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## BAQ'AH VALLEY PROJECT SYMPOSIUM

by  
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A Baqa'ah Valley Project Symposium was held the weekend of October 23-24, 1982 at the University Museum, University of Pennsylvania, Philadelphia, PA, U.S.A. The conference was sponsored by the Museum Applied Science Centre for Archaeology (MASCA) and the Near Eastern Section of the Museum through a grant from the University's Humanities Coordinating Committee.

The six public lectures on the Saturday program (*The Archaeology of Jordan: An Interdisciplinary Perspective*) were designed to give both the educated layman and the professional an overview of current archaeological work in Jordan, especially with regard to its increasingly scientific character. Given the necessary limitations of a one-day seminar, the sites and areas discussed, including some of the most intensively explored in Transjordan, covered a broad time span (Early Bronze Age up to the present) in considerable detail for different regions of the country (Jordan Rift Valley; central and southern plateau). Several of the following abstracts are of special interest, because they incorporate previously unpublished material. Full documentation and qualifications of the conclusions presented in a summary fashion here must of course await the final publications. As a final explanatory note, Beth Shan was included in the program because of the Museum's long-standing involvement with this site and its close ties with several of the Jordanian sites.

The choice of sites for the Saturday seminar was largely dictated by ongoing MASCA/Pennsylvania analytical programs and collaborative efforts, which were the focus of a workshop on Sunday (October 24). Presentations were given on Baq'ah Valley Project research, including metals (V. Pigott, MASCA), ceramics (P. McGovern), neutron activation analysis (G. Harbottle, Brookhaven National Laboratory), proton-induced x-ray emission spectroscopy (C. Swann, Bartol Research Foundation of the Franklin Insti-

tute), scarabs (J. Weinstein, Cornell University), Mycenaean and Cypriot imports (R. Koehl), marine mollusks (D. Reese), geophysical prospecting (B. Bevan), and human skeletal remains (D. Ortner and B. Frohlich, Smithsonian Institution; M. Finnegan, Kansas State University; M. Saul). General discussion followed each talk which was aimed at resolving outstanding problems and setting future research objectives. A summation session in the afternoon then sought to articulate the results of the various archaeometric and archaeological studies into a coherent frame-work of cultural and technological development in the Baq'ah Valley over a 500 year period (*ca.* 1600-1050 B.C.) For example, a marked shift in the metals and ceramics industries around 1200 B.C. with the appearance of mild steel jewelry and poorly fired, calcite-tempered wares, respectively, must be viewed in the context of the human and natural environment; the geological, human skeletal, faunal, and floral data is now being fully examined for any evidence of climatic deterioration, the incursion of a new ethnic element, etc. that might account for the technological changes. The present plan is to publish the technical reports as a *MASCA Journal Supplement* and the archaeological material as a *Museum Monograph*.

### **The Archaeology Of Jordan: An Interdisciplinary Perspective; Welcome** (by Khair Yassine)

It is indeed fitting that today's symposium should be held at the University Museum of the University of Pennsylvania, since this institution has long been in the forefront of archaeological research in Jordan. Over the past twenty-five years joint projects of survey and excavation were carried out through the collaborative efforts of the Department of Antiquities, the University of Jordan, and Pennsylvania, which included work at Tell es-Sa'idiyeh, in the

Jordan Valley, and in the Baq'ah. A number of native Jordanian archaeologists also received their academic training at the Museum. I sincerely hope that the proceedings of this conference will continue to encourage the scholarly dialogue and cooperation between American and Jordanian scholars, as already begun by the First Conference on the History and Archaeology of Jordan, held at Oxford in 1980, and the Third Conference on Bilad al-Sham, which took place at the University of Jordan in the same year.

The University of Jordan, young though it may be, has begun to build up research facilities for the recording, analysis, and conservation of archaeological materials. This will provide a central laboratory available to all interested researchers, and the goal is to combine it with an archaeological data bank.

