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# IRON AGE BURIAL IN THE LOWLANDS OF EDOM: THE 2004 EXCAVATIONS AT WĀDĪ FĪDĀN 40, JORDAN

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## Abstract

New excavations in the Iron Age cemetery at Wādi Fīdān 40, located in the Faynān district in southern Jordan, provide important evidence concerning the tenth-ninth centuries BC occupation of the region. The excavations, carried out as part of an emergency project along the Wādi Fīdān, boost the sample size of tombs, human remains, and other mortuary data from the site that help elucidate the nature of the Iron Age nomadic community who inhabited this part of the ancient Edom. The importance of the lowland region of Edom, home to the copper ore rich Faynān district, for understanding the early Iron Age history of this part of the southern Levant is highlighted by the 2004 expedition results. Some of the historical and anthropological implications of the cemetery are also discussed.

## Research Problem

The site was first probed in 1989 (Adams 1991) and incorrectly dated to the Chalcolithic period. The importance of the cemetery for the Iron Age archaeology of Jordan was brought to light during the 1997 excavations (Levy, Adams and Shafiq 1999) when iron jewelry and one radiocarbon determination helped date the site to the Iron Age. The site was named Wādi Fīdān 40 cemetery site after the first systematic archaeological survey was carried out along the Wādi Fīdān in 1998 (Levy *et al.* 2001). As this is the only cemetery excavated to date in the region identified as Biblical Edom it has become an important source of data for investigating the nature of Iron Age societies who dwelt in the lowlands of Edom. It is also of key importance for studying Late Bronze Age and Iron Age historical documents from Egypt that refer to the local population of Edom as Shasu nomads (Levy, Adams and Muniz 2004; Levy and Najjar 2005; Levy *et al.* in press). The archaeological, biological and chronological data from the 2004 excavation season (June 28-August 6, 2004) provides a much expanded database for understanding the

significance of the Wādi Fīdān 40 cemetery for the Iron Age occupation of this part of Jordan.

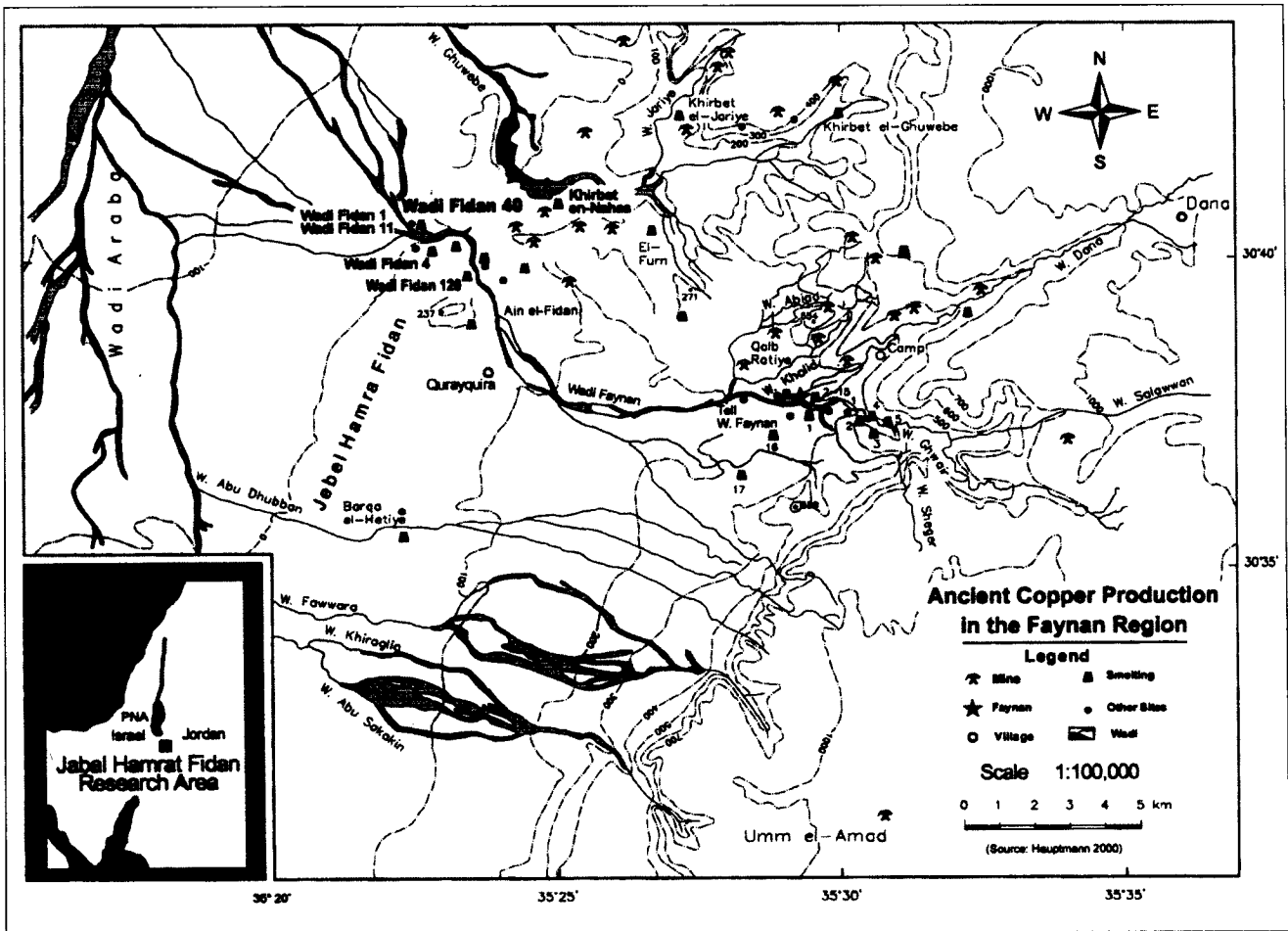
## The Site

The site is located in the Faynān district in southwestern Jordan some 50km south of the Dead Sea. Edom is composed of a rugged highland plateau zone where Mediterranean and semi-arid environments meet and a lowland centered on the hyper-arid Saharo-Arabian desert zone. The possibility that the site would be destroyed by the construction of a dam by the Jordan Valley Authority led us to carry out a large-scale excavation campaign in 2004.

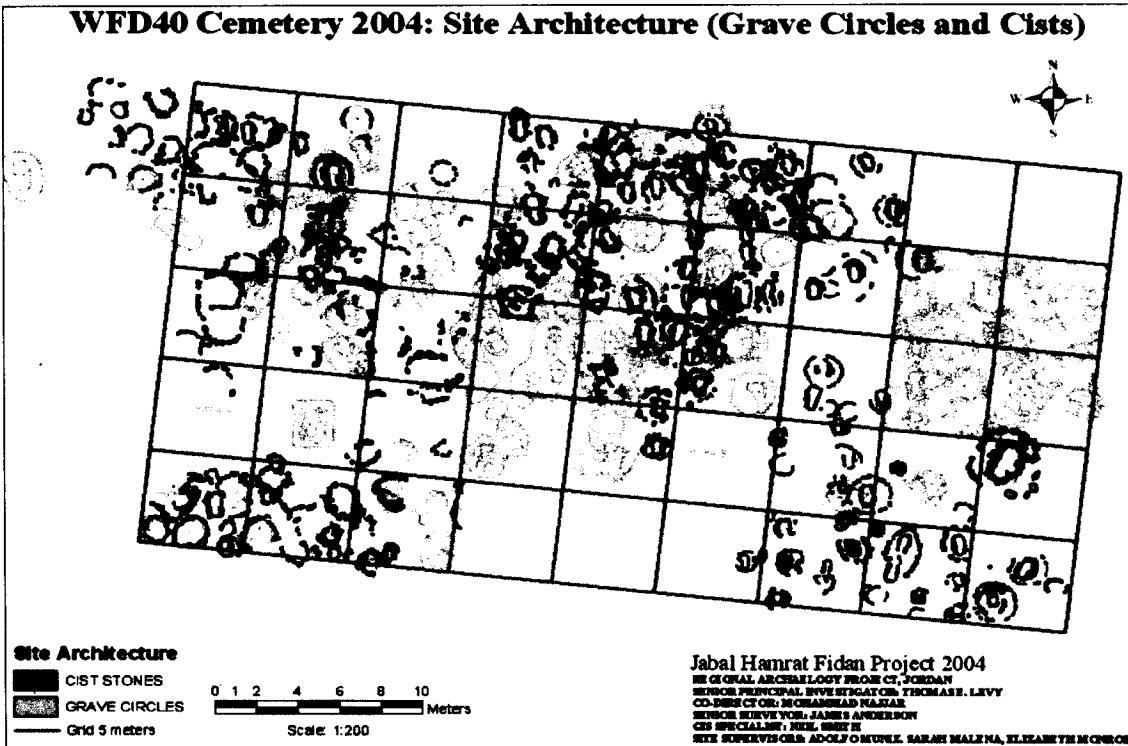
Wādi Fīdān 40 is a large cemetery site located on a ridge where the Wādi Fīdān debouches into the Wādi 'Araba. Hundreds of stone circles stud the hilltop on this site, which commands an impressive view of both wadis. About five kilometers distant is the major site of Khirbat an-Nuḥās, and also nearby are the copper rich outcrops of Faynān (Fig. 1). The 2004 excavations more than doubled the existing sample of tombs recovered in the earlier excavations at the site. Figure 2 highlights the newly excavated tombs from the 2004 season compared with the earlier work.

## Research Goals and Methods

Wādi Fīdān 40 (WFD40), which consists primarily of surface stone circles and subterranean cist graves, was first excavated on a large scale Thomas Levy and Russell Adams during the first Jabal Ḥumrit Fīdān Project excavation in 1997. During the course of the 1997 excavation the cemetery that was once believed to be Chalcolithic in date was reclassified as primarily Iron Age (Levy, Adams and Shafiq 1999b). In 2003 an area of the site east of the 1997 exposure was excavated by the team as the first season in an emergency investigation prior to the building of a dam — a construction which has since been canceled. Most of the graves excavated in that season were found to have been looted in antiquity.



1. General map of the Faynan (Jordan) research area.



2. Map of excavated tombs in the Wadi Fidan 40 cemetery. Note: the pale shaded graves were previously excavated in 1997 and 2003.

The two previous seasons taught us what to look for in the 2004 expedition. The 1997 excavations revealed that the WFD 40 cemetery was used during the tenth century BC by a relatively large group that seems to have left no permanent habitation site that would house its numbers. It was suggested that the buried population was most likely an Iron I pastoral nomad group, but one which could mobilize a great deal of manpower to cut and move stone for the construction of these primarily cist graves. The 2003 excavations showed that these burials often did not conform to the stone circles observed at the surface. Sometimes cists extended beneath the surface stone circle, and at other times graves had no stone circles at all. However, only one radiocarbon date was processed from the 1997 and 2003 excavation seasons making an accurate chronological assessment of this Iron Age site tentative at best. In light of the discoveries of the previous two expeditions at this site, the 2004 research was aimed at expanding the sample of tombs from the cemetery to learn more about the social organization of cemetery population, to obtain short-life samples of organic material suitable for high precision radiocarbon dating, and to obtain a larger sample of material culture that could inform about the chronological and cultural connections between Wādī Fidān 40 and other Iron Age sites in Edom and the southern Levant. This was achieved by excavating along the same grid encompassing the 1997 structures. The 2003 excavations had shown that many more tombs were packed in-between the large burial circles than had been assumed in the 1997 excavation. By re-excavating the 1997 excavation area to the maximum, we hoped to uncover un-looted graves that were not found when the most noticeable surface structures were excavated down to cist level in 1997.

Additional objectives of the 2004 season were to excavate structures that would add to the existing database that may contribute to understanding of social interactions within the copper-rich Faynān district. We hoped to better understand the cemetery's relationship to the full range of Iron Age sites in the region (camp sites, metal production sites, other cemeteries (recorded in surveys), especially the large copper production center and fortress site of Khirbat an-Nuḥās. In recent years, many researchers have come to see pastoral nomadic communities as having played a central role in the emergence, maintenance and collapse of Iron Age polities in Transjordan (Bienkowski and van der Steen 2001; LaBianca and Younker 1998; Levy 2004; Routledge 2004). Ultimately, we hope

that the Wādī Fidān cemetery excavations will shed light upon the increasing social complexity of this area of the southern Levant and the specific role pastoral nomads may have played in the beginnings of the Iron Age Edomite state.

Two approaches were used for excavating graves. The first consisted of topsoil and fill removal to discover new grave structures and then to excavate those tombs to the capstone level above the cist graves. The second consisted of removing topsoil and fill around the exterior of known and mapped graves to identify potential graves suitable for excavation. Once the capstones were exposed the mud plaster that usually sealed the capstones in place was removed. Following careful recording and photography, the capstones were then removed to expose the full dimensions of the cist. If the grave lacked a cist, fill removal would continue until human remains were unearthed or the basal level of the tomb could be reached. All fill below capstone level was sieved using a 1/4 screen with an 1/8 inset. Graves containing human remains were carefully assessed by the area supervisor and excavated by students, with the assistance of the project biological archaeologists. Where human remains were encountered, the bones were exposed and carefully recovered using wooden skewers, small soft brushes, and air puffers. All recovered materials were carefully recorded in the field, photographed, sorted and collected and carefully transported to the lab for analysis. All data from the 2004 excavations was digitally recorded and linked to a GIS system.

To these ends and using these methods, three areas were excavated in the 2004 season, designated A, B, and C, following the field layout established for the 1997 excavations. In Area A seventy-four graves were excavated. Forty burials were excavated in Area B, and forty-one burials were excavated in Area C. With ca. 155 graves, the 2004 season proved to be rich in data that will undoubtedly contribute to preserving Jordanian cultural heritage.

#### **2004 Excavations at WFD40-Area A**

Area A was the most extensively excavated and least disturbed of the three areas excavated in 2004. During the five week excavation period 16 5 x 5 square meter units were recorded and excavated in the western portion of the site, called Area A. A total of 81 graves were mapped and prepared for excavation. Due to the time constraints, only 74 graves were excavated (**Table 1**) during the 5 week excavation season. Graves in Area A are similar to the 1997 sample. The graves in Area A are distributed so closely that many of the large concentra-

Table 1: Area A graves summary (Dimensions are in centimeters).

