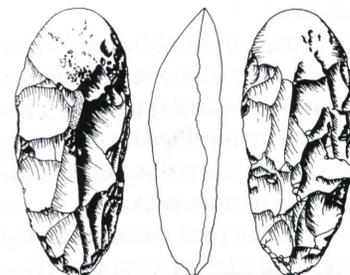


# ACOR Newsletter

## أخبار أكور



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## Milestones in Jordan's Prehistory

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### Introduction

Many people are familiar with the later antiquity of Jordan, and with such spectacular archaeological sites as Petra and Quseir 'Amra. Far fewer realize how rich Jordan is in prehistory, or what a central place it held in some of the most revolutionary changes in the human career. Long before the first written records, Jordan's landscape witnessed the spread of early humans into Asia from Africa, the development of sophisticated technologies for the manufacture of stone tools, the interaction between Neanderthal people with early modern humans, the beginnings of hamlets and villages, and the first steps toward agriculture, animal husbandry, political hierarchy and formal religious institutions.

### Palaeolithic (ca. 1 million to 20,000 years ago\*)

The first people who came to Jordan were tool makers whose fossil skeletons are classified as *Homo erectus*. So far none of their skeletal remains have been found in Jordan, but they left millions of their tools behind in campsites and caves in the western

hills and out into what is now the eastern desert. No one knows exactly when they arrived in Jordan, but dates on volcanic deposits in the Jordan Valley that overlie tool-bearing deposits show that they must have migrated from Africa more than 700,000 years ago, and possibly 1.4 million years ago. At that time, the Jordan Valley was much like eastern Africa and had not yet formed the deep rift we see today. The Lower Palaeolithic (ca. 1 million to 150,000 years ago) hunters were able to prey on elephants, hippos, antelope and smaller prey. They butchered the carcasses with tools we now call "handaxes": fairly large, and often finely made, pear-shaped flint axes



Lower Palaeolithic handaxe from Kilwah. Photo by James Sauer.

with a point at one end and a long cutting edge all around.

Later, in the Middle Palaeolithic, they developed new stone tools such as triangular spear points. We can find their campsites around the edges of the Pleistocene lakes that dried up to form the desert flats (Qa') of Jafr and Hasa and the remnant oasis of Azraq.

By this time, genetic changes had occurred as more modern forms of humans replaced *Homo erectus*. Around 100,000 years ago, early versions of modern *Homo sapiens* migrated out of Africa into southwest Asia. Fossil skeletons and tools found in caves in the Mount Carmel region of Israel indicate that these *Homo sapiens* were living there, and presumably in Jordan too, prior to the arrival of humans of the Neanderthal type around 50,000 years ago, who had independently evolved in Europe and more northerly parts of Asia. Although the relationship of the Neanderthals to modern humans is still controversial, it appears that they dwindled in numbers over the next millennia as modern humans fanned out from this region to colonize Asia, Europe, Australia and the Americas.

Modern humans made many innovations after about 40,000 years ago (Upper Palaeolithic). Although archaeologists tend to focus on the best preserved of these, the increasingly efficient stone tools, their culture would have been rich with art, ideology, costume, and oral tradition. Unfortunately, most of this does not survive.

### Epipalaeolithic (ca. 22,000 to 11,000 years ago)

This era is characterized by "microlithic" tools, which are actually the tiny components of composite tools. By this time tool makers knew that it was more efficient to make many small, highly standardized blades and geometric pieces of flint that could be fitted interchangeably into well-shaped wooden or bone hafts and easily re-



Epipalaeolithic microlithic tools from Qa'Khanna. Photo by James Sauer.



Prehistoric rock drawing at Kilwah (large animal above and a seated human below). Photo by James Sauer.

placed if damaged during use.

We also find that people were making the first beginnings of village life. At least part of the year, people of the Natufian culture (ca. 13,000 to 11,000 years ago) lived in small settlements of one-room, circular or oval houses, and were harvesting many wild plants, including wild wheats and barleys that would soon become domesticated crops.

### Early Neolithic (ca. 11,000 to 9,000 years ago)

At this time, small villages in the Jordan Valley and Damascus basin were probably the first in the world to domesticate wheat, barley, peas and lentils. In Pre-Pottery Neolithic A (ca. 11,000 to 10,000 years ago), they lived in round and nearly rectangular, one-room houses, usually on the lower slopes of the Jordan Valley where tributary wadis flowed in from the mountains. In Wadi Yabis, however, there is one case where the round huts are in a large cave high up on the wadi's walls.

During Pre-Pottery Neolithic B (ca. 10,000 to 9,000 years ago), large villages sprang up over all of the western part of Jordan, such as 'Ain Ghazal, near Amman, and Basta, Baja' and Beidha near Petra. Some of these settlements had more than 100 houses, so well built from stone and sometimes mud brick, that their walls sometimes stand to heights of more than 2 meters, even today. Their fine plaster floors were often painted red, and sometimes the walls were plastered and painted with abstract designs. Their economy included the cultivation of grain and legumes, the herding of goats, and the hunting of several animals, but most notably gazelle. The villagers included skilled tool-makers who made many tools from nearly mass-produced flint blades; sculptors able to mold small animal figurines as well as construct large, plaster-and-wicker statues of people; traders who brought volcanic obsidian, shells and other materials from Turkey or the Red Sea; and others skilled in making baskets or cloth. Some evidence from 'Ain



Beidha. Photo by James Sauer.

Ghazal suggests that their rich religious life may have centered on specialized shrines, and at this time Jordan participated in an advanced culture that stretched from the Red Sea to northern Iraq. Pre-Pottery Neolithic B settlements even occur in the steppes and deserts east of Azraq, where they may have been more heavily focussed on hunting gazelles and onagers (wild donkeys).

### Late Neolithic and Chalcolithic (ca. 9,000 to 5,500 years ago)

Most prehistorians tend to view the Late Neolithic and Chalcolithic as something of an anticlimax because most of the stone tools of these periods are much less skillfully made than in the earlier Neolithic. In fact, there were still some people able to make fine flint axes, sickle blades for reaping wheat, and beautiful knives and hide-scrapers. For everyday cutting tasks, however, people contented themselves with simple flakes that were fairly easy for anyone to make. At the same time, people made tremendous strides in other directions. By now their herds included fully domesticated sheep as well as goats, and probably their economy included pastoral nomads, the fore-runners of modern Bedu, as well as villages and scattered farmsteads. It is likely that they had begun dairy production, and possibly beer production, and their household wares



Copper slag at Feinan. Photo by Bert de Vries.

now include a tremendous array of pottery to prepare, contain and serve food and beverages. Some of this pottery is carefully decorated, perhaps to impress guests, and serves as a record of the time's artistic expression.

Other art included small clay figurines and abstract stone sculptures.

One of the greatest innovations during the Chalcolithic was the development of sophisticated metallurgical technology. Chalcolithic miners in the Wadi Feinan region of Jordan smelted copper out of the ore and used it to make ornaments, axes, maces and sometimes complicated crown-like objects that might actually be the regalia of chieftains. Many archaeologists would argue that Chalcolithic villages, such as Tuleilat al-Ghassul, had made the first steps toward political states or petty kingdoms more than 6000 years ago.

### Conclusion

There is much more to Jordan's prehistory than flint flakes. In fact, the prehistoric sites of Jordan and its immediate neighbors provide evidence for some



Excavation of a tomb in Wadi Ziglab. Photo by E.B. Banning.

of the greatest revolutions in our past. These include not only the origins of agriculture, village life and probably chiefdoms, but even the spread of modern humans themselves.

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\*The dates given in this article are rounded dates in calendar years before the present, and thus differ in many cases from the standard dates in the literature, which for later periods are uncorrected radiocarbon dates.

## Searching For Neanderthals and Finding Ourselves

Arguably, the most controversial issue in paleoanthropology today involves the various questions having to do with the emergence of modern humans. These center on alternative views of human evolution during the late Pleistocene, as encompassed by competing "continuity" and "replacement" models, as well as the question of the degree to which the behaviors of archaic and modern humans differed.