Until very recently archaeologists of Palestine and Jordan were largely preoccupied with pottery and architecture, especially as it related to the biblical tradition. As a result, ecological, demographic, and social processes were ignored. However, a wider perspective is needed, particularly in Jordan where textual material is meager. This symposium should move us further in the direction of integrating the diverse archaeological data into a more coherent picture of environmental conditions, population dynamics, settlement patterns, and technology. Drs. McGovern, Sauer, and Fleming are to be especially thanked for organizing the symposium. The large attendance today is eloquent testimony to the widespread interest in the archaeology of Jordan.

#### **Recent Scientific Approaches in Jordanian Archaeology: The Baq'ah Valley as a Case Study** (by Patrick McGovern)

Four seasons of work in the Baq'ah Valley illustrate how scientific techniques need to be fully integrated into an archaeological project. In addition to being essential for the reconstruction of

technological and cultural processes, scientific instrumentation is valuable in developing a directed, economical field strategy.

The main focus of the Baq'ah Project has been the elucidation of the Late Bronze (LB) and early Iron periods. Nelson Glueck in his pioneering survey of the central and southern Transjordanian plateau had noted a relative absence of LB remains, which led him to hypothesize that the region had been inhabited largely by nomads and 'semi-nomads' before the emergence of national states (Ammon, Moab, and Israel). Yet the appearance of exceptionally well-made LB I (ca. 1550-1400 B.C.) pottery on the Amman antiquities market in 1975-76, which was traced back to a partly robbed-out burial cave in the Baq'ah, pointed to a well-established, sedentary community. Subsequently, a trial sounding in this cave produced such impressive archaeological remains that a full-scale program of systematic survey and excavation was planned with the support of the University Museum and its Applied Science Centre (MASCA), the National Geographic Society, and the Jordanian Department of Antiquities.

During the 1978 survey, thirty-three additional partially or fully robbed-out burial caves, nineteen of which dated to various phases of the LB, were located on the lower northwestern slopes of the Baq'ah. The caves, which were formed initially by erosion of limestone and sandstone strata, run in lines at the back of terraces. In time they silted up and a thick soil accumulation sealed off the entrances to most of the tombs. The challenge was to find and employ a method of detection for locating undisturbed caves. Preliminary tests of soil and stone from the Baq'ah indicated that there was a contrast between the more magnetic soil in the caves and the surrounding bedrock. Measurements in the vicinity of the robbed-out caves with a cesium magnetometer led to the isolation of significant magnetic anomalies.

The most interesting of these anomalies, a 7.00 x 11.00 m. magnetic high, proved to be a completely intact Iron IA

(ca. 1200-1050 B.C.) cave with over 225 burials and a unique assemblage of 78 whole vessels, bronze and mild steel jewelry (NB: no weapons), and a wide assortment of small artefacts in glass, faience, semi-precious stones, and bone. Detailed metallographic examination showed that there must have been good control of the metals' production — the bronze has consistently high levels of tin (10-15%), and the mild steel displays a uniform carbon distribution. Glass was limited to 7 beads of very high iron (50%) content, suggesting that they were byproducts of the iron industry. The proximity of iron mines 10-80 kms. to the north, the only known source of iron ore in the Levant, suggests that fuller investigation of central Transjordan is crucial to understanding the transition from the Bronze to Iron Age.

Excavation of another magnetic high in 1981 resulted in the discovery of undisturbed LB II (ca. 1400-1200 B.C.) burial remains, which conveniently filled in the gap between the LB I and Iron IA groups. The LB II cave with its 20 odd burials and over 300 whole vessels provided the all-important link between the earlier and later artefactual and skeletal remains. Neutron activation, petrographic, and fabrication studies of the pottery indicate that the majority of the vessels from all three groups are made of clay from a bed in the wadi immediately below the main LB-Iron Age settlement site of the region, Khirbet Umm ad-Dananir. Although potters continued to use this clay over a 500-year period, less care was taken in tempering and firing the wares as well as in forming and decorating the vessels as one moves from LB I to Iron IA. Imported wares from Cyprus and central mainland Greece (as confirmed by neutron activation analysis) were found only in the LB tombs in which a larger number of vessels and special small finds (scarabs and cylinder seals) attested to a higher standard of living. Glass was the preferred material for jewelry in the LB I group; affinities with the Mesopotamian industry were revealed by pigment studies. Preliminary morphological and palaeopathological investigation of the human skeletal materials suggests

continuity in the human population, and a relatively high incidence of arthritis and dental caries, often characteristic of an agricultural way of life, was noted for the three groups. Carbonized bread wheat from the LB II tomb was the first direct evidence for plant domestication.

