangles).



and modern glass sherds at the bottom of the deposits confirmed that the cave had been "pot-hunted" in very recent times. The cave appears to have been used in Byzantine times as a burial crypt, for a small chamber had been cut into the soft limestone bedrock. Scattered human bones (a few phalanges and ribs mostly) were found in the disturbed cave fill, and a small quantity of minute ribbed potsherds of Byzantine ascription was found just in front of the cave opening. It is also clear that the Byzantine modification of the cave had thoroughly destroyed earlier Neolithic deposits in the cave, for chipped stone artifacts of this period were found mixed with the human bones, pottery, and modern contamination.

### The Principal Excavation Units

#### *The Central Field*

Six 5 x 5 m trenches were opened in the Central Field to connect Sectors I and II examined in 1988. For the most part, these excavations concentrated on architecture and deposits of the Yarmoukian period, although PPNC layers were reached in almost all of the trenches. In addition, Sq. 3283 was also probed to locate potential surfaces associated with the apsidal building uncovered in 1985 and 1988 and/or with a Yarmoukian re-use of a PPNC house in Sq. 3483<sup>3</sup>; no clear evidence of such a surface was found. Furthermore, a burial was removed from the section in Sq. 3279, dating to Late PPNB times. Finally, the massive "courtyard wall" exposed in 1988 was sectioned in Sq. 3475 to obtain a clearer picture of the use of this feature.

#### *The South Field*

Work continued in several of the trenches excavated in previous seasons in

the South Field to gain a more complete exposure of architecture in this part of the site, which resulted in the complete plans of two house plans sampled in 1984 and 1988 (Pl. I,1). Both houses, each representing a successive phase of the PPNC period, are remarkably similar to the Level IV dwellings at Beidha, dated to the middle of the 7th millennium B.C.<sup>4</sup> There is some suggestion that the Beidha C-14 dates are erroneous, and that this southern Jordanian site may also have contained a PPNC component.

#### *The Exploratory Trenches*

The earlier seasons of excavation at 'Ain Ghazal (1982-1985) had proceeded methodically, but they had also sampled only a very small portion of the immense site. Because of the uncertainty of the schedule for the destruction of the site prior to the 1988 season, plans to sample the threatened areas could not be adequately drawn until the 1989 season. In addition to the two features mentioned earlier (Sqs. 7876 and 7704), we were able to open five isolated test trenches along the western and northern edges of the main site area. We chose three trenches because of their association with specific, apparently natural terraces (Sqs. 6260, 6891, and 5493), as well as two other trenches above bulldozer sections that revealed interesting evidence of architectural construction (Sqs. 3300 and 5518).

The cultural phases in these five trenches have not yet been worked out to our satisfaction, although it appears that in addition to expanding the area of PPNC and Yarmoukian construction, we have our first major exposure of Late PPNB (ca. 6,500-6,000 B.C.) architecture. At the present time, we consider that Sqs. 3300, 5518, and 5493 have transitions from Late PPNB (LPPNB) to PPNC deposits, and in Sqs. 6260 and 6891 the phase sequences

3. Cf. G. Rollefson, Z. Kafafi and A. Simmons, 'The 1988 Season at 'Ain Ghazal: Preliminary Report', *ADAJ* 33 (1989), p. 9-26.

4. Cf. D. Kirkbride, 'Five Seasons at the Pre-pottery Neolithic Village of Beidha in Jordan', *PEQ* 98 (1966), p. 8-72.



may run through the LPPNB-PPNC-Yarmoukian periods.

## Architecture

### *Central Field - Yarmoukian*

At least three and perhaps four phases of Yarmoukian occupations have been identified in the Central Field, although only two of these produced definite permanent architecture in 1989. Isolated wall stubs and scattered stone alignments in the two latest phases *might* indicate substantial construction, but they may also relate to temporary structures as well. The second Yarmoukian phase obscured much of the construction details of the earliest phase. Only the earliest phase can be associated with the massive stone "courtyard wall" uncovered in 1988 (see below), although the 1989 excavations did not provide much information concerning the earliest Yarmoukian structures. (This phase was documented better in the 1988 season). On the other hand, Sqs. 3676 and 3677 revealed part of a "Yarmoukian II" phase house and adjacent courtyard, which included an exterior stone bench attached to the house wall as well as geometrically arranged post holes that suggest an exterior "ramada"-like structure; this arrangement of an unwallled roofed area would have provided a shaded work area open to breezes and indirect sunlight.

The partial dismantling of the thick "courtyard wall" sought to clarify the sequence of use (and thus function) of this feature through time. It was confirmed in 1989 that the wall was originally PPNC in construction, although it was also shown that the wall was modified during at least the earliest Yarmoukian phase of occupation. An opening through the wall occurred during the "Yarmoukian I" period, although whether this was an intentional act to create a "gate" remains unclear; nevertheless, the opening was closed in Yarmoukian I or II times, and there

remains a single course of stones (of an undetermined number of courses) that added to the height of the original wall. The Yarmoukian modification is clearly delineated, for the addition is narrower than the original PPNC wall by a single row of stones on both sides.

Although aceramic PPNC cultural deposits were reached in the Central Field, there was little indication that PPNC architecture was encountered. This ambiguity is understandable in view of the tendency for Yarmoukian I inhabitants (and the still elusive "transitional" population) to modify, sometimes severely, earlier standing PPNC structures.

