

Life and Death of Settlements in Jordan, Ancient and Modern

Within the general theme of this conference: “Archaeological Perspective on Society, Culture and Identity”, it is instructive, I believe, to survey the process of creating new settlements, their socio-economic development and their abandonment. A few examples from excavated sites will help shed light on this process, and in the absence of chronological documents, the comparison with modern settlements will be, no doubt, enlightening.

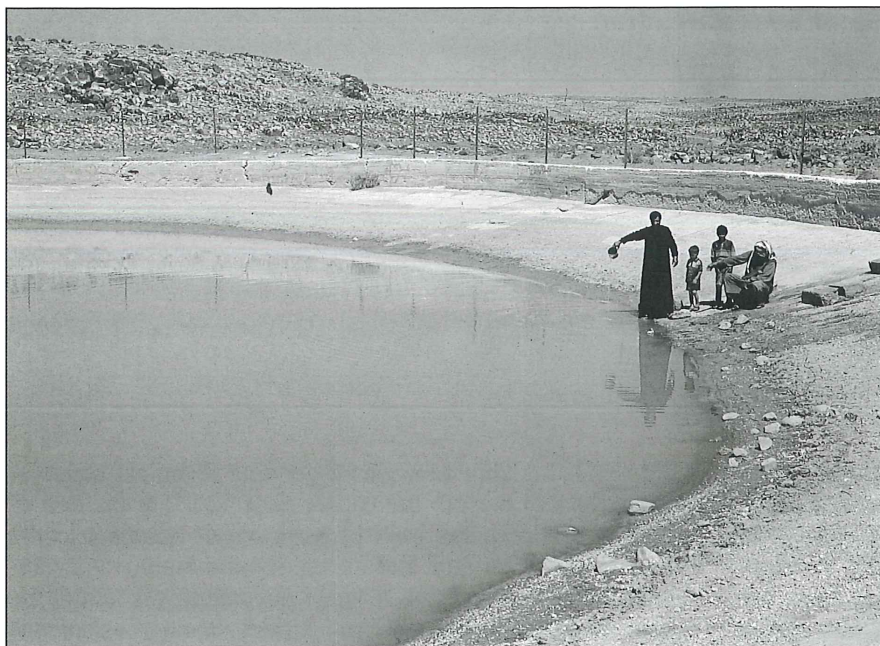
The city of Jāwā, North, sprang up in the black desert, on the right bank of Wādī Rājil which drains the seasonal rains of Jabal al-‘Arab (Druze). It is the best example of a fortified settlement that prospered from the Early Bronze IA, the Proto-Urban period, to the Middle Bronze IV/Middle Bronze A, that is approximately from 3200 BC to 2000 BC. Although life conditions were very harsh in what was called “cold ashes” or “*Bilād-ash-shayṭān*”, the land of the Devil”, the Jawites developed a sophisticated system of water harvesting (Helms 1981: 157-183). The most impressive feature was a huge dam of boulders, which was built on a tributary valley of Wādī Rājil (FIG. 1) by the Chalcolithic population of the site. It has been unfortunately replaced by a concrete dam and a water ba-

sin (FIG. 2). This dam was a genuine technical achievement for that period: the earlier dam “D1”, at the end of pool 4 (FIG. 3) was built of huge basalt boulders to the length of at least 80m and its maximum height was evaluated between 4 and 5m. A stone pavement was laid at the base of the retaining wall and a thick layer of ashes was piled at the base of the structure. This feature, at first, puzzled the excavators. But it became clear that the layer of ashes, when compressed, was the best water-proofing method (Helms 1981: 175). In addition to the main dam, the people of Jāwā have plotted ten pools as animal watering points. The total capacity of the watering pools was estimated at 52.100 cubic meters (Helms 1981: 180). Other water collecting basins were installed around Jāwā as evidence of a dense population of a mixed economy, based on agriculture and pastoralism.

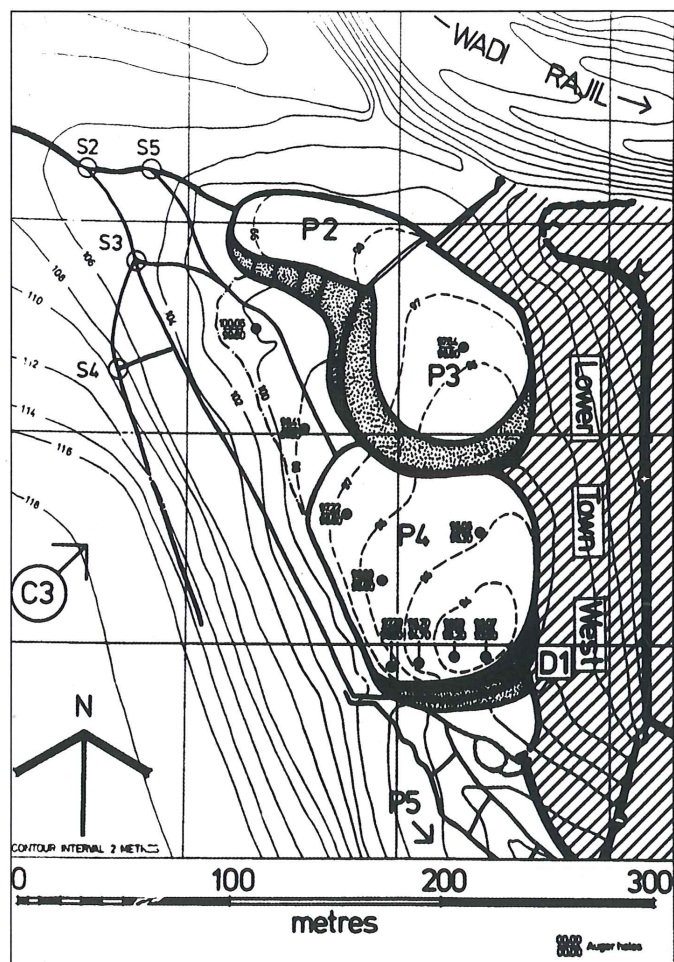
It is not easy to answer the question where the Jawites came from and how they disappeared? When the Jesuite Father Poidebard discovered the site of Jāwā in 1934 while surveying the *Limes Arabicus*, he thought the city belonged to the Roman fortification system. before 1973 the first season of excavation was started by S. W. Helms



