

# THE WADI EL HASA SURVEY 1979: A PRELIMINARY REPORT

by  
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## Introduction

The original intention was to do an archaeological survey of the south bank of the Wadi el Ḥasā from the western edge of the plateau leading down to the southeastern plain of the Dead Sea as far east as the Desert Highway at El Ḥasā close by Qal'at el Ḥasā. The survey work was to be carried out southwards from the Wadi el Ḥasā a distance of approximately 10 kilometres. The first days in the field, however, showed us that we had proposed to survey an area that was much too large. The archaeological richness of the area made it practically impossible for us to do an intensive survey of all the area. We had to make a decision to survey only the major sites in the proposed area or do an intensive survey of a much smaller area. We chose the latter and concentrated our efforts on the area from the ridge just to the west of the Wadi el La'bān, that is, Jebel eth Thamad, westward to where the plateau begins its descent to the southeastern plain of the Dead Sea. The main Karak-Ṭafīla road served as our southern boundary. We did not survey as far south as Ṭafīla, but concentrated our efforts to the north and northeast of that town.

The actual in-field work took place between October 28 and December 8, 1979. During this period the team which consisted of Burton MacDonald, E.B. Banning, L.A. Pavlish, and Nabil Begain, representative of the Department of Antiquities of Jordan, surveyed 214 sites. The sites were discovered, or if already known visited, described, photographed, and "sherded", mostly for pottery and flints as a help in determining the age of the settlement or settlements at the site. Each site was plotted on either a 1:25,000 or 1:50,000 scale map. (1:25,000 scale maps are not available for the western extremity of the area.) The "reading" of the sherds and lithics was done by Dr. James A. Sauer, Director, American Centre of Oriental Research (ACOR), in Amman. While in the field the team stayed at a rented house in Ṭafīla. The week-ends were spent in residence at ACOR.

For the purposes of this report a site is any *place* where *man* has left *evidence* of his activity. The types of sites surveyed include open-air stations, caves, tells, rujms, khirbets, roads, cemeteries, agricultural, pastoral, and hunting installations, water facilities, and major cities. Thus the sites discovered range from lithic and sherd scatters with no accompanying architectural remains to very large architectural sites with artifacts representative of several different periods. The occupation at these sites ranges from prehistoric to modern times, ranging in date from about 400,000 B.C. to the end of the Ottoman period in Jordan in 1918 A.D. Generally speaking the sites are not one period sites. Most sites represent several periods of occupation.

No one had previously found prehistoric sites in the area. During his survey of Eastern Palestine in the 1930's Nelson Glueck reported 20 sites from the area<sup>1</sup>. A team from the Department of Antiquities made a sounding at Site 6, Majādil, in 1973.<sup>2</sup>

## Environment

The survey area is located on the highlands at the eastern rim of the Wadi 'Arabah-Jordan Graben, bracketed by the Wadi el La'bān and the Wadi el Ḥasā on the east and north respectively. Its southern limit is the main road between the Wadi el La'bān and Ṭafīla.

The present physical appearance of the survey area is largely the result of anthropogenic alteration of Mediterranean woodlands and Irano-Turanian steppe-land. Evidence for the palaeoenvironmental history of the area is at present very limited, but it is likely that before human intervention became so extensive most of the plateau area was occupied by forest of the *Quercus calliprinos-Pistacia atlantica* association, while the slopes and valleys trailing off to the Wadi el Ḥasā probably showed much as they do today the transition to Irano-Turanian dwarf shrub *Artemisetum* steppe.<sup>3</sup>

The climax vegetation<sup>4</sup> is a reflection, in part, of the geology and climate. For the latter,

precipitation is of prime significance, and the survey area receives at present a mean annual rainfall between 200 and 300 mm, lying as it does at an elevation of 200-1,250 m above sea level. Precipitation is almost entirely a seasonal phenomenon, being restricted to the months of October through May.<sup>5</sup> Structural movements associated with the tectonically active Rift Valley have generated drainage base levels (e.g. Dead Sea, —392 m) which, combined with high surface water runoff, have caused extensive erosion that is expressed clearly in the landscape relief.<sup>6</sup> The most striking geomorphic phenomena in the survey area are the deeply entrenched consequent wadis resultant from complicated drag fault systems (e.g. Hasa, 'Afra, eth Thamad).<sup>7</sup> Tributaries of Wadis dissect the rolling high tablelands creating a stark, rugged landscape.<sup>8</sup> Microclimatic regimes are distributed over this landscape in thin, elevation-dependent bands which are largely a function of orographic effects on the terrain. Over 1,000 m of stratigraphy are exposed in the survey area. The two most important strata are the exposures of Mesozoic Era Kurnub sandstone of the Upper Jurassic to Lower Cretaceous periods (140-125 myBP), and the Ajlun and Balqa marine limestone sediment series of the Upper Cretaceous period (80-60 myBP)<sup>9</sup>. Also important are intrusive volcanic basalts that form isolated plateaux and dikes in the area. It is on the Ajlun-Balqa limestone cap that one would expect to find the oak stands (juniper, on the other hand, would occur on the Kurnub sandstone) where the water from winter rains is held through the year and weathering has produced fertile *terra rossa* soils of good structure.<sup>10</sup> The degeneration of this oak woodland has resulted not only from the clearing of farmland on the water-sherds, but also from its exploitation for timber and charcoal. Uncontrolled grazing, especially after the Byzantine period, has prevented regeneration of forest while reducing the brush cover, so that the water table has dropped and soil has suffered erosion.<sup>11</sup>

Both the limestone and the sandstone are aquifers, and springs are sometimes associated with deep exposures, although one of the consequences of the lowered water table has been the loss of some of these. The volcanic sediments provide the structural basis for both cold and hot springs.<sup>12</sup> These water sources create pockets of hydrophilic vegetation in an otherwise arid landscape composed of such secondary geomorphic features as talus slopes, colluvial fans, sheetwash erosional features, deflation pockets, chert desert pavement, and ancient alluvial terraces.<sup>13</sup>

The natural resources in the region include workable chert, gypsum, bitumens, building stone, phosphate, and the raw materials for glass and cement.<sup>14</sup> In antiquity, tree cover to retard water runoff rates and a rich soil were probably the survey area's most valuable resources.<sup>15</sup>

### *Description of the Main Sites and Findings by Periods*

The intention in this Report is to proceed in a chronological fashion. Representative sites from the various periods will be briefly described. The *Field Reading* for each site will be given in the order of the periods best represented by the number of sherds or lithics. A report such as this makes no pretense at being either final or definitive.

