ACOR Newsletter

أخبار أكور

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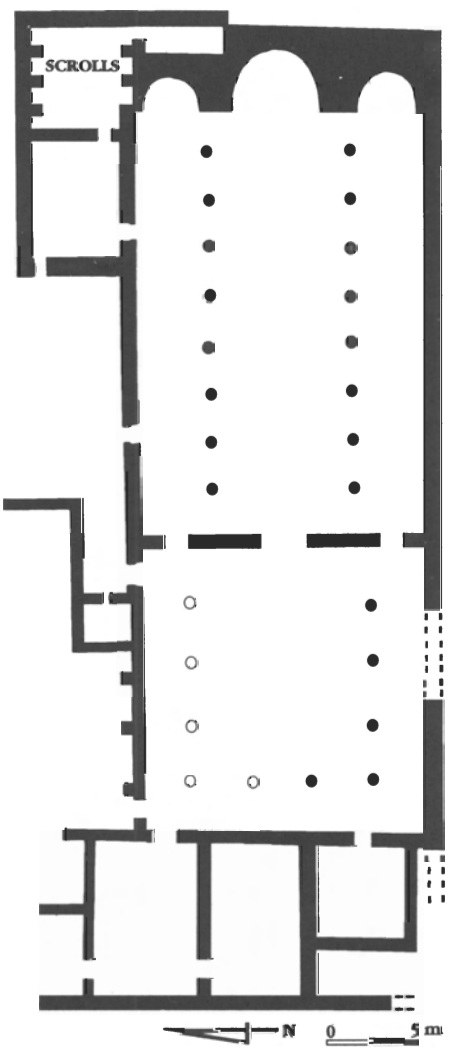
The Petra Scrolls

Glen L. Peterman

A number of papyrus texts of major significance were found at Petra in December 1993 in a room immediately adjacent to the Byzantine Church. The church excavation of 1992-93 produced spectacular mosaics in the aisles of the church. The current excavation is being conducted in areas flanking the basilica in advance of a protective shelter to be built over the site.

The texts are in the form of papyrus scrolls which, when rolled, measured some 30 cm wide and perhaps some 5-8 cm in diameter. Unrolled they may have been more than a meter in length. The preservation of these first papyri from Petra cannot be compared to that of the famous Qumran scrolls. While the latter were well-preserved, the Petra scrolls were carbonized in a fire which destroyed the church and affected the adjacent area of the building complex where they were kept. They were found crushed under and between the charcoal remains of the shelving on which they had apparently been stacked, and beneath nearly four meters of stone from the superstructure of the building. That building, like the church, collapsed in an earthquake, perhaps that which affected Petra in A.D. 551. Because of their flattened and carbonized condition, the number of scrolls found has yet to be determined. It is conservatively estimated that fifty may eventually be separated. Despite their state of preservation, the script is still remarkably legible.



Plan of the excavations by Zbigniew T. Fiema and Patricia M. Bikai.

In addition to the scrolls, carbonized basketry, textiles, copper hinges (or clasps), glass fragments, small bronze chains, and burned wooden discs were recovered. These provide indications that the papyrus rolls were stored in textile sleeves and/or wooden tubes or boxes, possibly with inlaid glass decoration.

The scrolls were excavated by conservator Catherine Valentour and Zbigniew Fiema, chief archaeologist of the Petra Project, with the assistance of staff archaeologist Deborah Kooring and of Suleiman Farajat of the Department of Antiquities.

Excavations at Petra are being conducted under the direction of Pierre M. Bikai of ACOR in cooperation with the Department of Antiquities, under a grant from the United States Agency for International Development (USAID).

The Discovery

The following are excerpts from letters written by Deborah Kooring to her family:

"Dec. 6, 1993—For the last few days we have been finding some very interesting things in the first room on the northern side of the church. First, we found some pieces of glass, about an inch long and 1/2 inch wide (about the size of dominoes) and others that are round or

Deborah Kooring looks on as the scrolls are being excavated.

tear-drop shaped. We are near the floor level of this room but there is a huge ash deposit. We also found a lot of brass fixtures, latches and hinges, etc. We speculated that perhaps these pieces of glass were inlays for boxes.

"Yesterday, as the workers were continuing to sift through the layer of ash, one of them (Muhammad) handed me a couple of pieces of what looked like burnt papyrus. I packaged them up and went to show them to Zbig. After seeing them, and examining the layer of ash, Zbig immediately stopped work in this room. It was evident that there were rolls of papyrus among the ash, and so we covered the entire area with plastic and called ACOR. Zbig found out that there is a conservator working with the team in Aqaba. Hopefully, she will be able to help us lift the scrolls.

"Dec. 8th—8:00 p.m.—The conservator, Cathy, came up from Aqaba yesterday. After she had a chance to look at the layer of ash, and was able to tell us just how many scrolls she thought there might be, we went to inform the Department of Antiquities representative, Suleiman Farajat. Suleiman was, of course, very excited about the news and wanted to see the scrolls right away. We explained that we had not yet lifted them from the floor and had only a couple of pieces from the first day.

When we returned from Suleiman's we all sat around in the lab talking while Cathy looked at a few of the fragments under a magnifying glass. A couple of our workmen (Hussein and Muhammad) were camping out at the site and we were all looking forward to the next day, when we would start to lift the scrolls. At about 8:00 p.m., we noticed quite a few cars coming down to Petra on the road from Umm Saihun. Just as we were talking about who it could be, Hussein called on the radio to say that there were policemen at the site and they wanted to talk to Zbig, who then got in the truck and went up there.