The prevailing view among researchers is that sometime after about 200,000 years ago, humans spilled out of Africa following a much earlier wave of dispersion. But unlike the earlier exodus that led to the spread of *Homo erectus* groups throughout the Old World, this putative, second expansion was composed of hominids that had evolved physical as well as cognitive and behavioral traits very similar to those of modern humans. Moreover, according to the replacement model, the adaptive advantages held by modern human groups enabled them to out-compete and ultimately supplant indigenous populations of archaic humans throughout the Old World. Intertwined with this notion is the idea that modern humans were able to achieve greater success in competition with indigenous archaic populations because of their advantages in cognition and behavioral organization. Most advocates of the replacement model do recognize how early misconceptions have come to depreciate our views of archaic behaviors as, for example, in the negative connotation of things Neanderthal. But many researchers nevertheless point to a wide array of archaeological data as evidence of what is thought to represent real cognitive and behavioral differences between archaics and moderns.



View of Tor Faraj looking up the Wadi Aghar from the southeast

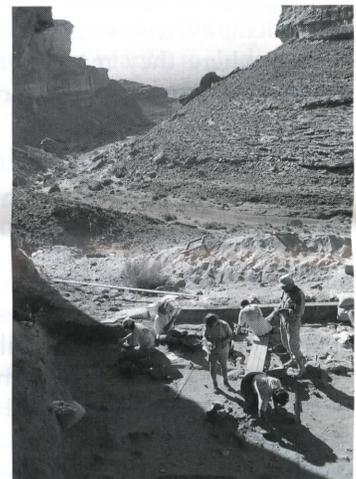
An alternative view among paleoanthropologists holds that while modern humans may have evolved in Africa, they did so elsewhere as well. This continuity model argues for regional evolutionary successions leading from *Homo erectus* to *Homo sapiens sapiens*. Although seen as geographically distinct, these succes-

sions are thought to have occurred at a roughly similar pace due to a limited amount of gene flow throughout the Old World. In contrast to the replacement model, cognitive and behavioral differences between archaic and modern populations are not emphasized by continuity advocates. They acknowledge cognitive and behavioral differences along an evolutionary continuum, but do not concede a sharp break between archaic and modern patterns.

In an effort to examine these competing models, a team of scientists coordinated by the University of Tulsa conducted research at a large rockshelter, Tor Faraj. The site is located roughly mid-way between Aqaba and Ma'an in southern Jordan. Over two summer seasons in 1994 and 1995, a large block was excavated in the 48-70,000 year old deposit, containing stratified Middle Paleolithic living floors. The excavation centered upon defining the ways in which the Mousterian and most likely Neanderthal occupants of the shelter organized their behaviors. Also, the research effort sought to determine the degree to which the behaviors defined at Tor Faraj differed from those documented for modern foragers in both archaeological and ethnographic contexts.

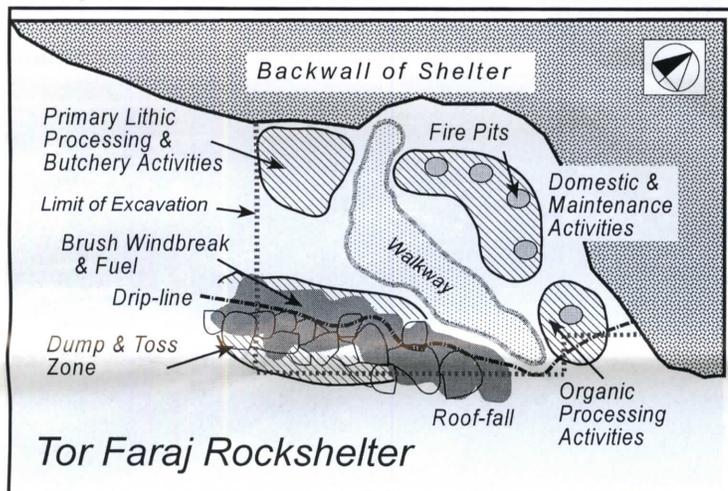
Statistical and spatial analyses of over 7,000 artifacts that were 3-D plotted within the deposit formed the core of the study. Beyond traditional technological and typological analyses of the chipped stone assemblages, focal studies examined micro-wear patterns and raw material varieties. Additionally, a highly successful refitting program was able to reform 209 artifacts into 68 artifact constellations. These artifact-based lines of evidence were examined in their relationship to geochemical data, phytoliths (silica bodies of plant tissue), numerous hearths, and various natural features (e.g., sunlight, temperature, rock-fall) of the shelter.

The study, now completed, is in the write-up stage and is scheduled to be finished this summer. What was learned? We found the spatial patterns of artifacts and associated residuals of behavior in the two living floors to be remarkably redundant. Therefore, these patterns as proxies of prehistoric behavioral organization can be viewed as habitual and normal, rather than exceptional. These patterns indicate that the archaic occupants of the shelter habitually segregated certain activities spatially within the shelter. We were able to define a large cen-



Excavation of Tor Faraj looking from the back of the shelter out of the Wadi Aghar canyon onto the broad floor of the Hisma Basin

trally located domestic area centered around a cluster of hearths. A wide range of activities were undertaken in this area as evidenced by the variety of lithic implements and reduction stages, wear-patterns, and phytolith types. Evidently plant, wood, and bone work was carried out here. Whereas some initial processing of lithics was undertaken, tools were mostly finished, rejuvenated and resharpened. Phytoliths, concentrated in the domestic area, suggest that roots and tubers of rushes along with dates were prepared in this part of the shelter. The phytolith study also indicates concentrations of the leafy parts of rushes near the backwall of the shelter, a likely area for bedding. Peripheral to the domestic area, two specialized activity areas were detected. One of these appears to have been used principally for the initial processing of lithics and for butchery. The other was used for butchery and food preparation.



Schematic plan of the excavation showing the areas of different activities that were reconstructed for Floor II based upon a synthesis of information obtained from the spatial analysis of artifacts, features, and natural evidence

The research at Tor Faraj shows a site structure that, in its complexity, challenges long-held notions that Middle Paleolithic, archaic organizational strategies were limited to simple, opportunistic, expedient, and routinized behaviors. In fact, when the spatial pattern data from Tor Faraj are compared to numerous living floor plans of modern foragers, one is struck by the striking similarities. Although the biologic relationship of Neanderthals and modern humans remains a complex, largely unresolved problem, data such as those from southern Jordan indicate that the behavioral organization of Neanderthals closely resembled our own.

Donald O. Henry, University of Tulsa

#### Suggested Readings:

Henry, D. (1995) *Prehistoric Human Ecology and Evolution*. Plenum Press: New York.

\_\_\_\_ (1998) *Prehistoric Archaeology of Jordan*. BAR, Archaeopress: Oxford.

Mellars, P. (1996) *The Neanderthal Legacy*. Princeton University Press: Princeton, N.J.

Shreeve, J. (1995) *The Neanderthal Enigma*. William Morrow & Co.: New York.

Stringer, C. and C. Gamble (1993) *In Search of Neanderthals*. Thames and Hudson: New York.

## Wadi al-Hasa

The Eastern Hasa Late Pleistocene Project (EHLPP) conducted its second field season from 24 May to 5 July, 1998. Fieldwork continued to focus on investigating changing hunter-gatherer settlement patterns, subsistence, and technology associated with a lake/marsh ecology in the eastern Hasa from about 40,000 to 11,000 B.P. Renewed excavations were carried out at three sites while test excavations were initiated at one new site.

Of some significance is the documentation of the rare Levantine Middle-Upper Paleolithic transition at the rockshelter of Tor Sadaf (WHNBS 8). Excavations in 1998 expanded the two 1997 test units to expose six additional contiguous units to a depth of 1.25 m. The lithic assemblages in the lower strata are clearly transitional, exhibiting an in situ technological transition from the late Levallois Mousterian to the early Upper Paleolithic. This transition is succeeded by a well-defined Early Ahmarian assemblage that is dominated by a blade/bladelet technology and el-Wad points. The transitional component makes it one of a handful of such sites in the Levant; however, the site is even more rare in that it demonstrates clear continuity between the lower transitional and upper Ahmarian components. To date, no other site in Jordan or elsewhere in the Levant appears to document stratigraphically the assumed technological evolution from the terminal Middle Paleolithic to early Upper Paleolithic.

Test excavations at the new site of Thalab al-Buhira (EHLPP 2) revealed an interesting series of occupation episodes during the early to middle Upper Paleolithic. Situated on the ancient shorelines of Pleistocene Lake Hasa, the site contains exceptionally well-preserved faunal material in stratified lacustrine marl sediments. Large mammal bones, teeth, and lithic artifacts are eroding out from well-defined horizontal strata. Three areas of the site were tested with each providing evidence for different occupation episodes and different activities. Dense artifacts and a diverse assemblage of lithics and fauna characterized the Locus E units, while Locus C contained a thick bed of butchered bones and a predominance of narrow endscrapers, presumably for the extraction of marrow. A single knapping episode was uncovered in Locus J. The most distinctive artifacts recovered from the site include eight Ksar Akil scrapers featuring micro-serration, a type of retouch found on numerous artifacts at the site.