Artifacts from all the Palaeolithic periods - Lower, Middle and Upper - dating from ca. 400,000 - 14,000 B.C. - were found in the area. The sites at which these artifacts were present were found mainly during our periods of walking. Many lithic sites were discovered in areas where today there is little or no habitation. These sites were found in such various or different locations as along the banks of wadis, in areas where there is running water, around springs, on high points or lookout spots, in agricultural fields, in conjunction with architectural remains such as stone enclosures, and in association with major architectural sites. Almost everywhere we surveyed we found at least some lithic materials. Only three of the many-discovered Palaeolithic sites will be described.

<b>Site number 38:</b>	Jeradin
Map Sheet:	210/025
Co-ordinates:	143/345
Elevation:	1100 m.
Estimated area:	50 x 50 m.

Site number 38, Jeradin, is a lithic site, located on the plateau northeast of Ṭafīla. The area of maximum density of lithics is in a plowed field. The site is located in a hanging valley with gentle sloping walls. The floor of the valley has experienced erosion in the form of sheetwash. The Lower to Middle Palaeolithic stone tools collected included hand axes, side and end scrapers, and awls.

*Field Reading:* LPL-MPL (134); Late Isl (Ott) (2); Nab (1); Ud Sherd.

**Site number 40**

Map Sheet: 210/035  
Co-ordinates: 141/393  
Elevation: 718 m.  
Estimated area: 300 x 100 m.

Site number 40 consists of a stone enclosure, stone piles, and a lithic scatter located on the west side of the Wadi eth Thamad. The circumference of the stone enclosure is about 57 m. while the diameter is about 19 m. The thickness of the wall collapse is one meter. Deposition within the enclosure appears to be at least 30 cm. The extensive lithic scatter was associated with both the enclosure and the stone piles. Lower to Middle Palaeolithic materials including burins, end scrapers, blades, cores, and flakes were collected along with Late Ottoman - Modern sherds.

*Field Reading:* LPL-MPL (108); Late Ott-Mod (23);  
Ud Flakes (19); Ud Sherds (8).

**Site Number 42:** Umm Qreiqarah  
Map Sheet: 210/035  
Co-ordinates: 152/388 - 153/385  
Elevation: 735-745 m.  
Estimated area: 400 x 120 m.

Site number 42, Umm Qreiqarah, consists of a very large stone enclosure and a cemetery situated on a basalt plateau on the east side of the Wadi eth Thamad (Pl. CIII,1). The stone enclosure is located at 152/388 while the cemetery is located to the southeast at 152/386. The dimensions of the four sides of the enclosure are irregular. The side walls are preserved to a height of 0.5 - 2.0 m. Unidentified structures appear within the enclosure. The cemetery to the southeast consists of two rows of graves roughly oriented in a north-south direction. Upper Palaeolithic (?) flint tools along with Iron I indicator and body sherds as well as one Nabatean and one Late Islamic sherd were collected in the vicinity of the stone enclosure. Seventy-four Lower Palaeolithic to Early Neolithic flints, along with two Early Bronze I sherds and a fragment of an Ottoman smoking pipe, were collected in the cemetery area.

*Field Reading:* UPL (?) (25); LPL-ENL (74); Iron I (35); EB I (2); Nab (1);  
Late Isl (1); Ud Sherds - saved (178);  
Ottoman pipe fragment.

Several Epi-Palaeolithic period (ca. 14,000 - 8,000 B.C.) sites were surveyed. Materials found at these sites are characterised for the most part by a microlithic flint industry composed especially of lunates, small blades, and small circular scrapers. Generally these artifacts were found in areas devoid of architectural remains. However, evidence of modern Bedouin encampments were frequently noted in the immediate vicinity. The Epi-Palaeolithic materials were usually associated with Early Neolithic materials. One such site is Site number 194.

**Site Number 194**  
Map Sheet: 210/025  
Co-ordinates: 120.5/308  
Elevation: 1170 m.  
Estimated area: 30 x 30 m.

Site number 194 is located on the plateau to the northeast of Ṭafīla in the Ṣalākhid region.

It is situated on a gentle slope in a cultivated area. The site consists of a moderate lithic scatter near the remains of a recent Bedouin encampment. A small chert outcrop exists about 30 m. to the south.

*Field Reading:* EPL-ENL (33); MPL (1).

Only materials from the Early Neolithic or pre-pottery Neolithic period (8,000 - 6,000 B.C.) were found. At this early stage of the study of the artifactual materials we have not identified any pottery Neolithic (6,000 - 4,250 B.C.) materials. The materials we did find included borers, blades and scrapers. These were generally found in association with stone enclosures, at or near caves, or devoid of any architectural remains such as Site number 62.

**Site Number 62**

Map Sheet: 210/035  
Co-ordinates: 112/409  
Elevation: ca. 600 m.  
Estimated Area: 100 x 30 m.

Site number 62 is one of our best Early Neolithic or pre-pottery Neolithic sites as far as materials found are concerned. The site is situated on the western slope of the Wadi 'Afrā, northern segment. No structures were visible in the immediate vicinity of the site. Materials collected include chisels, thumbnail and pushplain scrapers, graters, blades, and waste flakes.

*Field Reading:* ENL (83); PL (8); EB I body sherds, possible (5); Nab (3); Ud sherds - discarded (3).

No recognizable material, either lithics or sherds, were found which are at this stage of our study attributable to the Chalcolithic Period (4,250 - 3,300 B.C.). The chief or major Chalcolithic site in Jordan is Ghassul, which is located near the northern end of the Dead Sea. Neither architecture, lithics, nor sherds of the Ghassulian assemblage were discovered in the area.

Several Early Bronze I-III (3,300-2,300 B.C.) sites were surveyed. The most important of these sites are Sites number 61, 181, and 165.

**Site Number 61:** Khirbet 'Ain Saubalā  
Map Sheet: 210/035  
Co-ordinates: 112/403  
Elevation: 569 m.  
Estimated area: 300 x 200 m.

Site number 61, Khirbet 'Ain Saubalā, is situated on a plateau on the west side of the Wadi 'Afrā, northern segment. It is an extremely large site with many features. There are traces of stone walls along the western and southern segments of the plateau. Stone piles are also present in the same areas. At the northeast edge of the plateau there is a structure that may be a tower or stone platform (Pl. CIII, 2). It measures approximately 31 x 14 m. The pottery associated with this structure is Late Bronze or Iron II, more probably Iron II. What may be the remnants of an ancient aqueduct, measuring one meter wide by approximately 48 m. long, was noted on the western slope of the site. A stone building is situated across a small wadi further to the north. There is a spring just to the south of the site.