Area A Grave Number	Circle Dimensions		Circle Stone Materials	Cist Dimensions		Cist Floor Paving	Cap Stones		Rock Pile on Cist # Rocks
	Inner	Outer		Inner	Outer		#	Material	
5	154 x 115	165 x 176	Dolomite	108 x 103	147 x 84	None	2	Sandstone	0
9	210 x 130	170 x 260	Dolomite	None	None	None	4	Sandstone	0
55	115 x 130	120 x 150	Dolomite	None	None	None	4	Sandstone	0
59	130 x 124	195 x 130	Dolomite	161 x 52	177 x 100	None	4	Granite	34
80	151 x 151	185 x 165	Dolomite, Limestone, Granite	128 x 44	148 x 82	None	13	Sandstone	0
82	148 x 147	260 x 220	Dolomite	None	None	None	4	Sandstone	16
83	112 x 89	151 X 129	Dolomite	66 x 23	83 x 46	None	2	Sandstone	0
84	122 x 122	170 x 150	Dolomite	120 x 60	129 x 74	None	4	Sandstone	0
90	135 x 110	140 x 150	Dolomite	124 x 115	146 x 135	None	4	Sandstone	0
91	170 x 140	190 x 190	Dolomite, Sandstone	125 x 35	143 x 46	None	4	Sandstone	0
300	90 x 105	120 x 130	Dolomite	None	None	None	3	Sandstone	0
301	None	102 x 108	Dolomite	91 x 79	None	None	2	Limestone	0
302	85 x 58	98 x 76	Dolomite	None	None	None	0	None	0
303	None	95 x 70	Dolomite	None	None	None	2	Sandstone	0
304	None	176 x 154	Sandstone, Dolomite	None	None	None	0	Sandstone	0
305	110 x 87	149 x 126	Dolomite, Sandstone	None	None	None	0	None	0
306	76 x 68	113 x 104	Dolomite	63 x 25	67 x 60	None	2	Sandstone	0
307	142 x 133	165 x 181	Dolomite	111 x 43	144 x 96	None	4	Sandstone	0
308	None	None	None	100 x 60	122 x 80	None	5	Sandstone	0
311	155 x 180	210 x 240	Dolomite	125 x 50	10 x 85	None	5	Sandstone	
316	None	None	None	75 x 35	97 x 46	None	0	None	0
317	110 x 65	153 x 94	Dolomite	71 x 84	None	None	2	Sandstone	0
318	117 x 34	141 x 81	Dolomite	121 x 36	142 x 75	None	4	Sandstone	0
319	118 x 100	153 x 158	Dolomite	88 x 101	None	None	3	Sandstone	0
320	None	None	None	103 x 57	153 x 116	None	4	Sandstone	0
321	None	None	None	82 x 38	100 x 61	None	4	Sandstone	0
322	None	None	None	68 x 57	123 x 80	None	4	Sandstone	0
323	None	None	None	130 x 45	180 x 90	None	4	Sandstone	0
324	None	None	None	62 x 35	86 x 57	None	2	Dolomite Sandstone	0
325	None	None	None	80 x 40	100 x 60	None	3	Sandstone	0
326	None	None	None	64 x 34	86 x 63	None	3	Sandstone	0
327	None	None	None	52 x 30	89 x 55	None	0	None	0
328	None	None	None	77 x 27	105 x 58	None	3	Sandstone	0
329	None	None	None	110 x 56	170 x 97	None	4	Sandstone	0
330	None	None	None	67 x 34	96 x 72	None	3	Sandstone	0
331	192 x 170	215 x 220	Dolomite	115 x 50	135 x 80	None	4	Sandstone	0
334	210 x 185	240 x 270	Dolomite	105 x 30	120 x 60	None	4	Sandstone	0
335	None	None	Dolomite	86 x 47	109 x 56	None	4	Sandstone	0
336	None	None	None	65 x 26	88 x 45	None	3	Sandstone	0
337	None	None	None	130 x 56	160 x 90	None	3	Sandstone	0

cont. table 1: Area A graves summary (Dimensions are in centimeters).

Area A Grave	Circle Dimensions		Circle Stone Materials	Cist Dimensions		Cist Floor Paving	Cap Stones		Rock Pile on Cist
	Number	Inner		Outer	Inner		Outer	#	
338	151 x 160	199 x 152	Sandstone, Dolomite	119 x 46	131 x 68	None	3	Sandstone	0
339	127 x 194	168 x 210	Dolomite	127 x 37	170 x 92	None	3	Sandstone	12
340	None	None	None	115 x 42	140 x 85	None	3	Sandstone	0
341	None	None	None	41 x 63	46 x 70	None	1	Sandstone	0
342	170 x 170	190 x 200	Dolomite, Sandstone	110 x 65	130 x 75	None	2	Sandstone	0
343	None	None	None	139 x 65	165 x 108	None	2	Sandstone	0
344	None	None	None	65 x 23	91 x 52	None	4	Dolomite, Limestone	0
345	None	None	None	100 x 35	110 x 80	None	3	Sandstone	0
346	None	None	None	139 x 50	168 x 93	None	3	Sandstone	0
347	None	None	None	None	None	None	0	None	0
348	None	None	None	123 x 40	160 x 72	None	4	Sandstone	0
349	None	None	None	None	None	None	0	None	0
350	None	None	None	78 x 39	101 x 65	None	2	Sandstone	0
351	None	None	None	115 x 50	165 x 90	None	3	Sandstone	0
352	None	None	None	81 x 54	102 x 77	None	1	Sandstone	0
353	None	None	None	76 x 36	87 x 58	None	3	Sandstone	0
354	None	None	None	71 x 33	68 x 56	None	0	None	
355	None	None	None	68 x 44	None	None	3	Sandstone	0
356	125 x 115	143 x 147	Dolomite	103 x 39	115 x 71	None	3	Sandstone, Granite	0
357	137 x 102	148 x 132	Dolomite	88 x 35	105 x 58	None	3	Sandstone	0
358	133 x 119	164 x 158	Dolomite	91 x 43	102 x 75	None	4	Sandstone	4
359	79 x 60	100 x 74	Dolomite	79 x 52	90 x 73	None	2	Sandstone	0
360	None	None	None	107 x 48	140 x 85	None	3	Sandstone	0
361	100 x 80	135 x 123	Dolomite	73 x 28	98 x 45	None	4	Sandstone, Granite	0
362	112 x 119	143 x 152	Dolomite	120 x 39	137 x 57	None	4	Sandstone	
363	124 x 129	144 x 153	Dolomite, Sandstone	None	None	None	4	Sandstone	0
364	None	None	None	None	None	None	2	Sandstone	0
365	68 x 63	70 x 76	Dolomite	None	None	None	0	None	0
366	None	None	None	130 x 50	150 x 65	None	4	Sandstone, Granite	0
367	None	None	None	95 x 55	115 x 85	None	4	Dolomite, Sandstone	0
368	None	None	None	119 x 51	166 x 83	None	3	Sandstone	0
370	None	None	None	130 x 52	170 x 95	None	4	Dolomite, Sandstone	0
371	108 x 122	140 x 141	Dolomite	119 x 43	NA x 62	None	4	Sandstone	0

tions of rock circles are shared or touch their neighbors. In the areas where space is an issue, semi-circular structures buttress against each other to better utilize space. There are five areas in the current excavations where this type of distribution is most evident—even more so than in the 1997 excavations as can be seen in Squares H-12, I-12, J-

11, I-8, and J-8 (Fig. 2).

The graves in these squares share the same basic construction with little variance. The grave structures are either complete or partial rock circles constructed with dolomite stones. On occasion metamorphic or sandstone rocks would be incorporated into the grave structures. Except for two

graves, 319 and 359, paving stones or other eccentric architecture was lacking in the entire area. Grave 319 was a secondary burial that contained a complete level of paving stones that formed a tidy depressed dolomite circle. Similarly, Grave 359, also a secondary burial containing the remains of an adult, was marked by a very small and apparently un-worked standing stone in the middle of a dolomite pavement. Strangely enough, both burials lacked cists but were instead pit burials.

Other traces of dolomite could also be found within the fill removal. It is likely these were part of the backfill or even structure collapse. The grave capstones were typically made of sandstone or limestone, but may on occasion incorporate metamorphic and granite slabs. Where the grave had not been disturbed, large amounts of mud plaster could be seen surrounding the capstones. Beneath the capstones level, the cist was usually constructed with sandstone or limestone slabs forming the walls of the cist with dolomite stones forming the capstone support stones. Variations in cist construction vary from the cist wall stones to bottom paving to pit burials, although by far the most evident trait is the size and whether it is constructed for an adult or a child—although there is no guarantee between the relationship of size and structure on the type of grave good that may be associated with the burial.

The impetus for selecting the samples in Area A was the work previously conducted during the 1997 season. Three factors were taken into consideration for selecting the excavation areas. First, given that no graves had been excavated in the area to the south-southwest (Squares I-8, J-8, K-8), the squares in this sector of the cemetery were chosen. This section of the cemetery sits on a low inclining slope and contains shallow sediment deposits above the Pleistocene conglomerate that makes up the foundation of cemetery soils. While less energy and resources were spent on excavating the graves, rainfall has caused the sediments in the cist to become hard and compact encasing the human remains. A total of 25 graves were excavated in this area. 13 of the graves were primary burials, 3 were categorized as secondary burials, 4 of the graves were empty, and 5 were unknown because they were not opened or too disturbed to categorize.

Construction in the style of rock circle varied in the southern area. For example in the northern section of the site, the grave circles tend to be small in diameter as opposed to the southern section where they tend to increase in size. This style of a larger stone circle appears to be the intrusive or secondary burials as can be seen in Square J-8 with

graves 317, 341, and 316, 90 and 91. The graves associated with the larger circles appear to have been constructed later than the smaller ones. This may be partially accountable for the many small fragments that were recovered during fill removal from the adjacent graves. The variation seen in the construction of the surface structures posits the question of the ethnic or possibly group identity of the individuals interred in this area of the cemetery.

The limited amount of grave goods recovered from this area fail to disclose much information. Of the 25 sampled graves in this area, apart from the occasional bead, only two graves contained special artifacts. The first was Grave 91. Grave 91 was marked by a large circle structure. Excavations to capstone level indicated the grave might have been looted in antiquity as one of the capstones was missing. At first we were inclined not to excavate this grave, but following the decision to open the grave, a cist filled with compact sediment was observed. Careful excavations revealed a mature adult male in an extended position, head oriented towards the south, with arms folded over his chest (**Fig. 8**). *In situ*, next to his shoulder and cranium, a seal was discovered which is now known to date from the tenth century (**Fig. 37**; see grave and artifact discussions below).

A short distance from this grave, Grave 345 was excavated from capstone level. It too was a small grave, probably of a child, covered with compact fill. Excavation of the fill in the northern sector revealed a cranium, oriented to the north, with a small bowl (**Figs. 10, 33**). Further removal of the compact sediments revealed the interred individual was in fact a small child buried in a semi-flexed position (**Fig. 9**). After the clearing the basal fill, two copper earrings were recovered *in situ* (**Fig. 30**; see grave and artifact descriptions below). To claim these two graves are a representative sample of the prestige and ethnicity affiliated with the population buried in this part of the cemetery would be purely speculative. First of all, the graves do not appear to be contemporary in their surface structures—one is marked, the other not. Second, there appears to be some variance in the construction of the grave cists. The cist in Grave 91 has a rectangular shape while Grave 345 is more oval in shape.

As if things were not confusing enough, adding to this puzzle is Grave 9. This grave is located about 1 meter just to the north between Graves 91 and 345. The grave is the primary burial of an adult male. While there is a circle marking the grave, there is no cist. A hole was dug into the conglomerate and the body laid to rest in an extended position with his head oriented south (**Fig. 3**). There are two



3. Area A, Grave 9 burial.

unusual items entombed with this burial. First, a partial skeleton, perhaps a gazelle, was uncovered from atop his pelvic region. Second, irons fragments — probably from a blade — were recovered close to his cranium (Fig. 36; see also artifact and grave descriptions below). The argument that these are the remains of a great hunter would be purely speculative.

A second factor that went into account for selecting the excavation squares in Area A revolved around Grave 92 excavated during the 1997 season. Grave 92 is found in square J-12 in the northern section of the area. This grave contained the remains of an adult female buried along with a garland of pomegranates, an Egyptian style scarab, and iron anklets and bracelets. The area to the southwest had previously been sampled. In the last couple of years the immediate area to the south of the grave (L.2121) had been looted. A large trench about 4 meters had been dug by looters seeking buried treasures. Similarly, another grave to the southwest had suffered the same fate. In both areas, remains observed on the surface revealed fragments of human bones and the occasional discarded capstone. Fortunately, the looters avoided going beyond this area and into the adjacent areas to the south, where a small mound of paving stones had been laid in a cairn-like structure (Grave 59). Only another small complete structure was identified — Grave 319. Therefore, the decision to excavate square J-11 in its entirety was made. Graves were clustered in this area, but were unmarked. To find as many structures as possible, the entire square was excavated past topsoil to fill. The overall count of graves, reflecting burial of adults and children, uncovered in this square totaled 9. All graves, with the exception of one, were primary individual burials. Perhaps the most interesting of these is Grave 59. Grave 59 contained several

grave goods of a similar nature to those of Grave 92. Recovered from within the cist were 7 pomegranates — 4 in a wooden bowl (Figs. 5, 35; see also artifact and grave descriptions below) — and fragments of leather and textile burial shrouds (Fig. 6). In the immediate vicinity of this grave, several graves belonging to adults, infants and juveniles were also uncovered. None of the other graves contained any type of grave good or grave construction to rival this grave. However, it must be noted no other grave excavated this sector during the 1997 season yielded the quality of grave goods recovered from Grave 92. Within these parameters, two areas in the north sector of the cemetery were probed — the area to the west of Grave 59 (H-12, I-12) and one grave to the east (K-12). The summary grave Figures for this section include 12 primary burials, 3 secondary, 1 empty grave, and 2 unknown due to poor preservation. There are two significant points that need to be addressed that are pertinent to this area. The first regards looting in I-11 and I-12. It serves as a reminder that looting does not only occur among modern groups of the area. As a matter of fact, 19 graves appear to have been looted in antiquity (Table 2). In the north-western section, there are two areas along the southern baulk of I-12 where contemporary looters had dug small trenches and destroyed two graves — 360 and 325. These actions resulted in human bone scatter and fragmented sandstone capstones in the tailings. Unfortunately, these actions have directly affected this area of the cemetery as excavations suggest preservation here is excellent as seen in Graves 363, 356, 357, 338, and 358.

Second, it could be argued the graves in this section of the cemetery may belong to related individuals. For example there are 5 graves in Square J-11 (339, 338, 342, 355, and 350) that are laid out in an east-west axis. Not only are the graves identical in construction of cists, but the positioning of the individuals is similar. These graves, along with the adjacent graves in H-12 can be found clustering together identified by small rock circles on the surface. Excavation of these small groups revealed complete skeletal remains and yielded few graves goods such as leather and textile shrouds. All of these graves, with the exception of 356, were oriented south, although the burial position ranged from extended to semi-flexed.

Unfortunately, due to time constraints and logistics, only one grave to the east of Grave 59 was opened (Grave 371 in square K-12). This area served as the main exit area for fill removal from the northern section of the cemetery thus preventing fill removal till the very end. There was



Table 2: Area A graves looted in antiquity.

361	H-12	Circle with cist	Yes	Primary
362	H-12	Circle with cist	Yes	Unknown
339	H-12/I-12	Circle with cist	Yes	Primary
331	I-10	Circle with cist	Yes	Primary
364	I-12	Cist	Yes	Secondary
316	I-8	Cist	Yes	Primary
317	I-8	Circle without cist	Yes	Secondary
305	I-8/J-8	Circle with cist	Yes	Secondary
351	J-12	Cist	Yes	Secondary
302	J-8	Circle with cist	Yes	Empty
323	J-8	Circle with cist	Yes	Primary
5	J-8	Circle with cist	Yes	Unknown
304	J-8/K-8	Circle/Unknown	Yes	Unknown
318	J-9	Circle with cist	Yes	Primary
366	J-9/J-8	Cist	Yes	Unknown
311	K-10/K-9	Circle with cist	Yes	Secondary
354	K-11	Cist	Yes	Empty
352	K-11	Cist	Yes	Unknown
82	K-8	Circle/Unknown	Yes	Unknown

one small grave identified by a partial rock circle at the surface. However, removal of topsoil revealed a full rock circle. When capstone level was reached, a thick layer of mudplaster was uncovered, indicating the grave could possibly be one of a small child. The latter was confirmed by the removal of the capstones. The cist contained the remains of a small child (Fig. 11). Immediately, a copper bracelet could be seen close the cranium (Fig. 12). Careful removal of fill revealed a complete and well preserved skeleton interred with three copper earrings, a leather shroud, and a textile burial shroud. Furthermore, secondary remains begin to surface below the small skeleton. Careful retrieval of the skeleton and fill yielded a small pendant with round wing-like projections (Fig. 29). This pendant is very similar to the coiled wings on the small gold figurine found during the 2002 excavations at Khirbat an-Nuḥās, the large copper mining site located approximately 10 kilometers to the north.

**Grave Typologies: Area A**

The 102 graves identified in Area A were divided into eight overlapping categories — pit burials associated with capstones, pit burials, circles with cists, circles without cists, cists, secondary burials,

rock circles with unknown burial types, and capstones with unknown burial types — as described below.

*Capstones with Pit Burials*

In one grave uncovered in Area A, grave 355, a set of capstones was laid over a simple pit excavated into the underlying Pleistocene gravels. No other surviving mortuary architecture was observed.

*Pit burials*

A single burial, numbered 349, was found without any associated surviving mortuary architecture. This burial consisted of an adult and a child buried together, apparently in a simple shaft. No grave goods survived in this burial.