Renewed excavations also occurred at Tor Sageer, an

early Epipaleolithic rockshelter. Of special note was the discovery of a large area used repeatedly for hearths. At least two occupation horizons are present. One is associated with the use of the hearth area, and the second is attested to by red ochre staining in the deposits immediately above bedrock. Spatial differences in activities were reconfirmed, with an emphasis on core reduction in the eastern section of the rockshelter. The lithic assemblage includes La Mouillah points, arched backed bladelets, backed and truncated bladelets, rare Qalkan points, and microburins. There is a large, well-preserved faunal assemblage.

The collapsed rockshelter at Yutil al-Hasa, a site with late Upper Paleolithic (Area A), and early (Area C) and late (Area D) Epipaleolithic occupations, was also subject to renewed excavations. In Area A, Ouchtata bladelets are the most common tool type. In addition to two hearths located in 1984, two probable occupation surfaces were recorded. The upper surface is associated with one of the hearths, and is characterized by abundant bone and lithics. The lower surface has abundant trimming flakes and shatter. In Area C, the lithic assemblage includes La Mouillah points, backed and truncated bladelets, and arched backed bladelets, as well as microburins. Of some interest is the lithic assemblage from the lowest levels, which contains Ouchtata and Dufour bladelets, types generally considered typical of the Upper Paleolithic. These may indicate that Area C has two distinct chronological periods. Area D produced lithics of the early Natufian phase, including Helwan lunates, Helwan retouched bladelets, and microburins, as well as abruptly backed lunates. A small pit feature was uncovered just above bedrock.

EHLPP excavations during 1997 and 1998 have revealed a particularly rich late Pleistocene record in the eastern Hasa, emphasizing the great time depth and richness of Jordan's palaeolithic legacy.

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## Bawwab al-Ghazal

Research at Bawwab al-Ghazal focussed on a search for the origins of nomadic pastoralism. Surface collection of 6,000 m<sup>2</sup> and initial excavations were conducted at Bawwab al-Ghazal on the Azraq Wetland Reserve of arid, eastern Jordan. The site occupies a low mound on a former slough in a marsh environment between the springs of Azraq Oasis and Azraq Lake. The site was first used as a hunting camp during the early Natufian period, about 10,500 years ago, and excavation of one discrete Natufian locus yielded a bladelet industry, some 40 lunates, many bladelet tools, and bone fragments. Most of the occupation, however, dates to the Late Pre-Pottery Neolithic B, between 8,500 and 8,000 years ago.

Bawwab al-Ghazal was selected for study because

surface artifacts were of forms common in highland townsites of early Neolithic farmers and herders. Bones of early sheep or goats, neither of which were native to the lowland desert/steppe, and apparent goat horn cores were excavated from LPPNB deposits. These elements are considered evidence that the animals were brought down to the desert from villages in the highlands to the west. Genetic studies are planned to compare the early herd animal population with that recovered from Neolithic sites in the Highlands, and may indicate the home territory of the people that camped at Bawwab al-Ghazal. Studies of dental annuli, or growth rings on teeth, of sheep/goats and analysis of bird bones, many species of which were migrants between Eurasia and Africa, will be undertaken to determine the season(s) of site use.



Aerial view of Azraq. Photo by James Sauer.

While in the marsh zone, hunting seems to have been a major economic strategy of the inhabitants of Bawwab al-Ghazal. Thousands of bone fragments recovered in the course of excavation await firm identification, but they clearly indicate that large mammals, probably aurochs (ancestral wild cattle), onagers or other equids, and especially gazelles were regularly hunted, as were water birds of many species.

Construction appears on the surface in several areas as partly exposed stone alignments oriented perpendicular to prevailing winds. One excavated alignment was two tiers high and linear in configuration, suggesting anchorage for reed huts or tents.

An important industry was the production of shell and stone beads and other ornaments. Most of the shells are tentatively identified as those of a locally available aquatic snail, but a few are of marine origin. Many disk-shaped beads are of white, pink, and red stone, but evidence of their local production is limited. More important was on-site production of beads and pendants of many forms from a soft, pale green stone known locally as "Dabba marble." The material occurs as lumps in exposures of limestone on the site. It was flaked, ground

to form, and then drilled. Many delicate bead drills and many failed or aborted beads were recovered. It is significant that beads of the same green stone appear at the Neolithic site of 'Ain Ghazal near Amman in the same time period, thus supporting a connection between the desert and highland regions.

Bifaces, probably knives, many made on thin "seam" flint, account for more than half of the assemblage of formed flint artifacts. Hundreds of weapon points were recovered, underscoring the prevalence of hunting activities. Perforators and drills, including bead drills made on burin spalls, are also abundant. Seventeen obsidian pressure-blade fragments that appear to be of Anatolian origin attest to long-distance trade.

Thus, Bawwab al-Ghazal gives evidence for lengthy use of the marsh zone around the former Azraq Lake for some 3,000 years. It also provides initial data supporting the development of nomadic pastoralism during the Neolithic of the Levant, as early as 8,500 years ago.

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*University of California, Riverside*

*Gary O. Rollefson, Whitman College*

## **Ghwair I: A Small But Complex PPNB Settlement in the Wadi Feinan**

One of the most remote areas of Jordan is the Wadi Feinan, which drains to the larger Wadi Fidan. Yet this region, with its spectacular mountains and harsh desert scenery, is presently the scene of numerous archaeological investigations led by a variety of international and Jordanian scholars. One site originally investigated in the early 1990s by Mohammad Najjar as part of the German led Archaeometallurgical Investigation Project is the spectacularly preserved Pre-Pottery Neolithic B (PPNB) village of Ghwair I. Beginning in 1996, the authors renewed excavations at Ghwair I.

One of the project's major goals is to investigate Neolithic "core/periphery" relationships. In particular, we wished to examine whether Ghwair I, located in the periphery of the Neolithic world, functioned as a "frontier outpost" with minimal amenities, or if it was an elite, but small center. We wish to compare small settlements such as Ghwair I with larger Neolithic core centers, such as 'Ain Ghazal, Wadi Shu'eib, or Basta. Another project objective is to initiate paleoenvironmental and paleoecological reconstruction, and determine if the occupants of Ghwair I contributed to environmental degradation. Finally, we wish to better determine the site structure of Ghwair I, seeking to define its boundaries, architectural layout and possible social indicators, material culture, and chronology.

Ghwair I is located on a hillslope at an elevation of 290-320 m above sea level with a commanding view of Wadi Ghwair/Feinan. The site is small, covering an estimated 1.5 acres. Our renewed excavations have concentrated in six areas of the site, including portions that had been previously defined. The well-preserved archi-

ture is certainly the most spectacular aspect of the site, with walls containing windows and doorways preserved to over 4 m high in one instance.

The architecture at Ghwair I is relatively typical of the PPNB, but seems to exhibit some unique characteristics. For example, in 1996, a large room ("Room 1") containing several niches was partially excavated and completed during the 1997/98 season. This is an unusually shaped structure, roughly square, but with a "jog" in the western wall. The southern wall contains at least 3 niches, and the western wall has a blocked-in doorway. The western wall also has a small niche, a plastered bench, and a window-like feature. At least two of the "niches" may have functioned as vents, as they are "hollow" up the length of the walls. This room was an unusually complex structure for the PPNB period. The presence of several niches and other wall features suggests a special-use function.

During the 1998/99 season, we expanded the excavations to include units adjacent to Room 1. The new units included portions up to the eroded western edge of the site. Excavation was to the approximate levels of Room 1, and a complex of structures has now been exposed. Based on current exposures, Room 1 appears to be a core from which surrounding rooms expanded off. Many of these are small bins, several with passageways. Rather than follow typical rectangular arrangements, however, these are arranged less symmetrically. Eight bins were excavated, in arrangements of four, three, and one contiguous units. Most had plastered floors. Portions of attached rooms also were excavated. Material was relatively rich, although the floors were usually cleared. Plaster, much of it red painted, also extended up to the walls of some of these structures. Chipped stone and, especially, ground stone was abundant and varied in this region.