1. The huge dam at Wādī Rājil, before its destruction
(Photo 1981 by F.Z.).



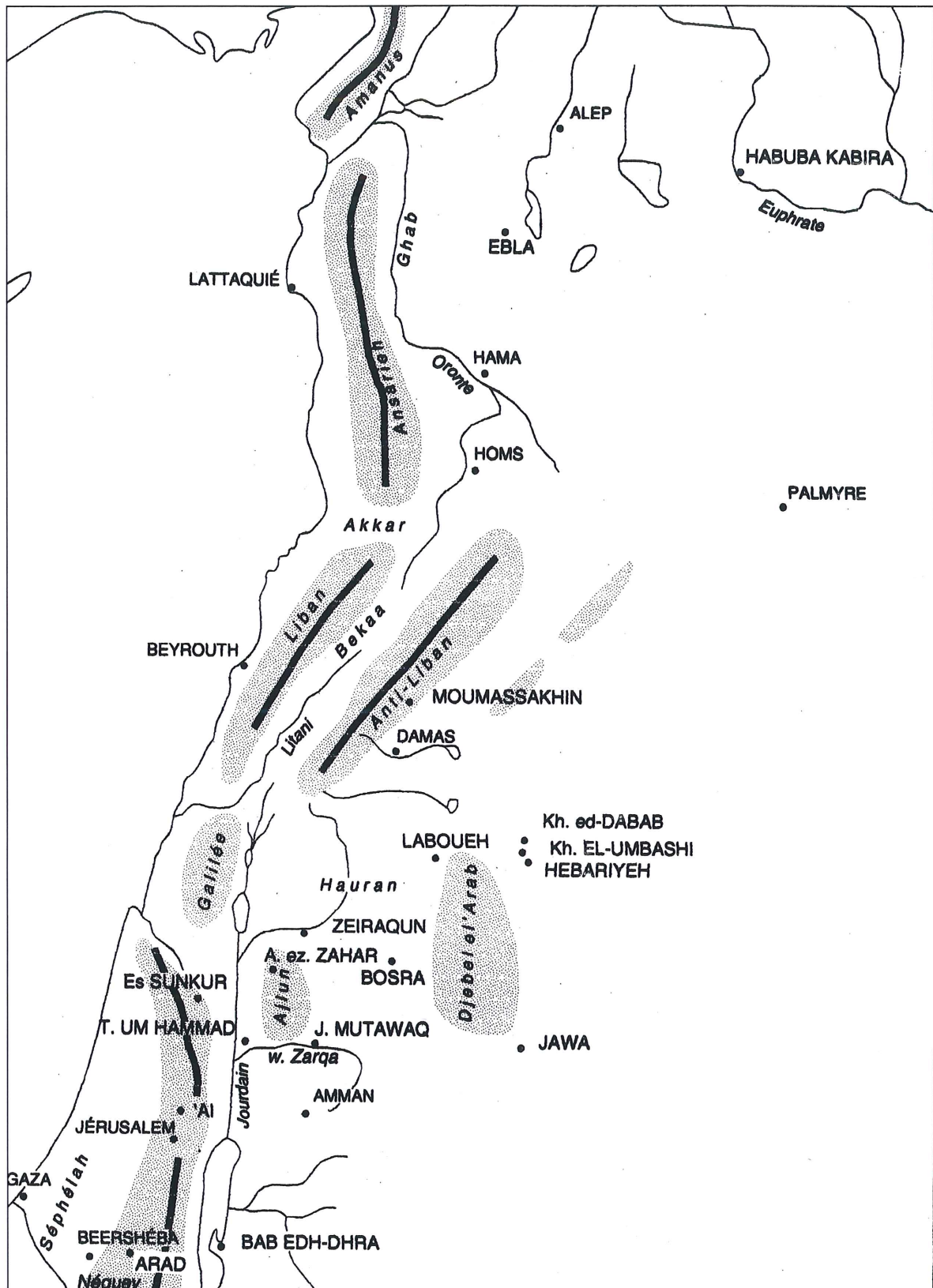
2. The modern water basin in Wādī Rājil.



3. Plan of water dams in Wādī Rājil, after Helms 1981: Fig. 78.

(1981).

Helms revealed that the city was extensively settled during the fourth millennium BC, but for a short period and then again in the early Bronze IV period, around 2000BC. The domestic quarters covered over 10ha. the houses were built on stone foundations with molded mud bricks. Hearths, storage silos, stone-lined bins and ovens were discovered inside the houses. The Jawites practiced a mixed economy of dry and irrigated farming and of pastoralism. To the question where they came from, the hypothesis of Helms (1981: 59) is the most plausible: "they came from a developed urban culture from beyond the basalt region". Recent archaeological researches in the basalt-strewn steppe, between al-Ladja and northern Jordan, brought to light several fortified sites such as Jabal al-Muṭawwaq, between al-Mafraq and Irbid where the excavations exposed a fortified village of the early Bronze A (3200-3000) and several fields of dolmens (Fernandez-Velasco 2001: 173-178). Similar settlements of the early Bronze I, II and III were investigated in the arid steppe east of Jabal al-ʿArab (ad-Druze) and include several sites: Khirbat al-Umbāshī, Khirbat ad-Dabāb and Habariya (FIG. 4). The first site, which was enclosed by a wall, covers an area of 4ha, contrast with Jāwā where the domestic structures are all inside the wall, at Khirbat al-Umbāshī, the settlements were outside the rampart (Nicolle 1999: 44; Braemer 2001: 200). Khirbat ad-Dabāb of the Early Bronze II (3000-2900BC) and III offers another type of domestic organization: in an area of 1,6ha. 60 to 80 houses were assembled in a compound system, consisting of rectangular rooms, which are distributed around a central courtyard. North of Khirbat al-Umbāshī, the au-



4. The Map of Bronze Age Settlements in the Levant, after Nicolle 1999: 117, Map 1.

thors recorded two villages of more than 150 to 180 houses, which were dated to the mid third millennium BC and to the EB IV (second millennium BC). These settlements are not systematically organized and in case of the most recent village, the plan of the structures resembles that of the rectangular houses, which surround the citadel of Jāwā. According to the two archaeologists, the breeding of cattle and of sheep and goats was the unique occupation of those settlements (Braemer 2001: 200). However, the precise study of the hydraulic system at Jāwā proved that agriculture played an important role in the “food economy” of the city (Helms 1981: 184-187). In the same way, the arid zone to the east of Jabal al-‘Arab which has no water resources for irrigation, practiced dry farming and horticulture production, mainly olive trees to extract oil. Exchange of production between pastoralists and farmers was certainly established (Nicolle 1999; Braemer 2001: 201).

It is obvious at this point that the survival of a city like Jāwā was dependent on the equilibrium between farming and pastoralism. The economy can be described as a self-supporting system (Helms 1981: 201). In this case, the puzzling question is how a city of such strong defenses and with a good economic potential could have come to an end in a short time? Raids were a current practice in the desert, and it was noticed, “a number of points in the lower defenses were stormed simultaneously” (Helms 1981: 205). The fortress was abandoned after the walls were breached. But what about the sophisticated water collecting system? Jāwā and Wādī Rājil became the grazing homeland of the so-called Safaitic tribes (see MacDonald 1982; MacDonald and Searight 1983). The drawings of sizeable bovine herds are surprising in the dry Ḥarra. This fact may suggest that the environment was different from the desolate landscape of today. In any case, the semi-nomadic

population of this region between Syria and Jordan continues to herd sheep and goats but no cattle were noticed while working in the Wādī Rājil area in 1981.

This pastoral mode of life is confirmed by a modern Arabic inscription, mentioned by Macdonald (1981: 167), because this inscription was not completely published and is ambiguous at the end, the next and the interpretation are given below (FIG. 5).