### *South Field - PPNC*

In 1989 we were able to expose the complete floor plan and adjacent outdoor areas of a PPNC house partially uncovered in 1988. The house appears to have been used over a very long time, for one interior PPNC wall partially covered a typical PPNB circular plaster hearth (Pl. I,1). The house also underwent several phases of modification during its use, including the closure of the northwestern "cell" after converting this small chamber to a burial crypt. The southern central "cell" also saw use as a special burial chamber, for a skull complete with mandible was found on the floor surface (Pl. I,2). Combined with the 1988 evidence, the dwelling appears to have been used throughout the entire PPNC period, including the transitional/early Yarmoukian modification of the front of the structure.<sup>5</sup>

The 1984 and 1988 seasons also partially revealed the floor plan and sub-floor features of an earlier PPNC house immediately to the south (Sqs. 4452-4454). The sub-floor chambers revealed in the northeastern room in 1988 appear to be unique, for they were not present beneath the other rooms excavated in 1989. Except for a north-south orientation of the central corridor, this dwelling resembled the other

5. Rollefson, Kafafi & Simmons, *op. cit.*, note 3.



## PPNC floor plan.

### *The Exploratory Trenches*

Recent deep agricultural plowing severely disturbed one or more Yarmoukian structures in Sq. 6260, although it appears that ceramic Neolithic occupations modified but maintained earlier PPNC structures. Of note in this respect is a single well-preserved cell similar in size to the PPNC structures in the South Field, although the walls of this cell are considerably higher, reaching >1.5m in height. It is possible that this architectural remnant may date originally to LPPNB times, modified for special use by PPNC inhabitants before final remodelling by Yarmoukian inhabitants.

In Sq. 6891 the corner of a Yarmoukian structure and an adjoining courtyard wall enclosed a partially preserved flagstone-paved courtyard. No PPNC structures were encountered, although aceramic levels were sampled at the bottom of the trench.

Sq. 5493 produced a frustrating record of events, for it is clear that at least one of the visible terraces at 'Ain Ghazal was an artificial creation of recent agricultural design. Modern artifacts were found deep into the trench, although uncontaminated levels were eventually reached. Only mere stubs of walls were found, probably (?) of PPNC date, although bedrock was reached at the bottom that exhibited a large bedrock mortar and a probable associated series of stone steps leading to it. The artifactual evidence is inconclusive, but it seems likely that the bedrock mortar is possibly as old as LPPNB in date.

Sq. 5518, on the cliff of the roadcut at the northern edge of the site, produced no *in situ* evidence of Yarmoukian deposits, although a relatively thin veneer of sediments has been ascribed to the PPNC period. The trench revealed a partially preserved house similar in many aspects to

the LPPNB structures at Baṣṭa<sup>6</sup> (much of the house was destroyed by bulldozers in the late 1970s). Rooms were square and small (just less than 2 m on a side) with connecting doorways between them. Despite a large (ca. 65 cm diameter, 40 cm preserved height) sun-dried ceramic vessel in one doorway, the deposits are clearly aceramic Neolithic, and the proportions of the room argue for a Late PPNB (*cf.* Baṣṭa) as opposed to PPNC (*cf.* South Field) or Middle PPNB (MPPNB) assignment; technological aspects of the lithic artifacts are ambiguous in this regard (see below). The floors of the structure are of typical PPNB manufacture, including the extensive use of red pigment, although no circular hearth was found in the preserved portions of the structure.

(The southwestern room of the house in Sq. 5518 evidently saw use as a storeroom for peas [and possibly lentils], for hundreds of charred peas were found on the floor. After this room caught fire, it was evidently abandoned, and the eastern door was blocked. The north door, however, was only partially blocked by the large sundried clay storage vessel, although it is clear that the roof of the room eventually collapsed while the other rooms were still in use. The charred peas should provide a very good radiocarbon date for the abandonment of this room).

Beneath a thin disturbed surface deposit of Yarmoukian and later ceramic pottery, Sq. 3300 produced a very restricted exposure of a corner of a channeled PPNC house in the southwestern corner of the square. Beneath this was a sequence of badly fragmented floors and tumbled wall fragments, all of them severely damaged during the Neolithic period, and no coherent architectural plans or sections were obtained for most of the depth of the trench. The base of the trench revealed two phases of aceramic architecture, but so little remained of the floors (the walls were completely robbed out during the Neolithic

6. H. Nissen *et al.*, 'Report on the First Two Seasons of Excavation at Baṣṭa (1986-1987)', *ADAJ* 31 (1987), p. 79-119.



period), that little can be said except that the few square meters of preserved red-painted plaster floors are more reminiscent of MPPNB structures than of LPPNB or PPNC constructions. Aspects of lithic technology are once again confusing for attempts to seriate the deposits, although typological seriation may be more productive in the near future. Several dense concentrations of charcoal indicate that the lowermost sediments in Sq. 5518 may be MPPNB in date, and radiocarbon samples are currently being processed to resolve the problem.

### Pottery

The pottery vessel samples from the 1989 season were principally restricted to the Central Field trenches, although significant ceramic-bearing layers were also found in Sqs. 6260, 6891, and to a lesser extent in 5493 (but with the problem of associated modern glass and metal, for example). Elsewhere non-contaminated pottery samples were isolated and generally restricted to the uppermost laminum of the depositional sequence.

As was the case in the 1988 season, Yarmoukian deposits were never particularly dense in terms of potsherds, at least compared to, for example, Bronze or Iron Age periods. This suggests a "cottage industry" situation, consistent with the onset of a tradition of local, small-scale ceramic production.

The repertoire of vessel forms was increased in the 1989 samples by the addition of crater forms, and several new handles and the presence of ring bases marked a broader variation in styles than had been previously documented for the Yarmoukian period at 'Ain Ghazal (Fig. 2). Bearing in mind the problem of the singular nature of the evidence, it is possible that one sherd indicates a bow-rimmed jar, suggesting that a very late

Yarmoukian/"Pottery Neolithic B" presence is testified at the site.

