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Excavations at Neolithic 'Ayn Ghazāl, 1993-1994

Introduction

After a four year hiatus since the close of the 1989 season, excavations were resumed at 'Ayn Ghazāl during 1993 and 1994 under the auspices of Institute of Archaeology and Anthropology, Yarmouk University, and the Department of Antiquities of Jordan. Efforts focused on continued investigation of changes in architecture, economy, and technology during the Yarmoukian, Pre-Pottery Neolithic C (PPNC), and Late Pre-Pottery Neolithic B (LPPNB) periods. A brief summary of the evidence for resource utilization and of the architecture from the two seasons is provided below (cf. Kafafi and Rollefson 1995; Rollefson and Kafafi 1994).

Synopsis of Resource Utilization at Neolithic 'Ayn Ghazāl

'Ayn Ghazāl was founded as an agricultural village at about 8,300 BC (calibrated) at a time when farming was supplemented with hunting and a growing control over herds of goats (Rollefson, Simmons and Kafafi 1992; Köhler-Rollefson and Rollefson 1990). Charcoal from fires and burned houses show that the area near 'Ayn Ghazāl was rich in terms of oak, pine, poplar and tamarisk trees, and charred seeds indicate a broad menu of domesticated and wild grains, pulses, and other plants (Rollefson *et al.* 1985; Rollefson and Simmons 1988). Goats were a major focus for the earliest residents of 'Ayn Ghazāl, probably domesticated in the seventh millennium (Köhler-Rollefson 1989), although other animals were probably domesticated during and just after the late seventh millennium, including cattle, pigs (Köhler-Rollefson *et al.* 1993; Rollefson and Köhler-Rollefson 1993) and especially sheep after 6,000 BC (Wasse n.d.). A dramatic decline in the variety of wild animal species among the faunal remains in the latter half of the seventh and throughout the sixth millennium testify to a marked alteration of the local vegetation cover, which has been ascribed to overgrazing of plant cover by goats and overutilization of woodland resources for fuel and construction purposes (Rollefson and Köhler-Rollefson 1992).

Inorganic resources used by the Neolithic 'Ayn Ghazāl

residents principally came from local resources. Limestone (both of soft and very hard quality) for house construction and other uses was abundantly available from exposures in the eroded az-Zarqā' River canyon sides immediately adjacent to the settlement. The excellent quality "pink-purple" flint that characterizes the PPNB lithics industry at 'Ayn Ghazāl (and many other contemporaneous settlements in the southern Levant) was traced to a broad outcrop in the Wādī Ḥuwayjir, about 2 km to the north of 'Ayn Ghazāl, during the 1993 season, and a probable seventh millennium flint quarry was located (Quintero, pers. comm.); in the sixth millennium, poorer quality flint outcrops in the cliffs around 'Ayn Ghazāl were resorted to with increasing dependence.

Clay used for animal and human figurines and a temporary experiment in pottery production (Rollefson and Simmons 1986) during the Pre-Pottery Neolithic phases was apparently obtained from the iron-rich colluvial deposits on the site itself, and to a lesser extent from a fine whitish clay band just above bedrock. Later, during the Yarmoukian phase of the Pottery Neolithic, a source of yellow clay at the northern edge of the site, at the junction of Wādī az-Zarqā' with Wādī al-Fakhit, appears to have been one of the principal sources. Lime plaster manufacture relied once again on the easily obtained soft limestone around the site; in the sixth millennium, lime plaster was replaced with *ḥuwwār*, a mixture of mud with crushed chalk that existed in both the Wādī az-Zarqā' and Wādī al-Fakhit at the northern edge of 'Ayn Ghazāl.