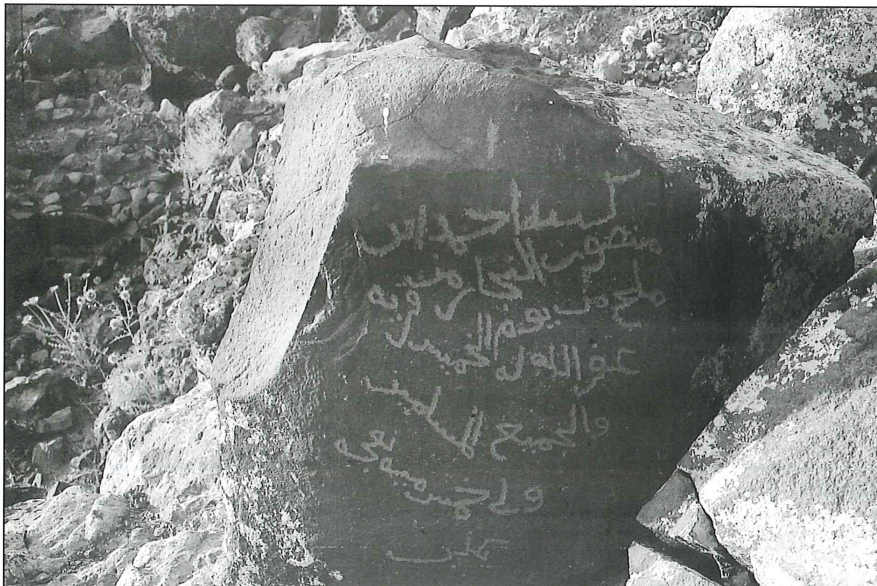
- 1- كتب أحمد ابن (sic)
- 2- منصور النجار من قرية
- 3- ملح من يوم الخميس
- 4- غفر الله له
- 5- والجميع (sic) المسلمين
- 6- ولي خمس مية (sic) نعجة
- 7- يكذب

Translation

- 1- “This was written by Ahmed Ibn Maṣṣūr al-Najjar, from the village of Malaḥ, on Thursday.
- 2- May God forgive him
- 3- And to all of the Muslims
- 4- And I possess five hundred ewes
- 5- He is lying

Commentary

This man is proud to breed a large herd of milking ewes. He lives in the village of Malaḥ — not Milḥ — according to (MacDonald 1981: 167). This village is located about 13km to the east of Ṣalkhad in the Ḥawrān. I did ask my friend François Villeneuve who wrote a doctoral dissertation on the villages of the Ḥawrān, to investigate who was that man? He asked in the village but the inhabitants said he was unknown to them. Nevertheless, he had an elegant handwriting and used colloquial Arabic (e.g. مية for



5. Modern Arabic Inscription in the Dam of Wādī Rājil.

مائة). (ولجميع for والجميع). The last word is difficult to read, because it was apparently added by a different hand. However, the kaf is clear and the word can be interpreted as “يكذب”, meaning “he is lying” suggested by Dr. Ghasi Bishsh. Such a comment by a passerby who estimated the figure of 500 ewes too exaggerated is not rare in the Arabic inscriptions.

To conclude this first example of the rise and decline of a settlement in the Ḥarra, it is clear that the Citadel of Jāwā prospered as a strong fortress, but was abandoned after it was stormed by invaders, maybe by the Amorite nomadic tribes in the EB IV period around 1950-1900BC. However, the Ḥarra of Wādī Rājil continued to survive as a pastureland for the so-called Safaitic tribes and, in modern times, probably until World War I, to the pastoralists of the Ḥawrān.

Khirbat al-Bālū', an Iron Age city in Central Moab

This is an extensive ancient city, about 550m from north to south and more than 800m from east to west, at the foot of Jabal Shihān, a holy mountain of northern Arḍ al-Karak. On its summit (850m asl.) are the remains of a Byzantine monastery, which was built over the tomb of a biblical prophet. According to al-Harawi (13th century AD) a tomb of Moses was venerated on this mountain (Sourdél-Thomine 1953).

The ruins of Khirbat al-Bālū' consist of a large field of basalt walls in a desolate state of destruction. The only remarkable feature of the city is a megalithic 28m² tower, probably of Nabataean origin. It commands the old track through Wādī al-Bālū' to the Arnon Valley (Wādī al-Mūjib) and from there to the Citadel of 'Arā'ir (Worschech 1990: 112-123). This was probably the road built by King Masha' and was recorded on the Moabite Stone, Line 26: “I built 'Aroer, and I made the highway in the 'Arnūn” (Pritchard 1950: 380). The inscription continues: “I built Bayt-bamoth, for it had been destroyed (Pritchard 1950: 320).

In 1930, a basalt stele was found at the entrance of the megalithic tower. It represents a local leader who is introduced by the Goddess Hatur (or Astarte) and receives the was-scepter from the God Ammon-Ra' (or Camosh). This stele is generally dated to Ramses II (1304-1237BC) who conducted several campaigns in the land of Edom and Moab (Ward and Martin 1964: 5-29).

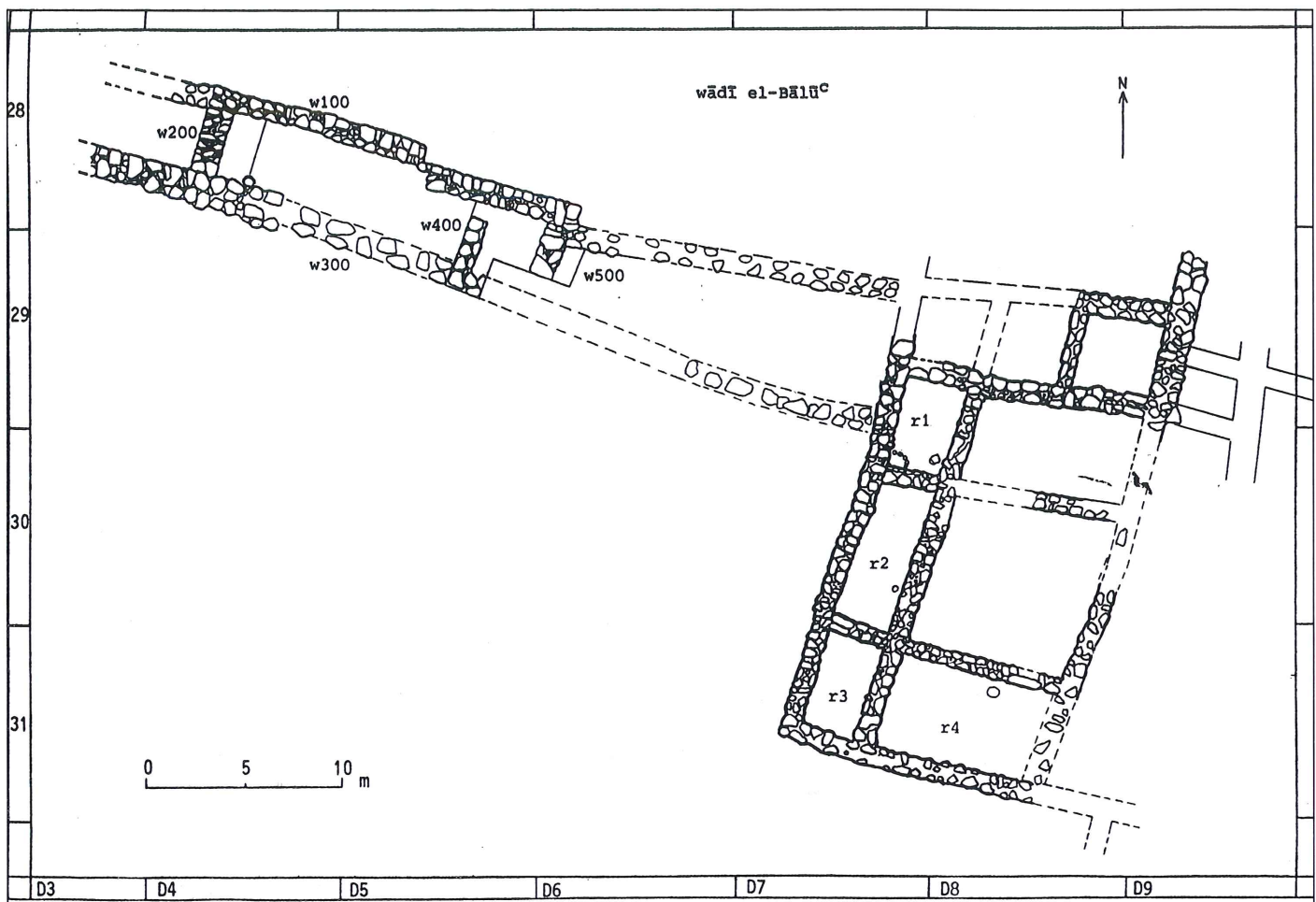
Crowfoot excavated, in 1934, three squares at the site with workers from the nearby village of Smākiyyah, the only permanent settlement in the vicinity at that time. He was discouraged by the hard task of removing a mass of boulders and stated at the end of the campaign: As a site for future excavations al-Bālū'a does not appear to the writer to be attractive (1934: 77). The judgment of G. Horsfield and Father Vincent was even more pessimistic since they qualified the site as “*misérable et amorphe*”