"While Zbig was up at the site, Cathy and I stayed at Nazzal's Camp [the dig house] and tried to figure out how the police got involved in all of this. Hussein came down from the site and told us that the police had taken Zbig, and Suleiman (whom they had picked up on their way down) into Wadi Musa. [Later] Zbig returned to tell us that it was all a big misunderstanding. The police were evidently told (by whom we did not know) to help Zbig and Suleiman in any way needed. They must have misunderstood the message and just thought that they were supposed to pick them up. We all laughed about the whole situation but knew that this would only be the beginning.

"We got up at 5:00 today and started work, as usual, at 6:00. When we got to the site there were two policemen there who had evidently stayed all night with our guards. At about 7:00, more policemen showed up and then Suleiman came with a few of the people from his office. So we had a huge audience watching us work. We decided that we would let the workmen go home (except for about four who were helping with the scrolls).

Some of the spectators huddle around a fragment. Catherine Valentour is at left.

The presence of so many policemen caused a great amount of excitement—I'm sure that most of our workmen thought that we had found gold. We expressed to the police chief (who also showed up) that it wasn't necessary to have so many officers around. We were left with two officers.

"At about 11:00, the Director of the Department of Antiquities, Dr. Safwan Tell, arrived with about six people. At about the same time some of the staff of USAID showed up as well as Glen [Peterman], who was bringing us more packing materials from Amman. During all of this we were trying to work on lifting the scrolls, which is very tedious work since they have to be lifted very carefully and then packed up immediately.

Conservator Catherine Valentour at work.

All of the people present wanted to see the scrolls and were taking pictures left and right. We worked all day, during all this fuss, and were able to lift most of the scrolls out by 5:30, when it got too dark to work anymore. So far we have lifted 25 scrolls! This is a lot more than we thought we had. We will lift the remaining scrolls out tomorrow. They are very fragile."

Preliminary Assessment

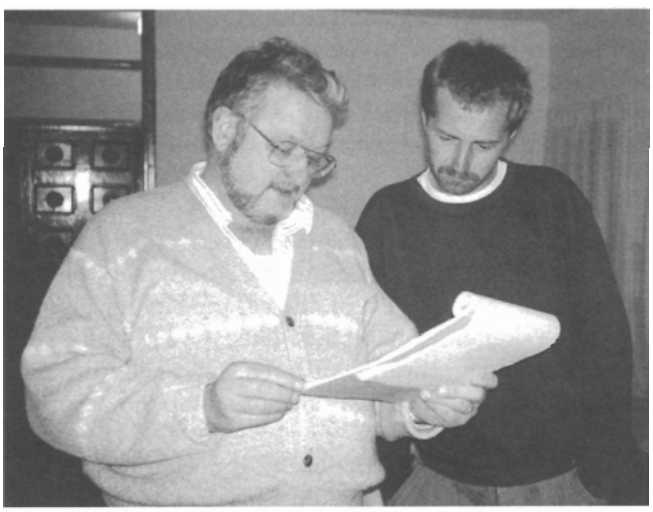
The scrolls were examined in January 1994 by Dr. Ludwig Koenen, the H.C. Youtie Professor of Papyrology at the U. of Michigan, and former president of the American Philological Association. His inspection revealed that they are of a type characteristic of the Byzantine period, and unroll vertically (from top to bottom) rather than horizontally (*transversa charta*). The texts are in a single column on the inside of the rolls, predominantly across the fiber of the papyrus. In two instances, script was noted on both sides of the papyrus. The arrangement of the texts on the scrolls indicate that they are more likely personal writings such as letters or contracts. Dr. Koenen noted in his initial evaluation that "the use of this format precludes that the Petra rolls are literary book rolls." Moreover, when the church at Petra was in use, "liturgical as well as literary books would have been written in codex form."

The scripts have been identified as a cursive Greek "documentary style" typical of the 5th-6th century. It is now clear, through a close examination of the handwriting, that more than one person was involved in writing them. Because the writings are on the inside of the scrolls (they have yet to be unwrapped) the text is readable only on isolated papyrus fragments. Some translated words seem to refer to a spiritual or tangible heritage; an agreement or contract (which confirms the documentary character of the writings); and one word has been translated alternatively as "by fire" or "related to wheat." Another fragment refers to a "king." Still other fragments have yielded traces of what may be numeric abbreviations or documentary symbols. This suggests that some rolls may contain information which could reveal the economy of the region.

A non-Greek script found on some fragments has yet to be confidently identified. It may be some form of Aramaic script or a very late form of Nabataean.

The most significant fragment is translatable as "Flavianus Patriarchus." Although it will have to be verified by further research, this may refer to Flavianus II, a patriarch of Antioch. After the Synod of Sidon in A.D. 512, he was banished to Petra for alleged heresy by the Byzantine monophysite emperor Anastasius, and lived there for the last six years of his life. The precise nature of the text in which the name is mentioned is unknown.

This enigmatic yet significant reference from the Petra scroll collection may strengthen the suggestion that the recently excavated basilica may be the seat of the bishop of *Palaestina Tertia*—which is known from historic texts to be located in Petra—and that the room where they were found is perhaps part of a monastery adjacent to the church.



Ludwig Koenen and Zbig Fiema.

The Future

ACOR is requesting the financial support of the academic community and the private sector to see that these papyri receive immediate attention. It has been determined that the inner portions of the scrolls should be largely salvageable by modern conservation and restoration techniques. However, the rolls are extremely fragile and in need of extensive conservation measures. ACOR is now assembling a committee of experts to undertake this task, and is in the process of raising $250,000 for its estimated cost. We urgently request ACOR supporters consider "adopting a scroll" through a $5000 donation for emergency conservation. All donations are welcome. It is critical that this extraordinary glimpse into the history of the early church be preserved for scholarly research and for future generations.