*Field Reading:* EB I (444); EB I, probable, but definitely EB (12); EB juglet base (1); LB (?) or Iron II (?), shapes are LB, however, cooking pot looks Iron II (22); Iron II (135); Nab (4); Byz (2); Ud sherds, mostly LB (?) - saved (109); Ud sherds, saved (13); Ud sherds - discarded (117); EB flints - saved (19); EB flints, probable - saved (2); EB waste flakes and chips, possible (5); Ud flakes - discarded (23); PL flints, period undetermined - saved (16).

**Site Number 181:** Al Manaqid  
**Map Sheet:** K737, 3151 IV  
**Co-ordinates:** 452.5/263  
**Elevation:** ca. 760 m.  
**Estimated Area:** 100 x 50 m.

Site number 181, Al Manaqid, is located on a spur between forks of a wadi on the northwestern extremity of the area. It could have been a village or town at one time but now all that remains on the surface is an Early Bronze I-II (3,300 - 2,700 B.C.) sherd scatter in the midst of stone piles and terraces in a cultivated area. Three Bedouin tents were located about 1 km. to the north.

*Field Reading:* EB I-II (222); Byz (2).

**Site Number 165:** Beider Rādwān  
**Map Sheet:** 210/035  
**Co-ordinates:** 125/443  
**Elevation:** 233 m.  
**Estimated Area:** 45 x 18 m.

Site number 165, Beider Rādwān, is located on a limestone shelf on the edge of the Wadi el Ḥasā. It is comprised of two rectangular structures: one to the northeast and the other to the southeast (Pl. CIV, 1). The former is aligned southeast-northeast and measures approximately 15 x 13 m. It is founded on flat bedrock. Limestone blocks measuring approximately 70 x 35 x 30 cm. constitute the structure. A plaza of flat bedrock measuring about 11 x 18 m. separates this structure from the one to the southeast. The second structure measures about 7 m. along the plaza, 8.5 m. on the perpendicular, and 9 m. along the back wall. A central aisle has two large standing stones and considerable modern additions of field stones making a small room. The north wall is preserved to a height of 1.0 m. while the tallest standing stone projects about 1.5 m. from the soil. The stone blocks making up this structure are rough and unequal in size. It is difficult to determine the date of the structures on the basis of the sherd and lithic collections from the site. Early Bronze I (3,300 - 2,900 B.C.), Nabataean, and Iron Age sherds were associated with the northwest structure while Early Bronze I-III, Iron Age, possible Late Bronze, and Nabataean sherds were collected from the southeast building. Early Bronze flints were found at both structures.

*Field Reading:* EB I-III (19); EB I (4); Iron Age (23); Nab (12); LB, possible (3); Byz (1); Ud sherds - saved (91); Ud sherds - discarded (43); EB flints (2); EB flints, possible (4); Ud flints - saved (15).

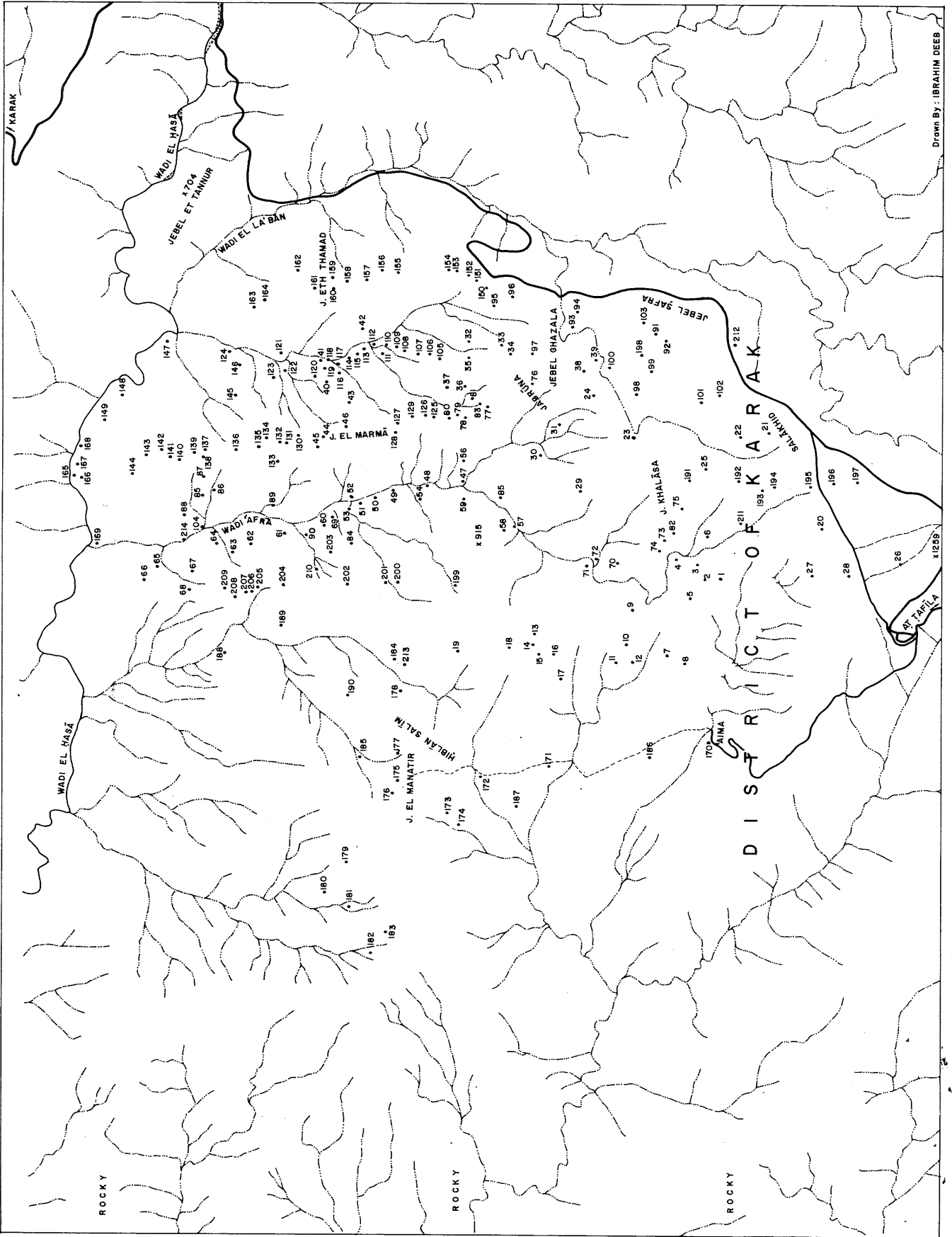
Early Bronze IVA pottery was found at several sites, the most important of which is Site number 23, Mashmil/El Mushimmīn, where eighteen Early Bronze IVA sherds, mostly indicators, were collected. The pottery at this site is predominantly Byzantine and thus this site will be described in conjunction with our treatment of the Byzantine period.