Not surprisingly, all of the essential requirements for a permanent (and large) farming population at 'Ayn Ghazāl were available within a short walk from the center of the settlement (see below for fields, hunting, and pastoralism). But 'Ayn Ghazāl residents also acquired exotic resources, either directly or indirectly. Bitumen, used for ritual (Tubb 1985) and profane purposes was probably obtained from the northeastern shores of the Dead Sea, a trek that could easily have been undertaken by one or more members of the 'Ayn Ghazāl population at any time. Some elements of jewelry reflect long-distance networks for Mediterranean and Red Sea shells, although many beads and pendants were made of locally available

animal bone and limestone. In the seventh millennium there was a strong reliance on copper ore for beads from the Wādī Dānā, although there was a gradual shift to the use of greenish "Dhabba marble" from nearby Wādī Jilāt at the end of the seventh millennium (Rollefson, Kafafi and Simmons 1990). Carnelian probably came from the sandstone outcrops west of 'Ammān. The most distant contacts of the 'Ayn Ghazāl residents are shown by obsidian fragments, whose color and opacity suggest a minimum of two sources in Anatolia.

The Late PPNB (6,500-6,000 b.c.)

At the end of the sixth excavation season in 1989, the 500-year long LPPNB period had been sampled over a combined area of only 60 m² in the South and Central Fields of 'Ayn Ghazāl. This under-representation of the LPPNB was mainly due to the extensive damage and destruction of late seventh millennium layers by later PPNC and Yarmoukian inhabitants of the village. Because this half-millennium is among the least-known periods of the Neolithic in Jordan, it was necessary to increase the exposure as much as possible. In 1989, a trench in Sq. 5518 in the North Field revealed remains of a substantial LPPNB structure (Rollefson, Kafafi and Simmons 1993: 114-115; Figs. 6-8) relatively unaffected by later occupations, so it was selected as a major focal point of the 1993 and

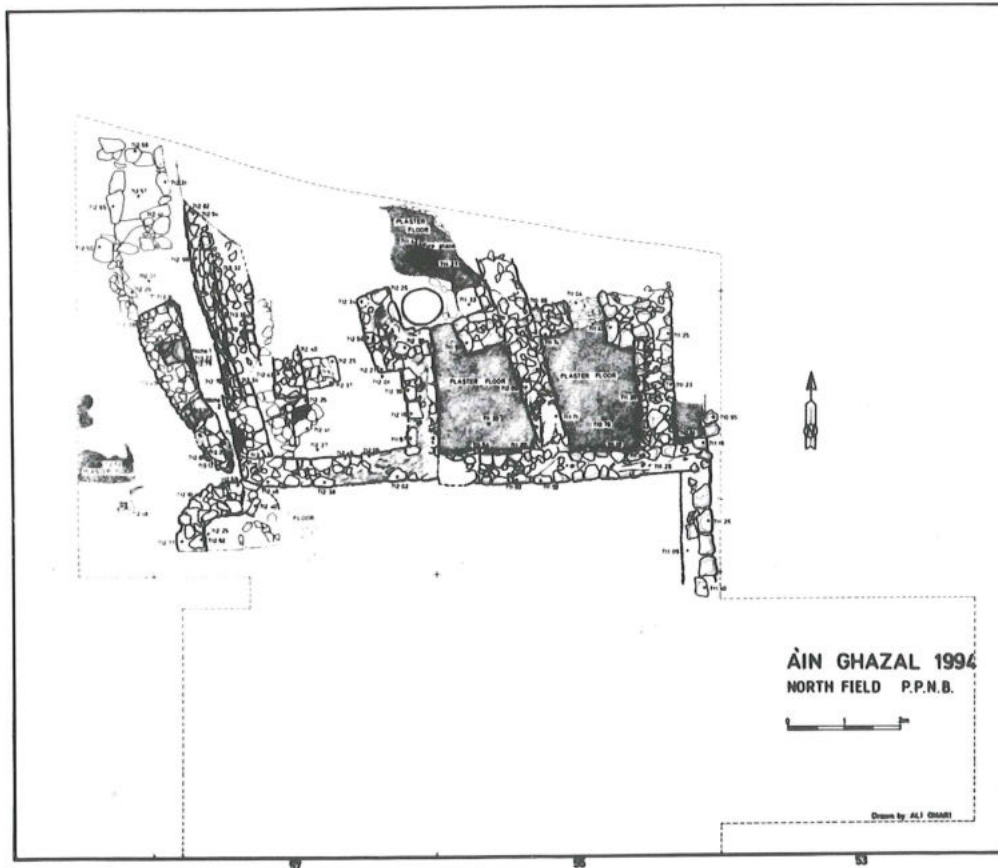
1994 seasons. Approximately 100 m² were exposed in several adjacent trenches centered on Sq. 5518 (FIG. 1).