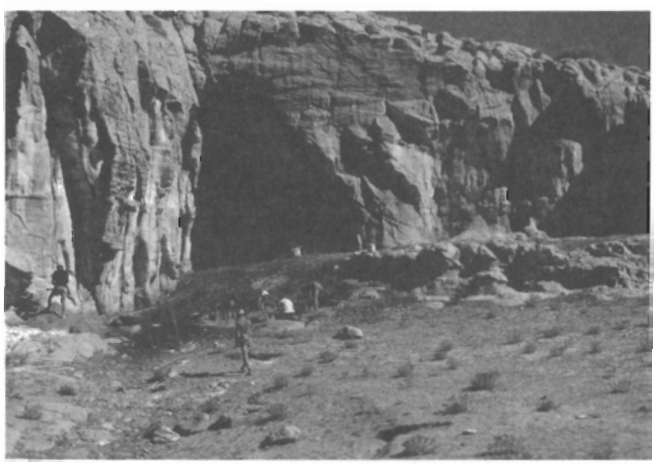
Were Neanderthals Really as Smart (Dumb) as Us?

During the summer of 1993, an international team of scientists initiated the excavation of a large rockshelter, Tor Faraj, in an effort to gain a better understanding of how archaic humans thought and generally organized their behavior. The research was supported by grants from the National Science Foundation USA (DBS-9223855) and the U. of Tulsa. Tor Faraj furnishes a rare opportunity for assessing archaic behavior in such a precise way. The shelter contains a deposit over 3 m thick which reveals a relatively undisturbed stratigraphy. Clear "living-floors" or paleo-surfaces are defined by shallow firepits, ash lenses, and artifact concentrations. Many of the chert artifacts, in fact, can be refitted one to another—again showing the pristine nature of the ancient, buried floors of the shelter.

The artifacts show that the entire deposit was formed during the Middle Paleolithic and more precisely the Late Levantine Mousterian. Ostrich eggshell fragments have provided amino-acid racemization and uranium-series dates that place the upper 80 cm of the deposit at about 70,000 years ago. Interestingly, at this time in the Levant we appear to have evidence for fossil hominids representing two taxa: Neanderthals and anatomically modern humans. While both have been associated with Levantine Mousterian artifact assemblages from sites in the Mediterranean woodland zone of northern Israel, fossil remains have yet to be recovered from sites in the arid zone of the Levant. Despite the recovery at Tor Faraj of a poorly preserved segment of longbone, possibly human, we can only speculate as to the biological identity of the shelter's inhabitants. This, however, does not diminish the significance of tracing the activities and behavior of the 70,000 year old foragers who occupied the site.

A detailed reconstruction of the behavior of the occupants of the shelter should assist in establishing the degree to which the behavioral organization of Levantine Mousterian groups resembled that of fully modern humans. This question of when people began to behave in a modern fashion has emerged as a focal topic in paleoanthropology. Through most of this century our central concern has been with the origin of culture. By researching fossils and artifacts, archaeologists have attempted to identify the contexts in which our early hominid ancestors became increasingly dependent upon cultural adaptation. This progressive shift from organic to behavioral adaptation was accompanied by extraordinarily rapid rates in both biological and cultural evolution, but over the last 100,000 years or so, the tempo of cultural evolution has greatly exceeded that within the organic domain. As reflected in the changes seen in human material culture and economic systems, cultural evolution has steadily accelerated to its presently dizzying pace. At some point within this long, 3-4 million year evolutionary sweep hominids came to rely more upon behavioral responses than biological ones in coping with environmental demands. Learned, patterned behavior and its material consequences (as evidenced by artifacts) have come to distinguish the human species, for we are now and have been for some time dependent upon them for our survival.

Within the last decade, scholars have become increasingly interested in identifying when in prehistory we crossed this adaptive threshold. Perhaps more importantly, they want to understand the factors that contributed to our making this significant evolutionary step. In terms of timing, the Upper Pleistocene has been targeted by many scholars as the interval which encompassed the transition from the "protocultural" to the "cultural" behavior that we associate with contemporary societies. This is a time when hominids are thought



View of Tor Sabiha shelter from the south.

to have emerged into a "fully human ecological niche" coinciding with the biological (i.e., *Homo sapiens neanderthalensis* to *H.sapiens sapiens*) and macro-cultural (i.e., Middle to Upper Paleolithic) transitions that are most clearly defined within southwestern Europe.

In addressing these questions, researchers have emphasized different prehistoric behavioral expressions (e.g., symbols, tool specificity, regionalism) of the emergence of modern culture, but they essentially share the notion that a new kind of cognition prompted these changes in behavior. In particular, anticipation, planning depth, and flexibility in organizing behavior have come to be viewed as a means of distinguishing archaic from modern strategies of decision making.

In following this lead at an analytic level, archaeologists have attempted to measure anticipation, planning depth, and flexibility in behavior through the examination of procurement and settlement strategies and intra-site organization. The results of these studies have been mixed relative to their definition of cognitively linked behavioral differences between Middle Paleolithic and succeeding populations.

Interestingly, the results seem to break primarily along geographic lines. It is the Near Eastern, especially Levantine, evidence that contrasts most strongly with

the prevailing notion of a late emergence of modern behavior coinciding with the appearance of anatomically modern humans and Upper Paleolithic industries as seen from Europe. Perhaps not by coincidence, the cultural and biological successions of the Levant also contrast markedly with those defined for Europe. Not only do we find the remains of Neanderthals and anatomically modern humans within Middle Paleolithic horizons, but in the Levant they are even associated with the same artifact inventories. Unlike the Middle to Upper Paleolithic transition of Europe, Middle and Upper Paleolithic industries of the Levant are weakly demarcated. Artifacts that are traditionally taken as markers of the Upper Paleolithic in Europe are consistently present within much earlier Middle Paleolithic assemblages in the Levant. Thus in the Levant, both biological and archaeological successions appear earlier than those of Europe. If this is indeed the case, should we also expect the evolution of human adaptive strategies to have followed a similar pace?