The Middle Bronze period (1,950 - 1,550 B.C.) is poorly represented in the area. Sherds from this period were found in small quantities at two sites, namely Site 64, where the reading is Middle Bronze - Late Bronze, and Site 172, Rebabeh, where the reading is Middle Bronze - Late Bronze - Iron Age.

**Site Number 64:**  
**Map Sheet:** 210/035  
**Co-ordinates:** 112/416  
**Elevation:** 510 m.  
**Estimated Area:** 100 x 60 m.

Site number 64 consists of a stone enclosure and numerous stone piles. The stone structure, located on the west side of the Wadi 'Afrā, northern segment, is situated on a small ledge bordered by a low retaining wall on three sides and a cliff on the west. The enclosure has a

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circumference of approximately 58 m. and the inside diameter is from 12 to 19 m. It is abutted by a platform 2.5 x 6.0 m. on the southeast and by another platform of approximately the same size on the northeast.

*Field Reading:* MB-LB (15); Nab (13); Late Isl (7); EB I (2); PL flints, probably (8); Ud sherds - discarded (82).

The Late Bronze I-II period (1,550 - 1,200 B.C.) is somewhat better represented by artifactual materials than the Middle Bronze period. However, there is no site in the area which has a predominance of Late Bronze pottery. Pottery of this period was found at several sites besides the two mentioned above and generally in association with Iron I pottery, for example at Site 147, Ash-Shorabat, Site 178, Ras Riḥab, and Site 106 located in the Wadi eth Thamad. Possible Late Bronze pottery was found at such sites as Site 28, Site 144, Al Qasrein West Site 145, Khirbet 'Ain el Ghuzlan, Site 169, Mu'afā, Site 146, Site 148, Al Burbeita, and Site 165, Beider Rādwan. All these sites, with the exception of Sites 28, 178 and 106, are located close to the Wadi el Ḥasā.

The presence or non-presence of Late Bronze pottery at Site 61, Khirbet 'Ain Sa-ubalā, requires further study. Only one Late Bronze - Iron I site will be described.

**Site Number 147:** Ash-Shorabat  
**Map Sheet:** 210/035  
**Co-ordinates:** 150.5/424  
**Elevation:** 315 m.  
**Estimated Area:** 50 x 50 m.

Site number 147, Ash-Shorabat, is located on a terrace next to the Wadi el Hasa. It is situated in a tomato patch and it is possible that the tomato formers have cleared away many of the stones from the site to plant their crop and to build their modern house. The site presently consists of a platform which measures about 35 x 15 m. on its southern half. Other stone foundations occupy the northern part of the platform and the sherd scatter continues into the surrounding tomato fields, especially on the northern side.

*Field Reading:* Iron IA (35); LB-Iron (15); Byz (7); Late Isl (6); Ud sherds - saved (72); Ud sherds - discarded (115).

The Iron I period (1,200 - 918 B.C.) is well represented in the area. Many Iron I sites were surveyed and some of these date to Iron IA (1,200 - 1,000 B.C.), or to the earliest part of the Iron Age.

**Site Number 212:** Khirbet Abu Bannā  
**Map Sheet:** 210/025  
**Co-ordinates:** 147.5/316  
**Elevation:** 1,172 m.  
**Estimated Area:** 175 x 70 m.

Site number 212, Khirbet Abu Bannā, is located in the Ṣalākhid region just to the south of the main Taḥīla-Karak road. It may be that this road has destroyed the northern segment of the site. The entire site is constructed of large chert blocks. The north, south, east and west walls of some of the ancient buildings are still standing, some to a height of 1-2 m. A wall in the center of the complex still stands to the same height. There is a great deal of evidence of rooms and building foundations even though it is apparent that some of the structures have been cleared away on all sides. On the east side there are the remnants of a wall, at least 1 m. thick, cornering on the southeast.

*Field Reading:* Iron IA (61); Iron I (151); Iron Age body sherds, mostly Iron IA - saved (150); Byz (16); Late Ott-Mod (4); Nab (2); Late Isl (1); Ud sherds - saved (174); Ud flints - saved (2).

**Site Number 10:** Umm er-Riḥ  
**Map Sheet:** K737, 3151 IV  
**Co-ordinates:** 502/210  
**Elevation:** 1,182 m.  
**Estimated Area:** 350 x 125 m.

Site number 10, Umm er-Riḥ, is located on a hill in the plateau region north of Taḥīla. The

site has many walls of chert and limestone blocks and at least two caves. There are possible towers or tombs around the periphery of the site. One large, flat-lying stone on the north side of the site bears a *wasm*. Stones from the ancient structures have been re-used for modern sheep pens.

*Field Reading:* Iron IA (19); Iron I (67); Iron II(9); Byz (10); body sherds, many Iron Age-saved (64); Nab (1); Mod (1); Ud sherds - discarded (277); PL flint: Ud flakes and debitage - saved (18).

Other sites that have predominant Iron I pottery are Site 28, (Iron IA or Early), Site 18, Huboul el-Ḥardhoun, Site 86, 'Ain ad-Dahs South, Site 179, Umm Suwwaneh. There are many other sites where Iron I pottery is present.

Besides the above-listed sites there are many sites at which Iron I pottery is found in association with Iron II pottery. Three such sites are Site 173, Al-'Addanin, Iron I - Iron IIA (1,200 - 721 B.C.), Site 24, Rujm Karaka, Iron Ic - Iron IIA (1,000 - 721 B.C.), and Site 211, Khirbet el Bureis, Iron I - Iron II (1,200 - 539 B.C.).

<b>Site Number 173:</b>	Al-'Addanin
Map Sheet:	K737, 3151 IV
Co-Ordinates:	472/245
Elevation:	920 m.
Estimated Area:	125 x 125 m.

Site number 173, Al-'Addanin is located to the west of the main 'Aima-Riḥab road (Pl. CIV, 2). It is situated on a hill giving the impression of a "citadel" measuring approximately 100 x 100 m. The hill is strewn with stones, large and small, and on its west end of foundation walls for buildings are visible. A modern paddock is located on the southeast of this hill along with some low stone fences. A sherd scatter was mainly concentrated on and around this "citadel". Sherds and lithics were also found in the surrounding agricultural fields but they were of low density. More lithics were found in fields to the east.