Based on the tentative stratigraphic phasing of the 1989 season, it is possible that there is a basis for distinguishing gross "early" vs. "late" Yarmoukian pottery phases on the basis of decoration. It was mentioned in an earlier publication<sup>7</sup> that the transition from the aceramic PPNC to the ceramic Yarmoukian periods was marked by small quantities of undecorated and relatively crude wares; this appears to be upheld by the 1989 stratigraphic samples. The appearance of "true" Yarmoukian pottery may be signalled by the appearance of red-painted or red-slipped pottery, followed by a later phase when incision (of chevrons in a cartouche, or as a herringbone design) occurs as a single design element or (more frequently) in combination with fields of red paint and/or slip. At least, the 1989 evidence suggests this sequence as a possibility, although it is admitted that much more intensive micro-stratigraphic work remains to be done.

### Chipped Stone Artifacts<sup>8</sup>

Initial ascription of cultural phases among the excavated sediments and associated materials in 1989 followed associations consistent with a) general patterns recognized in earlier excavation seasons at 'Ain Ghazal, b) with stratigraphic superposition, and c) with developments that would be expected to span previously inadequately sampled periods (especially the Late PPNB). It must be admitted here that some problems have arisen in relation to lithic technological aspects, but these appear to be principally associated with sampling problems (i.e., the restricted area and associated activities) in Sqs. 3300, 5518, and in the lowermost deposits of Sq. 6891 and the ascription of cultural deposits to the Late PPNB period.

The implications for the distinctions

7. Rollefson, Kafafi & Simmons, *op. cit.*, note 3.

8. We would like to thank Dr. D. Olszewski for

her preliminary technotypological analysis on which the following remarks are based.



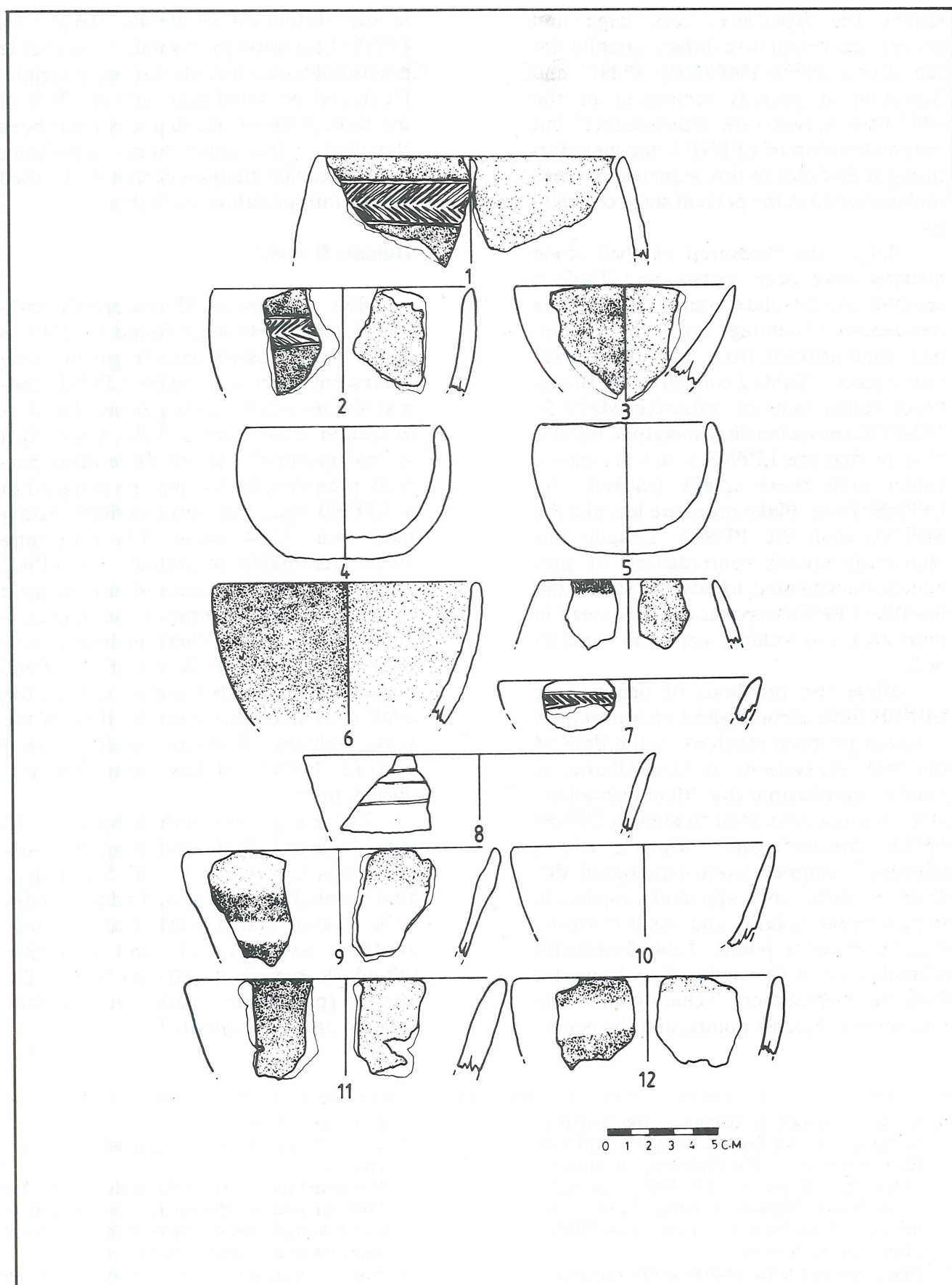


Fig. 2. Selected decorated Yarmoukian potsherds from the 1989 season at 'Ain Ghazal. (Drawing: D. Obeidat).

among the (spacially) very large and broadly representative lithics samples for the Middle PPNB (MPPNB), PPNC, and Yarmoukian periods recovered in the 1982-1988 seasons are indisputable,<sup>9</sup> but the relationship of LPPNB lithic manufacturing techniques in this sequence remains undetermined at the present stage of analysis.