The LB level at the settlement site of Khirbet Umm ad-Dananir has thus far been exposed in only a very limited area of the 2½ hectare site. A pit, containing large pottery vessels and the burnt bones of a variety of animals (sheep/goat, donkey, cow, and a carnivore), and an associated wall and floor were found 3.00 m. from the surface beneath Early Roman and late Iron Age remains. A wider exposure of the LB and Iron I occupational levels, the latter attested to by surface sherds, is planned in future seasons.

#### **Human Biological History at The Early Bronze Age Site of Bab Edh-Dhra** (by Donald J. Ortner and Bruno Frohlich)

Archaeological evidence at Bab edh-Dhra' suggests a gradual transition from a nomadic-pastoralist society in EB I (3150-2850 B.C.) toward a more sedentary, urban society highlighted by the construction of defensive city walls in the early stages of EB II (2850-2550 B.C.). The urban society flourished until the end of EB III (2550-2275 B.C.) and appears to be followed by a return to a nomadic-pastoralist society during EB IV (2275-2050 B.C.) at the end of which the site was abandoned. In the cemetery the transition from nomadic-pastoralist to urban society is suggested by the change in burial pattern from primarily secondary interments in underground shaft tombs during EB I to predominantly primary interments in mudbrick charnel houses toward the end of EB I and during EB II-III.

Preliminary data suggest that the EB I people were small both in stature and build with subsequent people being taller and more muscular. Whether this difference represents a change within a group or a new group of people taking over the site is not yet resolved. Evidence of probable

tuberculosis, osteomyelitis, osteoporosis and dental disease has been found in skeletons from the EBI shaft tombs. There is a dramatic increase in the frequency of violent skull trauma in the transitional primary burials (EB I B) which may indicate an increase in hostility that stimulated the construction of defensive walls at the site in EB II. Multiple charcoal lenses in an (EB I B) charnel house suggest repeated burning of the roof, perhaps the result of vandalism during raids of the site in antiquity. Some of the bones were badly deformed which indicates the presence of soft tissue on some of the burials at the time of burial and provides evidence in support of primary burial. If our skeletal samples are representative of the population, the health of the people during the EB I phase appears to be good with infant mortality low. With increasing urbanization we would expect to find a decline in health but the evidence for this is ambivalent on the basis of current data.

An important innovation in field methods was the use of a continuous reading, non-contacting terrain conductivity metre (EM 31, manufactured by Geonics, Ltd. of Canada) during the 1981 field season to locate shaft tombs. Not only were shaft tombs identified with remarkable precision, but significant silting in burial caves could also be detected and avoided in subsequent test excavations. The methodology promises to be a powerful tool in developing excavation strategy.

#### **Beth Shan: A New Kingdom Egyptian Garrison?** (by Frances James)

Beth Shan is important to Palestinian archaeology in that it produced an exceptionally long, almost unbroken, sequence of occupation from ca. 3500 B.C. to A.D. 1200. Strategically situated at the juncture of major trade routes running through the Jezreel and Jordan Valleys, it reflected cultural developments in peripheral areas, including Jordan. For the Late Bronze Age and early Iron period, it produced a sequence of temples with abundant finds, which attest to Egyptian control of the site. Neolithic, Chalcolithic

and Early Bronze Age remains occur on the tell, starting with Pottery Neolithic B. The Early Bronze-Middle Bronze people left a large cemetery across the Wadi Jalud and a few graves also on the tell, but there is no sign of occupation in either place. In the early Middle Bronze (Kenyon's Middle Bronze I), a settlement with houses and pottery paralleling that at Megiddo was discovered. Burial on the tell was practiced, though no built tombs were found.