Several other structural features are of interest. The earliest building phase seems to have included a very large room, approximately 10 meters on each side. Also of interest is a series of thick and parallel walls that may have served as retaining walls to prevent erosion or for water control. Of particular note was one room with a "cache" of goat and cattle skulls laying nearly directly on a plastered floor. This room appears to be a workshop of some sort, since in addition to the goat skulls there was another "cache" of chipped stone blades and points, a polishing stone with malachite imbedded into it, and several malachite pendant "blanks." Finally, beneath this floor, where the plaster was disturbed, was a typical Neolithic burial in that it is beneath a structure's floor and is in a flexed position.

The abundant artifacts thus far recovered include a large chipped stone assemblage that is typical of the PPNB. During the seasons, a huge quantity (nearly 50,000 pieces) of chipped stone material was systematically recovered. Although analysis is still underway, there is an unusually large number of projectile points present. A wide array of ground stone also occurs, with

many unusual pieces. There also are numerous small finds, such as spindle whorls, beads made of bone, stone, anthropomorphic and zoomorphic figurines, and marine shells. Significantly, a small number of potsherds also has been recovered, suggesting either a later Pottery Neolithic component or early experimentation of ceramic manufacture.



Part of a "mask"?  
Drawing by Renee  
Kolvet.

One particularly unusual artifact is a small, finely incised piece. When viewed laterally, it resembles a small bowl or cup of some sort with one extremely flat end. When placed vertically on the flat end, however, it is suggestive of the back part of a composite figurine bust. The artifact could represent the back of a head, with the incisions indicating a stylized "hairdo;" a molded face or "mask" could have been fitted into the hollow formed by this foundation. This admittedly is speculative, but it is a tantalizing functional reconstruction.

Faunal material, under analysis by Paul Croft, is quite rich.

Thus far, many have been identified, including caprines, cattle, pig, a small carnivore, and one or more species of bird. Paleobotanical material also were recovered and are being studied by Reinder Neef, who has identified charcoal, barley, emmer wheat, pea, and pistachio. Finally, Rolfe Mandel conducted a preliminary geomorphological analysis of the site. Among other things, he will study the possibility that the inhabitants of Ghwair caused severe environmental stress, as has been suggested for larger Neolithic core settlements such as 'Ain Ghazal.

In conclusion, our renewed investigations at Ghwair I have proven extremely successful. Even though it is a small site, covering approximately two acres, Ghwair I now appears to have been a complex village. This suggests that it was more than a mere frontier "outpost." Its relationship with a wider early Neolithic "interaction sphere" is yet to be determined. In the future, it will be interesting to compare this small site with the numerous large Neolithic "mega" settlements with near "urban" characteristic that have recently been documented in both central and southern Jordan.

*Alan H. Simmons, University of Nevada at Las Vegas*  
*Mohammad Najjar, Department of Antiquities*

## The Impact of 'Ain Ghazal

One measure of the importance of an archaeological site is the effect that the information recovered from it has had on earlier interpretations of cultural development. In this regard, 'Ain Ghazal ranks among the most

important sites in the Near East for our understanding of environment surrounding the emerging social complexity of the Neolithic period between 7,250 and ca. 5,000 B.C. (uncalibrated).

One of the most important aspects of the archaeological record at 'Ain Ghazal is the length of uninterrupted occupation. The encyclopedia sediments at this settlement crossed more than two millennia of continuous adaptation to the changing physical and social environments, and they provide a detailed picture of the daily life-styles adopted by the residents. Within this unfolding prehistoric sequence was a period of cultural change



PPNC (?) limestone figurine from 'Ain Ghazal. Photo courtesy of Gary Rollefson.

that had previously gone unrecognized: a 500-year span of the early 6th millennium that we dubbed the "PPNC". Until our research at 'Ain Ghazal, archaeologists had postulated a virtual abandonment of the southern Levant from ca. 6,000 to ca. 5,000 B.C. on the basis of widespread site abandonment in the Jordan Valley and Palestine, and this occupational hiatus was blamed on climatic deterioration that made farming unreliable. It is now

clear that 'Ain Ghazal (and several other settlements in the Jordanian highlands) maintained an agrarian base throughout the 6th millennium, and that the cause for settlement collapse to the west of the highlands must have been due to other factors than simply a reduction in rainfall.

One of the most striking features of 'Ain Ghazal was its relatively enormous size. With preserved evidence of 15 hectares (ca. 38 acres), four Jerichos or five Beidhas could fit comfortably in the area once inhabited by the people of 'Ain Ghazal. Although population numbers are notoriously difficult to estimate, certainly well over a thousand (and probably over 2,000) people lived at 'Ain Ghazal in its heyday in the last couple of centuries of the 7th millennium. With such a population size and density, it is not surprising that there is evidence of growing complexity in the social organization of the town, with formerly independent families forced into extended kin groups that pooled their resources to cope with the increasing demands on local farming and herding resources.

At 'Ain Ghazal and throughout the Jordanian high-

lands, multiple-family residences in single- and two-story buildings show up in the last half of the 7th millennium. There are strong indications that some of the townspeople of the various parts of Jordan were experimenting with pastoral nomadism as a way of decreasing pressure on local landscapes and increasing overall economic productivity.

Perhaps the most impressive elements recovered from 'Ain Ghazal are those associated with ritual activity; as time progressed, changes in these components also reflect a general increase in social complexity. The earliest information deals with widespread use of human and animal figurines as talismans and charms for protection and luck; it is likely that such small clay objects were imbued with their powers by shamans.

Human burials beneath house floors reveal that certain family members were selected for special burial, perhaps one each generation. Skulls modeled with plaster strongly argue for an ancestor cult on the "real" level, while marvelous plaster statues probably reflect ties of the community to mythical ancestors. In the latter half of the 7th millennium, the ancestor cult appears to have lost its importance.

Although kin group rituals may have been practiced in small cult buildings or "shrines", larger community effort was directed towards construction of larger, more imposing religious buildings that might be termed temples, where community-wide rites were performed, perhaps by full-time priests.

Another crucial piece of information that has charged us with rethinking our views of the past is the clear evidence of the local "invention" of pottery. For decades, conventional wisdom held that ceramic technology had been introduced into the southern Levant by migrations of people from a more advanced population to the north. But 'Ain Ghazal was the first settlement to show that pottery was developed by the local residents of the settlement, and that neither the material, the makers, nor the ideas were imported from outside the region. There is likely a strong correlation between the technological demands of lime plaster manufacture (a technology highly developed in the 7th millennium at 'Ain Ghazal) and the final adoption of pottery as a full-fledged material culture component in the 6th millennium.

For more than two millennia, 'Ain Ghazal's vicinity provided the resources and incentives for a profitable and sustained exploitation. But intensive farming and herding took its toll, and increasingly the local land lost its fertility. Population began to decline rapidly in the 6th millennium, and by the appearance of the 5th millennium, 'Ain Ghazal's fields were all but exhausted. The strong rush of water from the 'ain itself continued to flow, however, and this fresh water still attracted shepherds and their flocks long after farmers were forced to leave this cradle of cultural innovation and vitality.

*Gary Rollefson, Whitman College  
Zeidan Kafafi, Yarmouk University*

## Ancient Environmental Degradation

After hundreds of millennia of occupation by small bands of hunter/gatherers, the ancient Near East witnessed one of the most dramatic changes in human society to have ever occurred. Archaeologists today have a more sophisticated understanding of this process, which itself took thousands of years to unfold, than we did in 1936 when V. Gordon Childe spoke of the Neolithic Revolution. Nonetheless, our sense of its magnitude and its consequences has not diminished. At the end of the Pleistocene, the climate of the Near East began to grow warmer and more humid. In addition, human population had grown to a point that the Near Eastern landscape was saturated in the degree to which it could be effectively exploited by hunter/gatherers. In a relatively short span of time, these developments necessitated significant changes in the ways that humans derived their subsistence.