*Cists*

With thirty-one identified examples, cist graves are the most common kind of burial in Area A besides secondary burials. They generally consist of a shaft excavated into the Pleistocene gravels, which is then lined with large sandstone and dolerite cobbles and small boulders set on edge. A series of large cobbles is placed atop these stones in order to support a series of capstones, which seal the grave,

and the entirety is often covered with a thick layer of mud plaster. These cists occur in both rectangular and L-shaped varieties. Sometimes these capstones and their supports were not uncovered, but this seems to have been due to preservation bias rather than the original grave construction. Cist graves found in Area A include 308, 316, 320, 321, 322, 324, 325, 326, 327, 328, 329, 330, 335, 337, 340, 343, 344, 345, 346, 347, 438, 350, 351, 352, 353, 354, 360, 366, 368, 370.

#### *Circles with Cists*

Cist graves in Area A were often marked on the surface by a circle of cobbles and small boulders. (See for example **Fig. 7**) Sometimes these circles enclosed the entirety of the excavation originally made to house the dead, but often there was no clear direct relationship between the circle and the specific position of the underlying cist. Twenty-three cist graves with surviving surface grave circles were identified this season, including 5, 59, 80, 84, 90, 91, 305, 306, 307, 318, 323, 336, 342, 356, 361, 362, 363, and 371.

#### *Circles without Cists*

Eight circular stone structures resembling those associated with cists, as described above, were discovered to lack subsurface cists. No true burials were found in association. These included 300, 301, and 302.

#### *Secondary Burials*

Thirty-four secondary burials were uncovered during excavations in Area A. These were generally a tightly packed group of bones and were often quite fragmentary. Often these secondary burials were excavated in the fill of graves, just above the capstones. In some occasions, a disarticulated secondary burial was placed within a cist. In the case of grave 319, the bones were so tightly packed and clearly organized into a rectangular prism, which may have once been in a perishable container.

#### *Rock Circles/Unknown*

Three apparent grave circles were identified in Area A but were not excavated to a level at which it could be determined if they were associated with any existing subsurface mortuary architecture with which they are associated.

#### *Capstones/Unknown*

A single grave was identified but not excavated below capstone level in this season. As a result, it is unknown at this time what mortuary architecture

may exist below capstone level.

### **Some Notable Graves in Area A**

#### *Grave 9*

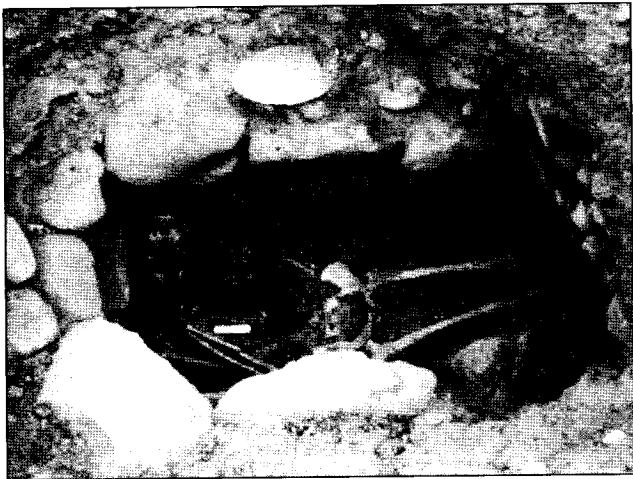
Grave 9 is located in the eastern half of the unit, roughly halfway between the northern and southern limits of the unit, partially overlapping unit J-8. It consists of four stones which appear to be part of what was once a grave circle and which extended to the surface of the present ground surface, as well as several more irregularly placed stones which seem to be related to this feature. Excavation of topsoil and fill yielded 4 large capstones made of sandstone. Although removal of the capstones failed to reveal a burial cist, further excavation of the compact sediments identified a primary burial containing an individual (possibly male) in an extended burial position (**Fig. 3**). A striking feature of this burial consists of ungulate remains—possibly gazelle—located on the pelvic region of the individual. The remarkable bone preservation allowed for removal of the entire skeleton with few mishaps. Following the removal of the burial, the cist fill yielded 3 small pieces of iron that may be blade fragments (**Fig. 36**; see also artifact description below).

#### *Grave 59*

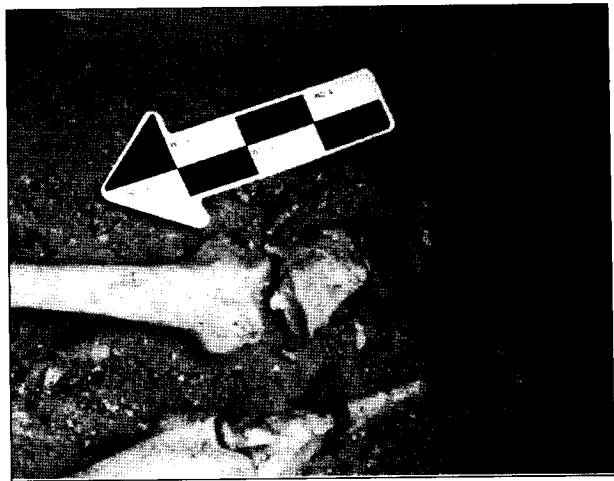
Grave 59 is located in square J-11 in the center-upper left of square. This grave had a complete stone circle of 18 dolomite stones surrounding a cairn-like rock pile of 34 stones. Excavation of top soil and fill revealed 4 granite capstones. Beneath the capstone locus was a rectangular cist, consisting of 15 support stones. The burial consisted of a single individual — a primary adult inhumation of estimated age 24-34. The skeleton was oriented towards the north and lay on its back (**Fig. 4**). Good bone preservation allowed for recovery of the entombed remains. Associated with the skeleton in this grave were a wooden bowl containing four pomegranates (**Figs. 5, 35**; see also artifact description below), leather and textile shrouds (**Fig. 6**), and a collection of four pomegranates placed next to the skeleton.

#### *Grave 91*

Grave 91 is located in the middle South end of square I-8. The grave had a complete rock circle of 20 dolomite stones. Top soil and fill was excavated to reveal 4 sandstone capstones (**Fig. 7**) covering a cist with 10 support stones. This was a primary burial of an individual extended and lying on its back with the head at the south facing up. Arms were crossed over the chest (**Fig. 8**). Bones were in good



4. Area A, Grave 59 burial. Note wooden bowl and pomegranates.



6. Area A, Grave 59 burial close-up. Note shroud entwining legs.



5. Area A, Grave 59 burial close-up. Note wooden bowl and pomegranates.



7. Area A, Grave 91 grave circle and capstones.



8. Area A, Grave 91 burial.

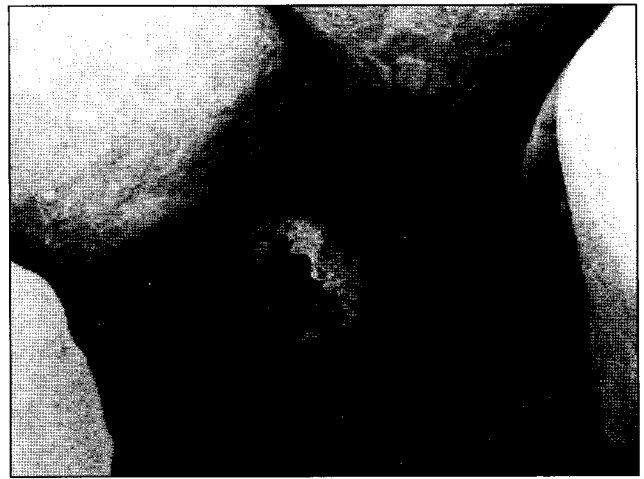
condition with 90% preservation. The individual was an adult, 40-50 years in age and was buried with one bead and a seal (**Fig. 37**; see artifact description below).

*Grave 345*

Grave 345 is located in the South end of square J-8. No surface features were observed, but after the top soil and fill were excavated, three capstones were revealed. Beneath capstone level, there are six cap support stones. The cist is trapezoidal. There is an individual primary burial of an infant 1-3 years old. The burial position is semi-flexed, lying on the right side facing west with the head at the north end (**Fig. 9**). Cultural objects include a complete ceramic bowl (**Figs. 10, 33**) and earrings (**Fig. 30**; see also artifact descriptions below).

*Grave 371*

Grave 371 is located in the South side of square K-12. A partial grave circle is present consisting of 7 dolomite stones. Fill beneath the top soil was excavated to reveal 4 sandstone capstones. Beneath capstone level is a rectangular cist containing two individuals. One is a primary burial, while the other is too fragmentary to determine. The individual on top, the primary burial, is a juvenile, probably



10. Area A, Grave 345 burial close-up. Note ceramic bowl.

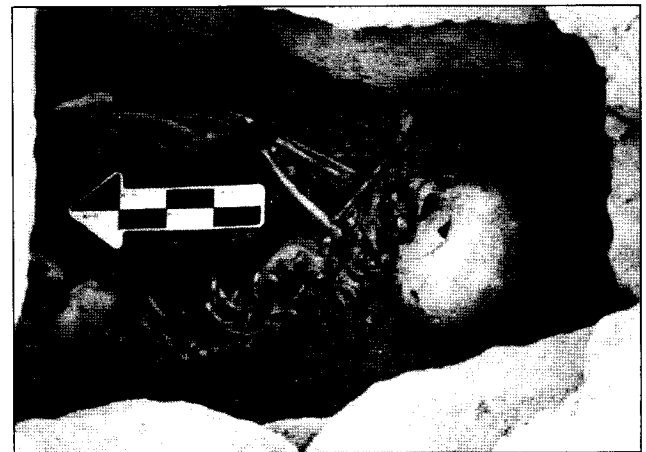
female, 6-8 years of age. The juvenile is semi-flexed, lying on the right side, facing east, with the head to the south. The arms were crossed across the chest with the hands on the opposite shoulders (**Fig. 11**). The bones are in excellent condition and preservation is 100%. Several objects are associated with the juvenile including copper earrings (**Fig. 31**), a shell pendant, textile, leather death shroud, a copper bracelet on the right forearm (**Figs. 12, 32**), and a copper pendant with a double spiral design (**Fig. 29**; see also descriptions of pictured artifacts below). Beneath the juvenile are the fragmented remains of an adult, 20-50+ years. The adult bones are in poor condition with 15% preservation. The burial position is undetermined, but one foot was to the north.

**Excavations in Area B**

Area B was located in the center of the overall excavation area for the 2004 season. Area A was located to the west, and area C to the east. Area B consisted of 15 squares (5 x 5 meters) with the des-



9. Area A, Grave 345 burial.



11. Area A, Grave 371 burial.



12. Area A, Grave 371 burial close-up. Note copper bracelet.

ignations of L, M, N from west to east, and the numbers 12 through 8 describing the squares from north to south. Excavation in area B concentrated on the northern squares (L12, M12, N12, L11, M11, N11), extending south only in the M10, M9, N10 and N9 squares. The 1997 excavations focused on the larger, most visible grave circles in the area; and the squares M11, N11, L10, M10, N10 were mostly excavated. The largest excavation area from 1997 occupied most of squares L10 and M10. The 2004 excavations concentrated on

fuller exposure of the area, excavating grave structures and the areas in between them. The majority of grave structures excavated in the 2004 season were not discernable from the topsoil levels.

Recent looting was evident in Area B in squares M13, M12, N12, N11. These areas appear to have been looted since the 1997 excavation. Scattered human remains littered the surface of these areas. The most obvious example is the looting of a cist between graves 28 and 29, graves, which were excavated in the 1997 season. The cist was entered through the baulks of the excavated grave pits. The cist structure has been dismantled on the north and south limits, but in the center of the cist the capstone(s) remain. This structure was not excavated in 2004. Graves 10, 11, and 47 were identified and numbered in 1997 but do not appear to have been excavated. Grave 11 was the most damaged with exposed cist. Graves 10 and 47 appeared to be disturbed at the upper levels by recent looting, but seem to have been abandoned before reaching lower levels of the grave structures. These two graves were excavated in the 2004 season.

In the 2004 excavation, 58 graves (total includes cist structures and pit burials) were excavated (Table 3). Nine were secondary burials in pits or in cists containing only secondary remains (Table 4). The remaining 49 were cist structures.

Table 3: Area B graves summary (Dimensions are in centimeters).

Area B Grave Number	Circle Dimensions		Circle Stone Materials	Cist Dimensions		Cist Floor Paving		Cap Stones Material
	Inner	Outer		Inner	Outer	#		
10	140 x 140	170 x 150	Dolomite	150 x 40	130 x 75	None	4	Dolomite, Limestone
47	200 x 125	209 x 146	None	130 x 45	150 x 80	None	1	Sandstone
500	124 x 88	150 x 100	None	None	None	None	0	None
501	95 x 83	145 x 116	None	113 x 44	133 x 90	None	3	Sandstone
502	145 x 145	176 x 176	None	110 x 40	115 x 80	None	2	Limestone, Sandstone
503	None	None	None	None	None	None	0	None
504	141 x 194	161 x 209	None	140 x 50	180 x 100	None	4	Sandstone
505	166 x 130	219 x 160	None	110 x 55	145 x 90	None	4	Sandstone
506	106 x 99	136 x 129	None	55 x 35	100 x 60	None	1	Sandstone
507	140 x 140	160 x 160	None	89 x 56	147 x 130	None	4	Sandstone
508	164 x 135	206 x 174	None	125 x 42	142 x 75	None	4	Sandstone
509	None	None	None	None	None	None	0	None
510	55 x 35	75 x 55	None	78 x 35	96 x 53	None	4	Sandstone
511	None	None	None	None	None	None	0	None
512	None	None	None	120 x 55	155 x 90	None	3	Sandstone
513	None	None	None	None	None	None	0	None
514	123 x 115	180 x 184	Dolomite	115 x 60	135 x 100	None	2	Limestone, Sandstone
515	110 x 110	170 x 150	None	75 x 20	125 x 110	None	0	None

Area B Grave	Circle Dimensions		Circle Stone Materials	Cist Dimensions		Cist Floor Paving		Cap Stones
	Number	Inner		Outer	Inner	Outer		
516	70 x 63	103 x 105	None	90 x 40	120 x 80	Present	3	Sandstone
517	None	None	None	120 x 55	165 x 105	None	5	Sandstone
518	None	None	None	109 x 50	135 x 90	None	2	Sandstone
519	None	None	None	110 x 50	140 x 90	Present	1	Limestone
520	None	None	None	130 x 60	155 x 110	None	2	Sandstone
521	62 x 45	94 x 75	None	65 x 25	85 x 55	None	1	Sandstone
522	95 x 40	160 x 120	None	95 x 40	160 x 120	None	4	Sandstone
523	79 x 73	134 x 103	None	110 x 50	130 x 100	None	4	Dolomite, Sandstone
524	None	None	None	120 x 55	145 x 85	Present	4	Dolomite, Sandstone
525	None	None	None	65 x 25	85 x 55	None	3	Limestone, Sandstone
526	None	None	None	90 x 55	145 x 130	None	2	Sandstone
527	None	None	None	50 x 30	95 x 75	None	3	Dolomite, Limestone, Sandstone
528	None	None	None	125 x 60	160 x 95	None	3	Dolomite, Sandstone
529	None	None	None	35 x 25	45 x 45	None	0	None
530	None	None	Dolomite	150 x 60	180 x 95	None	3	Sandstone
531	None	None	None	120 x 50	155 x 110	None	3	Limestone, Sandstone
532	None	None	None	115 x 55	145 x 95	None	4	Limestone, Sandstone
533	None	None	None	95 x 45	130 x 105	None	1	Sandstone
534	None	None	None	85 x 45	90 x 50	None	4	Dolomite, Sandstone
535	None	None	None	80 x 40	140 x 80	None	3	Limestone, Sandstone
536	None	None	None	75 x 35	125 x 90	None	5	Dolomite, Sandstone
537	None	None	None	60 x 45	145 x 105	None	3	Limestone, Sandstone
538	None	None	None	None	None	None	0	None
539	None	None	None	75 x 35	120 x 70	None	1	Sandstone
540	None	None	None	125 x 50	140 x 90	None	4	Sandstone
541	None	None	None	65 x 20	85 x 60	None	2	Dolomite, Limestone
542	None	None	None	125 x 60	155 x 100	None	2	Sandstone, Limestone
543	None	None	None	135 x 40	150 x 85	None	3	Sandstone
544	None	None	None	120 x 50	150 x 100	None	4	Limestone, Sandstone
545	None	None	None	85 x 30	120 x 85	None	1	Sandstone
546	None	None	Dolomite	120 x 45	140 x 90	None	1	Sandstone
547	None	None	None	135 x 38	160 x 60	None	4	Sandstone
548	None	None	None	None	None	None	0	None
549	None	None	None	125 x 50	150 x 85	None	3	Sandstone
550	None	None	None	95 x 65	145 x 125	None	3	Sandstone
551	None	None	None	120 x 45	145 x 85	None	3	Limestone, Sandstone
552	None	None	None	60 x 30	80 x 50	None	1	Sandstone
553	None	None	None	74 x 28	85 x 60	None	1	Dolomite
554	None	None	None	45 x 35	60 x 55	None	0	None
555	None	None	None	30 x 50	35 x 50	Present	2	Sandstone

**Table 4:** Area B secondary burials.

Secondary pit burial(s)	Above	Capstones of grave #
503		512 (disturbed)
509, 511, 513		537 (disturbed)
555 (associated with 527 in cist and 541 primary child)		unexcavated capstones
538		530 (disturbed)
548		549 (primary and secondary in cist, undisturbed)

Nineteen of these cists contained primary burials, and many contained additional individual(s) in secondary interment. The majority of cists contained highly disturbed human remains, consisting of up to 5 individuals. Analysis of the human remains associated with these 58 graves determined the remains were of 93 individuals, male and female, age ranging from neonate to older adult. These Figures include primarily the remains found in pit burials and cist structures, but due to the extent of looting, they also include remains found directly associated with the grave structures (including fill above disturbed capstones and cist structures). This number of individuals is larger than what would be expected for the number of graves excavated. The high amount of looting (in antiquity) in the area contributes to such a high number of individuals. One individual's remains may have been separated throughout the area, or be partially present in a cist structure as well as outside of it, leading to an inflated Figure for minimum number of individuals.