All of the recovered chipped stone artifacts have been sorted, and Table 1 presents the absolute counts and relative frequencies of debitage categories of chipped stone artifacts from the 1989 excavation season.<sup>10</sup> Table 2 compares the Blade: Flake ratios that are effective MPPNB-PPNC-Yarmoukian discriminators, but it is obvious that the LPPNB ratios are inconsistent with these trends (indeed, the LPPNB Blade: Flake ratios are less like the MPPNB than the PPNC). Despite this apparently strong contradiction of previously documented trends, we stress that the 1989 LPPNB deposits are very small in both area and volume (ca. 25m<sup>2</sup> and 15 m<sup>3</sup>).

While the problems of determining LPPNB lithic technological characteristics have not yet been resolved on the basis of the 1989 excavations at 'Ain Ghazal, it must be emphasized that lithic technology alone has not been used to identify PPNB/PPNC distinctions. Among other features,<sup>11</sup> chipped stone typological differences were also apparent, especially large ("spear point") and small ("arrowhead") projectile points. Table 3 provides a breakdown of the analyzed tool samples from the 1989 season, including *all* of the recovered projectile points, and the gener-

al size distinction of PPNB "large" vs. PPNC/Yarmoukian "small" projectile points holds true for this restricted sample. (It should be noted that only ca. 25% of the tools from *in situ* deposits have been classified at this point; burin distinctions noted in earlier analyses cannot yet be used in the interpretation of Table 3).

### Human Burials<sup>12</sup>

The remains of 23 discernible individual interments were found in 1989 as well as numerous scattered fragments. One adolescent from a probable LPPNB context was recovered eroding from a bulldozer section in the Central Field, evidently a secondary burial. Two or three other partially preserved burials may be assigned to a LPPNB age, but more definite dating must await C-14 assays. The remaining 19-20 identifiable individuals are PPNC inhabitants, and the circumstances suggest secondary burial in most of the interpretable circumstances. These include a sub-floor interment beneath one of the PPNC houses in the South Field as well as the adult male skull placed on the floor of the same building. Notably, skull removal during PPNC times remains undocumented.

The sex-age determinations for all 23 individuals include the following: 8 infants (<12 mos.), 5 children (1-12.5 years), 1 adolescent (12.5-18 years), 5 adult females (>18 years), and 4 adult males. Infant mortality was very high, and altogether sub-adults comprised well over 50% of the sample (paralleling results from earlier seasons at 'Ain Ghazal).<sup>13</sup>

9. G. Rollefson and A. Simmons, 'The Neolithic Settlement at 'Ain Ghazal'. In A. Garrard and H. Gebel (eds.), *The Prehistory of Jordan*, Oxford: B.A.R. Int. Ser. 396, 1988, p. 393-421; G. Rollefson, 'Neolithic Chipped Stone Technology at 'Ain Ghazal: The Status of the PPNC, *Paléorient* (in review).

10. Detailed stratigraphic analysis is still underway, especially among the Central Field samples, and the ambiguous "Y/C" and "LB/C" categories will be eliminated as the stratigraphic correla-

tions are determined.

11. Cf. G. Rollefson and A. Simmons, *op. cit.*, note 9.

12. We would like to thank Scott Rolston for his brief synthesis of the human burials, and to Carol Butler for her assistance in the recovery of human remains during the season.

13. E.g. G. Rollefson *et al.*, 'Excavation at the Pre-pottery Neolithic B (PPNB) Village of 'Ain Ghazal (Jordan), 1983', *MDOG* 117 (1985), p. 69-116.



**Table 1.** Absolute counts (above) and relative frequencies (below) for debitage classes among the 1989 chipped stone artifact samples from 'Ain Ghazal.\*

	<i>BL</i>	<i>bl</i>	<i>FL</i>	<i>CTE</i>	<i>BS</i>	<i>MF</i>	<i>DE</i>	<i>OT</i>	<i>PL</i>	<i>COR</i>	( <i>TL</i> )	<i>Totals</i>
M	2,235	507	5,624	137	162	2,326	1,015	33	5	165	(1313)	12,209
Y	3,181	760	7,141	200	303	2,417	1,691	32	3	136	(1316)	15,864
YC	499	109	948	37	75	351	262	3	1	9	( 176)	2,294
C	2,430	700	6,520	160	158	3,570	2,404	37	1	121	( 771)	16,101
LBC	485	111	927	43	25	422	339	9	—	21	( 144)	2,382
LB	940	187	2,779	101	59	1,434	1,013	16	—	28	( 326)	6,557
MB	6	—	2	—	—	—	2	1	—	—	( 2)	11
<b>Total</b>											<b>(4048)</b>	<b>55,418</b>

	<i>BL</i>	<i>bl</i>	<i>FL</i>	<i>CTE</i>	<i>BS</i>	<i>MF</i>	<i>DE</i>	<i>OT</i>	<i>PL</i>	<i>COR</i>	( <i>TL</i> )	<i>Totals</i>
M	18.3	4.2	46.1	1.1	1.3	19.1	8.3	0.3	0.0	1.4	(10.8)	100.1
Y	20.1	4.8	45.2	1.3	1.9	15.2	10.7	0.2	0.0	0.9	(8.3)	100.3
YC	21.8	4.8	41.3	1.6	3.3	15.3	11.4	0.1	0.0	0.4	(7.7)	100.0
C	15.1	4.3	40.5	1.0	1.0	22.2	14.9	0.2	0.0	0.8	(4.5)	100.0
LBC	20.4	4.7	38.9	1.8	1.0	17.7	14.2	0.4	0.0	0.9	(6.0)	100.0
LB	14.3	2.9	42.2	1.5	0.9	21.9	15.4	0.2	0.0	0.4	(5.0)	100.1

\* Column codes: BL = blades; bl = bladelets; FL = flakes; CTE = core trimming elements; BS = burin spalls; MF = microflakes; DE = debris; OT = "other flakes"; PL = paleolithic; COR = cores; (TL) = tools (not counted in totals).