Preliminary results of test excavations undertaken in 1980-1983 at Tor Faraj and the nearby and contemporary site of Tor Sabiha indicate that the 70,000 year old Middle Paleolithic occupants of the two shelters did, in fact, behave in a modern fashion. When the two occupations are compared they show some remarkable differences in prehistoric behavior, although certain stylistic artifact attributes and amino-acid racemization dates suggest them to be synchronous and remnants of a common cultural system.

The much larger shelter of Tor Faraj, situated at 900 m above sea level with a southwestern exposure, appears to have served as a winter camp inhabited by relatively large groups over extended periods of perhaps eight to ten weeks. Beyond its exposure and the seasonally-available water from the wadi running beneath the site, phytoliths (mineral portions of plant tissue) of non-flowering plant parts imply a winter setting. In contrast, the much smaller Tor Sabiha shelter is situated at 1,300 m above sea level with an eastern exposure—an unlikely cold-season camp setting. Its smaller, thinner cultural deposit and lower artifact densities point to it having been occupied less often, over briefer intervals, and by smaller groups—most likely during the warm season.

Such seasonal shifts in the levels of mobility and sizes of groups are characteristic of modern foraging behavior. Such adjustments enable groups to mesh their numbers with available resources. This, of course, demands behavioral flexibility. Evidence of the degree to which these Levantine Mousterians planned ahead or anticipated future needs comes primarily from Tor Faraj. The lithic artifact inventory from the shelter displays a high degree of processing that occurred very early in the shaping of cores from raw material. This in itself would not be so surprising, except that the chert which was selected for tool manufacture came from sources some 16-20 km distant and high on the nearby plateau some 500 m above the site. Typically when distant chert sources were exploited by prehistoric groups there was an attempt to reduce weight and increase portability by significantly trimming material at its source. This practice loses its economic advantage, however, when a group spends an extended time at a site. In this context, the bulk loading of large quantities of material becomes more efficient. Apparently, the occupants of Tor Faraj followed this later pattern in targeting specific chert sources from distant settings for exploitation. Cognitively, such behavior implies that the inhabitants of Tor Faraj were capable of anticipating future needs and planning ahead in much the same way as do modern humans.

Excavation of the east end of the shelter. Note the 'living floor.'

The large scale excavation of Tor Faraj provides another approach to answering questions concerning human modernity. This involves establishing the degree to which its occupants spatially organized their behavior according to discrete activities. Spatial segregation of behavior (that is, doing certain things in specific places) characterizes the ways in which modern foragers organize their activities within occupations. Moreover, such spatial segregation has been observed to become progressively formalized as the degree of residential permanence increases. As a long-term, winter campsite with its residue found on relatively undisturbed, level-bedded living floors, Tor Faraj provides an ideal setting for investigating the degree to which Middle Paleolithic, Levantine Mousterian behavior resembled that of modern humans.

The 1993 excavation of Tor Faraj centered on the pinpoint plotting of artifacts, bones, and firepits in order to define specific activities of the shelter's occupants. The locations of these data were recorded in the field three-dimensionally by a laser theodolite and data recorder. This information was then down-loaded each day into a PC at the fieldcamp for verification and analysis. Not only does this procedure greatly speed-up the analytic time, but it also greatly improves the accuracy of locational information.

Donald O. Henry, U. of Tulsa

Wadi Hasa Paleolithic Project and North Bank Survey

The fourth season of survey and excavation conducted under the aegis of the Wadi Hasa Paleolithic Project took place in 1993. The project is directed by the author and is supported by the National Science Foundation, Arizona State U. and the National Geographic Society. Survey on the north bank of the wadi was the major focus of the campaign. Altogether 453 sites were discovered, ranging in age from the Lower Paleolithic to Ottoman. These sites, when added to the 78 sites recorded in 1992, bring the survey site total to 531, the second or third largest archaeological survey in Jordan.

Whereas the 1992 survey was dominated by lithic period sites found at low elevations and associated with Pleistocene Lake Hasa, the 1993 survey produced large numbers of ceramic period sites, upstream, in plateau and cuesta ridge contexts, and at high elevations. Particularly striking was the high incidence of Iron Age sites, which were not represented at all in the 1992 effort. Also noteworthy was the episodic reuse of particular loci in the landscape over very long periods of time. Rujm Falah, for example, is an enormous site overlooking the Hasa with Bronze, Iron, Hellenistic, Roman, Byzantine and Islamic period ceramics. Although its function undoubtedly changed over time, it is located on a high promontory, with unobstructed vistas in all directions. Since there is also a dense Stone Age lithic scatter surrounding the rujm, it probably was a convenient spot for human aggregation over literally tens of thousands of years,

Most of the sites are isolated farmsteads and small hamlets comprising a few households with their corrals. This basic community plan appears to exhibit remarkable temporal stability since it first appeared in the Chalcolithic, about 6,500 years ago. The same basic plan persisted throughout the Metal Ages, the Nabataean and Roman eras, and into the Islamic periods.

It is worth remarking that the Wadi Hasa floodplain is being heavily farmed today using water drawn by pumps from springs in the wadi bed. Melons, tomatoes, sunflowers, squash and some maize are being grown in tractor-ploughed, irrigated fields. This intensive agriculture is very recent; there was no trace of it in 1984 when we first began to work in the area. It is very likely that this modern agricultural intensification is only the latest in a series of such efforts that date back to the Iron Age, when the first large increase in population took place. Without some form of intensive agriculture, and an efficient system of water impoundment and distribution, it is difficult to see how the high population densities of the Iron Age and the Roman/Byzantine eras could have been sustained.