The Two-Storeied House (FIG. 1)

The building first exposed in 1989 proved to be one of the largest structures encountered so far at 'Ayn Ghazāl. Much of the building was destroyed by recent highway construction and by erosion in prehistoric times, but parts of at least seven rooms climbed the hillside for at least 10 m in an E-W direction. The southern row of four rooms (numbered 1- 4 from west to east) were of moderate size, with dimensions of roughly 2 x 2 m, and each room opened to the north onto one or more other badly damaged rooms. Doorways also permitted access at least from Room 2 to Room 3, although this passage was later blocked; it is still unclear if another doorway connected Rooms 3 and 4.

The N-S dimensions of the building are unknown. Nevertheless, the western area of the house was at least 6 m wide, and minimally the building must have covered at least 60 m², and if symmetry played any role in the original construction, the house was perhaps about twice this size, placing it in the class of large buildings exposed at LPPNB Basta (Nissen *et al.* 1991: FIG. 1).

The LPPNB building suffered a severe fire, which was fortunate in several respects for our interpretations. First,



1. Plan of the two-story LPPNB house in the North Field. (Drawing: A. Omari).

it is now clear that the house consisted of two stories as a consequence of the ensuing collapse of the upper story into the rooms below. This is demonstrated in Room 1 (and to a lesser extent in Room 2) by the presence of burned-clay molds of ceiling beams that supported a thick, burnished, red-painted plaster floor. The room above Room 1 (and perhaps above Room 2) was evidently a storage chamber for peas, vetch, and lentils, numerous liters of which were recovered as charred remains through flotation.

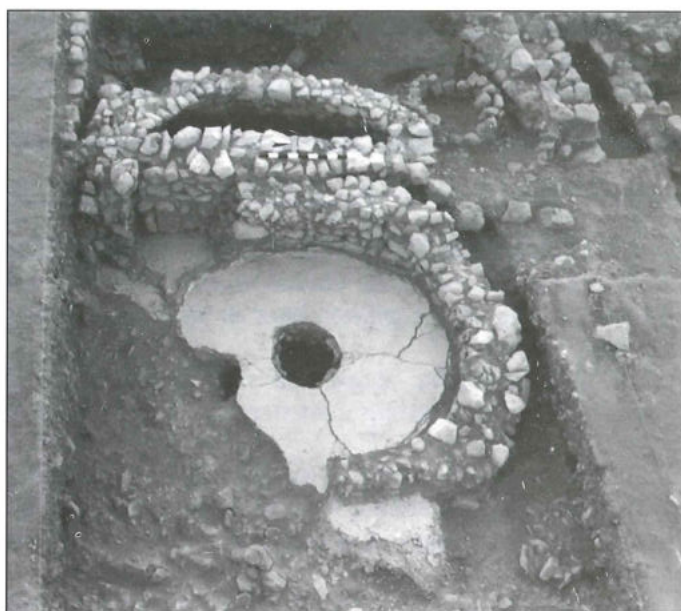
A sun-dried storage "pot" exposed in 1989 near the northern doorway of Room 2 of this building (Rollefson, Kafafi and Simmons 1993: 115 and Fig. 8). proved to be a "tubular silo" of clay using the plaster floor as its base; that is, it was not a vessel in the normal sense, since it had no clay bottom. A low plastered platform occurred nearby to the east, separated from the silo by an arc of small stone slabs, and a small (ca 35 cm diameter) hearth built into the floor was situated about 40 cm to the NE of the silo. With this combination of storage feature, platform, and hearth, the complex may represent a "kitchen area" of the building.