*Field Reading:* Iron I-Iron IIA (187); Ud sherds, mostly Iron I-Iron IIA - saved (114); Late Isl (Late Ott-Mod) (6); Byz (5); EB, possible (2); Ott-Mod, possible(1); Ud sherds - saved (12); Ud sherd - discarded; MPL, probable (8); Ud flints - saved (22).

Another equally important Iron I- Iron IIA site is 190, Heblan Salim. Among the sherds collected at this site were 78 identifiable sherds from this period.

<b>Site Number 24:</b>	Rujm Karaka
Map Sheet:	210/025
Co-ordinates:	138/343
Elevation:	1,148 m.
Estimated Area:	20 x 20 m.

Site number 24, Rujm Karaka, was probably a signal or communications tower. The structure is built of chert blocks. It is visible from almost any point on the plateau northeast of Tafila. This is surprising since it is no more than 3 m. high and not a large structure by any means. It provides a spectacular view of all the surrounding area. Many graves are located around its base and several are presently a part of its lower area. A hugh cistern cut into bedrock and stone aqueducts at ground level directing or channelling rain runoff into the cistern are located to the north of the stone pile or structure.

*Field Reading:* Iron IC-Iron IIA (71); Iron II (11); Late Rom (8); Byz (6); Late Isl (10) Ud body sherds - discarded (283).



**Site Number 211:** Khirbet el Bureis  
**Map Sheet:** 210/025  
**Co-ordinates:** 114/314.5  
**Elevation:** 1,145 m.  
**Estimated Area:** 180 x 150 m.

Site number 211, Khirbet el Bureis, is situated on sloping land just above the Wadi el Bureis in the Salākhid region. It consists of a heavy sherd scatter, many buried or at least partially buried walls, and the remnants of rectangular structures. The entire site has been disturbed by field clearance and by the robbing of stones from the ancient structures. The complex is made of chert blocks. A modern spring or well is located in the Wadi just at the southwest corner of the site. A stone wall was noted just to the north of this water source.

*Field Reading:* Iron I-Iron II (72); Iron II (38); Iron I, probable (6); Byz (86); Nab, possible (11); Late Rom (3rd c. A.D.) (6); Hell (2); Ud indicator sherd - saved; Ud sherds - discarded (419); Ud flints - saved (2).

Besides the Iron II (918 - 539 B.C.) sherds associated with the above-described or - mentioned sites, there were some sites at which Iron II pottery was predominant. One such site was 187, Al-Maqḥaz.

**Site Number 187:** Al-Maqḥaz  
**Map Sheet:** K737, 3151 IV  
**Co-ordinates:** 472/231  
**Elevation:** 745 m.  
**Estimated Area:** 215 x 150 m.

Site number 187, Al-Maqḥaz, is located on a spur approximately 1 km. downslope from Site 171, Dhibā'a. It is clearly visible from the latter and looks from a distance as nothing more than a modern animal pen. It presently consists of a heavy stone scatter surrounding a paddock. What appears to be a stone platform is located just to the west of the paddock. An olive grove to the southeast is irrigated by a modern aqueduct from a spring in the same direction. Another possible seasonal spring is located to the northeast. The site commands an excellent view of the area around the southeast end of the Dead Sea.

*Field Reading:* Iron II (32); Iron I (28); Ott (22); Late Isl (19); Byz (8); Hell, possible (1); Ud sherds, possible EB (3); Ud sherds - saved (51); Ud sherds - discarded (198); Ud flints - saved (2).

Another clear Iron II site is Site 71, Al Habes North. The only identifiable pottery at this site was Iron II. Generally speaking, at all the Iron II sites the earlier part of the period is better represented than is the latter part.

The period (539 - 332 B.C.) when the Persians dominated the Near East is one which is still scantily understood. Little or nothing is known of the Persian control of Southern Jordan during the period under question. Not one identifiable Persian sherd was collected in the area.

Alexander the Great conquered the Persians in 332 B.C. and Jordan became part of the Greek world. In Southern Jordan the Nabataeans, who are generally believed to have settled down near Petra during the Persian period avoided the Greek armies and remained independent throughout the period. None of the sites surveyed in the area south of the Wadi el Ḥasā produced Hellenistic architectural evidence. A few Hellenistic sherds were found at several sites, including Site 148, Al Burbeita, and Site 178, Ras Rihab.

Pompey conquered Syria-Palestine in 64 - 63 B.C. In Southern Jordan the Nabataeans avoided conquest in 63 B.C. and they remained completely independent of Rome until 106 A.D., when they were annexed by Trajan.

There is abundant evidence of Nabataean culture in the area. On the plateau just north and northeast of Ṭafila there is evidence of Nabataean civilization. Nabataean pottery is predominant at Site 76 - in the Karaka region - as well as the tower/tomb (?) sites along the northern edge of the plateau, namely Sites 29, 32 and 96. It is also present at several other sites,

for example Site 27, Buṭeina and Site 16, Khirbet Jumah, in the same region. In the Wadi 'Afra region there is evidence of extensive Nabataean settlement at such major sites as Site 84, Bahlūl, Site 85, 'Ain ad-Dahs North, as well as at Sites 88 and 90. Close to the Wadi el Hasā Nabataean pottery is predominant at such major sites as Site 143, Al-Qasrein East and Site 144, Al Qasrein West. At Site 145, Khirbet 'Ain el Ghuzlan the predominant pottery is Nabataean/Late Roman. On the western edge of the survey area Nabataean sherds were found at several sites but only at one, namely Site 183, Meghaeir al Qof, was it predominant.

**Site Number 85:** 'Ain ad-Dahs North  
**Map Sheet:** 210/035  
**Co-ordinates:** 121/418  
**Elevation:** 610 m.  
**Estimated Area:** 50 x 50 m.

Site number 85, 'Ain ad-Dahs North, is situated on the western slope of the Jebel el Marma ridge overlooking the northern section of the Wadi 'Afrā. The summit area of the site measures approximately 25 x 25 m. but the sherd scatter continues down the slopes, especially toward the spring in the wadi to the south. There are terrace walls on the slope near the spring. Robber trenches on the summit reveal a large millstone along with buried stone rooms. Some of these rooms show plaster on the inside. There is at least 1 m. of deposition on the summit of the site. Pieces of red flat tiles litter the ground, especially at the southern and western sides of the site. The site commands an excellent view of the Wadi 'Afrā and in general the area to the southwest and the west.

*Field Reading:* Nab (64); Late Rom (14); PL (2); Ud sherds- discarded (214); pieces of red flat tile.