(1932: 4). Luckily, those severe verdicts did not convince Udo Worschech and his wife Ursula who have been exploring and excavating the site since 1986, using the same village of Smākiyyah as their headquarter. Their patient work was rewarded by the reconstruction of the historical development of a Moabite city, from the Bronze Age to the Late Iron III periods. The most significant results of their work were the discovery of the impressive city wall and the Assyrian-type houses. The defense system of the city consisted in two parallel walls, an outer one, 1.20m wide that followed the edge of the escarpment and an inner wall, 2m in width with transverse partition walls in between (Worschech and Ninow 1992: 170). In the eastern part of the defense wall, the casemates were used as storage rooms, since many broken jars and craters were found inside. They were destroyed by fire evidenced by a thick layer of ashy tumble inside Area CIII (Worschech and Ninow 1992: 170).

The best example of the Assyrian-type house was excavated in Area C1 (FIG. 6): the outer city wall formed the northern limit of the complex, which included a central courtyard between two large halls. Six other rooms are distributed along the northern and western walls (Worschech and Ninow 1992: 171, Fig. 3). The walls, which are built with huge undressed boulders, are still standing to the height of 1.80m and the floor in R1 was laid with layers of lime (*huwwar*), ashes and sand, a technique, which provided a solid consistency to this surface. A *ṭābūn*, was found almost complete in the southeastern corner of room 1, and was paralleled by a large bin (1.05m x 0.60m) in the opposite corner. The domestic function of the complex was confirmed by several loom weights and a block of 7.50kg, which was probably used as a pressing counter-weight. The pottery which dates to the Iron IIB-C included fragment of an Assyrian-type carinated bowl, dated to the eighth-seventh century BC. This complex, a typical Moabite house, was different, as it pointed out by Worschech and Ninow (1992: 145), from the so-called four-room house, well known at the end of the Late Bronze-Early Iron Age I periods. This type of domestic building has been excavated at Tall al-'Umayrī, al-Lāhūn and Madaynat al-Smākiyyah in Jordan. Because this four-room house raised a problem of interpretation, and was recently the subject of controversial analysis by Herr and Clark (2001: 36-47), it deserves a short commentary.

The Four-Room House at Tall al-'Umayrī (FIG. 7)

Building B, as it was described, is the most complete house complex at Tall al-'Umayrī. It consists of “three long rooms separated by narrowly spaced post-bases” (Herr 2000: 173). This building is dated to the transitional period between the end of the Late Bronze and beginning of Iron I periods (end of the 13th century BC). (Herr and Clark 2001: 36-47). In the back room B4, about 20 collard



6. Khirbat al-Bālū'. The Assyrian-Type House, after Worschech and Ninow, 1992: 171, Fig. 3.

rim pithoi lined the wall. Other pithoi were found in the destruction layer of the southern long room and had fallen from an upper floor. The building was destroyed by a military attack as attested by bronze weapons: "arrow heads, javelins, a spear and a few stone ballistic missiles" (Herr 2000: 174). This house, which is slightly earlier than its equivalent in Palestine, witnessed, according to the author, the passage of the Hebrew tribes into the Transjordan during the Exodus. A cautious analysis of both the biblical narrative in (*Joshua* 13: 8-10) and the archaeological testimonies were however necessary: *Joshua* describes the conquest of the land of Canaan and the partition of the territory between the tribes. It contains different traditions and documents of various periods, influenced by the Deuteronomy and dating between the reform of Josias (622BC) and the return from exile in 538BC. Thus, these books are relatively late and their historical value is doubtful.

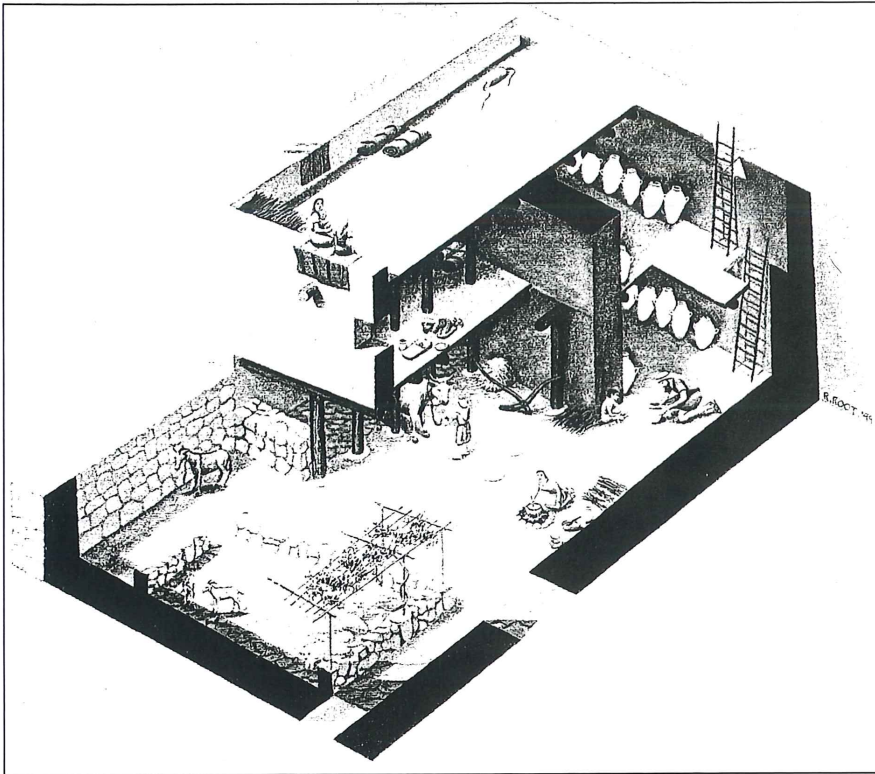
Joshua 13: 8-11 reads:

8- The tribe of Reuben and Gad and the other half of the

tribe of Manasseh had already received the land Moses, the Lord's servant, had given them; it was on the east side of the River Jordan.