Row codes: M = surface and mixed contexts; Y = Yarmoukian; YC = Yarmoukian/PPNC; C = PPNC; LBC = Late PPNB/PPNC; LB = Late PPNB (ca. 6,500-6,000 B.C.); MB = Middle PPNB (7,250-6,500 B.C.).

These codes are used throughout Tables 2-7.

**Table 2.** Absolute and relative frequencies of blades and flakes among the *in situ* chipped stone artifact samples from the 1989 season at 'Ain Ghazal.

	<i>N</i>			<i>%</i>		
	<i>BL</i>	<i>FL</i>	<i>Totals</i>	<i>BL</i>	<i>FL</i>	<i>Totals</i>
YARM	3,181	7,141	10,322	30.8	69.2	100.0
YC	499	948	1,447	34.5	65.5	100.0
PPNC	2,430	6,520	8,950	27.2	72.8	100.0
LBC	485	927	1,412	34.3	65.7	100.0
LPPNB	940	2,779	3,719	25.3	74.7	100.0

**Table 3.** Absolute counts of chipped stone tools in the analyzed samples of the 1989 season at 'Ain Ghazal.

	YAR	Y-C	PPNC	LB-C	LPPNB
Spear points	13	1	9	3	9
Arrowheads	37	2	15	—	2
Sickles	11	1	5	3	—
Burins (all types)	80	—	44	10	—
Truncations	16	—	12	2	—
Scrapers (all types)	15	—	11	2	1
Denticulates	30	1	32	—	—
Notches	22	1	44	5	—
Perforators	16	—	17	1	—
Awls/borers	18	1	10	2	—
Drills	2	—	—	—	—
Bifaces	2	—	—	1	—
Axes/Adzes/Celts	—	—	5	1	1
Picks	—	—	—	—	—
Chisels	—	—	1	—	—
Choppers	3	—	—	—	—
Wedges	3	—	2	1	—
Knives	4	—	6	1	2
Backed blades	2	—	—	—	—
Tanged blades	1	—	3	1	—
Retouched blades	43	—	35	6	—
Retouched flakes	61	—	42	2	—
Other	2	—	1	—	—
Utilized blades	23	—	25	4	1
Utilized flakes	28	—	32	1	—
Indeterminate	4	—	6	—	1
<b>Total</b>	<b>436</b>	<b>7</b>	<b>357</b>	<b>46</b>	<b>17</b>

Pathologies were generally restricted to arthritic degeneration, especially in the feet, a pattern common throughout the samples recovered in earlier seasons at 'Ain Ghazal. Dental health was relatively good, although alveolar resorption (from gum disease) increased with age to often severe proportions. Enamel dysplasia was common, indicating severe health stresses during childhood.

It is worth noting in passing that no burials can be assigned with any degree of confidence to the Yarmoukian period, although one relatively intact burial in the Central Field must be assigned to the "transitional" aceramic/ceramic phase of

occupation. Notably, no definite Yarmoukian burials have ever been found at 'Ain Ghazal, even after four seasons of investigation of this phase.

#### Faunal Remains

Animal bones were abundantly produced in the 1989 season, far outnumbering recovered lithic artifacts. Severe encrustation on Yarmoukian and PPNC samples continued to hamper identifications, and the sheer volume has also slowed meaningful interpretations. All that can be said at this time is that patterns of earlier analyses appear to be maintained,



although the numbers of PPNC and Yarmoukian vertebrate species have been increased in small measure. It also appears at this stage of analysis that the dramatic decrease in vertebrate species from the MPPNB to the PPNC periods<sup>14</sup> had already begun by the LPPNB part of the late 7th millennium. Once again, resolution of the kinds of faunal exploitation must await radiocarbon dates.

## Other Finds

### Bone Tools

Table 4 presents the counts of all of the bone tools identified so far from the 1989 season, and there is little difference from earlier excavation seasons. It must be noted, however, that a considerable amount of bone tools are found during the analysis of faunal remains, and many more bone tools will be identified as the sorting of animal bone samples progresses.

### Figurines

Table 5 reveals that figurines were relatively rare in 1989, although the recovered specimens permit some interesting observations. The absence of any figurines from LPPNB contexts is a probable reflection of the restricted area of excavation, particularly in view of the numerous objects from MPPNB layers. One definite PPNC human clay figurine is non-descript because of the state of preservation, and another is probably human despite the fragmentary state of preservation. The same can be said of a piece from a Yarmoukian locus, but there are three splendid specimens, including a typical "coffee-bean" example,<sup>15</sup> an incised lime-

stone pebble,<sup>16</sup> and an as yet unique "parted-hair" head (Pl. II,1). Among the animal figurines, one probable goat has come from a Yarmoukian context, the first example of this animal from this period.