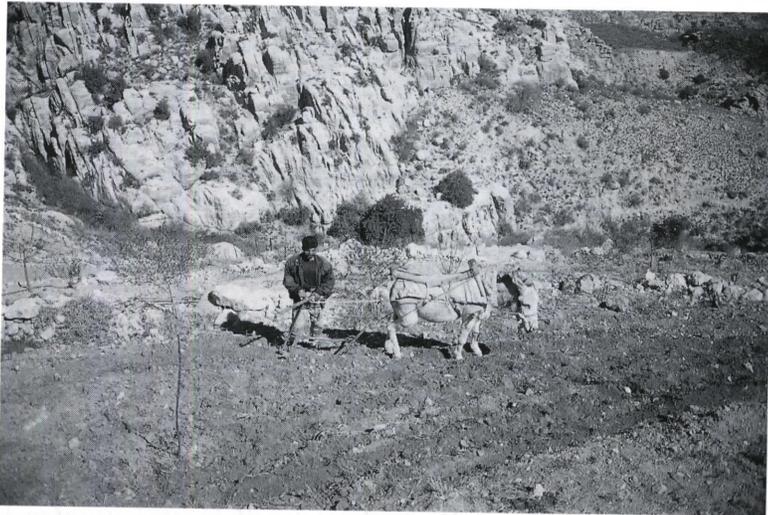
Jordan was one of the most important settings for this transition from the Paleolithic to the Neolithic. As competition for resources increased and environments changed, human populations broadened their subsistence base to utilize a greater variety of food sources. Moreover, they began to move around the landscape less and focused instead on intensifying their use of such foods as the wild barley and wheat that grew abundantly in this area. This change in subsistence strategy had important consequences. Among them were the domestication of numerous plants and animals, and the trend toward settlement in sedentary villages as people tended to their crops, and then tended to their stored foods, throughout the year.

Today many of the most spectacular archaeological remains of these early villages are found in Jordan. The excavation of Neolithic sites in Jordan in recent years has provided us with insights not only into the rise of agriculture and pastoralism, but also into the changes that resulted from a settled life. Along with changes in subsistence, increased sedentism led to the need for new ways of organizing society as people lived for the first time in concentrated numbers. Populations numbering in the hundreds, perhaps even thousands required new techniques of conflict resolution, as old strategies of group fission became less viable. In addition, the advent of sedentism and food storage introduced opportunities for the accumulation of wealth and increasing disparities between the haves and the have-nots, leading eventually to the rise of social and political hierarchy.

One of the most important developments of the Neolithic transition with regard to the modern world was the increased impact of human societies on the natural environment. For the first time in history we see evidence of significant environmental degradation in the vicinity of large Neolithic settlements. This degradation most likely occurred as a result of the cutting of forests for construction materials, and the intensification of agriculture and pastoralism. Together these fac-

tors led to the exacerbation of erosion that was already becoming a problem as the climate began to become warmer and drier in the late Neolithic. As a consequence the first large aggregated communities of the Neolithic in Jordan failed and were abandoned.

The transformations that occurred in the Neolithic, however, did not lead in a steady march either toward civilization as we know it today, or toward global envi-



Traditional agriculture in mountainous terrain. Photo by Brett Hill.

ronmental doom. On the contrary, the archaeological and environmental records of the ensuing millennia document repeated cycles of the florescence of new societies, as well as the recovery and then renewed degradation of the environment. Interestingly though, each appearance of a recognizably new society, in the Chalcolithic, the Bronze Ages, the Iron Ages etc., had distinctive features in terms of social organization, economic specialization, and technological innovation.

Likewise, the geological and botanical records indicate that there were repeated cycles of environmental degradation throughout these time periods. In each case the record indicates not only a different kind of degradation but environmental recovery in a new and different way. Sometimes, for example, the geomorphological record of valley bottom sedimentation or channel incision indicates fluctuations in soil erosion. In other cases the pollen record derived from lakebed cores indicates the destruction of forests. These cycles are often associated with developments in the human realm such as increasing population, or growing demand for export products such olive oil and wine. Periods of degradation were then followed by periods of recovery in which erosion slowed down or forests regrew, but in each case the environment seems to have recovered in a somewhat different form, indicating a new set of ecological relationships. The period from the beginning of the Neolithic until the present covers the entire Holocene, a span of approximately 10,000 years. Well over half of this period of remarkable transformation in human society and in human/environmental relationships oc-

curred in the absence of historical records.

The archaeological resources of Jordan constitute an invaluable material record of these transformations and hold great potential for learning how developments in human culture and society have shaped, and been shaped by, the ecology of the region. My research in the Wadi al-Hasa of west-central Jordan aims to elucidate these relationships as they have changed over the millennia.

For example, can a positive relationship be established between environmental degradation and the imposition of wealth-extracting foreign political domination? Conversely, is sound land-management correlated with the stability and security of a powerful central authority, regardless of its origin? Because of its long and cyclical history of environmental and socio-political change, I think that Jordan is an ideal location in which to evaluate ideas about the causes and consequences of anthropogenic environmental degradation.

*Brett Hill, Arizona State U.*

### **The Lower Jordan Valley and the Transition from Pre-History to History in Jordan**

Some of the earliest sites where hominid remains have been discovered are in the Jordan Valley. Since the Paleolithic, it has been a region of immense interest to prehistorians. Ten to eleven thousand years ago the Natufians, who may have been the first culture in the world to use domesticated plants, found this area to be the most hospitable proving ground for their experiments in agriculture. In the Neolithic, significant sites appear on both banks of the river—particularly those of the Wadi Raba culture and its variants. Most of these sites have appeared in the Upper and Middle Jordan Valley, however. The Southern Ghors has been of interest primarily as the location of the site of Tulaylat Al-Ghassul, on the East Bank of the river in Jordan.

Ghassul was occupied from about 5500 to 4300 B.C. An early and not well defined Late Neolithic occupation without significant architecture was found, but Ghassul is primarily known as a site of the Chalcolithic Period. The Chalcolithic, following the food and pottery production revolution of the Late Neolithic, was also a period of significant innovations. Many different craft specializations originated in the Chalcolithic—most notably, metallurgy. Concurrent with this major shift in technology, there was a similar shift in the economy. The full scale use of herd animals enabled the peoples of the Chalcolithic to establish a mixed agrarian-pastoral economy.

Considering the size of Ghassul and degree of complexity exhibited by the material culture of the site, it is logical to assume that it was a central place surrounded by smaller sites. Until the last few years, however, no real evidence of Chalcolithic settlement was found near

Ghassul. A site only a few kilometers south of Ghassul, Uzayma, has been the source of controversy since it was excavated in the thirties because it was originally identified as a huge cemetery with abundant pottery believed to be Ghassulian. From the illustrations of the material culture of the site, however, most scholars have asserted that the site is more likely to be from the Early Bronze Age.

Today, with more up-to-date archaeological data in this region, Uzayma can be considered as one of several sites exhibiting Chalcolithic to Early Bronze transitional characteristics. A recent survey of the area between Ghassul and Tell Iktanu, completed by the author, and recent salvage excavations at Wadi Al-Kufrayn conducted by Mohammed Waheeb of the Department of Antiquities of Jordan, indicate that the Lower Jordan Valley may be an area of key interest to the study of the Chalcolithic to Early Bronze Age transition. On the map, the transitional sites, two near the Wadi Al-Kufrayn and two near the Wadi et Tarfa, form a roughly equilateral triangle with Ghassul and Uzayma.

Eleven other small Chalcolithic sites were found in the survey and two additional Chalcolithic sites were included in the salvage project at Wadi Al-Kufrayn. This suggests that, during the Chalcolithic, the Lower Valley witnessed the establishment of many sites, besides the phenomenal site of Ghassul. Summarizing the evidence from the survey and salvage excavations the Late Chalcolithic settlement pattern in this region can be characterized as follows: 1) one very large settlement north of the Wadi Adjrafa at Ghassul with at least four satellite settlements, of differing sizes, on the perimeter of Ghassul; 2) one larger settlement and two smaller ones of the late Chalcolithic to Early Bronze Age 6 to 7 kilometers away from Ghassul near the Wadi Al-Kufrayn; 3) one larger settlement of the late Chalcolithic to Early Bronze Age 6 kilometers southeast of Ghassul near the Wadi et Tarfa; 4) a large necropolis of the Late Chalcolithic to Early Bronze Age at Uzayma about 4 kilometers south of Ghassul; 5) hamlets located both immediately north and south of the Wadi Adrafa and about one half of a kilometer north of the perimeter of Ghassul; and 6) temporary sites (pastoral camps) beginning at the southeast perimeter of Ghassul, at some two kilometer intervals, up to seven kilometers to the East.

Many dramatic theories about the so-called "abandonment" of Ghassul have been postulated. These speculations have been based primarily on the *lack* of evidence of Early Bronze Age I material in the region. Because of recent work in the Lower Jordan Valley another picture is emerging—one of expanding settlements and circumscribed population shifts within a well-defined area. Ghassul was not occupied in the very Late Chalcolithic and Early Bronze Age I Periods, it is clear, but any number of other sites located nearby were and this implies that the site died a more natural death—not one that was precipitated by catastrophic events.