The temple sequence starts in Level IX with one temple which probably was Canaanite although few 'cultic' artefacts were found in association with it. The Mekal stela, however, was found in Level VIII, and the IX temple might have been dedicated to this god as suggested by Alan Rowe.

Levels VIII-VII represent an Egyptian military installation of the Nineteenth Dynasty. A strong tower or *migdol* stood at the west end of the excavated area and a garrison or workmen's village to the east. From the finds in the latter area (e.g., approximately half the pottery was of Egyptian types), Egyptians must have lived and/or worked here. Between the *migdol* and the village was an Egyptian shrine dedicated to Hathor. This is the 'temple' planned at the centre of pl. 5 of Rowe's *Four Canaanite Temples of Beth Shan* (Philadelphia: University Museum, 1940). Examples of over a half dozen categories of objects now emerging as standard offerings to Hathor at sites in Egypt, Nubia, and the Wadi Arabah were found. Included here were over 10,000 items of jewelry, mostly of faience but also of glass, gold, semi-precious stones and other materials. The humble design of the shrine suggests that larger official temples to Amun-Re are yet to be found in Syro-Palestine as they have been in Nubia.

In Level VI, the *migdol* was eliminated, and the temple and village reconstructed. To the north were found at least two 'Amarna type' houses using hieroglyphic inscriptions on the stone work and dated by the cartouches to the time of Rameses III. Level VI apparently ended after the appearance of Mycenaean

IIIC pottery, since several sherds of the latter type were found in this stratum.

Level V had two phases. Lower V was grouped around two temples, probably Canaanite, with at least 4 royal Egyptian stelae in the courtyard. Both from the complete absence of Egyptian pottery here and the low state of affairs in Egypt itself in the twelfth and eleventh centuries, it seems likely that some royal retainers must be responsible for this. The stelae were overthrown about the time of Shishak, and Upper Level V is marked by an Israelite gateway and storerooms to the north of the temples. The latter may have been reused as administration buildings. Level V ended about 800 B.C. Level IV is a poorly preserved small town and appears to end about 700 B.C.

No buildings of the Persian or Hellenistic periods were found. However, figurines and pottery suggested that the temple area still served a religious function. During the Early Roman period, a large temple was built. Dwelling houses were again found on the summit. The pottery evidence continues through the seventh century A.D. A round church, dated to the fifth century A.D. by Fitz Gerald, also appeared here. No later structures were identified, although medieval pottery occurred, the latest being the red-and-white ware of the Crusader period.

#### **A Mid-Jordan Valley Culture of the Late Iron and Persian Periods at Tell es-Sa'idiyeh** (by James B. Pritchard)

The four seasons of excavation at Tell es-Sa'idiyeh, 1964-1967, have provided data on the culture of the mid-Jordan Valley during eight archaeological periods extending from the Late Bronze Age to the Roman period. The earliest period is that of the cemetery of forty-five burials, belonging to the thirteenth and twelfth centuries B.C., excavated in 1964 and 1965, and now published in *The Cemetery at Tell es-Sa'idiyeh, Jordan* (University Museum Monograph 41, 1980). The culture reflected in these burials is cosmopolitan, with elements from the material cul-

ture of Egypt, the Mycenaean world, and Cyprus.

From the tell itself we have a stratigraphic sequence of four occupational levels of the Iron II period. Strata 7-5 show a city plan of residential areas (about 400.00 sq. m.) protected by a city wall. At the time of Stratum 4 the same area was used for storing grain, and possibly straw, in 97 circular pits and two rectangular bins. After a gap in occupation, there appears in Stratum 3 a square fortress of the Persian period. Above it in the stratigraphic sequence is a rectangular edifice of the Hellenistic period, which also served a public function. Subsequently, the tell served only as a camping and burial place for bedouin.

