rence of Iron Age occupation ever found at the site. After the removal of the burnt-out roof (a 0.10–0.15 m thick layer of twig-reinforced sun-dried clay), we excavated a storage room with numerous intact or complete objects. The discovery of such a remarkable depositional context—where none of the room's many objects were disturbed after the conflagration—came as a surprise, considering how close the room was to the surface. The space is enclosed by four walls, three of which are preserved to a height of 1 m. There is a 0.12 m thick wooden roof support approximately in the center of the room. A 0.8 m wide entrance is in the northwestern corner, together with a step leading up to the next room, which could not be excavated because of shortage of time. In the southeastern corner of the passage to the next room is a door socket of limestone.

The room was crowded with objects intermingled with an ashy destruction layer. Eighteen complete earthenware vessels were exposed: three juglets, one strainer jug, one krater, and 13 jars. Three jars contained the remains of (barley?) flour, of which one had as much as 4 kg still preserved. The krater held the dried remains of what were most likely olive oil and olive pits. Basalt finds included a mortar, a millstone, and a spindlewhorl, which was probably reused because of its shape and production technique definitely belong in the Early Bronze Age. A cylindrical, ribbed spindlewhorl of fired clay, which is of a shape uncommon at the site, was also discovered. A sheet of bronze might belong to the door construction. A stone cylinder, 0.3 m long and 0.23 m in diameter, shows a centrally placed depression on one side, whereas the other side is broken off; it was used for crushing olives.

In summary, to date, we have clear evidence of Iron IIIB and IIC occupation at the site, whereas the Iron I period is represented only by stray finds.

KHIRBET AL-BATRAWY

Lorenzo Negro, Rome “La Sapienza” University, reports:

Khirbet al-Batrawy was identified in 2004 as an Early Bronze Age fortified site—the main site of Upper Wadi az-Zarqa in that period. The site has been the object of systematic excavations and restorations by Rome “La Sapienza” University since May 2005. Five seasons were conducted at the site, bringing to light EB II–III fortifications (areas B north, C, D, E), several clusters of EB IVB dwellings (areas A, B, D, F), the EB II city gate and some EB III buildings inside it (area B south), the northwestern (area C) and southwestern (area D) corner towers, and the EB II–III Broad-Room Temple on the easternmost terrace (area F). The fourth (2008) and fifth (2009) seasons focused mainly on the exploration of the northern fortifications, with the city gate, the quarter of dwellings and public buildings inside it (area B), and the easternmost terrace with the Broad-Room Temple (area F), as well as on the excavations of EB IV sparse dwellings in the same areas.

From Villages to Town: Upper Wadi Az-Zarqa in the Third Millennium B.C.E.

Archaeological surveys carried out along the Zarqa River illustrated settlement dynamics leading to the birth of the city of Batravy. The population settled during EB I in farmhouses and hamlets exploiting the favorable environment of the river at the beginning of the third millennium B.C.E., grouped on the khirbet of Batrawy. The erection of a massive city wall encircling the whole site and making it dominate the surrounding landscape marked the birth of the city, distinguished by a complex socioeconomic organization, centralization of functions, concentration of labor, agricultural products and goods exchange, and territorial control extending over tracks crossing the steppe and the desert and entering the Wadi az-Zarqa and, through it, the Jordan Valley.

The Northern Fortifications and City Gate (Area B North)

The Main City Wall erected in EB II was a stone structure 2.9–3.2 m thick, with a solid base employing large limestone blocks on the outer side (with an abutting foot), and curtain walls including a central fill made of medium-sized stones. The foundation reached the height of 2 m; over it was a mudbrick superstructure about 4.5 m high, making the whole defensive work 6.5 m high. A 1.6 m wide gate opened through this wall. This gate was intentionally blocked after an earthquake destroyed a great part of the city at the end of EB II (ca. 2700 B.C.E.). An outer wall (W.155), made of huge blocks, was added to the fortification line at the beginning of EB III. This structure was then further reinforced in EB IIIB by adjoining to it a third scarp wall (W.165), also made of big stones and blocks with a battering face, ending against the former with a semicircular bastion (W.825). Moreover, a curvilinear (W.185) and a rectangular (W.177) outwork protruded from these walls in EB IIIA and IIIB, respectively, presumably to protect the EB III city gate, located to the west (fig. 6).

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13 The use of this term reflects a historical-archaeological interpretation that attempts to highlight the difference between the socioeconomic model of village life (in use until the rise of the city of Batrawy in the Upper Wadi az-Zarqa) and...
Inside the Main City Wall, two symmetrical staircases made of slabs protruding from the wall itself were discovered; the slabs served as brackets to support wooden planks. Such architectural devices gave quick access to the upper part of the city wall, thus demonstrating that there was an upper passageway.