Looting and disturbance were very common in the area and appear to have taken place in antiquity (see above for recent looting activity). Forty of the 58 graves were clearly looted or disturbed, at times systematically. In many cases, 3 of 4 capstones appeared undisturbed, but in the place of the missing capstone were the debris of grave circles, paving stones, and often the displaced capstone. In other cases, the cists were opened at one end (often the north), where much of the remains, mudplaster debris, and beads were concentrated, as if the looter had pulled the contents of the grave to the open end.

Reuse was also evident in the area. Grave 544 contained a primary burial in a disturbed cist (southern stones missing), but the burial was oriented contrary to the cist orientation (body was head north, though cist was constructed with narrow south end). In six cases (Graves 507, 517, 522, 523, 539, 549), cists contained primary burials with secondary interments. In grave 549, the secondary remains were still partially articulated in the legs and feet, showing that the individual had originally been in primary interment in that cist but

was displaced to the north end of the cist to make room for a new primary burial. In other cases, the secondary remains were placed on top of the primary (for example, Grave 517) or were clearly below (Grave 523).

**Grave Typologies: Area B**

Area B is characterized by three main grave types: circles with cists, cists (lacking structures above or with remains of disturbed structures), and secondary burials without cists. Other features in the excavated area were empty, presumably looted, cists (2 examples) and rock features, such as stone platforms.

*Circles with Cists*

The most obvious/standard type of grave structure for WF 40 is marked by a stone circle (vertical dolomite) at the surface level with a stone lined cist at a lower level.

Circles did not always reflect the exact location of the cist below, and some needed to be completely removed in order to locate and excavate the cist. Most often, the circle was partially disturbed in order to excavate below. In some cases, imprecise markers may have been a result of later remarking (after disturbance, presumably from looting), perhaps with incomplete knowledge of the precise location of the cist.

Grave circles were of two types in Area B:

- a) The most obvious grave circle was made up of vertical dolomite stones partially buried in the soil that marked the grave from the surface. Complete examples of this type were not present in area B, though a few were nearly complete (for example: 10, 510). In many cases, however, the grave locations appeared to be remarked with flat stones, often incorporating the partial dolomite circle.
- b) An additional type of grave circle was found constructed of mixed stones lying flat around the grave location and were often discovered at lower levels of the excavation. These circles were found both at graves that did (examples: 504, 505, 508, 527) and did not have a surface,

dolomite circle (examples: 47, 517, 526). It is unclear at this time if those without the upper circle did originally have circles of both types or if the two types of circles represent different periods of grave construction. There were no examples of circles that were not marking a cist below.

### *Grave Cists*

Cists were of a fairly uniform type and construction within area B, with variation coming primarily in the size of cist, and occasional slight variation in orientation.

The general shape of the cists was rectilinear, tapered at the southern end where the head was usually located in the undisturbed primary burials. Most cists were aligned south-north, narrowing to the south. A number of cists were aligned along a more southeast (at the narrower end) to northwest orientation. The general orientation (south-north) held true for secondary cist burials as well, though the shape in the smaller cists (child's primary and adult secondary) was a truer rectangle.

Cists followed a standard pattern of construction in area B. The highest level of the cist was constructed of large, often sandstone but occasionally dolomite and rarely limestone, capstones that closed the cist structure. A typical cist had 4 to 5 capstones lying perpendicular to the cist structure. The capstones rested most often on smaller cap support stones (made up of dolomite, sandstone, and sometimes limestone) that ran along (sometimes also just outside) the top of the stone slabs that made up the lining of the cist. Cap support stones were often laid in one course, but in a number of cases were two courses in depth. Between the capstones were cobbles to fill in the margin and level the surface, which was then covered in a mud plaster/*pisé* substance. Most examples in area B were lacking the mud plaster covering or remnants of the covering were detected just outside the limits of the capstones due to disturbance of the cist.

The cist structure was lined with large sandstone and/or dolomite side slabs (there were a few examples of occasional limestone slabs making up part of a cist lining). Most often the southern limit was the most narrow, consisting of one slab; in the north, cists had one slab or two dolomite or smaller sandstone slabs, and along the east and west sides, cists were made up of approx. 3 slabs, 2 if the slabs were especially large.

At the lowest level, the cist bottom was a coarse, sandy soil often dense with small rocks/large pebbles. There was only one case, grave 524,

of a paved cist floor; other examples of paved cists have been found in WF 40. In grave 524, the paving consisted of ca. 13 stones lying flat and making up a level surface in the bottom of the cist.

Cists contained both primary and secondary burials. In the case of primary burials, typically the individual was oriented with head to the south facing west, lying on left side, legs flexed. In these cases, cists varied according to whether the burial was an adult or a child. It was also evident that in a number of cases, the primary burial in the cist was not the original burial (for examples, Figure Grave 544 — **Fig. 14** — in which the burial is oriented with its head to the north in a standard cist, or 549, in which a previous burial was still partially articulated in the northern portion of cist). This type of reuse was common in area B, and many primary burials shared a cist with secondary remains of other individual(s). There were also cases of small cists (what would appear to be child burials based on cist size) containing adult remains in secondary interment. It is not clear if these cists were originally constructed for this purpose.

Most typical for area B were disturbed cists. Often the disturbance was apparent from the condition or absence of capstones above the cists. In many cases, one capstone (often of 4) was out of place with dolomite paving and circle stones in place of the missing capstone. In other cases, the capstones were removed from one end of the cist (2 of 4 capstones missing), and the contents of the cist were concentrated in the region of the disturbance, as if the contents had been pulled to the open end for looting. In all of these cases there were also displaced dolomite stones and/or capstones inside the cist fill mixed with the human remains. The fill inside the cist was often solidified around the human remains, presumably from the consolidation of the mud plaster capstone covering that had been introduced into the cist through disturbance of the capstones.

### *Empty Cists*

In two cases, cists were found to be empty. Grave 553, a small, partially preserved dolomite cist, was close to the surface and partially exposed. It was cleaned for recording, yielding no finds. In the case of Grave 516, the capstones appeared to be in place, though an "extra" capstone was situated directly above the northernmost capstone; however upon excavation of the cist fill, there were virtually no finds (human remains or artifacts). This grave was also unique in that it was paved (approx. 3/4 of the cist) with a large rectangular shale paving stone. The paving stone was removed



to continue excavation, but a probe below also resulted in no finds. Some wood/organic samples were collected during the removal of the cist side slabs.

*Secondary Pit Burials (above capstones)*

The excavated squares in area B were dense with human remains outside of cist structures. These remains were recorded and collected as separate burials when a concentration was encountered that did not appear to be the result of looting activity or other disturbance to the cemetery, though this distinction was difficult to make with precision/certainty, due to the poor preservation and condition of much of the remains.

Seven secondary pit burials were recorded and collected. In each case, the remains were placed on top of the capstones to a cist structure and did not appear to have any other mortuary structure. In the case of associated burials 509, 511, and 513, there were dolomite stones at the edge of the remains but without a clear function, and in the case of 555, the pit bordered the cist structure of Grave 541 and appeared to use 555 as a limit.

These burials sat above five larger cist structures. One was not excavated (see **Table 4**). Of the four that were, three were clearly disturbed. Only Grave 549 (below pit burial 548) contained an articulated primary burial, though even in this case, the cist had been reused containing multiple individuals in secondary interment with the primary burial.

*Platforms*

Two large rock features were recorded for area B.

Locus 2251 appeared to be a platform. It was located in the center of square M10 and was constructed primarily of dolomite stones (approximately 30-35 stones), extending approx. 2m (east-west) by 1.5m (north-south) (see site photo 25). The precise function of the platform is not presently clear; however, cists surround the platform's location, and it is likely that an additional grave is located below. The feature was removed and adjacent graves were excavated (510, 515, 517).

Locus 2252 was recorded as a rock feature. It was ran north-south, with a slight orientation to the northeast-southwest. It was made up of approx. 30 stones, mostly dolomite (photo 26). The feature ran about 3 to 3.5m in length with a width of 1 to 0.5m. Portions of the rock line ran adjacent to grave circles, but other than this association, the purpose of the feature is unclear. The feature was removed to excavate the graves below (510, 514, 515).

*Rock Piles above Capstones*

The majority of graves in area B were disturbed, presumably through looting. Forty of the 58 excavated graves (total includes secondary pit burials) were clearly disturbed. More than a dozen of the disturbed graves were found with rocks piled on top of the cist structures (**Table 5**), which usually had at least one capstone still in place. The piles above the capstones/cists appeared to be the debris or collapse of dolomite circle stones and paving stones. On occasion there were also displaced capstones in the rock piles. These piles appeared to be the debris of each grave's upper structures, though

**Table 5:** Area B rock piles.

<b>Grave number</b>	<b>Rock pile description</b>
518	approx. 5 dolomite
520	approx. 6 dolomite and disturbed capstone
526	approx. 4 dolomite
530	many dolomite in north
531	approx. 10 dolomite
533	approx. 10 dolomite
534	mixed dolomite and disturbed capstones
535	many dolomite
543	approx. 5 dolomite and disturbed capstone(s)
544	approx. 10 dolomite plus others
545	approx. 8 dolomite
550	many dolomite and sandstone
551	approx. 8 dolomite

they may have also contained debris from other structures.

### Some Notable Graves in Area B

#### Grave 517

Grave 517 did not have surface monuments but had a lower ring around the cist and capstones. The ring is made up of medium sized dolomite and sandstones lying flat. The first element of 517 was the capstone locus made up of five sandstone capstones with cobbles in the seams and sealed over with mudplaster. The cist contained primary and secondary burials. The primary burial (517A) was fully articulated, flexed young to middle adult male, head oriented south, facing west with arms crossed over body (Fig. 13). The cist also contained the remains from a secondary burial (517B) of a young adult female. One bead was collected from the burial. Cist structure was constructed of dolomite and sandstone side slabs with sandstone and dolomite cap support stones in approximately 2 courses.

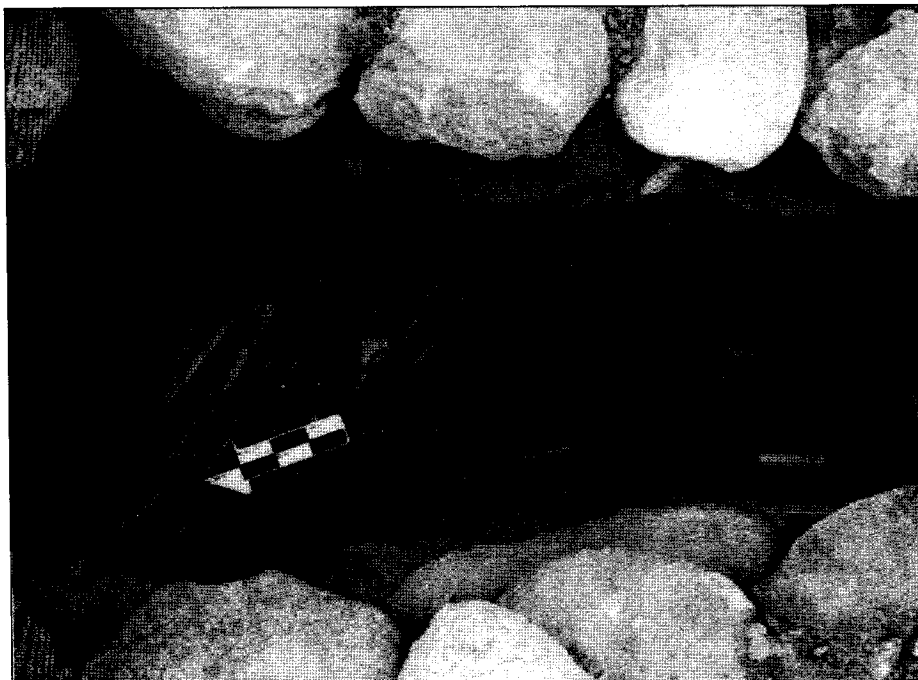
#### Grave 544

Grave 544 was made up of dolomite and capstone debris/rock pile on the surface, which with its location in line with graves 504 and 707, suggested a grave site. One very large dolomite stone is in line with the northernmost capstone and may be a marker or a standing stone no longer in place. The rock pile continued down to the capstone level. Capstones were lined with mudplaster and cobbles. The cist fill began ca. 10cm below the bot-

tom of the capstones. Cist structure is missing its southernmost stone, but otherwise resembles those throughout the site, tapering towards the southern end. Cist constructed of sandstone and dolomite side slabs and cap supports. The primary burial was detected first in the north with the exposure of a cranium, which would be expected in the south. The individual was flexed, oriented head north facing east (Fig. 14). The burial contained ca. 50 beads and shells found around the neck/base of the skull, along with organic materials from the same area, including wood, charcoal, and material taken from sediment around the mandible after extracting the skull. Darker sediment below the individual may be evidence of a shroud. A complete juglet rested just below the right elbow (Figs. 14, 15, 34; see also artifact description below).

### Excavations in Area C

The wide variety of grave types in Area C is quite similar in most respects to Areas B and A, with their secondary pit burials, stone circle structures without cists, stone circle structures with cists, but it also contains a variety of more complex architectural features including double stone circles (see for example Fig. 17), a rectilinear structure (Fig. 16; see Grave 703 grave description below), and a tumulus. Forty-two graves were defined in total in Area C in this season (Table 6). The area is dominated by large stone circles and large mortuary structures with more complex architecture. The majority of these structures have been disturbed, probably in antiquity, but it appears in



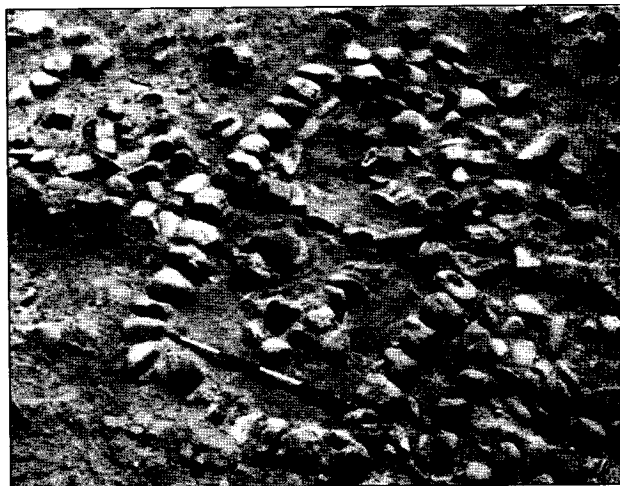
13. Area B, Grave 517 burial.