### Ornaments

Tables 6 and 7 tabulate the small finds attributable to "ornamentation", and the artifacts here are dominated by "bracelets", frequent in LPPNB, PPNC, and Yarmoukian deposits from earlier excavation seasons at 'Ain Ghazal. Beads are scattered in terms of raw material and temporal assignment, but no divergence from earlier patterns are notable; the few "greenstone"/turquoise pieces may include some "Dab'a marble",<sup>17</sup> but this has not yet been determined. It is interesting, perhaps, that land snails were used for pendants/beads/earrings found in LPPNB layers in Sq. 5518 (Pl. II,2). One of the Yarmoukian pendants listed in Table 6 is a lovely anthropomorphic specimen made of hippo tusk ivory (Pl. II,3).

Raw material differences among the cultural phases is difficult to confirm because of the restricted area/volume of excavations for each period (see Tables 6 and 7). Cowrie shells, for example, are scattered across the time scale, but there is a possible emphasis during the Yarmoukian period. Mother-of-pearl, on the other hand, remains restricted to the PPNC and Yarmoukian phases, a temporal structure noted in earlier seasons.

### Concluding Remarks

Although the 1989 season accomplished what we intended, it is unfortunate

14. Cf. I. Köhler-Rollefson, W. Gillespie and M. Metzger, 'The Fauna from Neolithic 'Ain Ghazal'. In A. Garrard and H. Gebel (eds.), *The Prehistory of Jordan*, Oxford: B.A.R. Int. Ser. 396, 1988, p. 423-430.

15. J. Perrot, 'La troisième campagne de fouilles à Munhatta (1964)', *Syria* 43 (1966), Pl. VI-13, 16-17.

16. E.g. M. Stekelis, 'A New Neolithic Industry: The Yarmoukian of Palestine', *IEJ* 1 (1950-51), Pl. iii-5.

17. Cf. G. Rollefson, Z. Kafafi and A. Simmons, 'The Neolithic Village of 'Ain Ghazal, Jordan: Preliminary Report on the 1988 Season', *BASOR Supp.* (in press).

**Table 4.** Bone tools from the 1989 season at 'Ain Ghazal.

	YAR	Y-C	PPNC	LB-C	LPPNB
Awl fragments	14	3	25	3	9
Spatula fragments	—	1	3	—	4
Needles	3	1	3	—	2
Polished rib fragments	4	—	10	—	—
Polished bone fragments	3	—	8	2	2
Serrated Bone	—	—	1	—	—
Other	1 <sup>a</sup>	—	—	—	1 <sup>b</sup>

a - "wand"

b - polisher?

**Table 5.** Human and animal figurines from the 1989 season at 'Ain Ghazal.

	YAR	PPNC	LPPNB
Human	3	1	—
Human?	1 <sup>a</sup>	1	—
Goat?	1	—	—
Cow	1	1	—
Animal, indet.	—	1	—
Animal?	—	—	1
Animal horn	1	1	—

Note: All the figurines listed above are of baked or sun-dried clay except:

a- limestone.

**Table 6.** Ornaments from the 1989 season at 'Ain Ghazal.

	YAR	Y-C	PPNC	LB-C	LPPNB
<b>Bracelets</b>					
Limestone	29	1	40 <sup>a</sup>	1	4
Alabaster(?)	1	—	2	—	1
Basalt	—	—	—	1	—
<b>Beads</b>					
Limestone	1	—	—	—	—
Snail shell	—	—	1	—	5
Greenstone	—	—	1	—	—
Turquoise	—	—	1	—	—
<b>Pendants</b>					
Mother-of-pearl	1	—	7 <sup>b</sup>	—	—
Cowrie	4	—	1	—	1
Sweet clam	2	—	1	—	1 <sup>c</sup>
Ivory	2	—	—	—	—
Boar tusk	—	—	1	—	—
Carnivore teeth	3	—	—	—	—
Bone	—	—	—	—	1 <sup>d</sup>
Limestone	—	—	1	—	—
"Blackstone"	—	—	1	—	—



Finger(?) rings					
Limestone	—	—	2	—	1
Bone	2	—	2	—	1
Button, Mother-of-pearl	—	—	1 <sup>e</sup>	—	—
Carnelian chunk	1	—	—	—	—
Greenstone chunk	—	—	1	—	—

a- one is perforated

b- two are double perforated

c- incised?

d- triple perforated

e- double perforated.

Table 7. Miscellaneous objects from *in situ* deposits of the 1989 season at 'Ain Ghazal.

	YAR	Y-C	PPNC	LPPNB
Game board, limestone	—	—	1	—
Painted bone fragment <sup>a</sup>	—	—	—	1
Obsidian chips	1	—	8	—
Geometric objects				
Sphere, limestone	—	—	1	1
Sphere, plaster/chalk	—	—	1	—
Macehead, basalt	1	—	—	—
Stone "cup", limestone	1	—	—	—
Perforated stone weights	3	—	2	—
Whorls, limestone	—	—	3	—
Double-perforated stone object	—	1	—	—
Pointed rod, limestone	—	—	1	—
Incised limestone object	1	—	—	—
"Worked" limestone piece	1	—	2	—
Plaster "nail"	1	—	—	—
Plaster cylinder	1	—	1	—
Shaped plaster/chalk fragment	1	—	—	1
Cord-impressed plaster piece	—	—	1	—
Pottery disc	1	—	—	—
Shaped clay (burned)	—	—	—	1

a- turquoise pigment.

to note that this season marks the final major excavation effort at 'Ain Ghazal.