**Site Number 145:** Khirbet 'Ain el Ghuzlan  
**Map Sheet:** 210/035  
**Co-ordinates:** 140/411  
**Elevation:** 635 m.  
**Estimated Area:** 200 x 150 m.

Site number 145, Khirbet 'Ain el Ghuzlan, is located on the eastern slope of Jebel el Marma and to the west of the Wadi eth Thamad. The presence of a spring, now quite weak, seems to have encouraged occupation of this site during several different pre-historic and historic periods. The spring-head has at least six descending pools and a stone spout, with other pools about 150 m. farther down-slope. It appears that an aqueduct led from the upper spring along the side of the spur to the citadel of the site, where it meets a large stone structure 370 m. along its course. (Pl. CV,1). The aqueduct then continues down-slope to the north, presumably to irrigate the fields below. The stone structure is preserved several courses high and there seems to be a great deal of deposition around it, as evidenced by a robber-trench on the western wall. A number of stone enclosures are located to the southwest and to the north of the main structure. Parts of an extensive outer wall suggest the existence of a lower town.

*Field Reading:* Nab/Late Rom (122); Nab (31); LB-Iron, Ud (12); Iron I (6); Late Isl (4); Mod (4); Ud sherds, Nab/Late Rom period - saved (102); Ud sherds - saved (5); Ud sherds - discarded (183); LPL- MPL (7); MPL (11).

At many of the above-listed Nabataean sites along the Wadi el Hasā Late Roman pottery is present as well. Besides being associated with Nabataean at Site 145, Khirbet 'Ain el Ghuzlan, it is also found in the same combination at such sites as Site 163, approximately 1 km. southeast of Site 145, at Site 162 on Jebel eth Thamad, and at Sites 150 and 200. Late Roman pottery is predominant at Site 100, Rujm al Qiṭṭah on the plateau and at Site 167, Al-Ma' deh, the remnants of a possible mill, by the Wadi el Hasā. Moreover, at several sites Late Roman pottery is associated with Byzantine pottery.

The Byzantine Period (ca. 324 - 640 A.D.) was apparently the one of greatest population and the greatest number of settlements in the area surveyed. On the plateau major Byzantine settlements were located at Site 1, Es Sab'ā, Site 6, Majādil, Site 16, Khirbet Jummah (Pl. CV,2), Site 23, Mashmil/El Mushimmīn, and Site 70, Al Habes South (Pl. CVI, 1). Down along the Wadi el Ḥasā Byzantine pottery is predominant at such sites as Site 148, Al Burbeita, and Site 169, Mu'afā (Pl. CVI,2), where the Wadi 'Afrā enters the Wadi el Ḥasā. On the western side of the area Byzantine pottery is predominant at such major sites as Site 172, Rababeh, Site 177, As-Sarab, Site 178, Ras Riḥab, and at Site 182, Khirbet Mleiḥ. Moreover, many Byzantine sherds were found at other major and minor sites throughout the area. Here only two major Byzantine sites will be described.

**Site Number 6:** Majādil  
**Map Sheet:** 210/025  
**Co-ordinates:** 111/322  
**Elevation:** 1,157 m.  
**Estimated Area:** 200 x 200 m.

Site number 6, Majādil, is a multicomponent site on a spur between the Wadi el Bureis and Jebel Khalāsa, (Pl. CVII,2). This large site has very good wall preservation, many caves, and what appears to be underground tombs. About 2 m. of deposition are visible in the excavated and robbed-out areas of the site. Modern orchards, vineyards, and a chicken farm now occupy the site. Islamic structures at the center of the site are largely intact and incorporate a cornice block taken from an older structure. Samples were taken from both the west and the east side of these structures. On the west side the pottery was predominantly Byzantine but there was a high concentration of Ayyubid/Mamluk, along with two Nabataean and four possible Iron I sherds among the identifiable sherds. In the two samples from the east side the predominant pottery was still Byzantine. However, there was not one Ayyubid/Mamluk sherd collected. On the other hand, 22 Iron I and one Nabataean sherds, along with 104 unidentifiable sherds, were found.

*Field Reading:* Byz (175); Ayy/Mam (30); Iron I (22); Iron I, possible (4); Nab (3); Ud sherds - saved (104); Ud sherds - discarded (11); Ud flints - saved (2).

**Site Number 23:** Mashmil/El Mushimmīn  
**Map Sheet:** 210/025  
**Co-ordinates:** 131/322; tower to the northwest: 129/334  
**Elevation:** 1,155 m.  
**Estimated Area:** 300 + x 200 + m.

Site number 23, Mashmil/El Mushimmīn, is a very large site situated on the plateau northeast of Ṭāfila, (Pl. CVII,1). There are many standing walls, some of which are probably rebuilds. The tops of buried walls are visible. The site, like many others in the area is presently used to paddock sheep and goats. Orchards are located on the north slope. Many caves and cisterns are located on the site. A possible tower is positioned about 200 m. northwest of the main area of the site. More caves and/or cisterns are found to the east and south of this structure. Some of the cave/cisterns are still used as animal pens. There is a sherd scatter in the valley to the south of the main area of the site with a cistern and stone enclosure and there is evidence of more structures - possibly a lower town - to the west. A quarry for building stones is situated on the east point of the site.

*Field Reading:* Byz (187); Iron I (21); Iron I, possible (8); Ayy/Mam (21); EB IVA (18); Late Isl (14); Late Rom (1); body sherds, mostly Byz - discarded (123); Ud body sherds - discarded (177); MPL flakes (2); roof tile fragments - saved (5); glass fragment, not modern.

Between 630 and 640 A.D. all of Jordan fell to Islam. Shortly thereafter Arabic replaced Greek as the dominant language, and Islam replaced Christianity as the major religion. The Umayyad dynasty was established in Damascus in 661 A.D. Jordan was close to the centre of

power and was also positioned on the pilgrimage route to Arabia. Thus, during the Umayyad period Jordan continued to flourish. However, in the surveyed area it appears that the region became almost desolate. No major sites and very, very little pottery was found that can be attributed to the Umayyads.

The defeat of the Umayyads in 750 A.D. by the 'Abbasids was a major blow to Jordan. The 'Abbasid, Fatimid, and Seljug-Zengid periods (750 - 1,174 A.D.) are very poorly represented in the archaeological evidence from Jordan. In the area surveyed there is neither pottery nor architecture that can be attributed to these periods.