The Wadi Hasa Paleolithic Project also excavated an Upper Paleolithic rockshelter (Yutil al-Hasa) located on the south bank of the wadi. These tests, which were directed by Deborah Olszewski of the U. of Arizona, located a formerly unsuspected Epipaleolithic occupation at the site, and we now know that the rockshelter was used three times by humans over the 20-12,000 year interval. The first of these was during the late Upper Paleolithic, about 19,000 years ago, just prior to the draining of Pleistocene Lake Hasa. During this interval, a number of springs existed in the site vicinity, providing fresh water to Ahmarian hunter-gatherers in the area since the lake had become increasingly alkaline (salty) over time. The site was apparently not used by humans between about 19,000 and 13,000 years ago, but after about 13,000 years ago, a series of Epipaleolithic Madamaghan occupations is documented. Tests in these levels produced thousands of tiny microlithic artifacts, which were probably replaceable elements in a variety of composite tools used for hunting, and the processing of animal and plant foods. By this time, the lake had probably disappeared from the valley, which was probably occupied by a perennial stream. There is also a late Epipaleolithic Natufian occupation at Yutil al-Hasa, created by what were probably the last hunter-gatherers in the region. Shortly after the Natufian, we have the earliest unequivocal evidence for agriculture and for the herding of sheep and goats. The site was apparently abandoned after about 11,000 years ago, never to be reoccupied again.

Further excavations are planned at Yutil al-Hasa over the next few years, and at three other Upper Paleolithic shelters located by the survey in 1992 and 1993.
Geoffrey A. Clark, Arizona State U.

'Ain Ghazal

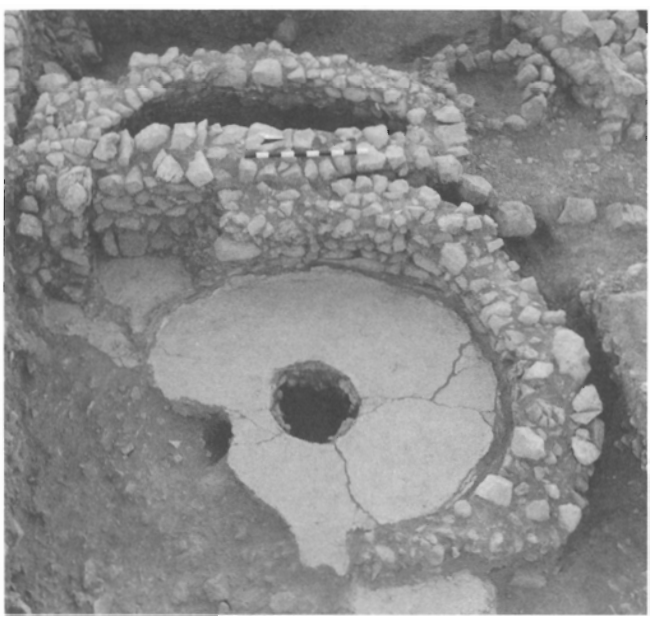
Under the sponsorship of the Institute of Archaeology and Anthropology of Yarmouk U. and the Peabody Museum, Harvard U., and with a grant from USAID, the 1993 season sampled more than 250 m^2 in the North and Central Fields of 'Ain Ghazal.

LPPNB Layers

The aim of the North Field effort was to investigate Late Pre-Pottery Neolithic B (LPPNB; circa 6,500-6,000 B.C.) architecture and cultural deposits. There appeared to be minimal post-LPPNB disturbance in this part of the site, in contrast to the severe damage imposed by later Neolithic inhabitants on LPPNB layers in the Central Field. In addition to the exposure of an LPPNB house and associated courtyard wall, a four-phase structure was encountered just below the modern land surface.

The earliest phase (P-I) was poorly preserved. P-II included a wall with a shallow curve at the western end; this evidently began to collapse inward, so in P-III a straight wall was erected across the interior of the apse, changing the building shape to rectangular. Phase IV consisted of a circular room 2.5 m in diameter, with a doorway leading to a badly damaged antechamber towards the east. The red painted P-IV lime plaster floor included seven or eight episodes of reflooring immediately atop the previous one.

A large hole (65 cm) dominated the center of the P-IV floor, much too large to have served as a posthole for so small a building. The plaster curved up against the edge of the hole on the NE side, indicating a former installation. In the walls of the hole were two pairs of stone-lined subfloor channels (N-S and NE-SW) that may have served as air ducts leading into the hole from outside the walls. The apsidal shape for P-II and the circular form for P-IV are unique for the LPPNB, and it seems that the building probably served a ritual purpose.



Phase IV of the circular room in the Central Field. Photo by Yousef al-Aoubi.

Yarmoukian Layers

With the end of the 1993 season, there are now more than 850 m² of Yarmoukian deposits exposed at 'Ain Ghazal, the largest area for any Yarmoukian settlement. In addition to providing greater details of courtyard arrangements, excavations also uncovered several stone platforms with relatively dense amounts of pottery and grinding stones on their surfaces. The function of these features remains unclear.

One of the most striking discoveries of the season was a walled street 2.5 m wide that led up the hill (E-W) in a series of stone steps, traceable for 12 m. Two 1-m wide gateways in the north wall, set off from the street by a low stone curb, probably led into courtyards, although this could not be investigated. The street was intensively used by Yarmoukian inhabitants, but it still remains possible that the feature was originally a PPNC construction, perhaps contemporaneous with the large wall 15-20 m to the south.

Finally, the discovery of a pink-purple flint quarry in the Wadi Umm Huweijir, 2 km north of 'Ain Ghazal, may have resolved the enigma of the source of a raw material so popular in MPPNB and LPPNB times throughout the southern Levant.