The 1989 season was the sixth campaign of excavations, and despite a brief hiatus in 1986 and 1987, there remains an enormous amount of material to be analyzed in detail. The coming years will provide us the opportunity to conduct the research methodically and without undue pressure, and we anticipate that the volumes of the final reports of the excava-

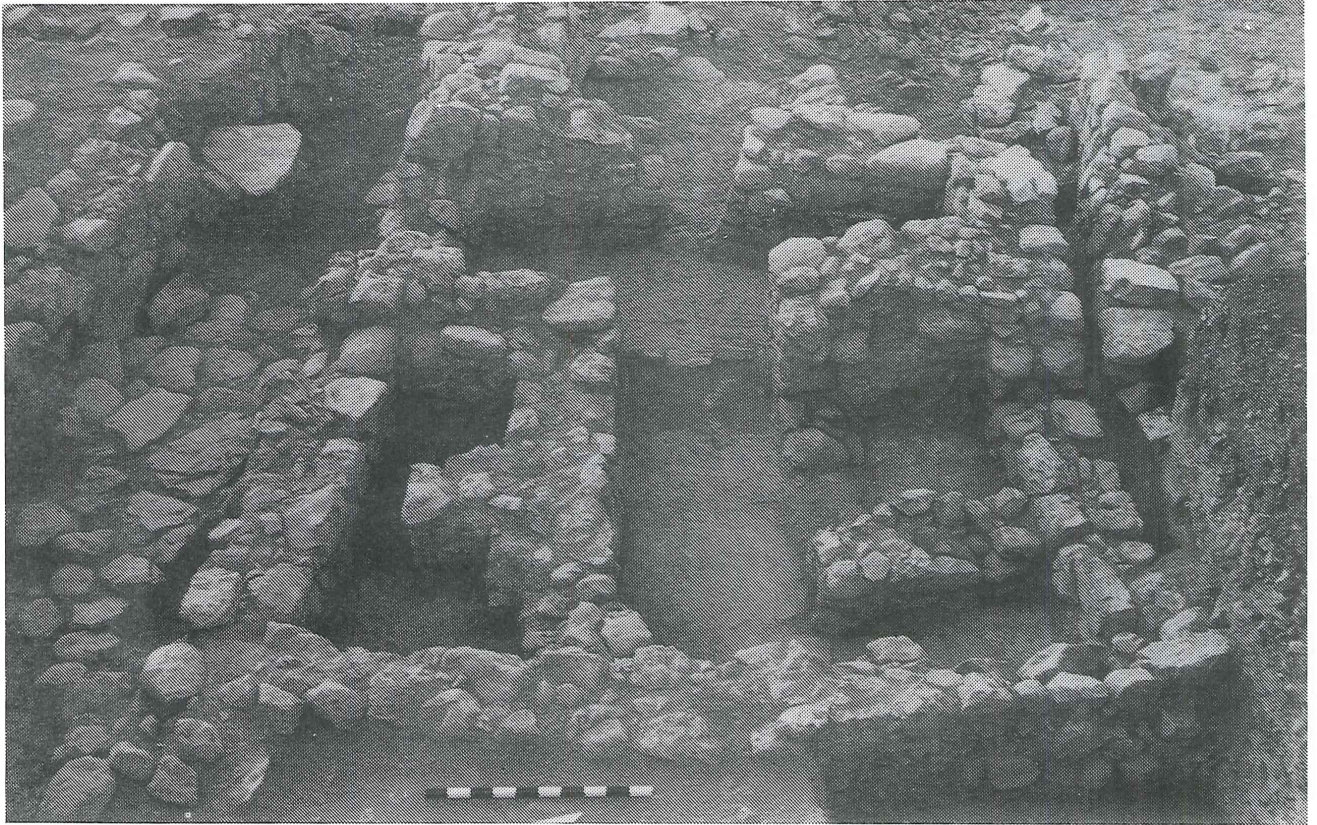
tion project will begin to appear as early as 1992.

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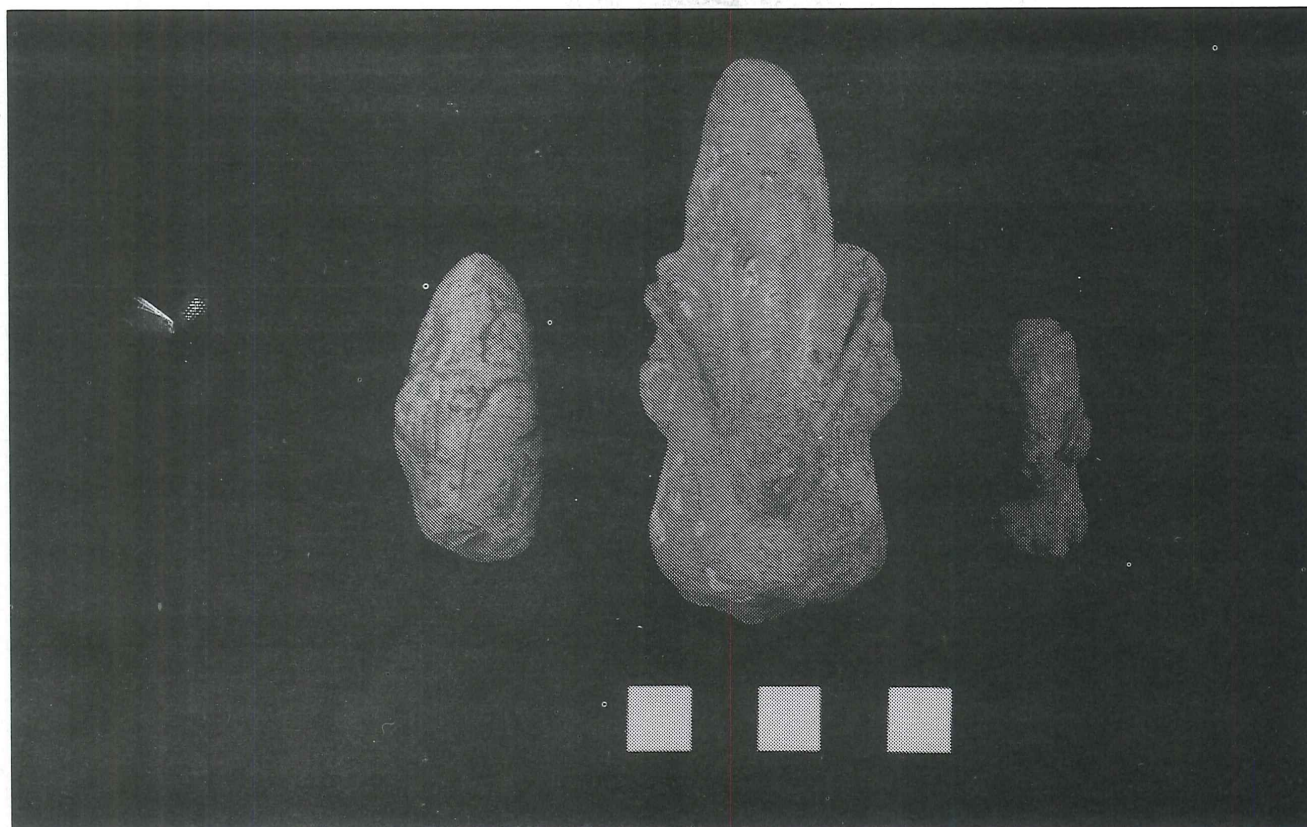