Houses and Buildings of the City (Area B South)

Inside the triple fortification line, an area of dense occupation was excavated with structures preserved up to 1.4 m. Buildings were constructed with medium-sized stones at the ground floor and mudbricks and wooden posts for the superstructure and were separated from the main city wall by a 1.8 m wide street. Building B1 included at least two rooms and a staircase. Against its eastern wall, a semicircular oven was adjoined, paved with basalt slabs and grinding stones. Farther east, there was a rectangular house (B2) with a circular basin in the middle and a fireplace in the northeastern corner. At the opposite side of the area, another large building (B3) was discovered that contained a series of large pithoi. These huge containers, which show the traces of the fierce fire that destroyed the city at the end of EB IIIB (ca. 2350 B.C.E.), were aligned against the north wall. Their presence testifies to a central administration capable of concentrating foodstuff and goods. The same picture of the earliest city of Batrawy is provided by analysis of other finds (seashells, copper items, tokens) and faunal and paleobotanical remains: the city controlled olive oil production in the nearby hills west of the Zarqa River, and it was a crossroads for donkey caravans crossing the desert.

The Broad-Room Temple (Area F)

A large temple was discovered on the easternmost terrace of the hill that dominates the pass into the Upper Wadi az-Zarqa Valley; its architecture is typical of other temples from the late fourth and third millennia B.C.E. in the southern Levant. The temple was a broad-room, preceded by a forecourt, in which several cult installations stood, including a circular...
altar (diam. 2.5 m, ht. 0.4 m), with a slab and a cup mark in the middle, and a freestanding betyl. The cela had a niche facing the entrance, with a raised bench inside. After the destruction of the earliest building, which occurred at the end of EB II (ca. 2700 B.C.E.) as the result of a terrible earthquake that destroyed the city, the temple was reconstructed with some changes: a new entrance and a new cult focus. A platform was erected on the western side of the cela, with a horseshoe-shaped niche against the west wall. Facing this structure, a couple of betyls stood upright. The temple of Batrawy finds a striking parallel in a similar sacred building discovered at Bab edh-Dhra' on the Dead Sea plain, thus showing the unity of religious tradition during the Early Bronze Age, at the dawn of the earliest urban culture in Jordan.

QUSEIR AMRA

Fadi Balawy, Hashemite University, reports:

Quseir Amra is a World Heritage site located in a remote area of the Jordanian desert on the highway between Amman and Al-Azraq. In Arabic, the word quseir refers to a small palace. The current project aims to study the main physical and chemical properties of the building materials of Quseir Amra and to establish an environmental monitoring program for the site. The study will also evaluate all the internal and external decay features of the structure. The research will define the necessary practical, remedial, and preventive practices required at the site and will create a long-term, comprehensive plan for the management and conservation of the site.

The current project started in January 2009 and will be completed by December 2010. The project was divided into four main phases and is now in phase 3.

The first phase involved creating a detailed documentation system for the building structure and external and internal decay issues, collecting samples for analyses, as well as observing the environment surrounding the palace. Two small tag data loggers were installed at the quseir to record the relative humidity and temperature conditions. One of these loggers was installed inside the quseir, and another outside. The microclimate data from these loggers will provide a detailed record for monitoring both the interior and external conditions at the quseir.

Collecting samples from a World Heritage site is a challenging and debatable issue. The size and number of samples should be minimized from an ethical point of view, but this must be balanced against the lack of sufficient information regarding the building materials. This information is necessary to understand the main causes of decay that could result in the gradual loss of this unique cultural heritage resource. It was thus necessary to develop a responsible sampling strategy that provided the required data without further endangering the monument.

The building material on the quseir can be divided into four main types: the main building stone (limestone), the cementing material, the internal plaster, and the pigments materials. Approximately 16 limestone samples were collected either from a fallen rock or a nonvisible location within the quseir so as not to affect the site aesthetically or structurally. In addition, approximately 10 samples of cementing materials were collected, also from nonvisible locations for the same reasons. A few very small samples of internal plaster and pigment materials were also collected.

The preliminary results from an evaluation of weathering processes show that stone breakage, fractures, cracks, scaling, and salt efflorescence are the primary external decay factors, while flaking, scaling, washout, salt efflorescence, and subefflorescence are the main threats within the interior of the palace. The documentation process included the use of a high-resolution camera and a monthly schedule of on-site observation to record any development of the decay elements in the structure. This phase also included a study and evaluation of the surrounding environmental conditions, in particular, the traffic-related threats from the neighboring highway. The study was able to demonstrate that traffic vibrations were responsible for a fracture on the main gate.

During the second phase, a large number of laboratory tests were conducted on the samples of the four building materials at Quseir Amra as the first step in selecting suitable conservation procedures. These tests are vital for understanding the physical and mechanical properties of the materials so that the decay processes can be identified and suitable remedial and preventative measures designed. Petrography, porosity, permeability, water-absorption capacity, water uptake capacity, salt content, and X-ray fluorescence (XRF) tests were performed on the limestone building material. The chemical content of the cement and plaster samples was analyzed using XRF, while ion chromatography (IC) and inductively coupled plasma atomic emission spectrometer (ICP-AES) tests were used, respectively, to measure the anion and cation content of these samples (table 1).

The early results showed that the limestone has a high effective and fine porosity. The porosity ranged between 15.2 and 13.9%. This type of porosity is quite dangerous because the absorbed moisture in the stone will remain for longer periods and could activate salt decay and growth of mold within the building, as well as encourage insect inhabitation.

The project is now in the third phase, during which all the physical and chemical properties of the building stone will be considered to understand the