The unusual and sometimes unique features found in the four Iron II strata are for the most part architectural. Stratum 7 had among its conventional domestic buildings a large three-room house containing a mud-brick plastered platform, on which a tripod incense burner was found *in situ*. In Stratum 5 there appeared a block of twelve houses, identical in plan and size, in two rows back to back and opening onto two parallel streets. There was a room behind and a larger front room divided by a row of columns. Probably to be dated to the Iron Age is a stepped tunnel, which leads from the north sector of the city down the north slope of the tell to the water source at its base. Although tunnels built as a means of obtaining water in a city in time of siege are known from Hazor, Megiddo, Gezer, and Gibeon, this is the first to be found that is built within the earth comprising the tell.

When the ceramic repertoire of Strata 7-4 was compared to roughly contemporary material from such Transjordanian sites at Dhiban, Buseirah, Heshbon, Tell el-Kheleifeh, Umm el-Biyara, as well as tombs at Amman and Sahab, it appeared that, apart from the tripod cup or incense burner, there were few direct links between the ceramic tradition of the middle Jordan Valley and that of the Jordanian plateau to the east and the south. Nor are contacts strong with Phoenicia to the north and sites in southern Palestine.

The strongest affinities to outside

traditions are found at the sites of Tell el-Far'ah (N), Samaria, and Hazor, where strata generally assigned to the eighth and seventh centuries B.C. have produced striking parallels to the Tell es-Sa'idiyeh corpus of forms. Thus, the cultural alignment of Tell es-Sa'idiyeh in the late Iron II period would seem to be with the sites across the Jordan on its west bank, rather than with those on the plateau of Transjordan. Lines of contact can be drawn across the Jordan to the hill country on the west and also up the Jordan Valley as far as Hazor.

#### **Tell Hesban: 2700 Years of Frontier History** (by Lawrence T. Geraty)

Tell Hesban is a Transjordanian mound at an elevation of 2900 feet, which guards the northern edge of the rolling Moabite plain where a southern tributary to the Wadi Hesban begins to cut down sharply toward the Jordan River, about 15 miles to the west. It is about 35 miles east of Jerusalem, 12 miles southwest of Amman, 4 miles northeast of Mt. Nebo, and 600 feet higher than 'Ain Hesban, the perennial spring with which it is often associated. Because of the spring's distance and the absence of wells, springs, or streams at the tell itself, extensive facilities for storage of rain and runoff water were essential throughout all periods of occupation.

For geographical and linguistic reasons Tell Hesban is identified with Heshbon, mentioned 38 times in the Bible. The earliest literary reference to Heshbon's history is in Num. 21 where mentioned is made of the Israelites taking the city from Sihon the Amorite who had in turn taken it from the Moabites. It became a possession of the tribes of Reuben and Gad, belonged to Solomon's 12th administrative district, and ultimately reverted to Moab and perhaps Ammon. In post-biblical pre-Arab literary sources, the site is commonly called Esbus. It is also known from coins, milestones, and inscriptions.

An Andrews University expedition completed five seasons of excavation

(1968, 1971, 1973, 1974, and 1976) at this once vital commercial and military centre at the intersection of two important ancient trade routes. A series of 32 squares were cut to bedrock along major north-south and east-west axes centered in the acropolis. This was supplemented by tomb research and soundings scattered around the perimeter of the site in most seasons as well as the continued excavation of one of the Byzantine churches in 1978. This work identified a series of nineteen distinguishable superimposed strata covering a period from about 1200 B.C. to A.D. 1500 (4 strata of the Iron Age, 5 strata of the Hellenistic and Roman periods, 6 strata of the Byzantine and Early Arab periods, 3 strata of the Ayyubid/Mamluk period, and a final Ottoman/Modern stratum). There seem to be two primary gaps in settled occupation (about 500-250 B.C. and A.D. 1500-1870).