14. Area B, Grave 544 burial. Note juglet.



15. Area B, Grave 544 burial close-up. Note juglet.



16. Area C, Grave 703, rectangular burial structure.

Table 6: Area C graves summary (Dimensions are in centimeters).

Area C Grave Number	Circle Diameter		Circle Stone Materials	Cist Dimensions		Cist Floor Paving	Cap Stones	
	Inner	Outer		Inner	Outer		#	Material
700	None	None	None	None	None	None	0	N/A
701	None	351 x 267	Dolomite	109 x 47	125 x 84	Present	4	Dolomite, Limestone, Sandstone
702	44 x 36	57 x 46	Dolomite	None	None	None	2	Limestone
703	133 x 129	153 x 161	Dolomite	None	None	None	3	Limestone
704	80 x 53	92 x 79	Dolomite	105 x 61	113 x 84	None	3	Limestone
705	140 x 127	169 x 150	Dolomite	85 x 48	120 x 92	None	2	Limestone
706	195 x 180	173 x 135	Dolomite	132 x 52	156 x 88	None	4	Limestone, Sandstone
707	123 x 123	77 x 83	Dolomite	90 x 62	150 x 135	None	5	Limestone
708	39 x 43	32 x 35	Dolomite	111 x 37	143 x 74	None	3	Limestone
709	54 x 52	34 x 38	None	None	None	None	-	None
710	277 x 201	206 x 101	Assorted boulders	206 x 101	277 x 201	None	0	None
711	None	None	None	67 x 33	87 x 50	Present	2	Limestone
712	226 x 237	204 x 200	Dolomite	105 x 46	132 x 100	None	0	None
713	187 x 184	176 x 146	Dolomite	140 x 43	142 x 123	None	4	Limestone
714	230 x 225	210 x 198	Dolomite	125 x 56	154 x 85	None	5	Limestone
715	172 x 181	158 x 167	Dolomite	121 x 41	153 x 102	None	2	Limestone, Sandstone
716	85 x 89	75 x 69	Dolomite	None	None	None	2	Limestone
717	106 x 107	90 x 90	Dolomite	None	None	None	2	Limestone
718	122 x 126	108 x 111	Dolomite	97 x 66	107 x 80	None	4	Limestone
719	None	None	None	132 x 48	158 x 80	None	3	Limestone
720	135 x 160	125 x 160	Dolomite	97 x 38	134 x 95	None	3	Dolomite Limestone
721	119 x 114	101 x 102	Dolomite	None	None	Present	3	Limestone
722	147 x 106	125 x 87	Dolomite	112 x 44	112 x 82	None	3	Limestone
723	None	None	None	59 x 26	74 x 44	None	0	None
724	171 x 159	155 x 138	Dolomite	130 x 35	145 x 74	None	3	Limestone, Sandstone
725	None	None	None	75 x 28	80 x 53	None	2	Limestone
726	130 x 92	96 x 71	Dolomite	95 x 50	123 x 87	None	3	Dolomite, Limestone
727	None	None	None	None	None	None	0	None
728	None	None	None	115 x 31	124 x 74	None	3	Limestone
729	None	None	None	None	None	None	0	None
730	128 x 102	108 x 67	Dolomite	96 x 48	108 x 105	None	3	Limestone
731	None	None	None	68 x 38	107 x 68	None	3	Limestone
732	120 x 100	110 x 95	Dolomite	95 x 46	119 x 86	None	3	Limestone
733	111 x 113	103 x 102	Dolomite	None	None	None	2	Limestone
734	112 x 97	100 x 91	Dolomite	126 x 60	150 x 103	None	2	Limestone
735	115 x 100	95 x 84	Dolomite	None	None	None	2	Limestone
736	203 x 208	159 x 171	Dolomite	124 x 51	130 x 92	None	3	Limestone
737	110 x 110	100 x 97	Dolomite	74 x 38	84 x 74	Present	2	Sandstone
738	83 x ?	69 x ?	Dolomite	None	None	None	1	Limestone
739	122 x 112	95 x 77	Dolomite	None	None	None	4	Limestone
740	51 x ?	43 x ?	Dolomite	69 x 35	78 x 51	None	2	Limestone
741	None	None	None	None	None	None	2	Limestone



17. Area C, Grave 703, double burial circle.

many cases as if they were re-sanctified. For example, Grave 712 was marked on the surface by a large double grave circle (Fig. 23; see also grave description below). The inner circle, which was almost directly over the cist, had fully intact upper pavement within it. The fill underneath the pavement was void of artifacts and rubble save for a single standing stone with anthropomorphic features that was lying with its face up (Fig. 38; see artifact description below). The cist was found underneath this and was not covered with capstones. There was almost no skeletal material within the cist. It seems as if the grave was probably disturbed at one point and then re-sanctified in some manner reflected in the archaeological record by reconstructing violated architecture or constructing new burial architecture. Most of the larger and more complex mortuary features appear to have been disturbed and then put back together in some way. Given the absence of significant finds in all but two graves, it is possible that even some of the large graves that still have intact skeletons were robbed in antiquity and re-sanctified later. There are smaller graves throughout the area, too, but these seem to be mostly of juveniles and are less likely to be disturbed. Given the pattern of large and complex mortuary monuments as well as the propensity for disturbance of these large graves, it can be suggested that this was an elite area of the cemetery. Although the graves in question are from the Iron Age, the importance of this area of the cemetery may be older than that. An incredibly large stone circle and associated cist, constructed of very large boulders, was found in the area. A tabular scraper found in the cist dates the grave to the Early Bronze Age. The monumental nature of the grave helps to support the idea that this area of the cemetery may be where the elite were interred,

surrounding this focal point of unknown meaning.

## Grave Typologies: Area C

### *Pit Burial*

Pit burials are burials with no associated mortuary architecture. In Area C only secondary burials were found in this sort of burial and they tended to be a tightly bunched collection of bones, primarily long bones, and are no more than 30 x 15cm in size. One such burial, Grave 700, was found lying on four paving stones. Other burials that represent this type are Graves 727 and 729.

### *Grave Circle with Cist*

These are the most prevalent type of mortuary structure in Area C. (See for example Fig. 19) A circle of stones, usually of dolomite, mark the graves on the surface. The grave circles range in diameter from 50cm to 230cm. The larger ones completely encircle the area of the grave cist below while the smaller ones only mark the location of the cist, with the cist itself extending beyond the area of the grave circle. An upper pavement of small stones, usually limestone and dolomite, is often found at least partially preserved within the grave circles. These layers of pavement are very close to the top of the grave circle stones and were most likely at the surface when the graves were constructed. Under the pavement is a layer of fill ranging in depth from 20cm to 90cm. In undisturbed graves this fill is relatively loose and although containing a moderate amount of gravel, does not in most cases contain rubble. In disturbed graves a very high amount of rubble is found in the fill above the capstones. The capstones are generally about 40 x 20 x 10cm in size and are usually made of limestone although sandstone and dolomite were used as well. There are generally three to four stones that are laid with their length running from east to west. Intact graves have a thick mud plaster and small chinking stones over the capstones that sealed them. Disturbed graves usually have only one or two capstones removed with the rest remaining *in situ*. The capstones are resting on cap support stones, which are small stones (ca. 10cm in diameter), generally dolomite, but also limestone and sandstone that are resting on top of the cist side slabs. In some cases (Grave 715 as an example) two or three layers of cap support stones are present. The cist is usually trapezoidal in shape with the narrower end at the south. In one example, Grave 718, the cist was L-shaped with the cist bending at a 90 degree angle to the west to accommodate the legs of the individual. Three graves had ovular cists: Graves 715, 732, and 736. The av-

erage size of a cist is 130 x 50 x 50cm. Most often the side slabs are made of large limestone and dolomite stones although sandstone and granite were sometimes used as well. The orientation of the remains within undisturbed cists tends to be a flexed burial with the skull in the southern end and facing west. In two cases (Graves 706, 714) secondary burials that may have originally been interred in the cist were found pushed to the northern end to make room for the primary burial. There is one example of a secondary burial interred by itself in one of these types of cists, Grave 732). In this case the long bones are stacked in the southern end and the skull is located in the northern end. The graves that have been disturbed are usually a jumble of bone that is mixed within a hard-packed fill. The bottom of most of the graves is virgin soil underneath the level of the side slabs and the burial, but one exception was Grave 720 in which there was a pavement in the cist similar to the pavement found at the top of the mortuary structures. One notable and somewhat different example of this type of mortuary structure is Grave 710, which is most likely an Early Bronze Age grave. In this case there was a very large (277cm in diameter) stone circle made of very large boulders and a cist in the middle, again made of very large boulders, with no capstones. Pavement was found under the burials within the structure. Examples of this type of mortuary structure are Graves 720 and 736.

#### *Grave Circles without Cists*

Five examples of grave circles without cists were excavated in Area C. These grave circles tended to be small ranging in size from 85cm to 110cm in diameter. Three of the examples, Graves 716, 717, and 733 had intact pavement with non-anthropomorphic standing stones in the middle of them. Capstones much like those seen in grave circles with cists are present under similar fill, but there is no cist. Rather the capstones are resting on sediment and the bodies are buried directly under them. There appears to be no distinction between the fill of the area excavated for the body and the surrounding fill. Examples of this type of mortuary structure are Graves 713, 716, 717, 721, and 733.

#### *Cists only*

Six examples of graves that consisted only of cists were found in Area C. Graves 719, 725, 728, and 731 were all discovered as capstones over grave cists. The capstones and cists are similar to those found in grave circles with cists and were probably originally associated with grave circles. Two very similar small (70 x 30 x 40cm) cists,

Graves 711 and 723, were found. These cists were made of small limestone side slabs. Grave 711 had small capstones, but Grave 723 was found without capstones. Very little human remains were found in either cist. Examples of this type of mortuary structure are Graves 711, 719, 725, 723, 728, and 731.

#### *Double Grave Circles*

Four examples of mortuary structures with double rock circles were found in Area C. These consist of an inner circle — like those described above under the category of “grave circles with cist” — which is surrounded by an outer circle (see for example **Fig. 17**). The inner cist is over the cist. In Grave 708 there was pavement between the inner and outer circles. In Graves 708 and 736 the stones of the outer circle are at a lower level than those of the inner circle. Also in Grave 703 there is a rectilinear stone structure built on top of the outer circle that extends to the east of the grave. Examples of this type of mortuary structure are Graves 703, 708, 712, and 736.

#### **Some Notable Graves in Area C**

##### *Grave 703*

Grave 703 is a rectilinear structure (**Fig. 16**) with an associated grave circle (**Fig. 17**) in its eastern half. The structure is approximately 4 x 2 meters and is made of a single layer of assorted cobbles. The grave in the eastern half of the structure has a complete grave circle made of dolomite cobbles. Another stone circle circumscribes the smaller one. This stone circle is made of large dolomite cobbles and is at a slightly lower level, running under the walls of the installation. There is evidence of possible pavement between the two stone circles in the western part. Within the smaller stone circle there was intact pavement across approximately 1/3 of the area. Underneath the level of the pavement, there was a large amount of rubble underneath where the pavement was missing. This includes a dolomite standing stone with anthropomorphic features (**Figs. 18, 40**; see artifact description below). There were two limestone capstones, present in the north and south balks respectively. The middle capstone was missing. The grave cist was rectilinear with limestone cist support slabs and dolomite and limestone cap support stones. Human remains were scattered throughout the fill of the grave. Those that were collected were aged as a juvenile/adolescent. Pottery, one bead, and marine shell were found associated with the grave.

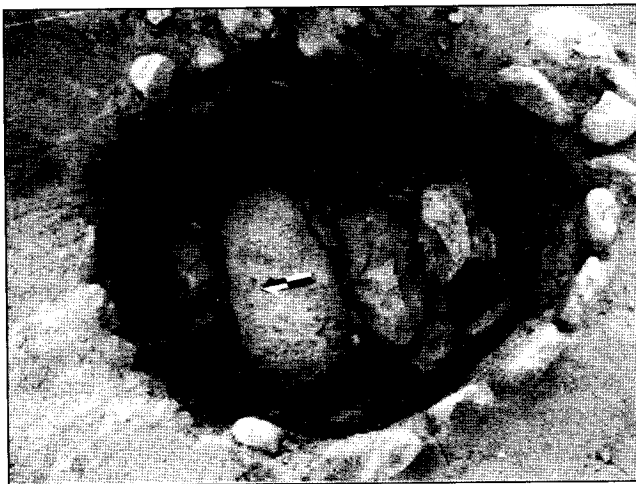
##### *Grave 706*

Grave 706 was marked by a partial grave circle

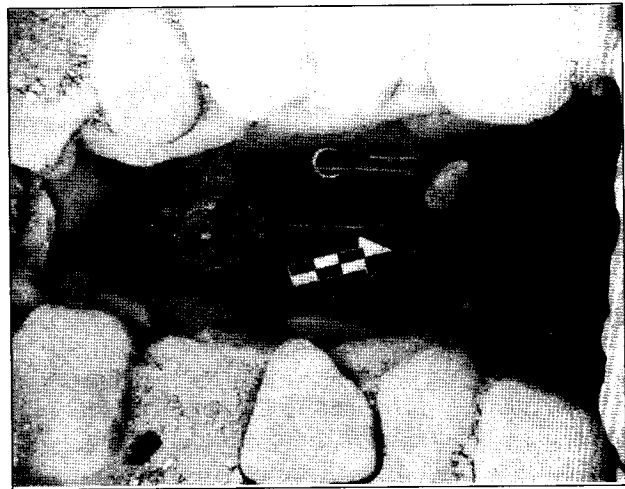


18. Area C, Grave 703, anthropomorphic standing stone (with nose) in the rubble fill (near scale).

of dolomite cobbles. No pavement was visible in the upper layer. The fill was a uniform sandy silt with gravel and no cobbles. Four capstones (three limestone, one sandstone; **Fig. 19**) were found *in situ* with a thick layer of mud plaster covering them. The grave cist is trapezoidal with the narrowest part in the south. The cist side slabs are all dolomite, although in the east they are smaller and there is mud plaster between the stones. Resting on the cist side slabs are two layers of dolomite cap stones. The cist was undisturbed with two burials, a primary and a secondary. The primary burial (**Fig. 20**) was in a flexed position, lying on its left side with its head oriented to the north. Human remains from the primary burial were sexed as female and aged at 18. A lambis shell bracelet was found around the wrist of the individual. There was also a mother-of-pearl shell found to the west of the body. A bone pendant and several beads, possibly of malachite, were found in the region of



19. Area C, Grave 706 capstones.



20. Area C, Grave 706 burial. Note lambis shell and bracelet of the same material.

the neck, and a large number of small beads were found around the pelvic region. The secondary burial was placed at the north of the cist at the feet of the primary burial. It was sexed as female and aged at 36. Several beads were found in the northern part of the grave and are probably associated with this burial rather than with the primary one. There was no pavement underneath the burials.