- 9- Their territory extended to 'Aroer (on the edge of the Arnon Valley) and the city in the middle of that valley and included the entire plateau from Medaba to Dibon.
- 10- It went as far as the border of Ammon and included all the cities that had been ruled by the Amorite King Sihon, who had ruled Heshbon.
- 11- It included Gilead, the regions of Geshur, and Maacah, all Mount Hermon, and all of the Bashan as far as Salecah" (*Good News Bible* 1994).

It is clear from this biblical text that the territory given to Reuben, Gad and the half tribe of Manasseh extended from Mādabā to the 'Arnūn Valley and went as far as the border of Ammon. Other references, such as *Deuteronomy* 3: 12 and 16, indicate that the Reubenites and Gadites received the land of Gilead and the whole of Bashan to Wādī 'Arnūn "the middle of the ravine marking the boundary, and up as far as he Jabbok, the wadi mark-



7. Tall al-'Umayri. The Four-Room House after Herr and Clark, 2001: 40.

ing the frontier of the Ammonites” (Deuteronomy: 3-16). These references do not specify that the Ammonite Kingdom was included in the land given to the Israelite colonists. Herr correctly remarks (2000: 177): “When we move to the plateau of Tansjordan, we can no longer assume an “Israelite” identification”...“we should no longer think in the terms of the emergence of Israel, but of the emergence of Iron Age tribal nations or chiefdoms of Palestine”. Unfortunately, because archaeology does not provide us with “socio-political distinctions, we cannot be certain of which tribal group settled at al-'Umayri” (Herr 2000: 177). Faced with such historical and archaeological dilemma, the author endeavors to find a solution. Following a suggestion of F.M. Cross, a well-known epigraphist and Biblical archaeology researcher (1988: 46-65; 1998: chap. 3), Reuben is listed in the Bible as the first born of Jacob, even after the tribe “seems to have disappeared very early” (Herr 2000: 178). On the other hand, Reuben, was cursed by his father because he slept with one of his concubines (*Genesis*: 35, 22, 49, 4).

Nevertheless, the fact of the consistent appearance of Reuben as the first born of Jacob provides an argument to Herr for the socio-political identification of the four-room house at Tall al-'Umayri as the archaeological testimony of the Reuben tribe and at the same time as the confirmation of the Exodus in Transjordan! This genuine interpretation is faced with some contradictions: Herr notes that “al-'Umayri was in Ammonite territory in later times

(Iron IIC)”, (800-539BC). This could be the case, but since the author is basing his demonstration on biblical narratives (at the same time of the Exodus), he should have known that the territory granted to Reuben, extended in *Joshua* (13: 8-10), is from the Arnon to the Ammonite border. It is not understandable, in this case, why the four-room house is to be attributed to the Reuben tribe who had disappeared after the conquest and not to the Ammonite Kingdom. The answer was clearly expressed by Herr and Clark (2001: 43). They rebuilt with skill and traditional materials a small scale model of the four-room house at the entrance of the excavated site. But their ambition was to realize “a full size replica” of this house to serve as a visitor centre. This is indeed an excellent initiative. They received some financial support from companies in Jordan. But the cost of the full size replica is estimated at US\$ 200,000. To collect this big amount of money, why not appeal to the generous donors who still believe in the primacy of Reuben even after he was cursed by his father Jacob (*Genesis* 35, 22: 49, 4). As for the Ammonites who left a brilliant city on the Citadel of Rabat Bani 'Ammon, from at least the Middle Bronze Age period to the end of the Iron Age, they did not deserve attention from the two authors. Good examples of domestic architecture have been excavated in the land of Moab, at al-Lāhūn by Dr. Homes-Fredericq (2000: 180-195) and at Mudaynat Smākiyyah.

The house of al-Lāhūn near Dhibān was not a four-

room house but included six-rooms, dating to the Iron I period (12th century BC). A central courtyard enclosed by five rooms, the northwestern closed room being a granary. The excavation yielded good evidence that the house was "abandoned, (perhaps during war-time) at the end of the second millennium BC, presumably at the same period as al-Bālū' and Mudaynat Smākiyyah, and other sites of the region" (Homes-Fredericq 1999: 194).

Mudaynat Smākiyyah was excavated by Olavarri (1977-78: 136-149). The site overlooks Wādī al-Mūjib, the Arnon, and controlled the track to Qatrāna and to the desert highway. The pillar house, which is a rectangular structure 4.50 x 2m, consists of four rooms (FIG. 7). Four engaged pillars are set in both walls H and G (Olavarri 1983: 138). This house belongs to the Late 13th century or to the early 12th century BC. It was occupied only in the Iron I period, at a time when the Moabite tribes started to settle down. It suffered a violent destruction in the first half of the 11th century BC and was never occupied after this destruction (Olavarri 1983: 143). This strategic settlement at the eastern border of the desert had the function of protecting the cultivated plains of the plateau from the incursion of the nomadic tribes. It should be remembered in this connection that the King of Edom refused passage to the wandering Hebrew tribes, coming from the Sinai desert (*Num* 20: 14-20).

In conclusion, a four-room house was discovered at Tall 'Umayri, another one was dug at Mudaynat Smākiyyah and a pillar six-room complex was uncovered at al-Lāhūn. There is no convincing archaeological evidence that they belonged to any specific ethnic group and al-'Umayri was certainly located in the Ammonite territory. It suffered a violent destruction with al-Lāhūn and Mudaynat Smākiyyah at the end of the Iron I period and was abandoned. Khirbat al-Bālū' suffered also a violent destruction but survived until the Iron III. The abandonment of the site could be the result of Nabonidus campaign in 552BC. Another reason could be the changing of the highway from Wādī al-Bālū' to 'Arā'ir to a western road through the Arnon to Dhibān and Mādabā, probably by the Nabataean caravaneers and later by Trajan who paved the "*Via Nova Traiana*" from Bostra to the Red Sea between 111AD and 114 AD. But al-Bālū' was re-occupied in the Medieval period and a village was created to the southwest of the ancient site in the Mamluk period (Worschech and Rosenthal 1986: 292).