Excavation on the tell yielded the following: Iron I--a reservoir, major wall, deep fills; Iron II/Persian--reservoir, soil layers, Ammonite ostraca. Throughout the Iron Age the town was relatively small and characterized by domestic facilities, possibly including a cottage textile industry. There was no apparent trade. A carburized blade-point and arrowhead of the seventh/sixth century indicate that local smiths had a working knowledge of ferrous metallurgy. A mixed economy of farming and cattle herding prevailed. Hellenistic--two defense walls, rock-cut caverns. In the small fortified settlement luxury trade items of alabaster and ivory were found for the first time. Early Roman-domestic caves, a sequence of plazas, tower; Late Roman--monumental stairway to acropolis, possible temple, domestic complex. The Roman town was relatively large with evidence for mercantile activities, trade, and elaborate public architecture. Skeletal remains suggest a stressed population. Farming, cattle herding, and viticulture were the main economic activities. Fish remains pointed to east-west movement. Early Byzantine--tower rebuild, basilica-type Christian church, lime kiln, "Prometheus Bound" carving; Late Byzantine--three churches (one an expansion), stone

stairway. The Byzantine community was well-established with elaborately decorated buildings and evidence for foreign trade. It was surrounded by numerous contemporary sites and elaborate water-management works. There was intensive food production with the consumption of poultry, pigs, and fish. Sheep/goat remains were relatively scarce, probably because pastures had been turned into croplands by employing horses and donkeys as draft animals. Umayyad-flagstone floor, ceramic oven, and imported marble; Abbasid--stone-lined pit; Ayyubid/Mamluk--vaulted rooms associated with caravan "motel," series of cisterns, domestic caves, domestic building complex, bathhouse, and possible mosque. The Arab period begins with a mixed-farming community which gradually declines until its medieval revival when a relatively large, important settlement emerges with intensive food production. The fish remains evidence of north-south movement.

Further expedition goals and results included soundings--eighteen of which added important complementary data and confirmed the accuracy and completeness of the more extensive acropolis stratigraphical operation; cemeteries--all the tombs of which were either Roman or Byzantine (192 skeletons studies) despite a thorough search for Iron Age burials; regional archaeological survey--155 sites were mapped with a 10 km. radius of the tell including two impressive tells, Tell el-Umeiri and Tell Jalul; related scientific data--such as environmental and ethnographic fieldwork (floral changes at Hesban indicate a succession of plant communities through time but no evidence for desertification), zooarchaeological data gathering (50,000 animal bones were processed yielding some 120 species of which 42 were wild birds, 32 hunted mammals, and 14 domestic mammals), and investigations aimed at discovering the depositional, post-depositional, and excavation factors which affect our understanding of the material excavated (bones, sherds, glass, scientific samples, small finds etc.)--all now undergoing study for final publication.

#### **Pella of the Decapolis** (by Robert Houston Smith)

Since major archaeological work began at Pella in 1967, a great deal has been learned about the history of the city and its relationship to its larger region. The reconstruction of Pella's past has involved the study of ancient texts, environmental factors (geography, weather, hydrology, etc.), excavation, and specialized geological, zoological, botanical and anthropological studies.

It is now known that occupation of the site began as early as 5000 B.C. (not to mention nearby Palaeolithic occupation) and continued with the little interruption until the city was destroyed by earthquake in A.D. 746/747. Middle Bronze II B.C., Late Hellenistic, Byzantine and Umayyad remains are especially abundant, but there is also increasing attestation for Middle-Late Chalcolithic, Late Bronze I-II, Iron I and Iron II, and Roman occupation. As excavation reaches deeper levels in the central mound, additional evidence of Pella's early periods will probably be found.

Thus far excavation has been carried out in more than a dozen areas, including the central mound, Tell el Husn (a large natural hill south of the tell with occupational remains and numerous tombs), the Wadi Jirm, and several outlying locations.

With the help of the Department of Antiquities, which has provided generous support for the Joint Expedition in a number of ways, some of the columns of Byzantine ruins at the site have been restored to their original positions. The expedition has had financial support from the National Geographic Society, the National Endowment for the Humanities, and the Australian Grants Committee, among others, and, pending the continuation of such funding, the Expedition anticipates being in the field for a number of future seasons.

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