#### Grave 710

This grave was marked by a very large (277 centimeters in maximum extent) stone circle made of boulders. A rectilinear cist is inside the circle and is also made of large boulders. The entire architectural feature was covered with a rubble pile made up of a variety of different cobble stones (**Fig. 21**). The cist was at the same level as the stone circle. Within the cist was a large amount of human remains (**Fig. 22**). Four skulls were located at the south end of the cist. One of the skulls was



21. Area C, Grave 710 rubble pile. Note the very large stones which make up part of the cist.

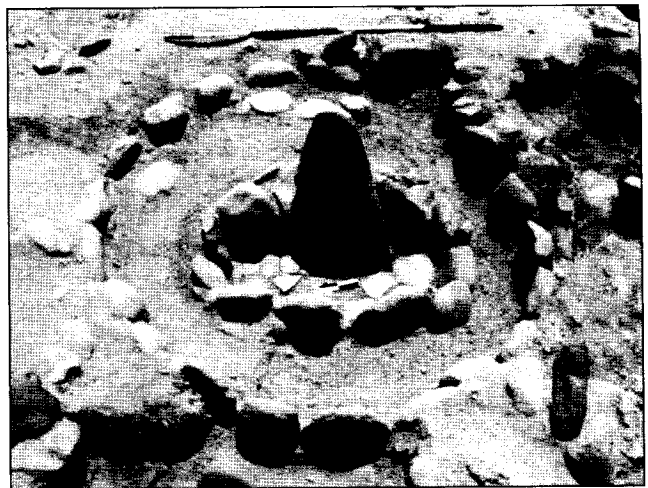


22. Area C, Grave 710 burial.

associated with vertebrae and an os coxae. Most of the long bones were located in the middle and northern parts of the cist, although they were generally not articulated. This suggests a secondary burial for all individuals. The four individuals in the cist were an adult male, an adult female, an adult of undetermined sex, and a sub-adult of undetermined sex. A large number of beads as well as an Early Bronze Age tabular scraper were found within the cist. The tabular scraper was found near one of the skulls. The human remains were placed directly onto pavement made of relatively large stones. This pavement was sectioned and removed in the south. Approximately 20cm of sterile soil was under the pavement before a large boulder, similar to the ones used in the construction of the grave circle and cist, was found. Beads and pottery were associated with the grave along with the tabular scraper.

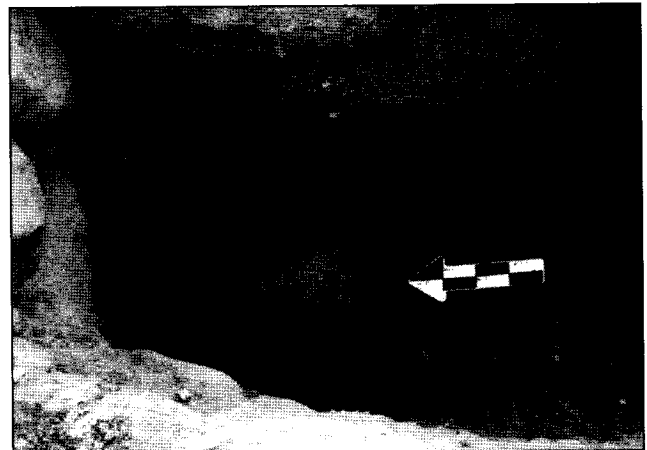
#### Grave 712

Grave 712 was marked by two concentric stone circles made of dolomite cobbles. A shallow robber's trench was in the middle of the grave feature, but it did not reach the pavement of the inner circle. The outer circle is quite large (294 centimeters in maximum extent). The inner circle is more oval in shape and lies directly over the cist. In the east of the circle is a large standing stone with shoulders but with no other anthropomorphic features, placed upside down (Fig. 23). One of the rock circle stones in the west has a number of straight lines incised onto it. The inner circle was covered with paving stones. There was a small amount of pavement between in the big stone circle and the little stone circle preserved in the northeastern part. In the fill underneath the small stone circle was a small standing stone with an-



23. Area C, Grave 712 stone circles, pavement, and standing stone.

thropomorphic features placed lying face up with the head oriented to the north (Figs. 24, 38; see also artifact description below). There were no capstones over the cist. The cist was made of dolomite cist side slabs with two layers of dolomite cap support stones (Fig. 25). There was very little skeletal



24. Area C, Grave 712 standing stone beneath inner circle.



25. Area C, Grave 712 outer circle and cist.



material in the cist. What was there was identified as a young/middle adult, age 30-40. It appears as if the grave was probably disturbed and then later re-sanctified. Pottery was the only special find associated with the grave.

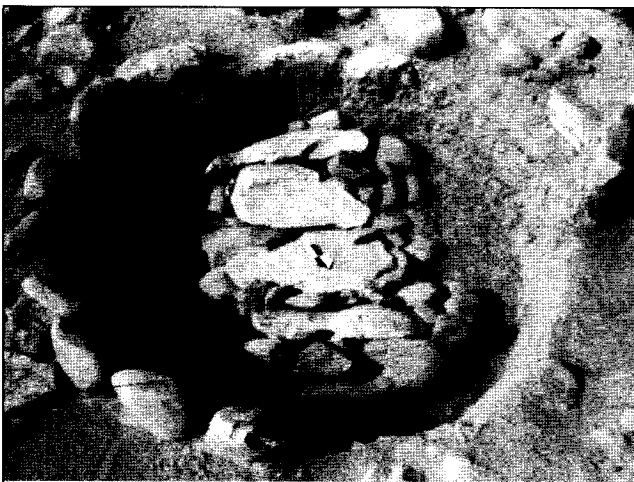
#### Grave 714

Grave 714 was marked by a small number of dolomite cobbles forming the northeast part of a large grave circle. No rubble was found in the fill above the capstones. Five limestone capstones (Fig. 26) were found *in situ* with chinking stones and a large mound of mud plaster sealing them. The grave cist was trapezoidal with the narrowest part in the southern end. The cist side slabs were made of dolomite, and there are two layers of dolomite cap support stones. A primary and a secondary burial were found within the cist (Fig. 27). The primary burial was an adult male, age estimated at 42. He was placed in a flexed position on his left side with his head oriented to the south. A number of pathologies were found on the bone including trauma to the ribs and vertebrae as well as severe osteoporosis of the vertebrae. The secondary burial was placed in the northern part of the cist at the feet of the primary burial. One of the feet of the secondary burial was underneath the feet of the primary burial in the same position. It is likely that the secondary burial was initially interred in the cist as a primary burial and then pushed to the north in order to make room for a new burial. Two beads, a pendant, and wood were found associated with the burial. The pendant was found near the neck of the primary burial (Fig. 28).

#### Special Finds from the 2004 Season

##### A Double Spiral Copper Pendant

A copper pendant (L. 9243, B. 8660, EDM



26. Area C, Grave 714 capstones.

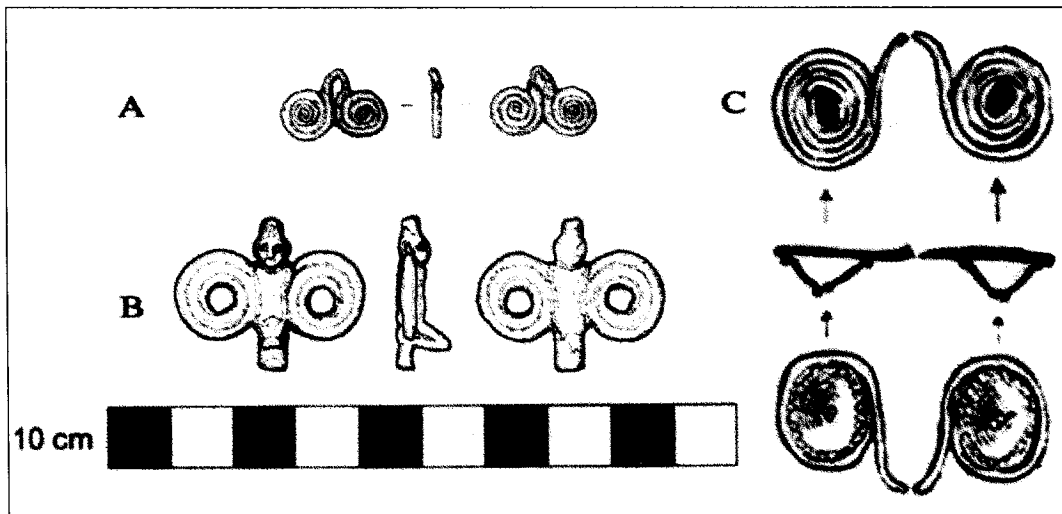


27. Area C, Grave 714 burials.



28. Area C, Grave 714 burial close-up. Note triangular pendant with small hole.

89220; Fig. 29) made of a simple copper wire twisted into double-spiral was discovered in Grave 371 of Area A (Fig. 29A; see grave discussion above). The pendant consists of two tightly coiled flat spirals of round-section copper continuously joined by a central loop. This pendant is similar to the gold double spiral pendant found at *Ṭuwaylān* (Ogden 1995: 73-74, 287), but with that example the spiral served as the base for a more elaborate



29. A) The double spiral copper pendant from Area A, Grave 371; B) double spiral figurine from Khirbat an-Nuḥās, C) gold double spiral pendant from Tuwaylān (Bennett and Bienkowski 1995: 277).

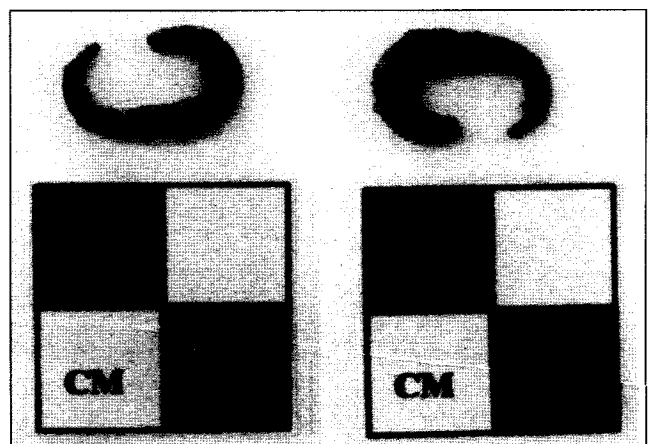
granulated domed covering. If any covering existed on the WFD 40 pendant, it perished or its remains passed through the 1/8 screen. Ogden has set this spiral form firmly in the tradition of the Late Bronze — Iron Age Near East, and in a Palestinian context at Tall al-‘Ujūl in so-called Governor’s Tomb dating to the Late Bronze Age with internments up to the time of Ramesses II (ibid. 74). The parallel comes from a simple copper alloy wire double-spiral pendant which is quite similar to the Wādī Fīdān 40 sample (Petrie 1933: pl. IX no. 28 — **Fig. 29B**). Significantly for the Iron Age settlement of the lowlands of Edom, a bronze pendant consisting of a figurine with double spiral wings was found at Khirbat an-Nuḥās (**Fig. 29C**) in the Iron Age II fill of stratum A1 in one of the fortress guard rooms of the four chamber gate. The double spiral pendant from the WFD 40 cemetery is nothing as spectacular as the Tuwaylān gold pendant and associated assemblage. However, in terms of dating the gold hoard, Ogden says “There seems little doubt that the hoard of gold jewellery from Tuwaylān pre-dates the majority of the other finds from the site and either presents evidence for earlier settlement or is a hoard, or separate finds, discovered in antiquity and then reburied for safety” (Ogden 1995: 74). The similarity between the WFD 40, Khirbat an-Nuḥās and Tuwaylān double spiral pendants suggests that they are all at home in the early part of the Iron II period. The discussion below of the radiocarbon dates from WFD 40 help clarify this chronological issue.

#### *The Copper Hoop Earrings*

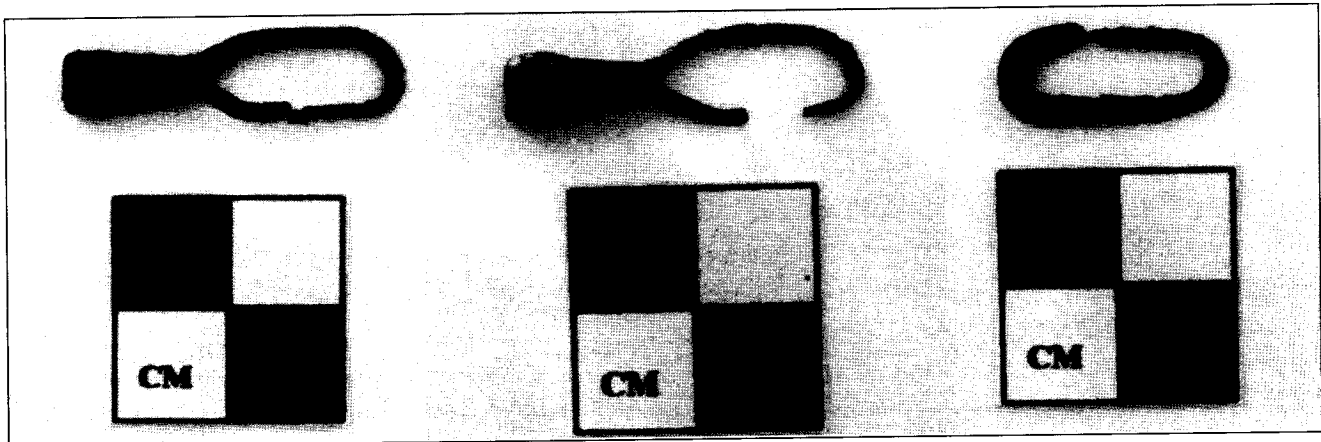
Several copper hoop earrings were found at the cemetery, primarily associated with children’s graves. These earrings consist of two types and both types have been found in the same grave. The

first is the simple hoop earring. Ogden (1995) refers to these as the ‘leech form’. These are similar to earrings found widely and over long periods of time in the Near East, including the gold earrings and the gold-covered copper alloy earring found at Tuwaylān (Ogden 1995) and the bronze earrings of the transitional Late Bronze/Iron Age burial cave at Saḥm (Fischer 1997: 133). Two of these hoop/leech earrings (L. 3119, B. 3060 and 3606, EDM 86994 and 70004; **Fig. 30**) were found in Area A, Grave 345 (see grave discussion above) and a third was found in Area A, Grave 371 (L. 9243, B. 3246, EDM 70391; **Fig. 31**; see grave discussion above).

The other type of bronze earring found here is a hoop with a projecting cylinder or stump. It is possible that the stumps were designed to hold additional decorative pieces to the earring. Two of these were found in Area A, Grave 371 (L. 9243, B. 3244 and 3245, EDM 70387 and 70390; **Fig. 31**), both in the same grave and in association with a simple hoop earring.



30. Two copper hoop (leech form) earrings from Area A, Grave 345.



31. Three copper earrings from Area A, Grave 371.

*The Copper Bracelet*

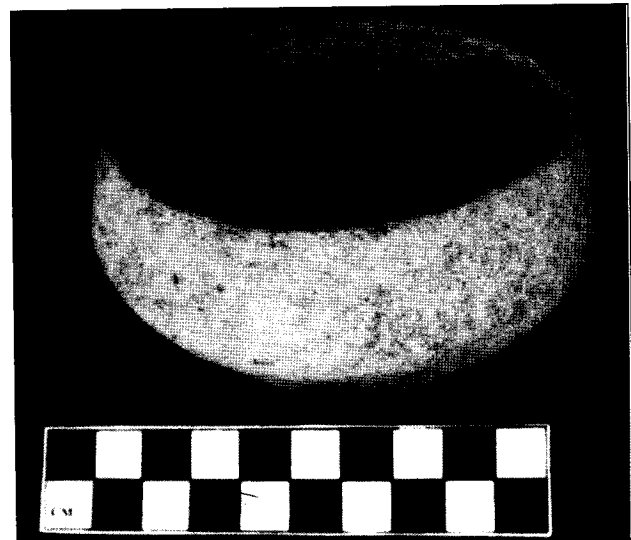
Adding to the assemblage of copper objects found at the cemetery is a copper bracelet (Grave 371, L. 9243, B. 3240, EDM 70369; **Fig. 32**) which was found in the same grave as the simple copper hoop earrings and the hoop earrings with projecting cylinders described above, in Area A, Grave 371 (see grave discussion above). It consists of a thin, simple ring of copper that tapers to a point at one end. It was found on the right arm of a deceased child. A similar copper bracelet was found on the arm of another child discovered in the Wādi Fidān 40 cemetery (Grave 97; B. 3620) (Levy *et al.* 1999: 301).

*The Complete Pots*

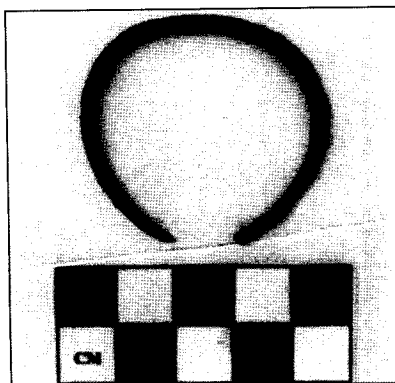
Pottery was very rare in this cemetery. Potsherds were very rare, usually occurring in the fill above graves if at all. Nevertheless, two complete ceramic vessels were found within cists at the cemetery.