Based on a radiocarbon date of $6,050 \pm 80$ b.c. (uncalibrated) from charred pulses from the fill in Room 2 (Rollefson, Simmons and Kafafi 1992: Table 1), this building was destroyed by fire near the end of the LPPNB period. But a new structure was soon erected, using many of the earlier walls as foundations for the new building and construction techniques similar to those of the lower LPPNB house. Unfortunately, much of this more recent architecture was destroyed in the sixth millennium by PPNC residents, but it is clear that the most recent LPPNB building incorporated a narrow entrance passage at the west end. The westernmost wall formed a shallow arc with a preserved chord length of ca 2.2 m and stood about 1.2 m high. On the interior (east) side of the wall were two niches, each about $40 \times 40 \times 25$ cm. The northern end of the wall appears to have ended at a broad doorway leading to the exterior (west), while the southern end led to an entrance into the former Room 4 area. (This doorway was later blocked by PPNC remodelers). Future excavations in the area will help in reconstructing the terminal LPPNB construction.

The LPPNB Cult Building (FIG. 2)

In 1993 the remnants of the walls of a unique LPPNB structure came to light just a few centimeters below the eroded and bulldozed surface of Sq. 5517, just south of the LPPNB house described above. The structure proved to have four phases of use.

The first phase of construction is represented by a small, straight southern wall stub and adjacent red-colored plaster floor that curves up along it. A period of abandonment of unknown duration is represented by several centimeters of sediments that contain stony debris, although this layer is surmounted by another red-painted plaster floor coving up a southern straight



2. The LPPNB cult building in the North Field. (Photo: Y. Zoubi).

stone wall that joins a curved western wall arcing to another straight wall at the northern edge of the structure.

This second phase of the building's history appears to be short-lived, possibly due to the soft texture of the angular and chalky limestone used in the apsidal section to the west: the SW corner area began to collapse inward. The building was salvaged in Phase 3 by erecting a wall at right angles to the northern and southern walls (a chord across the Phase 2 apse and directly atop the Phase 2 floor), changing the shape of the building in the process.

Phase 4 entailed a totally new design: a circular wall was built directly on top of the Phase 2/3 floor, creating a room approximately 2 m in diameter. A doorway at the eastern perimeter of the Phase 4 circular room led to another room whose dimensions and shape are unknown due to erosional destruction, probably in prehistoric times. In addition to the striking geometry of the Phase 4 room, the floor was relaid at least six (and possibly more) times, with no evidence of deposits between the episodes; it seems probable that each new flooring episode included the application of red pigment, although this cannot be confirmed.

Perhaps the most striking feature of the circular room in Phase 4 is a relatively large central hole in the floor, 65 cm across and almost 40 cm deep (its bottom reached beneath the lowermost Phase 1 floor). At almost one-third of the diameter of the room (ca 2 m), it is clear this was not a massive post hole, a conclusion reinforced by the subfloor features that exist in the sides of the hole. Four small stone-lined channels lead pair-wise (N-S and NE-SW) from the central hole towards the exterior walls, although we have not yet determined if they actually led to the exterior of the building. Since the flat, hand-sized slabs lining the channels occur only along the vertical sides and across the top of the passageways, it is clear

that they were not intended to conduct fluids into or out of the hole; instead, it is probable that they were air ducts, perhaps to draw air into the central shaft for a hearth, perhaps an altar. All of the exposed surfaces of the floors of this structure, from Phase 1 through Phase 4, were coated with a dense layer of calcification, so no evidence of possible burning is available at the present time. It is clear, however, that at one time an installation of some kind existed in the central hole as shown by an upward curving of the plaster floor at the edges of the opening.

The uncharacteristic shape and size of the room of Phase 4, at least, is strong evidence that this was not a common domestic area. The repeated reflooring efforts conform to ritual reflooring of MPPNB houses following subfloor burials, and although we have not destroyed the floor to seek interments, it is likely that there is a ritual association with the replastering of the room's interior.

The radiating subfloor channels are also unparalleled in LPPNB architecture, although we wish to emphasize that LPPNB architecture is poorly known outside of al-Basta.