Zeidan A. Kafafi, Yarmouk U., and Gary Rollefson

Skeletal Material from 'Ain Ghazal

During summer 1993 the human skeletal material from 'Ain Ghazal was analyzed as part of a larger project to track changes in the sexual division of labor across the transition from foraging economies to those dependent on domestic plants and animals. Inferences about the activities of the prehistoric population at 'Ain Ghazal will be based on both cultural and osteological material. Stone and ceramic artifacts, as well as plant and animal remains, help to reconstruct a partial range of past activities. Within this general framework, muscle attachment sites (enthesopathies) on bones can identify which individuals or groups were responsible for certain activities. In previous studies, specific activities such as hunting with a spear or *atl-atl*, hunting with bow and arrow, burden bearing, and cereal processing have been linked to specific patterns of frequency and robusticity of muscle attachments.

'Ain Ghazal is particularly important because it is a huge settlement inhabited by one of the Levant's early farming groups. Domestic and wild species of cereals and legumes have been identified. The faunal remains also indicate a mixed economic strategy, with both wild and domestic animals represented. At this large site, one might expect that labor patterns are in a period of adjustment—adapting not only to life in larger, more sedentary communities, but also to a new suite of tasks associated with producing plant and animal products.

Preliminary analysis indicates that the 'Ain Ghazal skeletons provide insights into changing labor patterns. In general, the musculature in the arm and shoulder region for the individuals examined appears to be quite robust. Both men and women have very robust biceps brachii attachments. The biceps muscle is the principle agent responsible for flexing the elbow, but can also be involved during supination (the motion of unscrewing a jar lid). The pattern is bilateral, with strong expression on both the right and left sides. One activity inference being considered is the carrying of heavy loads with bent arms. A similar muscle pattern was documented among modern-day bakers and brick masons.

The costoclavicular ligament on the clavicle is also quite robust and exhibits stress lesions in some cases, particularly among the men. Among Eskimo populations, a similar pattern is apparently related to arm rotation movements during kayaking. Obviously, another interpretation must be generated to explain the 'Ain Ghazal pattern.

This research strives to define some of the social changes associated with the development of farming. Preliminary data indicate that these objectives will be at least partially met. How past groups met the social challenges of the new tasks associated with village life, including farming and stock-raising, has important implications for models of the origins and development of domestication economies throughout the Levant.

Jane Peterson, ACOR USIA Fellow, Arizona State U.

Madaba Region Early Bronze Age Survey

As part of an ongoing study of the Early Bronze Age (EBA) in the Madaba region, a survey was conducted by the author in 1992-93. The project was made possible by a USIA-ACOR Fellowship, and a Ryerson Travel Grant from the U. of Chicago. The survey universe was defined by the Dead Sea escarpment to the west, the foothills of Amman to the north, the desert steppes to the east, and the north branches of the Wadi Mujib to the south.

The survey area incorporated a representative cross-section of the geographical and climatic diversity characteristic of the fragmented highland terrain. The relatively wet Mediterranean zone along the escarpment is at one extreme, and the more arid Irano-Turanian zone of the desert steppes at the other.

An area of approximately 1600 km^2 was surveyed, and a total of 124 sites recorded. The survey recorded a general description of each site, collected surface sherds and made a determination of site size and location. In addition to evidence of EBA activity, the ceramic record included material from the Middle Bronze II, Iron I, Iron II, Nabataean, Early Roman, Late Roman, Byzantine, Early Islamic, Ayyubid / Mamluk and Late Islamic / Ottoman periods.

Timothy Harrison, ACOR USIA Fellow, U. of Chicago

Jebel er-Reheil

An excavation and survey project was conducted in the upper Zerqa Valley near the village of Sukhne by a team from the U. of Rome. The project was financed by grants of the Italian Ministry of Foreign Affairs and the National Research Council of Italy.

The aim of the project is to understand the relationship between nomadic and sedentary peoples from the third millennium B.C. to modern times, and to collect information on the earliest periods of human settlement. This is achieved through the identification and study of different types of archaeological sites and patterns of land use. The situation in the upper Zerqa basin is ideal for this kind of research, as the sparse vegetation cover allows good ground visibility. The concentration of sites in this area is also particularly high, because of the presence of permanent sources of water, such as Seil ez-Zerqa and Wadi Dhuleil.

Excavations conducted at Jebel er-Reheil, a site dated to 2900-2200 B.C., revealed the presence of complex fortification systems and at least two phases of domestic occupation, one of the Early Bronze II (ca. 2900-2700 B.C.) and the other of the Early Bronze IV, 500 years after the first occupation. In one of the trenches, the archaeologists identified a courtyard area with two ovens containing large quantities of carbonized seeds, mainly wheat and perhaps barley, indicating the presence of a flourishing agricultural community which was perhaps also involved in long-distance trade, since a copper ingot was found in one of the trenches.

A survey conducted in the vicinity of Jebel er-Reheil led to the identification of 218 previously unrecorded archaeological sites; this was in an area where previous surveys had identified only 35 sites. The sites are mainly tumuli and tombs built on hilltops, but there are also some sites of potential scientific importance, such as Lower Paleolithic sites dated to over 500,000 years ago; a large Neolithic village of 8000 years ago, a period when pottery started to be produced and agriculture became the major source of food supply; several fortified towns dated to between 2900 and 1000 B.C.; a Roman military camp in a strategic position along the Zerqa River; and a series of Early and Middle Islamic villages in excellent state of preservation. Sites which are often not properly considered during such an archaeological project—traditional villages and recent Bedouin camps—were also recorded so that there will be a complete record of human occupation and land use of this fertile but semi-arid area at the edge of the desert.

Part of the fortifications at Jebel er-Reheil. Photo by Gaetano Palumbo.