A bowl (L. 3063, B. 3094, EDM 86998; **Fig. 33**) was discovered in association with the remains of a child in Grave 345 of Area A (see grave discussion above).

One complete dipper juglet (L. 9381, B. 5308,

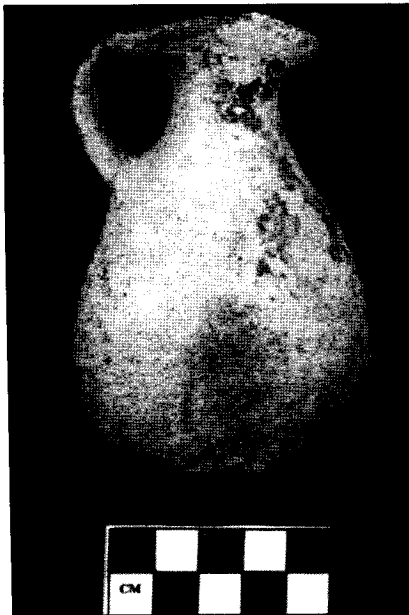


33. The ceramic bowl from Area A, Grave 345.



32. The copper bracelet from Area A, Grave 371.

EDM 72399; **Fig. 34**) was found in Area B. This was found in the cist of Grave 544, next to the right elbow of the entombed (see grave description above). Like the bowl, it is difficult to firmly place it in local typologies. This dipper juglet has an elongated ovoid shape with a flat base. The handle attaches from rim to shoulder. The rim has been pinched creating a pronounced spout. The exterior color ranges from pink to pinkish-white; there are also grey patches from firing. There is no decoration, slip, or burnish visible on the surface. Despite the flat base and plain exterior, parallels are attested at Lachish III (pl. 88:300-302), TBM III (pl. 18:20), TBM I (pl. 51:12), Beersheva I (pl. 55:14 str IV), and Ein Gedi (fig. 30:18). Traditional dating would place this juglet within the tenth-ninth century BC, however, this style continues into the seventh century BC, as witnessed at Ein Gedi (fig. 30:18) (*cf.* Lachish III: p. 295). There are no clear parallels from other sites excavated in Edom, but there is evidence of perhaps later forms without the



34. The ceramic juglet from Area B, Grave 544.

pinched rim: cf. Ghurāra (Hart 1989: pl. 20:1-2), Umm al-Biyāra (Bennett 1966: pl. 2:14), and Tall al-Khalifa (Practico 1993: pl. 30:9).

#### *The Wooden Bowl*

Among the most impressive finds of the season was a wooden bowl (L. 2172; B. 2785; EDM 86460; **Fig. 35**) found in Area A, Grave 59 (see grave discussion above). Unfortunately, although

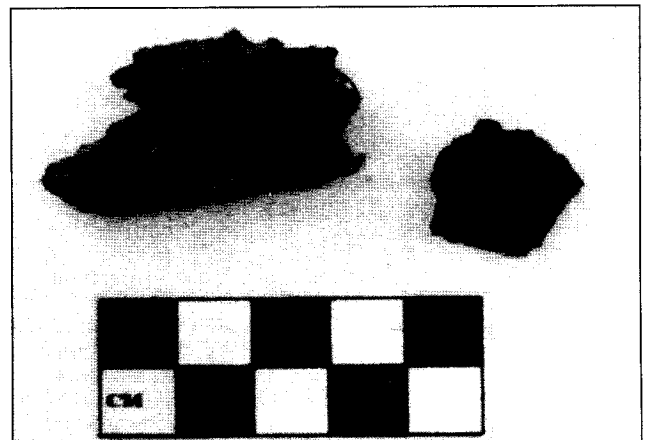


35. The wooden bowl from Area A, Grave 59. The pomegranates found in association with this bowl were dated using high precision radiocarbon dating methods at the Oxford Radiocarbon Accelerator Unit (see below).

well preserved, this bowl began to disintegrate after the cap stones of the cist had been removed. Nevertheless, the bowl was photographed, studied *in situ* and now conserved. The wooden bowl from Grave 59 is very similar to ones found in the earlier excavations at Wādī Fidān 40 (cf. Levy et al. 1999: 300). These bowls are approximately 15cm in diameter and ca. 6.5cm deep. The ones found earlier in Area A (Graves 92 and 97; other graves with wooden bowls include Nos. 12 and 22) have a single rectilinear lug protruding along the rim of the bowl. The example from Grave 59 has twin lugs located at opposite sides of the bowl rim and are more pronounced protrusions than those found in Graves 92 and 97. At the time of the Grave 59 burial ritual, the bowl was filled with pomegranates and placed on the chest of the deceased. Four pomegranates were found inside the bowl and another four inside the cist grave but in close proximity to the bowl. It is highly possible that at the time of burial all of the fruit were in the same wooden bowl. Wooden bowls and bowl fragments are common in the Wādī Fidān cemetery. In 1997 four graves (Numbers 22, 92, 97, and 12) were found with pomegranates. The 2004 excavations revealed an additional 5 graves with pomegranates. The absence of extensive evidence of ceramic vessels in the tombs at Wādī Fidān 40 (cf. Levy et al. 1999), the importance of wooden bowls and other wooden implements in traditional Bedouin society (Musil 1927), and other attributes has led us to interpret WFD 40 as a cemetery that belonged to a nomadic community.

#### *The Iron Blade Fragments*

Iron fragments (L. 2147, B. 2917, EDM 86776; **Fig. 36**), possibly from a blade, were discovered in Area A, Grave 9, near the head of the entombed (see grave discussion above). What appears to be



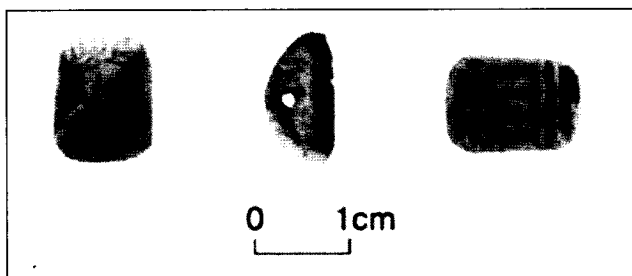
36. Iron fragments from Area A, Grave 9.

bitumen remaining on the fragments is probably the remains of hafting. Unfortunately, the pieces are extremely fragmentary and consist mostly of corroded metal to say anything conclusive about the artifact's nature.

*The Stamp Seal from Grave 91 (Area A)*

As indicated above, Grave 91 (Figs. 7, 8) was disturbed in antiquity. Although a number of the cap stones were removed, one of the most important small artifact finds was discovered in this tomb. The artifact is an Egyptian stamp seal (Fig. 37A). The context of the find is summarized as: Area A, Grave 91, Locus 3050, Basket 2983, EDM Registration-no. 86873. Before describing the stamp seal, a number of points need clarification: a) in the discussion below the symbol \* indicates that the given parallel has no stratigraphic attribution; b) the measurements described here were taken from digital photographs made in the field; c) the report on the stamp follow the conventional Iron Age chronology according to *The New Encyclopedia of Archaeological Excavations in the Holy Land*, and d) the dates are according to Keel (1995: 660-666).

The object is almost a rectangular 'piece with sheaf shaped handles' (Keel 1995, see 210, 212-213 [type II]. Keel catalogued well over 20 items from Israel/Palestine) in (Keel, Shuval and Uehlinger 1990: 355-660), updated in (Keel 1995: 212); further see (Keel 1997: 'Ashkelon' no. 108) to which the following from Transjordan should be added: \*Saḥāb, tomb C: (Dajani 1970: 34, pl. 23 bottom left = (Horn 1971: 103-105, fig. 1) and



37A. The seal from Area A, Grave 91.

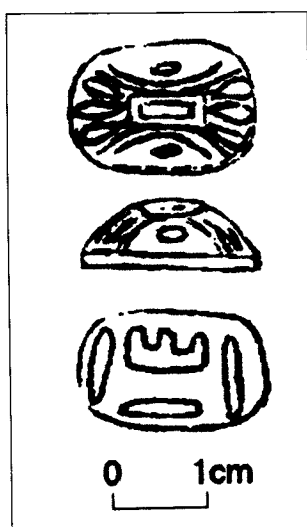
\*Tall as-Sa'idiyya, tomb 354 (Tubb 1990: 40 (not illustrated).

Contrary to other seals of this type, which normally tend to be more oval, the plinth of the item from the Wādī Fidān 40 cemetery is almost rectangular; similar in shape are examples from \*Tall Abū Ḥawwām, Str. IIIB<sup>1</sup>: (Hamilton 1935: 28 no. 151 = (Keel 1997: 'Tall Abū Ḥawwām' no. 7), \*Tall al-Fār'a South, tomb 524<sup>2</sup>: (Petrie 1930: pl. 31: 301 (listed by Petrie as coming from tomb 504; for a correction of this attribution, see (Braunstein 1998: 506), \*Tall al-Fār'a South, tomb 133<sup>3</sup> (Petrie 1930: pl. 29: 273) and \*Gezer, tomb 96<sup>4</sup> (Macalister 1912: III: pl. 90: 30<sup>5</sup>). The seal is somewhat worn; its plinth is slightly damaged (the upper part of the fourth vertical stroke is apparently broken out along the outer edge). The base is engraved in a bold, linear style. Preliminary observations indicate that the stamp is made of a composite material. This is probably correct since 'oval/rectangular pieces with sheaf shaped handles' are almost exclusively made of composition (Keel 1995: 394-395) with a greenish or bluish glaze<sup>6</sup>. With its measurements of 14.5 x 10.5 x 8.0mm the seal is among the smallest of its type<sup>7</sup>.

BASE: The base should most probably be viewed horizontally. It shows four vertical strokes flanking — two on each side — an endwise-vertical rectangle which is horizontally divided by two additional lines into three segments. The decoration on the seal's base is uncommon and no exact parallel could be found. However, on the basis of comparative material it might be suggested that this geometric pattern imitates or alludes to the divine name of *Jmn* 'Amun', similar to seals of the same type bearing — equally, though to a lesser extent — debased renderings of the name of this Egyptian deity. Closest to the base engraving of the seal discussed here comes an unstratified item from Gezer (Fig. 37B); (Macalister 1912: II: 322 no. 217 and III: pl. 207:30; cf. also *infra* note 7 regarding its dimensions). Other 'pieces with sheaf shaped handles' bearing the defectively (vertically

1. For the dating of this stratum to the Iron Age IIB, cf. Balensi *et al.* 1993: 9-10.  
 2. The ceramic grave good fits a Iron Age IB horizon best (cf. type 16S2 [bell-shaped bowl], type 23B4 [bell-shaped bowl], type 55T2 [tall piriform pyxis]; see Petrie 1930: pl. 69 and Duncan 1930).  
 3. According to Petrie the two-phased tomb 133 contained no pottery (1930: pl. 68; Braunstein 1998: 488; the finds are not associated with a specific phase). However, among the grave-good a so-called post-Ramesside mass-production seal was found (Petrie 1930: 10, pl. 29:272 = Munger in press Fig. 1:3) indicating that the grave was in use in the terminal stages of the Iron Age IB (Munger 2003).

4. The tomb is contemporary to Str. VIII; cf. Dever *et al.* 1974: 4 fig. 1.  
 5. An equally 'rectangular piece with a sheaf shaped handle' bearing a somewhat similar base engraving is Basle: von Bissing collection; Hornung and Stachelin 1976: no. 588.  
 6. But cf., e.g., Basel: Museum für Völkerkunde; Hornung and Stachelin 1976: nos. 17-18 where the material Steatite is indicated — though with a question mark.  
 7. A seal with similar dimensions is, e.g., the seal from tomb 133 at Tall al-Far'a South mentioned above. The measurements indicated by Keel (in Keel *et al.* 1990: 356 no. 13 and 1995: §212) for the below cited item from Gezer should be doubled.



37B. The seal from Area A, Grave 91.

arranged) written names of Amun are, e.g., \*Tall Abū Ḥawwām, Str. IIIB<sup>8</sup>: Hamilton 1935: 28 no. 151 = (Keel 1997): Tall Abū Ḥawwām no. 7, Tall al-Fār'a South, tomb 643. Petrie 1930: pl. 35: 401, (\*)Tall al-Fār'a South, "Stratum" Y: (Macdonald, Starkey, and Lankester-Harding 1932: pl. 62: 20 and \*Timna South, site 200 (*Hathor sanctuary*), locus 107: (Schulman 1988: 138, Eg.Cat, fig. 46,9 and pl. 123,6).

DATE: In so far as none of the comparative seals in question bear a datable inscription, i.e. a pharaonic name that is likely to be contemporaneous with the seals' production (Jaeger 1982),<sup>9</sup> it is appropriate to give a relative date. Among the earliest find spots is the one from Saḥāb (see above) where a rectangular/oval piece with sheaf shaped handle' was found in a tomb-chamber that mainly contained LBII-I material (Dajani 1970: 30). However, it cannot be ruled out that this seal was deposited at a later time, since tomb C at Saḥāb was in use until the Iron Age IIB<sup>10</sup>. Another case is the seal found in the Hathor sanctuary at Timna South (see above; (Rothenberg 1993) that is dated to the 19th-20th dynasties (1292-1075)<sup>11</sup>. Nevertheless, all other stratified items from Cis- and Transjordan were found in find context's dating to the Iron Age IB or later. In view of the debased base engraving and the unusual material used (which might point to a local production) a date for the seal from the Wādī Fidān 40 cemetery at the end of the 20th dynasty until the 21st dynasty (ca. 1100-950 BC) is suggested (see also Keel

1995: 213 with earlier literature). As will be discussed below, this reading of the stamp seal from the Grave 91 is remarkably close to the average of 7 radiocarbon dates from Grave 59 at the 2 sigma range (95.4% probability) and places Grave 91 in the 10th century BC.

#### *Anthropomorphic Standing Stones or Massebot*

A common feature of religious life in the Levant from the Bronze Age on, including the Iron Age and even the Early Arab Period, is the standing stone or standing stone complex (Avner 1984). At Wādī Fidān 40, we have a number of standing stone types. In one respect, all of the grave circles are standing stones complexes, and occasionally a single standing stone is seen within a circle. What are particularly notable, however, are the anthropomorphic standing stones which to our knowledge are not seen elsewhere in the Levant at this time. Indeed, it seems that it would not be until the seventh or sixth century that anthropomorphic funerary stelae would appear even in South Arabia (Vogt 2002).

The anthropomorphic standing stones at WFD40 are very stylized and take the form of small local dolomite boulders — all of them less than one meter in maximum length — shaped in such a way that they appear to possess a prominent nose, side projections that can be interpreted as either shoulders or ears, or both the nose and side projections. These have generally been found on the surface of the site, though on rare occasions (most impressively in the case of Grave 712; see description above), particularly in graves disturbed in antiquity, they are found in the grave fill. Presumably at one time they stood over and marked the graves, possibly representing either the deceased or deities.

One massebah associated with a grave was found lying flat and buried in Grave 712 (see grave discussion above). It has the prominent nose common to these anthropomorphic stones but not the ears or shoulders (L. 249, B. 6875, EDM 88517; **Fig. 38**).