Petra-Wādī Mūsā in the south offers the best example of life and death of settlements in Jordan. The Nabataean capital was a stronghold at the end of the Edomite Kingdom it was demonstrated by the excavations of Umm al-Biyāra (Bennett 1966: 372-403). This natural fortress was occupied in the seventh – sixth century BC and could not be identified with the biblical as-Sala', captured by king Amazias of Juda in the eighth century BC. The rock south

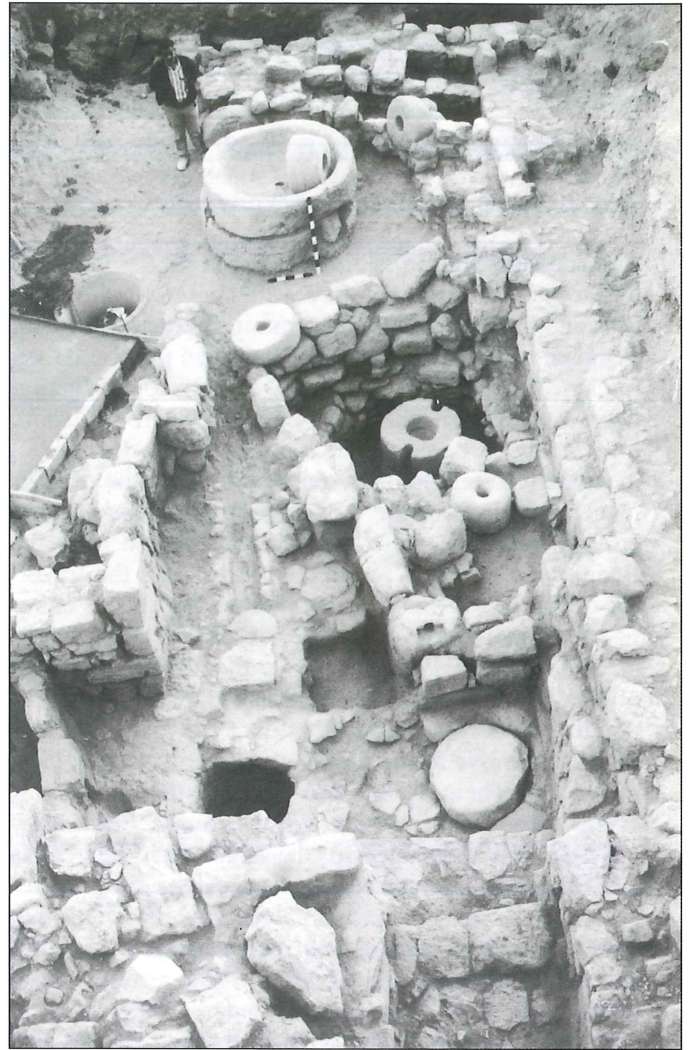
of at-Ṭafila and which is still known by the name of as-Sala' is better qualified to be identified with the ancient rock. If we consider the biblical references to the rock, *ha sela'*, three of them: *Judges* I: 36, *Isaia* I6: 1, *Jeremiah* 49: 16 locate this fortress to the north in the at-Ṭafila district (Starcky 1966: col. 895). Furthermore, the rock (Petra) of the Nabataeans besieged by Antigonos' general and by his son Demetrius is at the distance of 300 stades (35km) from the Dead Sea (Diodorus *Hist.Lib.*, XIX 98: 1). This figure corresponds with the interval between as-Sala' and the Dead Sea. The caravan city of Petra flourished from the second century BC to the Late Roman period, when it was destroyed by the 363AD earthquake. But the site was not wholly abandoned since three churches were built in the fifth and sixth centuries AD (Bikai 1996: 481-486). The last date of the Petra Papyri was 593AD. In the 152 rolls or fragment of rolls the city and its suburb continued to be the sea of the metropolitan of Arabia Tertia until the advent of Islam (Sadaqa or Sadakathon in the text, Augustopolis Udhruh) proved to have enjoyed full prosperity, based on agricultural development (Frösen 2002: 18-23). Another severe earthquake in July 551 reduced the city to a heap of rubble. Yet, the city was not abandoned until the seventh century AD, after the Persian invasion in 614AD. Before the battle of Mū'ta in 629, the governor of Ma'ān Farwa bin 'Umayr al-Judhāmi converted to Islam. When Prophet Muhammad mounted a military expedition to punish the Byzantines and their allies who killed the three commanders of the Muslim troops, he was met at Tabūk by the bishops of Ayla-'Aqaba, of al-Jarba and of Udhruh-Augustopoulos. The bishop of Petra was not among them, although he was the metropolitan of Palestina Tertia. This suggests that he had moved to a more secure Byzantine center. The Greek inscription from Rabba-Areopolis near al-Karak proved that he was resident in that city under the Umayyads in 687, during the time of Calif 'Abdel Malek Ibn Marwan (Zayadine 1971: 74-76). He had probably changed his see to this city before this date.

Wādī Mūsā at the eastern entrance of Petra was mentioned during the Muslim conquest (Waqidi: 61). But Petra was not known, until the visit of Sultan Baybars in 1276. The Arab chronicler Nuwairi reported a vivid description of the site under the name "The cities of *Bani Israel*". When he traversed a valley called al-Madār, still known under this name to the north of Wādī Mūsā, he mentioned a spring and a village called al-'Udma. The village is most probably Khirbat an-Nawāfla, where a spring is still known under the name "al-'Udmal". The village of an-Nawāfla was abandoned in 1975 but was recently converted into a touristic hotel. The careful excavations by Dr. 'Amr exposed remarkable Nabataean remains, consisting of a genuine hydraulic system, but more surprising was the remains of an olive press dated to the early first

century AD ('Amr *et al.* 2000: 234-239, Fig. 20). This is obviously a challenge to Strabo's report (*Geog* 16: 26) claiming that the Nabataeans did not cultivate olive, but had used instead sesame-oil. Also excavated at the site was part of an early Islamic olive press, and a well-preserved Ayyubid-Mamluk press that reused a Nabataean structure (FIG. 8). A modern olive press system was in good condition of conservation when the salvage excavations started by Dr. 'Amr and her team and was moved to an open area museum in the rehabilitated an-Nawāfla village ('Amr *et al.* 2000: 239-253, Fig. 27).

Another abandoned village is in ruin near the spring of Badabda, north of Petra and overlooking the area of al-Bayḍa (FIG. 9). When J. L. Burkhart visited Wādī Mūsā and Petra in 1812, he reported that the "village of Badabda was inhabited till within a few years by about twenty families of Greek Christian (Orthodox) who subsequently retired to Karak" (1822: 420). This report was confirmed by the people of al-Karak and Smākiyyah who have traditionally known that they migrated from Wādī Mūsā area in the Ottoman period. Those are four families, the 'Akasha, the Bawālṣa, the Masā'da and the Zayadine. Since they belonged to the Greek Orthodox confession, they claim they are the descendants of the Nabataeans who converted to Christianity, and had a bishop and churches in Petra. But other people claim they belong to the Nabataean tribes and those are the Bedul of Umm ṣayḥūn near Wādī Mūsā. Recent research on their tribal connections are, however, different from their legendary traditions: ethnoarchaeological investigations into the origin of this small Bedouin tribe gathered two different accounts of their origin:

I- One tradition is reported by the Bedul of al-Ḥumayma, ancient Auara, about 12Km west of the highway Petra-'Aqaba. The Bedouins of this region recognize tribal



8. The Ayyubid-Momluk olive press at Khirbat an-Nawāfla.



9. The abandoned Village of Badabda, North of Petra.

alliance with the 'Alawin, a fraction of the influential Huwaytāt tribe who occupy southern Jordan and the Sinai (Ohanessian 1992: 403-405). And this tradition is confirmed by the Huwaytāt of al-Jafr. When I asked their Shaykh Muhammad, the son of 'Auda Abu Tayeh, about the Bedul origin, he recognized that they were affiliated with them after World War I.