The presence of the calcareous encrustation on the Phase 2/3 and Phase 4 floors is frustrating, since it inhibits the detection of any possible painted designs on the surface. But the calcified deposits also are clear evidence that the floors were kept scrupulously clean until and even after the abandonment of the structure: any domestic trash would have been cemented to floors, but no such evidence was found. Altogether, the constellation of features indicates that the remodeled building served some non-domestic and probably cultic role for the LPPNB people living in this part of 'Ayn Ghazāl, at least during Phases 2-4.

The PPNC (6,000-5,500 b.c.)

Most of the PPNC architectural information from 1993 and 1994 came from the North Field. After the final abandonment of the LPPNB two-storied house, at least some of the standing walls were used by PPNC residents, who cut through at least one of the latest floors of the Room 4 area. The deposits in this sector were dark and ashy, reflecting heavy use of several firepits in the area bounded by the walls. This appears to have been an enclosed inner courtyard that served some industrial purpose. To the south of this small courtyard was a rectangular room approximately 2 x 3.5 m in size. In view of the elevations of the floor, it must have been semisubterranean, with a dirt floor and walls about a meter thick that reflect two phases of construction. The features of this structure stand out in stark contrast to the PPNC "corridor buildings" excavated in the South Field in 1984-1989 (cf. Rollefson, Simmons and Kafafi 1992: Fig. 5), which we have interpreted as storage bunkers (Rollefson and Köhler-Rollefson 1993: 36-37). The North Field PPNC building appears to have been a normal domestic building with an associated courtyard

and compound wall.

PPNC layers were encountered only on a small scale in the South Field in 1993 and 1994, and it is clear that Yarmoukian disturbance to the latest PPNC occupations here was extensive.

The Yarmoukian (5,500-?4,500 b.c.)

Almost 400 m² of Yarmoukian deposits were investigated in the South Field in 1993 and 1994. One aspect of village layout in the latter half of the sixth millennium became clear: housing density had decreased substantially. Yarmoukian houses were widely dispersed, with immense open courtyards dominating the village area. In comparison with the almost townhouse arrangement of buildings during the MPPNB period, it appears that 'Ayn Ghazāl's population had decreased acutely by the latter half of the sixth millennium.

The Yarmoukian House (FIG. 3)

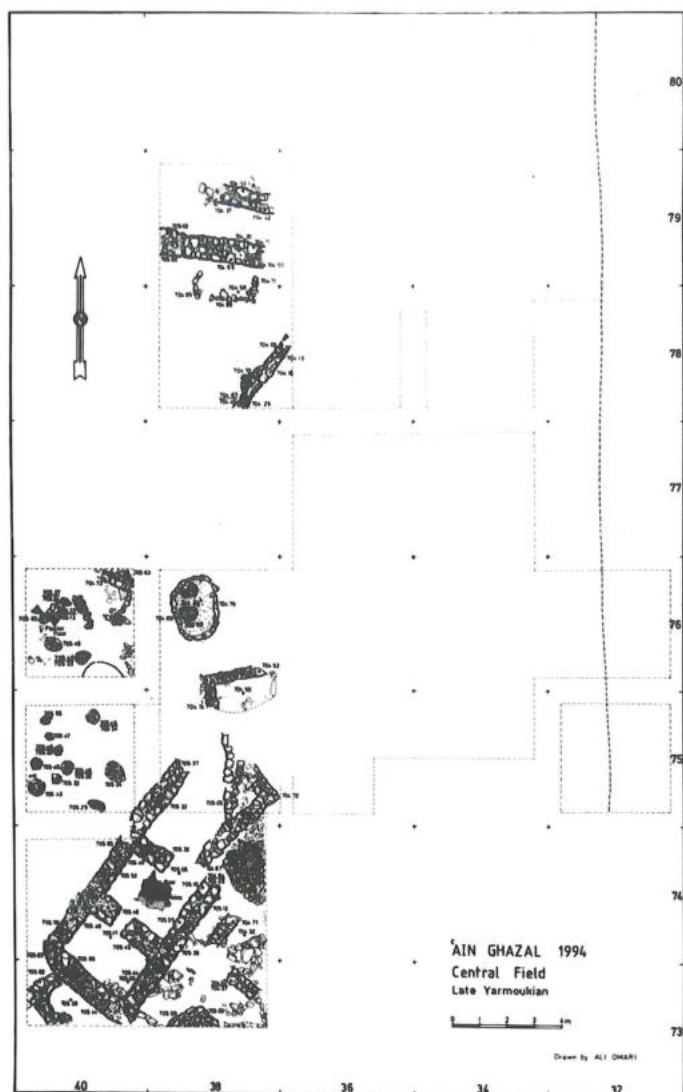
A nearly complete house plan was exposed in 1994. Oriented SW-NE, the length was preserved for about 9 m (although the NE end was destroyed some time after abandonment), while the minor axis (NW-SE) was almost 4.5 m wide. The house consisted of at least three rooms and possibly a fourth, although the area at the northeastern end may have simply been an open porch structure. Although the exterior walls defined an area of approximately 40 m² or more, the thickness of the walls (including interior partition walls) greatly reduced the interior room areas. Attached to the "back end" (SW) of the house was a small semicircular utility room with no apparent direct access to the interior of the house. To the NW of the house were several superimposed courtyard surfaces with fireplaces and postholes that suggest a ramada- or 'arisha-like shade structure, a feature noted in several other courtyard areas in 1993.