Sandra Scham, Catholic University

## Update on the Petra Papyri

The most significant single activity connected with the Petra papyri in 1998 was the digital imaging of all texts by Steve Booras and Gene Ware of Brigham Young University and the Center for the Preservation of Ancient Religious Texts (CPART). The full set of photographs that had been made in 1994/95 remains indispensable for a record of the texts as they appeared immediately after conservation, but the new technology produces images of vastly superior quality, especially in difficult parts of the texts. The new technology consisted of multi-spectral computer-assisted digital imaging at close range.

Enhanced images can be produced and when necessary, the images taken at different light spectra can be combined to produce images with more detail than is visible under any single spectrum. The results should greatly facilitate future decipherment and make it much less necessary to handle the fragile originals. The team from Provo (Utah) conducted test-imaging of the papyri in Amman in January 1998, evaluated the results and established working procedures in Provo, and then carried out the entire imaging of 366 plates of papyri of which 99 had writing on the back (thus, in effect, 465 plates) in 53 days of intensive work in Amman at the end of 1998.

The University of Michigan team, led by L. Koenen, concentrated above all on the decipherment and continued reconstruction of inv. nos.: 8 (an exchange of property, including several toponyms); 10 (a division of property, see *AJA* 102 [1998] 601-602); 48 (dealing with a cession of property); 63+65 (dealing with the transfer of bridal property in connection with the marriage between the main figure of the archive, Theodoros, and Stephanous daughter of Patrophilos); 64+66 (a registration of a sale of land near Augustopolis), and 71 (three receipts for payments of taxes on inherited property).

The Finnish team led by J. Frösén continued to reconstruct and decipher; this year they worked primarily on inv. nos.: 4 (a division of property which was written in Gaza); 6a (a will or a donation of Obodianos); 9 (a sale of real property); 13, 14, and 17 (tax documents); 20 (a settlement of a debt between two families); 22 (a sale of real estate); 24 (a sales contract); 68 (this is similar to 63+65, see above); 69 (tax-receipts and a list of stolen property); 72+79 (dealing with real estate); 83 (see *AJA* 101 [1997] 530-531); 84 (the registration of a sales contract); 86 (recto, a perpetual lease; verso, a donation), and 88 (dealing with an inheritance). Improved preliminary transcripts were prepared for the following documents of uncertain nature; inv. nos. 15, 29, 35, 36+37, 38, 39, 40, and 41.

In addition, inv. 98, a list of many toponyms, several identical with those in inv. 10, was worked on by the authors.

R. W. Daniel, University of Michigan

M. Lehtinen, Academy of Finland

## Director's Report: July through December 1998

Pierre M. Bikai

### ACOR Projects

Petra, Petra Mapping Project, ACOR and Hashemite University, USAID Petra Endowment  
Petra, Petra Church Project, Atrium Cistern, USAID and the Ministry of Tourism and Antiquities



Excavation of the atrium cistern in Petra

Amman Citadel, Great Temple, Landscaping and Presentation, USAID and the Ministry of Tourism and Antiquities

### Petra Papyri Publication Project

U. of Michigan: Ludwig Koenen and Robert W. Daniel;  
U. of Helsinki/Academy of Finland: Marjo Lehtinen;  
Brigham Young U.: Gene Ware and Steven Booras

### ACOR-Assisted Field Projects

Eastern Hasa Late Pleistocene Project, Nancy Coinman, Iowa State U., and Deborah Olszewski, Bishop Museum, Hawaii  
Petra: Great Temple, Martha Joukowsky, Brown U.  
Humeima Excavation Project, John Oleson, U. of Victoria  
Tell Madaba, Tim Harrison, U. of Toronto  
Madaba Plains Project, Larry Geraty, La Sierra U.; Larry Herr, U. College of Canada; Øystein LaBianca,

Andrews U.; and Doug Clark, Walla Walla U.  
Khirbet Iskander, Jesse Long, Lubbock Christian U.  
Tell Safut, Don Wimmer, Seton Hall U.  
Wadi ath-Thamad, Michèle Daviau, Wilfrid Laurier U.  
Qastal, Erin Addison and Stefania Dodoni, Hollins College  
Um al-Jimal, Bert de Vries, Calvin College  
'Ain Ghazal, Gary Rollefson, 'Ain Ghazal Research Institute, and Zeidan Kafafi, Yarmouk U.  
Bawwab al-Ghazal (Azraq), Gary Rollefson, 'Ain Ghazal Research Institute, Leslie Quintero and Philip Wilke, U. of California, Riverside  
Lehun, Denyse Homès-Fredericq, Vrije Universiteit, Brussels  
Medieval Petra, Guido Vannini, U. of Florence  
Petra: North Ridge Project, Patricia M. Bikai, ACOR

### Fellows in Residence

*Near and Middle East Research and Training Act (NMERTA)  
Pre-Doctoral Fellows:*

Leigh-Ann Bedal, U. of Pennsylvania, Petra Lower Market Survey

Benjamin J. Dolinka, North Carolina State U., History of Aila (Aqaba) during the Early Roman Period: Ceramic Evidence

*United States Information Agency Fellows:*

Leslie A. Quintero, U. of California, Riverside, The Jafr Basin Archaeological Project, Phase II

Mohammed M. Hafez, London School of Economics and Political Science, Islam: Explaining the Sources of Accommodation

Karen Borstad, U. of Arizona, Reconstructing Ancient Roads: A Diachronic Study of Communication Routes Using Geographic Information System Models for the Madaba Plains Project Region

*National Endowment for the Humanities Fellow:*

Andrew Shryock, State U. of N.Y., Buffalo, The Politics of Hospitality in Tribal Jordan

*Kress Fellows:*

Ellen Kenney, Institute of Fine Arts, New York U., Power and Patronage in Mamluk Bilad al-Sham: The Architecture and Urban Works of Governor Tankiz (1313-40)

Alexandra Retzleff, U. of North Carolina, Chapel Hill, Roman Theaters

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### In Memoriam: Susann Wheatley Dennis

Sue Dennis passed away on Oct. 22, 1998, after a brave fight against cancer. Her's was not a name familiar to many in the ACOR family, but since 1991, she was often ACOR's volunteer U.S. representative.

Sue never even saw ACOR, but she loved being involved. If we needed supplies for the Petra Church Project or titanium for the restoration of the Great Temple, she would help get them to Amman. For ACOR, she would happily, as she would say, "shop 'til she dropped."

As it happened, she was the first person in the U.S. to know of the discovery of the Petra Papyri and she was very proud that all of the initial arrangements for the scrolls were made on the telephone in her kitchen.

Born in Oakland, California, on Jan. 17, 1945, she was a mother, homemaker, Girl Scout leader, and worked with the PTA and earthquake preparedness groups. She is survived by her husband of 30 years, Bill, and her daughter, Carrie Celeste. She will be missed.

### US/ICOMOS Intern:

Susan B. Tillack, U. of Oregon, Petra Church Documentation Project

For information on ACOR's fellowships contact: ACOR, 656 Beacon St., 5th Floor, Boston, MA 02215-2010, Tel.: 617-353-6571, Fax: 617-353-6575, e-mail: acor@bu.edu or at www.bu.edu/acor on the web.

### Lectures

- July 14. Carlos Cordova, Geoarchaeology of the Alluvial Deposits in the Wadi Themed  
July 18. Don Wimmer, Tell Safut  
July 19. Jerry Rose and Mahmoud al-Najjar, Tombs and Bones, Byzantine Excavations  
July 22. Tim Harrison, Tell Madaba Excavations  
July 25. Jack Lee, Cave Living with the Bedouin in Wadi Rum  
July 28. Michèle Daviau and Chris Foley, Survey and Excavation of Wadi Themed  
Aug. 3. Larry Geraty, Øystein LaBianca, Larry Herr, Madaba Plains Project Update  
Aug. 4. Harold Mare, Abila  
Aug. 7. John Oleson, Humeima  
Aug. 10. Martha Joukowsky, Petra: the Great Temple  
Aug. 22. Leslie Quintero, Gary Rollefson, Philip Wilke, Neolithic Use of the Desert Margins: Bawwab al-Ghazal

### Donors to ACOR

From July through December, 1998, the following friends of ACOR donated to the endowment: Mrs. Nancy Frederick, Dr. John Oleson, Mr. Artemis Joukowsky (Joukowsky Family Foundation), H.E. Senator Leila Sharaf, Ms. Jessie Easton, Ms. Aldeth Amundson, Mr. Steve and Mrs. Cindy Infantino, Dr. Mac and Mrs. Jacquelyn Gimse, Dr. Nancy Lapp, Mr. Felix Emse, Jr., Mr. and Mrs. Charles P. Schutt, Jr., Ms. Marjo Lehtinen, Mrs. Martha Boling-Risser, Mr. Henry Christensen III, Dr. S. Thomas Parker, Mr. Randolph Old, Mr. Harold Forshey, Dr. Walter Rast, and Ms. Marie Louise Sidoroff.