II- The second tradition is circulated among the Bedul of Petra. They pretend that they were chased by the Muslims and took refuge on the summit of Umm al-Biyāra, in the city center. The Muslims besieged them and they remained some time without water or food; finally, they surrendered and accepted to convert to Islam. This legend is based on the fact that the Bedul are but indifferent to religion and on the interpretation of their name: Bedul, from the Arabic root (بدل) *baddala*, to change (religion). This legend was reported after the Bedul were in contact with the tourists and the travelers of the last century. They claimed they were either pagan (Nabataeans) or even Jews. When the Government decided in 1979 to remove them from the caves of Petra where they had established their dwellings, this legend became a historical fact for them, for they refused to move to the new housing project until 1985 (FIG. 10). Their excuse was that the new houses of bricks were small and not solid. Besides, Petra, they claimed, was their ancestral heritage, since they were the descendants of the Nabataeans! Archaeological research in the area of Petra demonstrated that the group who was in Petra arrived from Ṭūr Imdayy, west of Petra, in the drainage fan of Wādī Mūsā torrent, about three hours walk from the city centre. They were in this area "from at least 1650AD through the present

time" (Russel 1996: 5). Their Shaykh شيخ Mqaybal Abū Zaytūn مقبيل ابو زيتون who was a nomadic pastoralist moved into the mountains of Petra in the late 1920's. When Peake Pasha, the commander of the 'Arab Legion under the Mandate visited Petra in 1926, he noticed two wild heads that emerged from the rocks. He sent one of his mounted men to chase them. He caught one of them. "He was naked except for a hyena skin" (Russel 1990: 54). This was a Bedul man. But this account is somehow exaggerated. It is true that this Bedouin tribe was very poor before the flow of tourists. But their leading Shaykh was known as a respectable man who offered hospitality under his tent.

Petra, South Jordan, Matera, and South Italy: Forced Abandonment of Rock-Cut Dwellings

In 1977, the Government of Jordan initiated, with the financial support of the World Bank, the Archaeological and Touristic project for the development of Petra and Jarash. To preserve the archaeological sanctuary of Petra, it was decided to move the Bedul Bedouins from the rock-cut monuments of the site and resettle them in a newly built housing complex. The UNESCO commissioned an expert, Sharif Mahmoud al-Ḥakīm of Egyptian nationality in 1978 to examine the project and the site proposal for the resettlement. Finally, after the survey of several options, the site of Umm Ṣayḥūn, at the eastern entrance of Petra by Wādī al-Turkmaniya was selected for the new housing project. The Bedul numbered at that time 504 individuals (al-Hakim 1978: 3). They strongly opposed the idea of moving them from their troglodyte dwellings. The houses of bricks consisted of two rooms, a kitchenette and a bathroom. They were equipped with running water and electricity. Ḥakīm presented the gov-



10. A Bedul Family in a Petra Cave (Photo Immanuel Jarry).

ernment with a plan for the new houses with an Oriental architectural design. But this housing design was refused by the responsible architect of the project and cubic brick compounds were built in a uniform standard style. Ḥakīm's proposal included the building of the compounds by the Bedouins themselves. But this new idea was also declined. Many anthropologists regretted the transfer of the Bedul Bedouins from their traditional dwellings in the caves to the new compounds. With their access to the site and the selling of drinks and souvenirs to tourists, most of them could receive a decent income. They are, in addition, employed in the archaeological projects of the Department of Antiquities or in the foreign excavations. The German Association for Technical Assistance (GTZ) trained Jordanian technicians and Bedul workers for the restoration of the rock-cut façades of Petra. Two tombs, 825 and the Turkmaniya No. 633 (also known as Turjmaniya) were restored with excellent technical skills (Shaer and Aslan 2000: 89-108). The German Association founded a Center in Petra to continue the work of restoration of the rock-cut monuments, which are badly weathered in many places. The two German experts M. Külenthal and H. Fischer left Jordan after they have entrusted the new Center to the Jordanian Department of Antiquities. It is hoped that their efforts will continue to salvage the precious monuments and to preserve them for future generations with the technical assistance of the Jordanian experts and the experience of the Bedul workers.

Matera in South Italy, in the Basilicata region, is carved in the soft tuffa. The hunter-gatherers of the Neolithic period left in the caves as traces of their occupation, as well as the pastoralists-agriculturalists of the Iron Age (Laureano 2003: 128-131). They developed a sophisticated system of water collection by digging water channels and basins. The economy of the city was based on the preparation of wool and leather for the industry, together with food production. At the end of the 17th century, the new strategy of the wool market which was in the hands of England, brought a crisis to the country's products of South Italy. In the second half of the 18th century, the hydraulic system was out of use. Urbanistic projects during World War II, such as the building of roads and a public piazza completely ruined the troglodyte city. At this point, the transfer of population became unavoidable. Out of national pride and for humanitarian reasons, house compounds were built for the population of Matera. However, the efforts of Pietro Laureano, a water engineer, and a native of Matera, the city was inscribed in the World Heritage list of UNESCO and regenerated by the rebuilding of some houses in the ancient traditional style (see Imbrighi *et al.* 2003: 240-252 and Fig. 77).

Petra suffered the same fate of the demise of its hydraulic system. Three main springs provided the city with

drinking water: the Badabda spring in al-Bayḏā, 'Ayn Brāq on the way to aṭ-Ṭayība and the springs of Wādī Mūsā. To these perennial water supply, we have to add the spring of Wādī aṣ-Ṣiyyagh and Qaṭṭār ad-Dayr inside the city. Hundreds of cisterns and water dams collected each drop of water. It was the disruption and abandonment of this system, which brought to an end the brilliant civilization of the Nabateans. On the other hand, water cisterns and basins, which collected rainwater, are the best method to restrict the destructive effects of the flash flood, which erode the monuments in rainy seasons. The regeneration of the garden in Wādī Farasa, which was watered by a large water reservoir 18.2 x 6m and 3.6m deep, would be a pleasant attraction on the hard ascent to the High place. There was also a large green terrace in front of the Palace Tomb, which was irrigated by a waterfall and a huge reservoir north of the monument.

Conclusion

This survey of a variety of sites in Jordan and Syria aimed at demonstrating how a strong citadel like Jāwā north survived from the fourth to the second millennium BC because of its defensive walls but mainly thanks to a genuine water harvesting system. The huge dam in Wādī Rājil (FIG. 1) was still able to retain enough water for the herds and maybe to irrigate, by the deflecting canals, a large agricultural area. Instead, this ancient technical work was demolished and replaced by poor cement reservoir. The area was a pasture land for the Safaitic tribes and for the modern pastoralists of Ḥawrān, such as Ahmad bin Mansur who was able to keep five hundred milking ewes. We encountered semi-nomadic tribes, to whom the Jordanian Government built water reservoirs. But there were no large herds and the area was poor since there was no market, with the dependence on the generosity of the army to provide some bread and food supply.

On the other hand, the comparison between the troglodyte settlements of Matera in south Italy and Petra in Jordan showed how it was possible to rehabilitate the dwellings of Matera thanks to the efforts of conscious people, such as engineer Pietro Laureano and his colleagues. It was not possible to keep the Bedul Bedouins in the caves of Petra because this site was registered as a national archeological heritage and because families had no access to hygienic accommodations. However, it was certainly possible to control the new village of Umm Ṣayḥūn by building traditional houses similar to those in the village of Khirbat an-Nawāfla. What happened is that the Bedouin are erecting concrete blocks, which have become an odd element in the beautiful landscape of Petra. At this point, it was probably wiser for the protection of the natural and archeological park to keep the Beduls in the non-archaeological caves or build the new villages in a discrete and non-visible site from the city center.