Between 1099 and 1187 A.D. the Crusaders of Europe built and maintained two castles in Jordan, one at Karak and the other at Shaubak. Aside from these castles, the Crusaders probably had little impact on the occupation of Jordan, which was apparently slight when they arrived anyway. In 1187, the Ayyubid leader, Saladin, defeated the Crusaders at the Battle of Hattin, and from that time on Jordan was in Arab hands. The Crusaders remained in Palestine until 1291 A.D., when they were ultimately thrown out completely by the Mamluks. The defeat of the Crusaders and the uniting of Egypt and Syria under the Ayyubids and Mamluks led to a great revival of occupation in Jordan, because Jordan was now a link between those two regions.

Ayyubid/Mamluk Period (1187-1516 A.D.) pottery is represented in the area at such major sites as 6, Majādil, 23, Mashmil, 13, Gnan el-Qarn, and 20, Naukha. It is the predominant type of pottery at these two latter sites.

<b>Site Number 13:</b>	Gnan el-Qarn
Map Sheet:	K737, 3151 IV
Co-ordinates:	505/288
Elevation:	ca. 1,190 m.
Estimated Area:	225 x 100 m.

Site number 13, Gnan el-Qarn, is a very large site situated on the plateau north of Ṭafīla. It is constructed of chert blocks. It is presently occupied by a shepherd who lives in a cave which has a well-built front wall, windows and door, (Pl. CVIII, 1). Corrals are located in front of the cave. The recent constructions on the site probably utilize older material. Two wells were noted in association with the site and many caves and/or cisterns are located on the south and east sides of the structures. We counted over fifty rooms or structures of various sizes. A possible gateway with a tower is located on the north-east side of the site overlooking the Wadi 'Afrā.

*Field Reading:* Ayy/Mam (110); Byz-Mam body sherds - discarded (53); Byz (38); Mod (1); Ud Sherds - discarded (198); MPL (6); Ud flakes (5); stone bowl fragment, possible.

<b>Site Number 20:</b>	Naukha
Map Sheet:	210/025
Co-ordinates:	114/300
Elevation:	1,220 m.
Estimated Area:	145 x 100 m.

Site number 20, Naukha, is situated on a hill just to the north of the main Ṭafīla-Karak road (Pl. CVIII, 2). It commands an excellent view of the region to the north, to the northeast, to the east and to the south. The site is presently used as a place to keep sheep and goats and thus the area of the site is covered with animal pens. Many of the stones from the ancient structures have been used to make the walls of these pens. In places it is difficult to distinguish ancient from modern walls. There are at least six caves and cisterns on the summit of the site and additional ones on the south and north slopes. A modern well - dry at the time of visit - is located at the east end of the site.

*Field Reading:* Ayy/Mam (109); Byz (54); Iron I (12); Iron II (3); Late Rom (4); Ud sherds - saved (2); body sherds - discarded (603); sling stone.

In 1516 A.D. the Mamluks were easily defeated by the Ottoman Turks, and Jordan

became part of the Ottoman Empire in which it remained until 1918, World War I. During this period Jordan was chiefly of interest to the Turks because the pilgrimage route to Arabia passed through it. Most of Jordan's villages and towns were either abandoned or greatly reduced in size during most of the Ottoman period. In the area in question, however, there are a number of important settlements which date either to the Late Islamic period (1174 - 1918 A.D.) in general, or to the Ottoman period (1516 - 1918 A.D.) in particular. The predominant pottery at Site 31, Khirbet Karaka, Site 39, Khirbet Jeradin, Site 55, Khirbet al-'Oran, Site 99, Umm Buweir West, Site 170, 'Aima, Site 184, Khirbet Riḥab, Site 185, Miḥraq (Pl. CIX, 1), and Site 188, Ṣabrah, is Late Islamic. Site 56, Sadir 'Afrā, Site 27, Buṭeina, and Site 171, Dhibā'a have Ottoman-Modern pottery as predominant.

**Site Number 27:** Buṭeina  
 Map Sheet: 210/025  
 Co-ordinates: 103/302  
 Elevation: 1,193 m.  
 Estimated Area: 100 + x 50 + m.

Site number 27, Buṭeina, is a well-preserved, Late Ottoman-Modern site to the west of Site 20, Naukha. The site probably extends well beyond the area of standing walls and stones as evidenced by the sherd scatter in the surrounding cultivated fields. It is probable that some of the site has been destroyed by field clearance. There is a good deal of evidence that building stones and possible old walls have been used to strengthen the present standing structures which appear to be used primarily as barns to house animals and store fodder. Several collapsed roofs and arches are visible. One cave has an arched doorway and an arch on the inside. An orchard is located to the east and south of the buildings. A modern pipeline brings water to the site and there is one modern cement building on the site. Roads leading away to the south, west, and northeast are lined with neat stone fences.

*Field Reading:* Late Ott-Mod (93); Byz (46); Nab (37); body sherds, mostly Byz (47) - saved (5); Ud sherds (203) - saved (18).

**Site Number 56:** Sadir 'Afrā  
 Map Sheet: 210/035  
 Co-ordinates: 127/368  
 Elevation: 832 m.  
 Estimated Area: 200 x 200 m.

Site number 56, Sadir, 'Afrā, is a modern as well as ancient site. There are several modern buildings on the site in which the members of two farming families live. These buildings are probably constructed from the stone of the ancient buildings. One ruined room at the summit of the hill on which the site is located still has well-built walls of two outer stone faces with rubble fill in between. A recent grave occupies the centre of this room. The tops of buried walls are visible near the summit and have an orientation which is different from the modern structures. There are four caves on the site. One of these caves is presently used to store fodder and it has a beautiful arched entrance. Two possible oil presses and one grinding installation were noted on the site. Stone wall collapse is present all down the slopes of the hill to the south, west and east. The sherd density is heaviest on these slopes. The site, situated on a high hill on the east side of the Wadi 'Afrā, commands an excellent view of the entire northern segment of the Wadi.

*Field Reading:* Ott-Mod (431); Byz (15); Byz, possible (6); Mod (12); Ud Sherds - discarded (466); Ud flints - saved (3).

There are many sites which we surveyed and which are not as yet datable because of the lack of artifactual material or because of the fact that more study is required of the artifacts collected at the site. Some of the most important sites in this category are Site 26, an ancient road which was noted near Site 20, Naukha, and 23, Mashmil. Other interesting sites are a series of mills surveyed in the Wadi 'Afrā. The most impressive of these mills is Site 52, Ṭawaḥin al-'Oran, located in the central segment of the Wadi (Pl. CIX, 2). Also in the Wadi

'Afrā an extremely interesting site is 104, Hammam 'Afrā. This is the location of several hot springs with many caves. Two of the caves have paintings and inscriptions associated (Pl. CX). A separate study of this site is required.