General Donations were made by Dr. Ludwig Koenen, Mr. Robert Mittelstaedt, Mr. Peter Warnock, and Mr. Henry Christensen III.

The Jennifer C. Groot Endowment received contributions from Mr. Bruce Gould and Dr. S. Thomas Parker. The Russell Trust received donations from Ms. Nicola Zwaschka and Ms. Doris Phelps.

The Bikai Endowment received donations from Dr. Pierre Bikai and Ms. Soheri Carty (USIS).

Donations to the library endowment were received from Mr. Khalid Shoman, Dr. Bert and Mrs. Bert de Vries, Mrs. Anne Ogilvy, Mr. and Mrs. Tony Vander Heide, Mr. Don L. Oens, Dr. David McCreery (Kyle-Kelso Foundation), and an anonymous donor.

Donations of books and journals were received from: Al

al-Bayt University (Courtesy of Dr. Adnan al-Bakhit), Ms. Nagham Assaf, Dr. Pan. Asimakopoulou Ataaka, Mr. Steven W. Booras, Dr. Geoffrey A. Clark, Dr. Carlos Cordoba, Dr. Bert de Vries, Mr. Benjamin Dolinka, Drs. Trude and Moshe Dothan, Ms. Edith Dunn, Dr. Zbigniew Fiema, Dr. Elise A. Friedland, Mr. Dan Gamber, Dr. Mustafa Hamarneh, Dr. Denyse Homès-Fredericq, Ms. Randa Kakish, Ms. Marjorie Kelly, Konrad Adenauer Stiftung and Al Kutba Institute for Development, Dr. Øystein LaBianca, Dr. John R. Lee, Mr. Ivan Mannheim and Mr. D. Winter, Madaba Mosaic School (Courtesy of Dr. G. Claudio Infranca), Madaba Plains Project, Dr. Jodi Magness, Ms. Fatma Marii, Dr. John Oleson, Dr. Thomas R. Paradise, Dr. Leslie Quintero, Dr. Albert Randall, Dr. George (Rip) Rapp, Royal Institute for Interfaith Studies (Courtesy of Dr. K. Salibi), Dr. Ahmad Sadri, Dr. Denise Schmandt-Besserat, Dr. Robert Smith, Ms. Jane Taylor, University of Jordan Library, World Affairs Council (Courtesy of Dr. Adnan al-Bakhit), and Dr. Donald Whitcomb.

### Happenings at ACOR

- July 17. We expect water to come in from the mains today, but nothing happens. It seems that many parts of west Amman have no water.  
July 30. There is a party on the balcony for all ACOR residents.  
July 31. At Hesban, there is a celebration of the 30th anniversary of the beginning of that excavation. H.R.H. Prince Raad, H.E. the Minister of Tourism and Antiquities Akel Biltaji and many others attend. I am among the speakers and congratulate the excavators for returning to the site after so many years and putting so much energy into its conservation and presentation.  
Aug. 12. There is a meeting of the Jordan Committee of the ACOR Board of Trustees, followed by a reception.  
Aug. 13. At 4 am, Martha and Arte Joukowsky take off for the airport. The end of the Brown University dig traditionally marks the end of the main excavation season for ACOR. Quiet reigns.  
Aug. 16. The water situation reaches critical levels or, rather, critical no levels—there isn't a drop in the house. There is brief consideration of closing ACOR down completely, but a water truck saves the day!  
Aug. 20. A new government is appointed. ACOR Trustee Dr. Michel Marto becomes Minister of Finance. Congratulations to H.E. Dr. Marto!  
Aug. 23. Riet Versteeg and I begin punching holes around the front of ACOR, looking for an ancient cistern so that this winter ACOR can store its own water.  
Aug. 27. I take off to Aqaba to lead a Friends of Archaeology tour.  
Aug. 27. In the evening, most of the residents attend Abed Adawi's wedding in Zarqa. Congratulations to Abed!



Fellow Leigh-Ann Bedal with Mohammed Adawi's grandson, Omar

- Aug. 30. A ton of pottery from the Ridge Church tomb is spread from one end of the subbasement to the other. Kathy tours and declares that she **LIKES** the Nabataean pottery—the first time in all her years here, she says, that she's seen anything pretty.
- Aug. 5. Patricia continues pasting and gluing STUFF for the new exhibit panels.
- Sept. 8. Naif Zaben, toiling away in the subbasement on the pottery from the Nabataean tomb under the Ridge Church, pieces together most of a unique chalice. Everyone scrambles to find the rest of the pieces.
- Sept. 13. There is a send-off luncheon for Fatma Marii and for Bob Mittelstaedt. Bob is returning home after a stint as assistant director. Fatma has a full-year internship at the Getty Museum conservation lab.
- Sept. 14. The new U.S. ambassador, William Burns and his wife, Ms. Lisa Carty, tour ACOR.
- Sept. 28. I lecture to a huge gathering of Madaba residents at the Madaba Archaeological Park.
- Oct. 5. Patricia and I drive out to Hashemite University to see the first output of the new map of the Petra city center. It is beautiful—now we know where we are!
- Oct. 7. The new ACOR display panels go off to City Hall.
- Oct. 20. The scroll scanners from Brigham Young arrive.
- Oct. 21. U.S. Ambassador, William Burns, and his wife, Ms. Lisa Carty, host a reception at their residence for the ACOR trustees, staff and residents.
- Oct. 29. Dr. Jessica Easton, who has been here for two months helping the Al-Hussein Society for the Physically Disabled, leaves for the U.S.
- Nov. 2. After much fiddling with software, the scanning project is really rolling. Gene and Steve devise a "thermometer" to mark progress on the scanning of the 300+ plates.
- Nov. 2. I return from a one-day run to Petra where 35 column drums have been brought up from the cistern in the Petra Church's atrium.
- Nov. 6. Patricia and I depart for the U.S. Megan Perry becomes Acting Director.
- Nov. 24. Megan represents ACOR at the Darat al-Funun

anniversary celebration at which the Abdul Hameed Shoman Foundation's new book *Darat al Funun: Art, Architecture, Archaeology* is introduced. May Sha'er's and my final report on the excavation of the Byzantine church is the archaeology section of this beautifully produced book.

- Dec. 1. In the subbasement, Gene Ware and Steve Booras slave away scanning the scrolls. They are now taking shifts so that they can work 22 hours a day. They even take shifts for lunch. However, it appears that they will be able to finish the job a bit early.
- Dec. 5. One of the Peter Principles kicks in: a job will expand to fit the time you have in which to do it. Marjo Lehtinen keeps coming up with more scrolls for Gene and Steve to scan.
- Dec. 7. A group of 26 students from St. Olaf's College descends on ACOR. Among the group is, by great good chance, Angela Hendrickson, the niece of Jennifer Groot.
- Dec. 8. Patricia meets with a group from the new magazine *National Geographic Explorer*. They are doing an article on rock climbing in Wadi Rum and Petra. Patricia shares all of her rock climbing experience with them (this takes about 4 seconds).
- Dec. 9. In Washington, an exhibit on Petra opens at Explorers Hall, National Geographic.
- Dec. 10. The St. Olaf's students depart and quiet reigns.
- Dec. 11. There is nice coverage of the National Geographic exhibit on Jordan Television. The panther vase is featured. We are happy to see that it is safe!
- Dec. 12. In the subbasement, Gene and Steve are still at it—on what is supposed to be their last day of alternating 12-hour shifts. ACOR thanks them and Marjo for their wonderful and very hard work.
- Dec. 17. Megan Perry ends her term as Acting Director. Thank you Megan for a job well done.
- Dec. 19. Ramadan begins.
- Dec. 24. At sundown, 24 residents, staff and families, sit down to ACOR's first Holiday Iftar. As usual, Mohammed outdoes himself.

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## Jennifer C. Groot Fellowship:

### Now Ten Years Old

This year is the tenth anniversary of the establishment of ACOR's Jennifer C. Groot Fellowship in the Archaeology of Jordan. Jennifer (1951-1987) received a B.A. in Art and Ancient Studies from St. Olaf College in Northfield, Minnesota, in 1973, and an M.A. in Ancient Art from the University of Iowa in 1979.