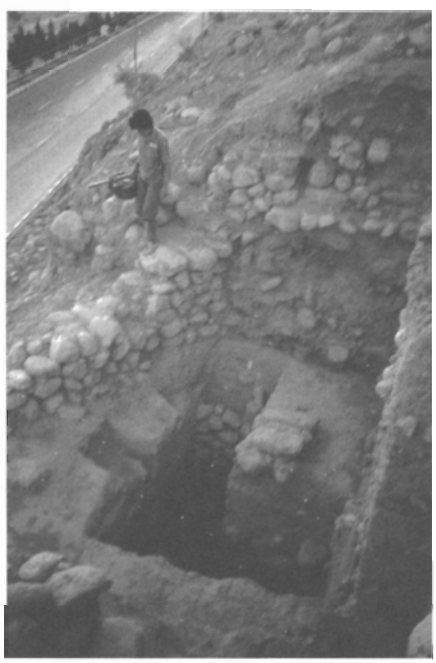
Gaetano Palumbo, ACOR

Tell Nimrin

Tell Nimrin is located on the eastern edge of the village of South Shuna, in the southern Jordan Valley. Modern development has encroached on the western and southern slopes of the mound. In 1980, a four-lane highway cut the northern flank of the tell. The earliest evidence of occupation represented in the road cut are small domestic structures dating to late Early Bronze IV / early Middle Bronze I (ca. 2000 B.C.). Several phases of MB domestic structures on the site's northern edge stand directly above those earliest levels.

Tell Nimrin road cut showing Middle Bronze Age stone and mudbrick walls. View from the north.

Near the end of the MB period (ca. 1600 B.C.), large stone walls with mudbrick superstructure were built on top of the small domestic structures. The largest stand more than 4 m high and 3 m wide and may be a large public building or city fortification. No clear evidence from the Late Bronze and early Iron I (ca. 1500-1000 B.C.) has been found, and the presence of late Iron I walls built immediately over MB II structures suggests an occupational gap during the second half of the 2d millennium B.C.



Tell Nimrin: 10th century B.C. stone walls on top of a Middle Bronze Age wall.

During the Iron Age, Tell Nimrin appears to have suffered a series of destructions followed by short periods of abandonment and reoccupation. Well-preserved mudbrick and stone walls, some still covered with plaster facing, date to the 10th, 9th and 7th centuries B.C. Numerous ceramics, mostly storage jars, were found associated with the Iron Age structures along with large quantities of plant remains, including whole carbonized fig, linseed, wheat, barley, olive, lentil, chick-pea and a variety of other foodstuffs.

The Persian Period is represented on the top of the mound by a multi-phase building in which eight Aramaic ostraca were found. Domestic architecture, ceramics and living surfaces dating to the Persian Period were also found on the western slopes.

Hellenistic and Roman ceramics attest to occupation during these periods but thus far no structures dating to this era have been uncovered because of modern bulldozing. The western slope of the site holds the greatest potential for finding relatively intact strata of the Hellenistic and later periods.

Tell Nimrin flourished during the Byzantine and Islamic eras, especially the Umayyad and Mamluk Periods. Numerous Mamluk sugar pots and a mill race located to the northeast of the tell testify to the Jordan Valley's well-known sugar cane industry during the Mamluk Period.

Remains from the Byzantine Period included numerous walls on the site's western slope plus a late 6th century A.C. church excavated by the Jordanian Department of Antiquities in 1980. The most unusual Byzantine find from the 1993 excavation was a cache of 34 gold coins and two pairs of earrings. The cache was found in a small ceramic juglet that had been deposited above the floor of an abandoned Byzantine building. The coins are dated to the mid-4th to the early 6th century A.C.

The excavations at Tell Nimrin have demonstrated that it is one of the Jordan Valley's richest and most important sites. It is therefore an ideal place to investigate the social, economic and environmental history of the region from the past 4,000 years.

J. W. Flanagan, Case Western Reserve U.; D. W. McCreery, Willamette U.; and K. N. Yassine, U. of Jordan

Tell Jawa

Examination of the ceramics from Tell Jawa, which is near Amman indicates that the tell was occupied from the Middle Bronze Age to the middle of Iron Age II. After a gap in settlement, occupation resumed and several structures on the tell, along with associated installations in the bedrock outcrops to the south, were in use during the late Byzantine-Early Islamic period.

During 1993, work continued in Fields B, C and E in order to further expose Iron Age structures inside the casemate wall system. In Field E, a breach of the wall system was found. Here, two parallel walls formed a 80 cm wide corridor that extended inside the town and ran north through both the inner and outer casemate walls. The function of this corridor is unclear; it may have been a postern or a drain.

Domestic structures were also found in the three fields. Field E produced a courtyard, with central cistern, surrounded by rooms. These rooms were full of smashed pottery, grinding stones, and other imple-

Tell Jawa, Field C: pillared house with stone staircase.

ments. Some 147 vessels were recovered.

The pillared building discovered earlier in Field C also produced significant domestic finds. The broad room at the back of the building was filled with lamps, cooking pots, storejars, ground stone tools and some ceramic spindle whorls and unbaked clay loom weights. In the central room was a stone staircase which led up to a landing. In Field C, another area of domestic quarters was uncovered which contained a *tannur* and various kitchen implements.

A Late Byzantine-Early Islamic period building in Field D provided some of the most fascinating discoveries of the 1993 season. Under a kitchen floor were found thirty-five copper coins minted in Damascus and Ramla. The central courtyard was paved with a plain mosaic floor that ran under the remains of an arch flanked by a doorway. Among the artifacts found in this room were an impressive collection of Umayyad vessels, as well as many Umayyad or Abbasid lamps decorated with the grape leaf and cluster design. Several lamps were inscribed in Greek and Arabic scripts.