### *Summary*

Two hundred and fourteen sites were surveyed in a six week period. We do not claim that we have discovered all the sites in the area. However, we are quite confident that we have discovered over 90 per cent of the major sites. Every square meter of the area would have to be gone over thoroughly before all the minor sites such as lithic and sherd scatters can be discovered. Other survey teams using a different definition of site, a different methodology, and working under different human and physical conditions will find additional sites in the future.

At this stage of the study of the materials we have not identified any artifactual material from the pottery - Neolithic, Chalcolithic, Persian, with very little material from the Early Islamic period. There is very little evidence from the Middle Bronze period. The Late Bronze period is better represented than many people would have thought. There is evidence of a great deal of artifactual material from the Iron I period. There is no evidence for the Persian occupation of Jordan and little from the Hellenistic period.

Our survey area included only a small part of Southern Jordan. It is but one geographical region of the country. Therefore, it is not possible to draw conclusions for all of Southern Jordan on the findings of this survey. The lack of evidence for some periods could merely mean that we have missed the evidence.

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## NOTES:

1. N. Gleuck, *Explorations in Eastern Palestine II. AASOR*, Vol. XV for 1934-1935. (New Haven: American Schools of Oriental Research, 1935), pp. 100-109; *idem.*, *Explorations in Eastern Palestine III. AASOR*, Vols. XVIII-XIX for 1938-1939. (New Haven: American Schools of Oriental Research, 1939), pp. 56-60.
2. Moawiyah M. Ibrahim, "Excavations in Jordan: 1973-1974", *ADAJ* XIX (1974), pp. 16-17 (Arabic Section).
3. For evidence of extensive deforestation: A. Horowitz, "Preliminary palynological indications as to the climate of Israel during the last 6,000 years", *Paleorient* 2 (1974), pp. 407-414; H.E. Wright, Jr., "The environmental setting for plant domestication in the Near East", *Science* 194 (1976), pp. 385-389. See also M. Rossignol, "Analyse pollinique de sediments Quaternaires dans la Plaine de Haifa, Israël", *Israel Jn. of Earth Sciences* 12 (1963), pp. 207-214.
4. E. Bossier, *Flora Orientalis* (Geneva: 1867-1888); A. Eig, *Les Eléments Phytogéographiques Auxiliaires dans la flora Palestinienne*, Feddes Report, Nov. Reg. Veg. Beih. 63 (1931-1932).
5. Temperatures have an average diurnal variation of 10°C with a mean summer (May-August) temperature of 22°C and a mean winter temperature of 4°C.
6. F. Bender, *Geologie von Jordanien* (Stuttgart: Gebruder Borntraeger, 1968), p. 11; K. Sanford, "Structure and evolution of the Levant and North Africa", *Nature* 154 (1944), pp. 569-571; M. Enenari, *et al.*, *The Negev* (Cambridge; Harvard Univ. Press, 1971), pp. 132-147, *passim*; A.M. Quennel, "The structural and geomorphic evolution of the Dead Sea rift", *Geological Society London Quarterly Journal* (1958), pp. 1-24; D.J. Burdon, *Handbook of the Geology of Jordan* (Hashemite Kingdom of Jordan, 1959), p. 54; H.G. Busk, "On the normal faulting of Rift Valley structures", *Geol. Mag.* 82 (1945), pp. 37-44.
7. A. Strahler, *Introduction to Physical Geography* (New York: John Wiley & Sons, 1967), p. 364.
8. E. Huntington, *Palestine and its Transformation* (London: Constable & Co., 1911), pp. 106-107.
9. S.G. Willimott, *et al.*, *Conservation Survey of the Southern Highlands of Jordan* (Durham: Univ. of Durham, 1964), p. 24; A. Strahler, *op. cit.*, p. 248; F. Bender, *op. cit.*, pp. 22-26; D. Burdon, *op. cit.*, pp. 69-70.
10. Willimott, *et al.*, *op. cit.*, pp. 46-47; A. Reifenberg, *The Soils of Palestine* (London: Thomas Murby & Co., 1947), pp. 73-96, *passim*; J. Dan, "Soil-catina relationships as evidence for erosional cycles and changes of base level during the Pleistocene in Israel", *Israel Jn. of Earth Sciences* 13 (1964), pp. 82-87; H.E. Reineck and I.B. Singh, *Depositional Sedimentary Environments* (New York: Springer Verlag, 1973).
11. Willimott, *et al.*, *op. cit.*, pp. 57-58.
12. D.J. Burdon *op. cit.*, pp. 72-73; *idem.*, "Groundwater in the Hashemite Kingdom of Jordan", *Assoc. Internat. Hydrol. Sci. Assemblee Gen. 2* (publ. 37), pp. 331-342.
13. C.A. Cotton, *Climatic Accidents in the Landscape* (London: Whitcome & Tombs Ltd., 1942), pp. 4-11; C. Vita-Finzi, "Slope downwearing by discontinuous sheetwash in Jordan", *Israel Journal of Earth Sciences* 13 (1964), pp. 88-91; *idem.*, "Observations on the Late Quaternary of Jordan", *Palestine Exploration Journal* 96 (1964), pp. 19-33; *idem.*, "The Hasa formation: an alluvial deposition in Jordan", *Man* 1 (1966), pp. 387-390.
14. F. Bender *op. cit.*, pp. 132-166; F.G. Clapp, "Geology and bitumens of the Dead Sea area, Palestine and Transjordan", *Bulletin of the American Association of Petroleum Geologists* 20 (1936), pp. 881-909; Parsons Corp. *El Hasa Phosphate Project 2, Exploration and Geology*, Unveroff Bericht, Engineering Report 3166-1. Los Angeles; Arch. Natural Resources Authority, Amman (1963); W. Heimback, "Geology and phosphorite possibilities in the area between el Hasa and Ma'an", *Unveroff Bericht Deutsch. Geol. Mission Jordanien*, Arch, Bundesanst. f. Bodenforsch., Hannover; W. Lynch, *Official Report of the United States Expedition to Explore the Dead Sea and the River Jordan* (Baltimore: John Murphy & Co., 1852), pp. 182-187; P. Jones, "Effects of raw materials on biface manufacture", *Science* 204 (1979), pp. 835-836.
15. W.C. Lowdermilk, "Erosion control lessons from Old World Experience", *Soil Conservation* 5 (1939), pp. 157-162, and (1940), pp. 228-231; *idem.*, "Conquest of the Land through 7,000 years", *Agricultural Bulletin* no. 99, Soil Conservation Service, U.S. Department of Agriculture, Washington, p. 18.