Above all, Jennifer was a field archaeologist, working on many excavations in Jordan between 1974 and 1987. She began at Tell Hesban, a seminal experience for many archaeologists in Jordan. Perhaps a dozen people who later became directors of their own projects worked at Hesban, where Jennifer served as a square supervisor

in 1974 and 1976. During that latter year I joined the Hesban staff, met Jennifer, and was immediately taken by her intelligence, warmth, and sense of humor. We became fast friends at Hesban. For the next twelve years, every excavation on which I worked included Jennifer as a trusted friend and a valued colleague.

In 1977, a number of Hesban alumni joined the first major excavation season at Umm el-Jimal under Bert de Vries. Jennifer again worked as a square supervisor but also served as a small finds specialist, a field in which she would display increasing expertise in coming years. In 1981 and 1984, Jennifer returned to Umm el-Jimal, now both as an area supervisor of the barracks in the newly discovered Roman fort within the city and as a small finds specialist. Working as a stratigrapher and pottery specialist at Jimal in those seasons, I could count on Jennifer to have total control over her excavation areas and detailed contextual information at every pottery reading.

In 1979, while organizing the Limes Arabicus Project, I invited Jennifer to join the senior staff. She accepted responsibility for a major excavation area, the barracks within the legionary fortress at el-Lejjun, plus the small finds. I recall that Jennifer was in fact hesitant to accept the area supervisor position, fearing she lacked sufficient experience. But I prevailed upon her, in hindsight the best personnel decision I ever made.

Jennifer worked four seasons at el-Lejjun, between 1980 and 1987. Her barracks turned out to be the most stratigraphically complex area of the entire project. Her skill and sensitivity in excavation succeeded in recovering the complete stratigraphic profile of the fortress. In 1985, she also began excavating in the so-called "Empty Quarter" of the fortress, where she discovered the foundations of four entire barrack blocks that fundamentally altered understanding of the strength of the original legionary garrison. In 1987, she published major articles on the barracks and the small finds in the project's interim report. Fortunately, Jennifer saw these major articles in print just months before her death.

Even more important than her scholarship was her extraordinary performance as a teacher for her students. They responded to her warmth and humor and quickly became devoted to her during her seven seasons at Umm el-Jimal and el-Lejjun. Some have gone on to successful careers in archaeology.

In 1987, Jennifer returned to el-Lejjun for what proved to be her final field season. She was in fact already ill, although no one suspected the real significance of her pain. As usual, she took on large responsibilities, directing two separate excavation areas within the fortress and the small finds. Although dealing with increasing pain, Jennifer fulfilled all her responsibilities with her usual excellence and returned to her husband, Bruce Gould, and her farm in Michigan. In fact, Jennifer had only three more months to live. She died of cancer on October 19, 1987.

It is notable that even after her death Jennifer contin-

ued to contribute to the success of the Limes Arabicus Project. Her impeccable field records allowed others to take over her excavation areas and the small finds with little difficulty and bring them to completion. Jennifer also left a generous bequest in her will in support of the project's final field season in 1989 and subsequent work on final publication. In short, Jennifer made sure that the project was concluded successfully. The project's final report, now in press, is dedicated to her memory.

When Jennifer died at age 36, we all felt a sense of disbelief that someone so young, talented, and beloved could be taken so quickly. Then, in our grief, a group of family, friends, and colleagues decided to perpetuate Jennifer's memory in a small way, and, thus, the Jennifer C. Groot Fellowship was born. Our hopes were modest—a small annual ACOR fellowship to assist North American students with little or no field experience to join a dig in Jordan. These were the kind of students about whom Jennifer really cared.

Contributions were made to ACOR for an endowment. The response to the fund-raising appeal was gratifying, a tribute to how much Jennifer was loved. Thus ACOR awarded the first Jennifer Groot Fellowship of \$1,000 in 1989. Fittingly, the first recipient, Benjamin Hartsell, had worked with Jennifer during her final field season. By 1998, endowment growth permitted the funding of three annual fellowships of \$1,500. The endowment ensures that these fellowships will be awarded in perpetuity.

Jennifer's incisive eye for stratigraphy, her easy manner with her Jordanian workers, her boundless energy, and her warmth for friends and students are sorely missed. She contributed so much to the archaeology of Jordan. The Groot fellowship honors the memory of this wonderful colleague and friend with whom we were privileged to work, live, and love.

*S. Thomas Parker*

#### **Jennifer C. Groot Fellows**

<i>Year</i>	<i>Name</i>	<i>Project</i>
1989	Benjamin Hartsell	Limes Arabicus Project
1990	Brenda Strickland	Tell Nimrin
1991	Kelly Low	Humeima
1992	Dennine L. Dudley	Humeima
1992	Judith Dale Mitchell	Humeima
1993	Janice E. King	Tell Nimrin
1993	Megan Anne Perry	Tell Nimrin
1994	Elizabeth Pollard Lisi	Roman Aqaba Project
1994	Elizabeth A. Stephens	Roman Aqaba Project
1995	Angela Hummel	Tell Nimrin
1995	Mary Barbara Reeves	Humeima
1996	Carol Joan Frey	Roman Aqaba Project
1996	Pauline L. Ripat	Humeima
1997	Brian Brown	Petra Southern Temple
1997	Cristian Rata	Wadi eth-Themed
1998	Robin Marie Armstrong	Roman Aqaba Project
1998	Joseph Brett McClain	Tell Madaba
1998	Warren J.L. Wood	Humeima

## ACOR Publications

*The Mosaics of Jordan* by Michele Piccirillo. Large format, cloth-bound volume includes 303 pages in full color with 824 illustrations, plans, and aerial photographs. \$175.

*The Great Temple of Amman: The Architecture* by Chrysanthos Kanellopoulos. The architecture of the temple that was excavated and partially restored by ACOR. Large format, cloth-bound. \$80.

*JADIS: The Jordan Antiquities Database and Information System: A Summary of the Data*, edited by Gaetano Palumbo. Basic information on nearly 9,000 archaeological sites from all periods, plus 117 maps. This 453-page, hard-bound volume is xerographically reproduced. \$40.

*The Great Temple of Amman: The Excavations* by Anthi Koutsoukou, Kenneth W. Russell, Mohammad Najjar, and Ahmed Momani. Description of the 1990-93 excavations undertaken by ACOR and the Department of Antiquities. This hard-bound volume has 180 pages and 3 fold-out plates. \$65.

*Madaba: Cultural Heritage* edited by Patricia M. Bikai and Thomas A. Dailey. Catalogue of the remains from the Early Bronze Age through late Ottoman vernacular houses (113 pages, paper-bound) Over 150 illustrations, five in color. Includes a separate large map. An Arabic translation is available at no additional cost if requested. \$35.

*Ancient Ammonites & Modern Arabs: 5000 Years in the Madaba Plains of Jordan* edited by Gloria A. London and Douglas R. Clark. Life across the centuries in the area excavated over the past 30 years by the Madaba Plains Project. Hard-bound volume of 71 pages with many illustrations, some in color. \$27.

*The 150<sup>th</sup> Anniversary of the United States' Expedition to Explore the Dead Sea and the River Jordan* by Robert E. Rook. An assessment of the Lynch expedition in 1848. Hard-bound volume of 32 pages. Many reproductions of Lynch's illustrations, including his three maps. \$20. All prices include shipping.

### ACOR and its Newsletter

ACOR, the American Center of Oriental Research, is a nonprofit academic institute whose services are supported through endowments, donations and grants. ACOR is tax exempt as a 501(c)(3) organization, as determined by the U.S. Internal Revenue Service. Inquiries may be sent to ACOR, P.O. Box 2470, Amman 11181, Jordan, Tel.: (962-6) 534-6117, Fax: (962-6) 534-4181, e-mail: ACOR@go.com.jo, or to ACOR, Boston University, 656 Beacon St., 5th Floor, Boston, MA 02215-2010, Tel.: 617-353-6571, Fax: 617-353-6575, e-mail: acor@bu.edu, web: www.bu.edu/acor. The *ACOR Newsletter* is edited by Patricia M. Bikai. Printed in Jordan by Jordanian Printing Press. The logo on the front page shows three views of a Neolithic chisel. Drawing by Nazeh Fino.

## ACOR Trustees Meet in Orlando

The annual ACOR board meeting was held in Orlando, Florida, on Nov. 20. Topics included plans for the year 2000 when the board will meet in Amman. Also discussed was the on-going and successful campaign to endow the directorship. A campaign to endow the library has begun. The next evening, ACOR hosted a reception.

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