References

- 'Amr, K. *et al.* 2000. Summary Results of the Archaeological Project of Khirbet an-Nawafila/Wadi Musa; *ADAJ* 44: 231-255.
- 'Amr, K., Al-Momani, A. 2001. Preliminary Report on the Archaeological Component of the Wadi Musa Water Supply and Wastewater. *ADAJ* 45: 253-285.
- Bennett, C-M. 1966. Fouilles d'Umm el-Biyara, Rapport préliminaire. *RB* 73:372-402.
- Bible, 1994. *Good News Bible*. Great Britain: Harpercollins.
- La Bible, I. 1956. Under the Direction of Ed. Dhorme, Pléiade, Gallimard, see Introduction: LVVI-LXIX.
- Bikai, P. 1996. The Ridge Church at Petra. *ADAJ* 40: 481-486.
- Burkhardt, J.L. 1822. *Travels in Syria and the Holly Land*. London, John Murray.
- Cross, F.M. 1992. An Interview, Part I, Israelite Origins. *Bible Review* 2001: 2.
- Crowfoot, J.W. 1934. An Expedition to Balu'ah. *PEFQ*: 76-84.
- Fernandez-Tresguerres Velasco, J.A. 2001. Jabal Mutawwaq at the End of the fourth millinnium BC. , *SHAJ* 7: 173-178.
- Glueck, N. 1940. *The Other Side of the Jordan*. Cambridge, Mass. ASOR.
- Helms, S. W. 1982. *Jawa, Lost City of the Black Desert*. New York.
- 1991. *Excavations at Jawa, 1972-1986*. A.V.G. Betts (ed.), Edinburgh.
- Herr, L.G. 2000. The Settlement and Fortification of Tall al-'Umayri, in Jordan during the LB/Iron I Transition. Pp.167-179 in *the Archaeology of Jordan and Beyond, Essays in Honor of James A. Saur*. Massachusettes: Harvard Semitic Museum.
- Herr, L.G., Clark, D.R. 2001. Excavating the Tribe of Reuben, A Four-Room House Provides a Clue to Where the Old Israelite Tribe Settled. *BAR* 27: 37-47.
- Homes-Fredericq, D. 1999. Lahun et le Wadi Mujib, Evolution Religieuse Sur un Site de Moab. *Le Monde de la Bible* 244: 32-37.
- Horsfield, G., Vincent, L.H. 1932. La stèle égypto-moabite au Balu'a. *RB* 41: 417-444.
- Imbrighi, G. *et al.* 2003. Materiali per l'architettura ipogea, Pp. 240-252 in L. Rami Ceci (ed.), *Sassi e templi*. Rome.
- Kühlenthal, M., Fisher, H. 2000. *Petra, the Restoration of the Rock cut Tomb Façades*. Munich: Bayerisches Aldesamt für Denkmalpflege.
- La Bianca, Ø. 1994. The Journey from Heshbon to Hesban: An Account of the Evolution of the Hesban Expedition Scope of Research. In D. Merling, L.T. Geraty (eds.), *Hesban After 25 Years*. Michigan: Andrews University.
- Laureano, P. 2003. Castostrofi, Sock culturali ed esodi urbani. Pp.121-135 in L. Rami Ceci (ed.), *Sassi e Templi*. Rome.
- MacDonald, M.C.A. 1982. Inscriptions and Rock-Drawings of the Jawa Area. *ADAJ* 26: 159-168.
- MacDonald, M.C.A., Searight, A. 1983. Inscriptions and Rock-Art of the Jawa Area. A Preliminary Report. *ADAJ* 27: 571-576.
- Merling, D., Geraty, L.T. 1994. *Hesban After 25 Years*. Michigan: Andrews University and the Michigan Humanities Council.
- Nicolle, C. 1999. L'époque des premiers bourgs fortifiés. *BAH*. T. CLVI. Beyrouth: IFAPO.
- Nicolle, C., Braemer, F. 2001. Le Levant Sud au Bronze Ancien: Pour une définition des systèmes socio-économiques non-intégrés. *SHAJ* VII: 197-204.
- Ohanessioan-Charpin, A. 1992. Discours et Territoires: deux récits de fondation pour la tribu des Bdoul. *SHAJ* IV: 403-407.
- Olavarri, E. 1983. La campagne de fouille 1982 à Khirbet Medieneh el- Mu'arrajeh de Smakieh (Karak). *ADAJ* 27: 165-178.
- Pritchard, J.B. 1955. *Ancient Near Eastern Texts Relating to the Old Testament* ANET. New Jersey: Princeton University Press.
- Russel, K.W. 1990. *Historical Notes on Southern Jordan*. Manuscript, Amman: ACOR.
- Shaer, M., Aslan, Z. 2000. Nabataean Building Techniques with Special Reference to the Architecture of Tomb 825. Pp. 89-108 in M. Kühlenthal, H. Fisher (eds.), *Petra*.
- Schmid, S. G. 1997. Nabataean Fine Pottery and the Destruction of Petra in the Late First Century AD. *SHAJ* VI: 413-420.
- Simms, S. R., Russel, K.W. 1996. *Ethnoarchaeology of the Bedul Bedouin of Petra, Jordan, Report of the Petra Ethnoarchaeological Project*. Manuscript. Amman: ACOR.
- Sourdel-Thomine, J. 1953. Guide des lieux de pèlerinage par Al-Harawi. *Damas*: 46-47.
- Starcky, J. 1966. *Dictionnaire de la Bible, Supp.VII*. Paris, Art. Petra et la Nabatene, col. 886-1017.
- Tentori, T. 2003. Matera: non-solo un ricordo. Pp. 59-68 in L. Rami Ceci (ed.), *Sassi e Temple*. Rome.
- Ward, W.A., Martin, F.M. 1964. The Balu'a Stele, A New Transcription with Palaeological and Historical Notes. *ADAJ* 8-9: 5-29.
- Waqidi, Mohammad Abi Abdallah bin 'Omar. (No date). *Futuh al-Sham*. 1-2, Beirut: Dar al-Jil (Arabic).
- Worschech, U., Rosenthal, U. 1986. Soundings at Khirbet al-Balu'. *ADAJ* 30: 291-301.
- Worschech, U., F. Ch. 1989. Preliminary Report on the Second Campaign of the Ancient Site of al-Balu' in 1987. *ADAJ* 33: 111-121.
- Worschech, U., Ninow, F. 1992. Report on the Third Campaign at the Ancient of Balu'. *ADAJ* 35: 167-174.
- 1994. Preliminary Report on the Third Campaign at the Ancient Site of el-Balu' in (1991). *ADAJ* 38: 195-203.
- Zayadine, F. 1985. Caravan Routes Between Egypt and Nabataea and the Voyage of Sultan Baibars to Petra in 1276. *SHAJ* II: 159-174.
- 1971. Deux inscription grecaves des Rabbat Moab (Arceopolis). *ADAJ* 16: 74-76.