1. Complete PPNC house in the South Field, with entryway near the top (east) of the photo. A circular PPNB hearth is visible in the dark patch of the central corridor. A flagstone pavement lies just outside the wall on the left (north). Scale = 1 m. (Photo: L. Rolston).

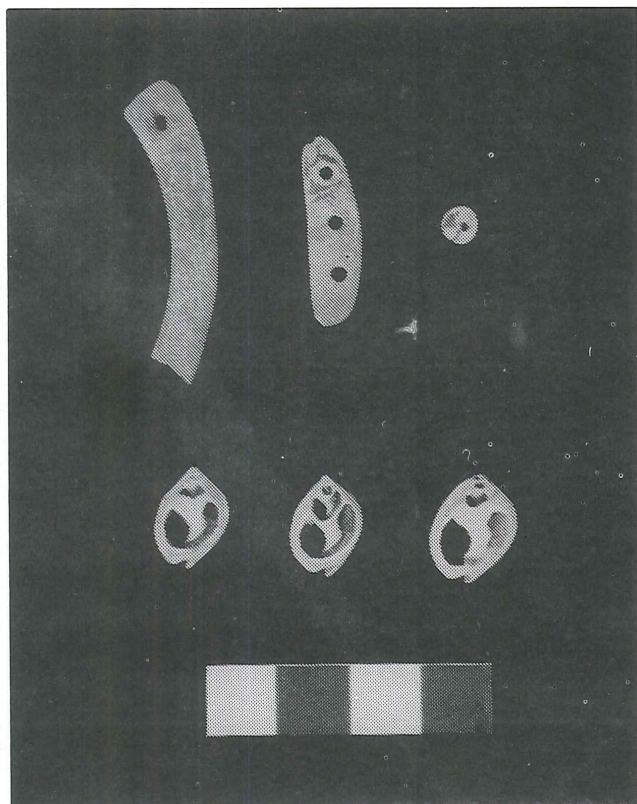


2. Adult male skull and mandible on the floor of the south-central "cell" of the house pictured in Pl. I,1. Scale = 25 cm. (Photo: L.R.)

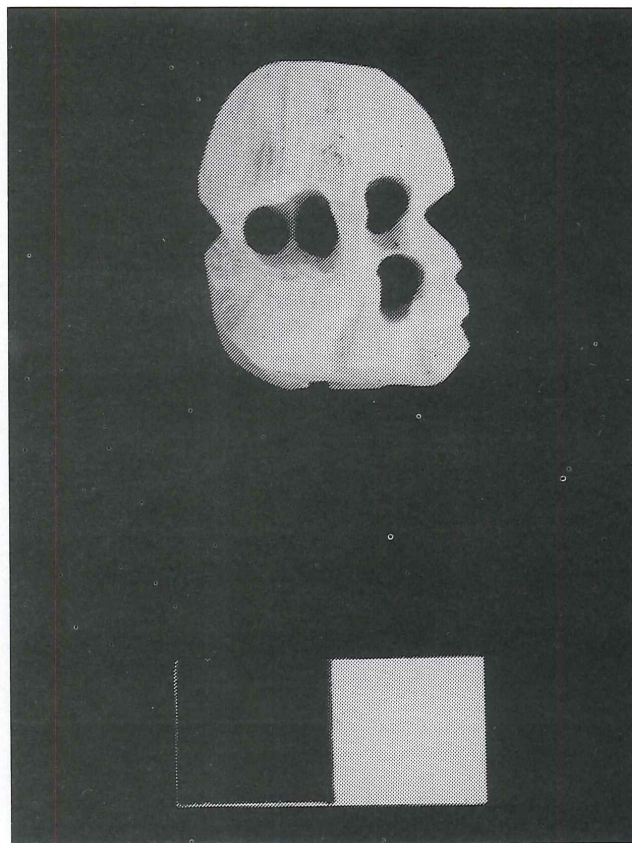




1. Yarmoukian human figurines from the Central Field. From left to right: incised limestone pebble, "coffee bean", and "parted hair". Scale = 5 cm. (Photo: L.R.)



2. Shell and bone ornaments from 'Ain Ghazal. Top row: PPNC mother-of-pearl; bottom row: LPPNB snail shells.



3. Yarmoukian anthropomorphic ivory pendant (hippo tusk) from 'Ain Ghazal.