3. Yarmoukian house in the Central Field of 'Ayn Ghazāl. (Photo: Y. Zoubi).

The Yarmoukian "Kitchen" (FIG. 4)

At least three circular or elliptical stone platforms were uncovered during the two seasons. Measuring from 3 - 4

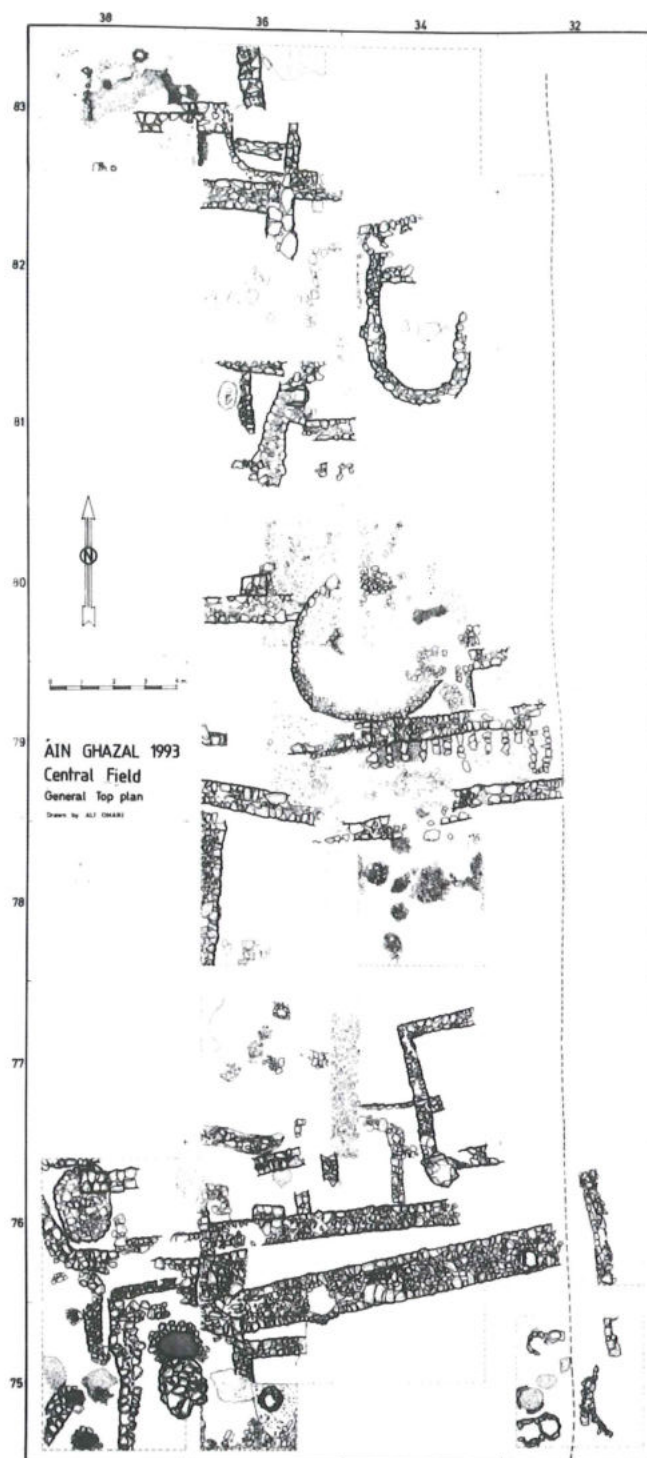


4. Plan of the Yarmoukian house (lower left) and the "kitchen" outbuilding (left center). (Drawing: A. Omari).

m², there was a general association with grinding slabs, which suggested that they were work areas in the courtyards. The largest platform was excavated in 1994. Stone slabs (including numerous grinding stones) had been set on edge to form an oval area of ca 1.5 x 2.5 m. Partially buried in the earth, the single course of stones probably anchored a flimsy superstructure of brush or skins to protect the interior. In the northern end of the enclosure was a large (ca 50 cm diameter) storage jar partially set beneath the surface. Just to the south, two large grinding slabs were set on edge, separating the storage section from the rest of the interior, whose surface was very ashy due to a small fireplace in the southern end. The small structure appears to have served as an outdoor kitchen, where grain or pulses were taken from the storage jar, ground to meal, then cooked or baked over the hearth.

The Yarmoukian Tent (FIG. 5)

The latest occupation phase at 'Ayn Ghazāl is represented



5. The circular Yarmoukian tent foundation lies adjacent to the walled street in the Central Field of 'Ayn Ghazāl. (Drawing: A. Omari).

by a large circular structure that was found just below the modern surface of the South Field. Approximately 4.5 m in diameter, the structure consisted of a narrow, low wall of small stones one to two courses high, with a broad entrance facing the NE. Flanking each side of the interior of the doorway were low stone platforms, and the floor had been prepared using *huwwār* plaster. Near the center of the building was a shallow pit about 50 cm in diameter, although it is not clear if this was a posthole or a hearth.