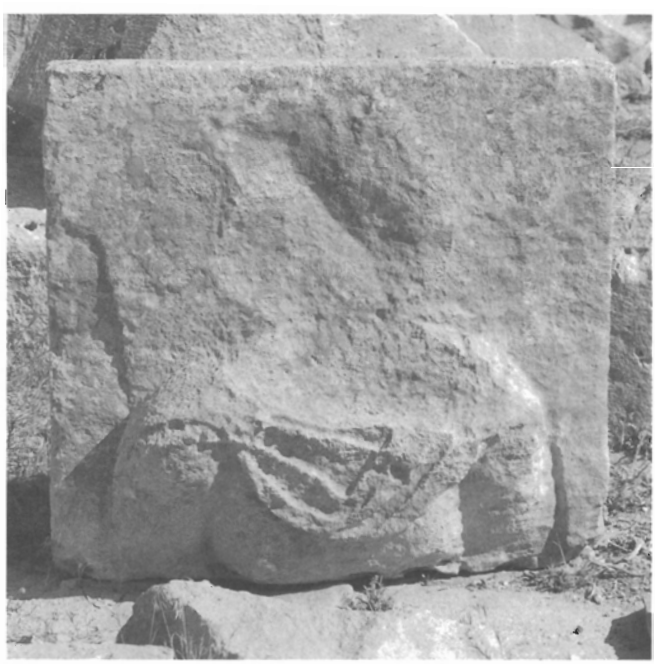
P. M. Daviau, Wilfrid Laurier U., and S. Thibodeau

Khirbet et-Tannur

On an isolated summit on the south bank of the Wadi el-Hasa stand the remains of what was one of the most impressive Nabataean temples, Khirbet et-Tannur. It was excavated in 1937 by N. Glueck, of the American Schools of Oriental Research. The temple became famous for its architectural decorations and its numerous sculptures which depict various divinities and religious symbols. Half of these sculptures are now at the Jordan Archaeological Museum in Amman and the other half are at the Cincinnati Art Museum which has the richest Nabataean collection outside of Jordan. In 1965, N. Glueck published a general book on the Nabataeans, with a focus on the Khirbet et-Tannur temple and its rich iconography: *Deities and Dolphins*. Despite its detailed discussion of the temple, this book was not a final report on the excavations.

The tremendous progress in Nabataean archaeology in recent decades made necessary a reassessment of the interpretations and conclusions of the excavations of the Khirbet et-Tannur temple.

The present project focused on the following issues: the problem of continuity between Edomite and Nabataean populations and cultures, as illustrated by Khirbet et-Tannur, believed to be originally a sanctuary to the main Edomite god Qaws; the exact nature of the two main divinities, traditionally labelled Hadad and Atargatis; the origins of the plan of the temple, which retains some features of the original high place; and the interpretation of its exuberant decor, which has parallels in other Nabataean temples at Petra and Khirbet edh-



Khirbet et-Tannur sculpture. Photo by Marie-Jeanne Roche.

Dharih. The research had two phases: visits to the collections at the Cincinnati Art Museum and the Jordan Archaeological Museum, and field research. The field work included not only the site of Tannur, where some pieces of sculptures, very damaged, are still visible, but also numerous Nabataean temples and other sites for comparison. These included Petra and Khirbet edh-Dharih, the two only sites of the ancient Edom where Nabataean temples can be recognized.

Marie-Jeanne Roche, ACOR Dodge Fellow

The Southern Temple, Petra

The Southern Temple (also known as the "Great Temple") is one of the major archaeological and architectural components of Petra. Positioned to the south of the Colonnaded Street and southeast of the Temenos Gate, the Southern Temple occupies a position of paramount importance. From north to south the complex consists of a Propylaea; a Sacred Area or Lower Temenos ending in a Grand Stairway; and an Upper Temenos—the sacred enclosure for the temple proper.

As part of a five-year program, this first year of archaeological survey and excavation of the Southern Temple was conducted in 1993 by Brown U. It consisted of historic research, archaeological excavation of the temple stylobate, and the examination of other architectural components, such as the Propylaea and other *in situ* features in the Lower Temenos. Fieldwork also consisted of reconnaissance, site survey and mapping (including the use of a laser Electronic Distance Measuring System for a computerized survey of the complex), and analysis of the ancient landscape and ancient and contemporary drainage problems.

Excavations were conducted along the north temple face so that the character of the temple stylobate and its foundations might be ascertained.

The temple stylobate measures approximately 28 m (east-west), and we assume the temple itself to be some 40 m in length, if not more. The bottom course of the *crepidoma* or podium was reached at approximately one meter below the northwest stylobate edge where a paved floor bedding was uncovered. Our preliminary analysis is that the temple is tetrastyle *in antis*, with widely-spaced central columns at the entrance (7.9 m), and two end columns located about 5 m to the east and west respectively. A stairway was constructed into the stylobate leading from its level into a broad pronaos, measuring some 8 m in depth. This stairway leads up to the naos or cella, which measured approximately 28 m in length by 18 m in width. From our measurements of the porch columns (the shaft plus the base and the capital), they stood approximately 19 m in height. Added to this would have been the superstructure, including the pediment and the entablature, hypothetically placing the height of this edifice at 28 m.

Our understanding of the stratigraphy of the temple site itself has been hampered by the lack of dateable materials. On the basis of the floral decoration of the limestone capitals and the entablature, the iconography appears to be similar to the Khasneh or Treasury, perhaps the most well-known monument at Petra. Tentatively, this evidence thus suggests the temple was constructed sometime in the early 1st century A.C. by the Nabataeans who combined their native traditions with the classical spirit. The temple was devastated by the earthquake of A.D. 551, which all but brought the city to ruin and abandonment.

Martha S. Joukowsky, Brown U.

Aerial view of the South Temple, Petra. The Roman Street is at lower left. Photo by J. Wilson Myers and Eleanor Myers.

Humeima

A third season of the Humeima Excavation Project took place in 1993. The project was once again funded by the Social Sciences and Humanities Research Council of Canada, and by a special grant from the Taggart Foundation awarded to help pay for the costs of conservation.

Excavation in the Lower Church provided further information about the entrance room, which fortunately also yielded numerous new fragments of the carved and inscribed marble chancel screen. It was also possible to define the wall lines, if not the precise chronology and