The small size of the stones and the narrowness of the walls indicates that this was a temporary structure that could represent the Yarmoukian version of Bedouin tents of much later times.

The sixth Millennium Street (FIG. 5)

The 1993 season produced one of the most impressive features uncovered anywhere in the Levant. Two stone walls in the South Field ran in an E-W direction, parallel to and about 15 m north of the Great Wall (Rollefson, Kafafi and Simmons 1993: Fig. 3); the Great Wall was built originally during the PPNC period but used well into the Yarmoukian as well. Between the two walls was a series of at least 13 steps 2.5 m wide that climbed the hill at intervals of 35-65 cm. The southern boundary of this walled street was repaired badly at one time and eventually destroyed during the Yarmoukian period, but the northern wall preserved two 75 cm wide gateways that opened from the street into courtyards. A single course of small stones acted as a "curb" at the gateways. The eastern end of the street was destroyed by bulldozers, but the street could be traced uphill for more than 9 m toward the west, where it was also destroyed by later Yarmoukian construction.

The street was certainly in use during the Yarmoukian period, as is shown by potsherds mixed into *huwwār* surfacing of the steps. But it remains unclear when the street was originally constructed: at the eastern end of the street, the dirt between the stone steps produced no pottery, suggesting that it may have been constructed in the PPNC at about the same time as the Great Wall. But this small area barren of ceramic evidence is insufficient in sampling terms to be conclusive, and the only way to make a convincing determination would be to excavate (and in the process destroy) the feature, which we do not wish to do. It is safe to conclude, on the other hand, that the walled street represents one of the earliest efforts at community planning, dating to around the middle of the sixth millennium.

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