An unusual anthropomorphic standing stone with a nose and very prominent ears (L. 2457, B. 6573, EDM 88366; **Fig. 39**) is a surface find, also from Area C. Unlike most of the anthropomorphic

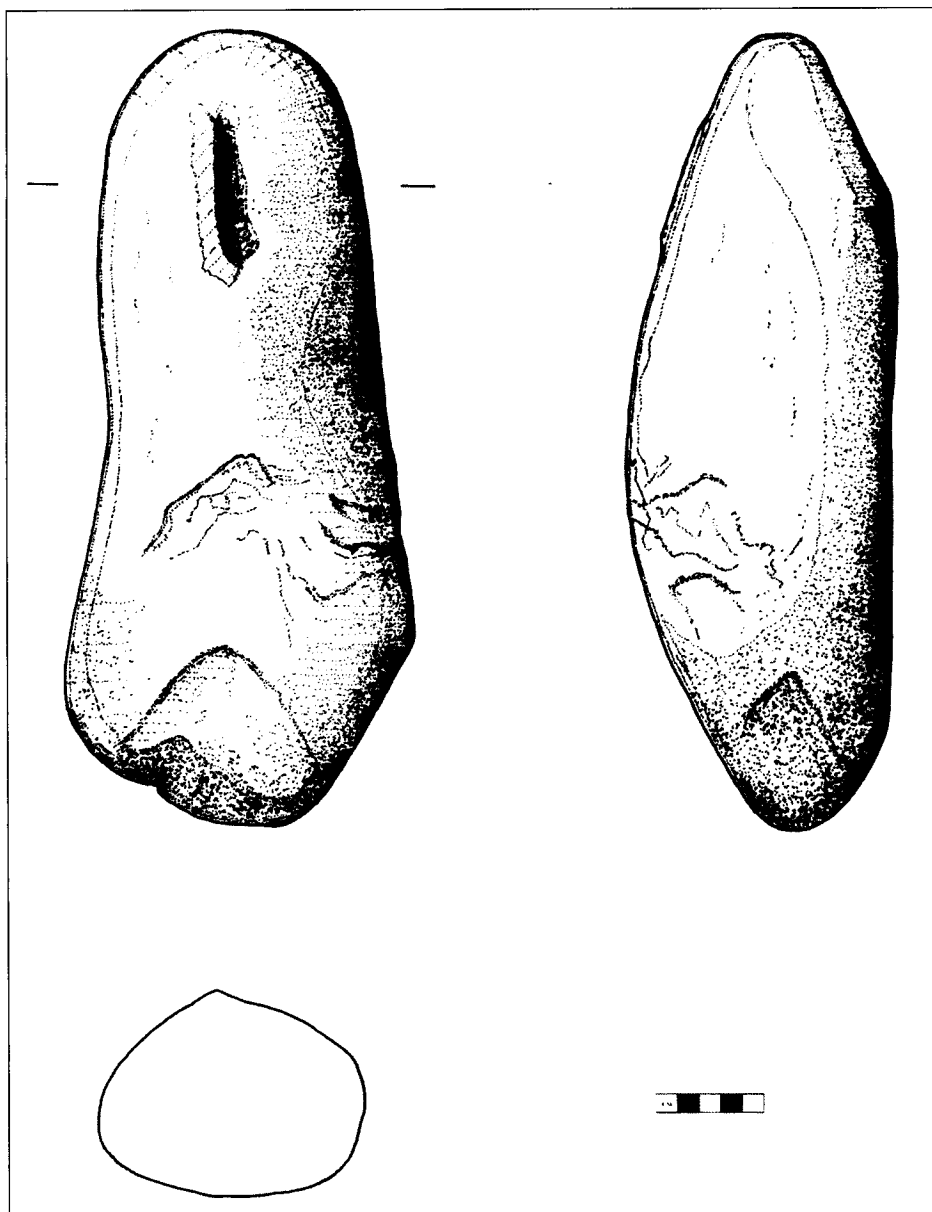
8. For the dating of this stratum to the Iron Age IIB, cf. Balensi et al. 1993: 9-10.

9. For a dismissal of hitherto proposed readings of Pharaonic names on such seals' bases cf. Jaeger 1982: §1048 and Keel 1995: §212).

10. For a critique of the early dating of the Early Iron Age cemeteries and the corresponding Str. XII at Tall as-

Sa'idiyya, cf. Münger 2003: 75 with further references). An item from Megiddo (LOUD 1948: 146 with pl. 162:9) was associated by its excavators with Str. VII. Yet, they did not rule out a somewhat later date of the find spot. For another outlier from Tall Jemmeh, cf. Keel 1995: §213).

11. Cf. also the summary in Rothenberg 1993: pp. 1482-1485.



38. The anthropomorphic standing stone from Area C, Grave 712.

standing stones at WFD 40, this stone was rectangular rather than rounded.

A more common intermediate type which displays side projections but without particular prominent side projections (L. 2431, B. 6626, EDM 88194; **Fig. 40**) was found in Area C, Grave 703 (see grave description above).

PRELIMINARY STUDY OF HUMAN REMAINS FROM WĀDĪ FĪDĀN 40 CEMETERY EXCAVATIONS, 2004

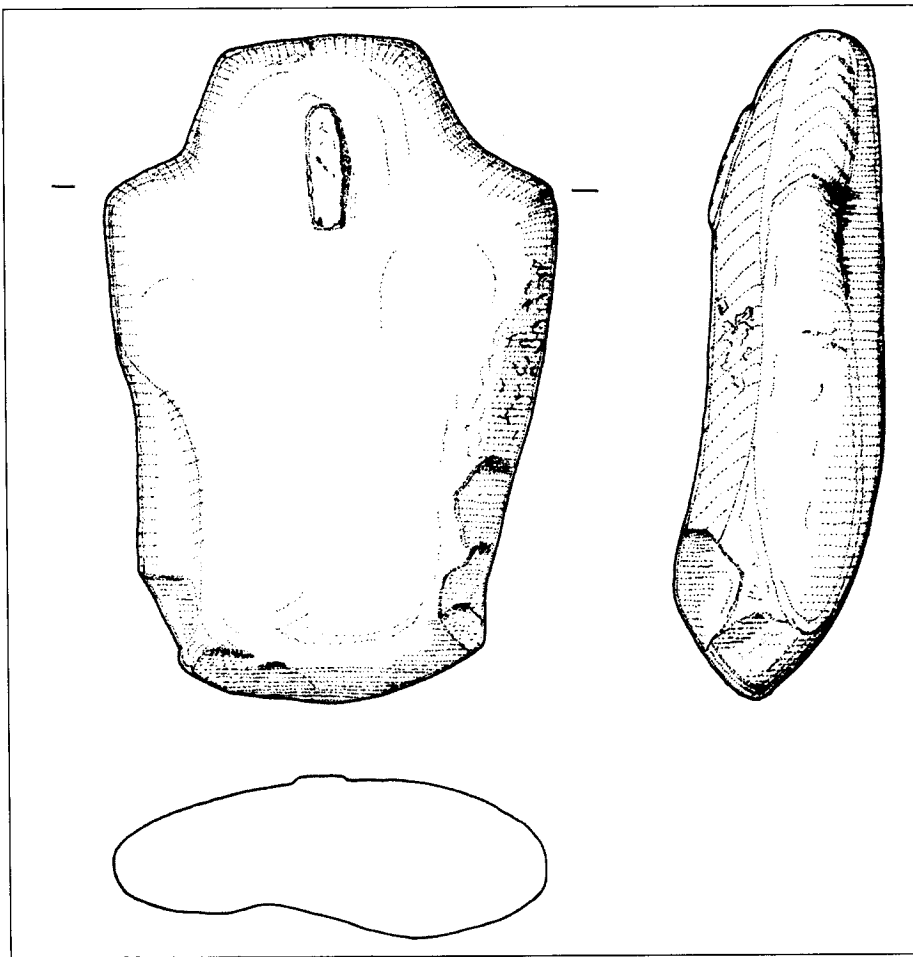
**Overview of the 2004 Cemetery Population**

During the 2004 season, a total of 172 graves were excavated from the Wādī Fidān 40 Cemetery. The total number of individual burials excavated

and analyzed is 235. The number of burials is significantly higher than the number of graves due to the frequency of graves containing more than one individual. Multiple individuals from single graves were found in a variety of contexts:

- Some grave cists contained a primary interment with secondary remains either scattered throughout the cist fill or neatly placed at the foot of the primary burial.
- Many disturbed grave cists contained no clear primary interment, but instead contained remains of multiple individuals.
- Many other grave cists contained one individual, with secondary and/or scattered remains located in the grave pit outside the cist structure.

Mortuary analysis is critical for understanding



39. An anthropomorphic standing stone from Area C, surface.

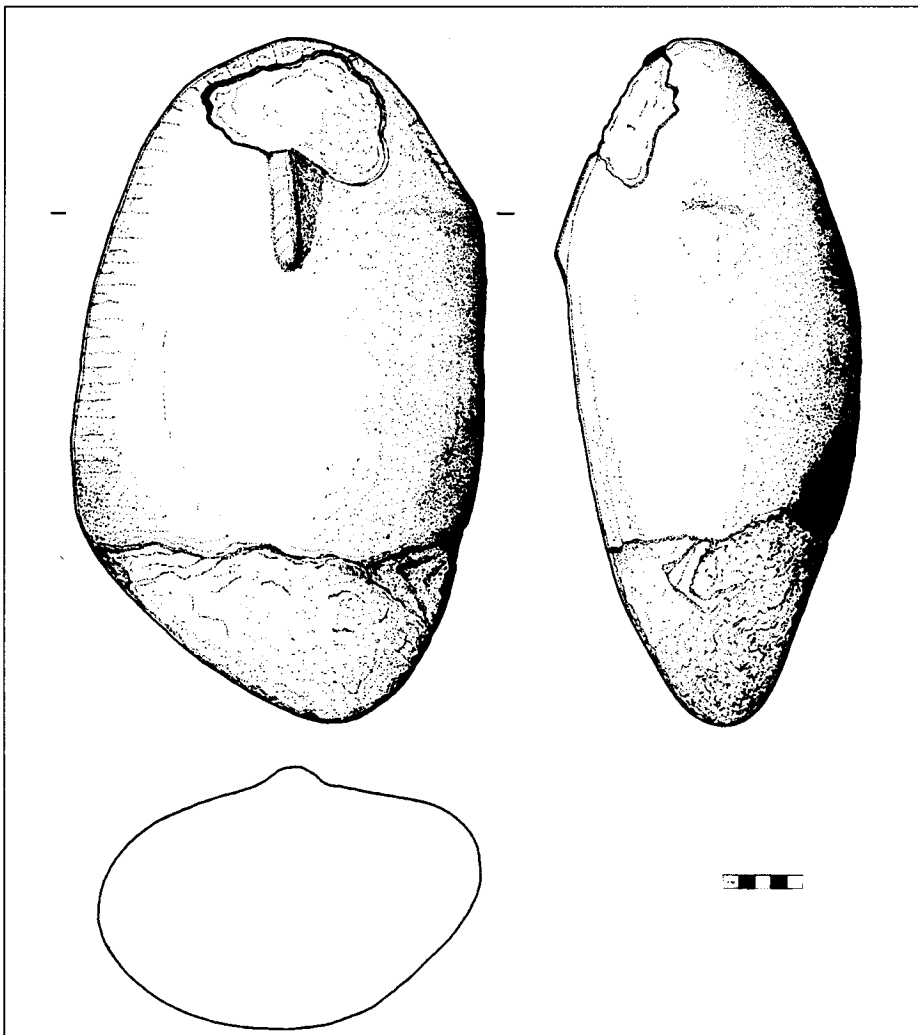
the behavior and ceremonial practices of the Iron Age Wādī Fīdān inhabitants (and later groups that used the cemetery). For each grave, an assessment was made of burial type (single, double, multiple, or indeterminate); burial disposal (primary, secondary, or indeterminate); position (flexed, semi-flexed, hyper-flexed, extended); disposition (on back, left side, right side, prone, etc.); orientation (direction of head), and facing direction. The last four descriptions are possible for primary burials only. At time of this preliminary report, analysis is forthcoming.

#### *Materials*

A total of 235 individuals were excavated from 172 distinct grave contexts. This very high MNI is misleading without qualification. A large number of "individuals" are represented by very small amounts of skeletal material, often less than an estimated 5% of a complete skeleton. This is due primarily to the extreme density of the Wādī Fīdān 40 Cemetery. The number of graves packed into the spatial limits of the site is astounding. Disturbance to graves since antiquity, and even the ac-

tivity of burial and reburial by the original users of the cemetery, have left human remain scatters of varying quantity throughout grave pit and cist fills, in addition to (and in close proximity to) the large number of clear primary and secondary interments. For instance, Area B of the cemetery revealed an especially marked degree of disturbance, and multiple individuals within grave contexts were very common, often with only a very small amount of remains representing an individual. In dealing with such a dense cemetery with substantial disturbance, unless a burial is clearly primary or secondary and located in an undisturbed grave, it is impossible to tell whether the remains of each counted individual were originally and purposefully located in their respective grave context. In other words, processes of legitimate use/reuse and disturbance could have resulted in scatter of the remains of single individuals among separate contexts (e.g., adjacent grave pit fill soils), leading to "redundant" observation and MNI counts in the lab. However, we feel it is important to report the total MNI as determined through careful laboratory analysis, with the caveat that each area, especially Area B, may

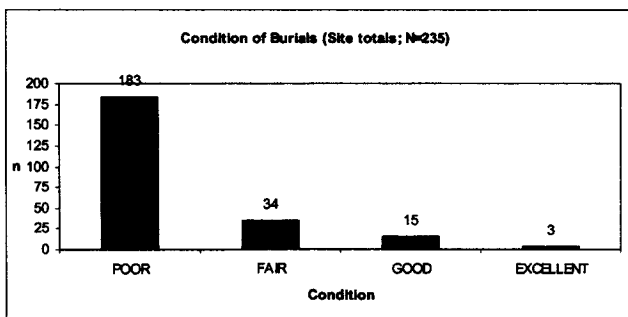




40. The anthropomorphic standing stone from Area C, Grave 703.

yield MNI counts that are too high. We can still estimate with confidence that the true MNI excavated during the 2004 season is around 200.

Disturbance and poor preservation of many grave contexts also impeded analysis of interment types in the field and skeletal analysis in the laboratory. **Figure 41** shows that the vast majority of burials were found in poor condition (n=183). The processes described above will primarily affect the value of this category, thus it should be noted that



41. Condition of Burials.

this value may be too large.

Burial condition is a subjective index of the physical integrity of excavated human remains, taking into account the amount of cortical bone preserved, evidence of weathering and diagenesis, and other taphonomic processes. The degree of friability and resistance to damage during excavation, transportation, and analysis are the primary factors taken into account when assigning burials to one of the following categories: Poor, Fair, Good, and Excellent. Burials in poor condition were fragmentary and weak, with a high degree of exfoliation of the outer bone surface. In contrast, burials in excellent condition were sturdy, lacking post-mortem breaks and other damage. Unfortunately, poor burial condition severely limits the amount of skeletal data (metric, morphological, pathological, etc.) that can be collected during preliminary analysis. Conversely, burials in good and excellent condition represent a wealth of skeletal data, and the Wādī Fidān 40 Cemetery provided a sample of skeletons conducive to an in-depth bioarchaeological analysis.

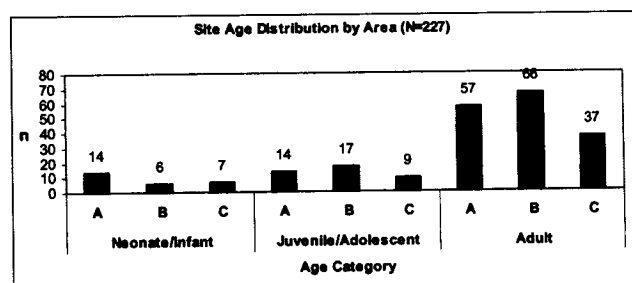
## Methods

A crew of three specialists trained in bio-archaeological excavation and laboratory methods were on-hand for the analysis of excavated human remains throughout the 2004 season. Analysis of human remains followed data collection standards outlined in (Buikstra and Ubelaker 1994). Data collection began with a complete inventory of the human remains. At this stage, duplicate skeletal elements were often identified, which usually led to the creation of a separate burial alphanumeric (e.g., 371 A, 371 B) representing the extra elements. Due to increasing time constraints as the season progressed, complete inventory was not made for many poorly preserved burials.

The main goals of the 2004 Wādī Fidān 40 Cemetery preliminary skeletal analysis were to compile demographic (age and sex) data for the minimum number of individuals excavated. In addition, a preliminary documentation of pathological conditions was begun for the entire site and completed for all burials in Area A of the cemetery. Further description of methods is included within the following sections.

### Age at Death Distribution

Precise age at death estimates were assigned to adult skeletons containing diagnostic elements such as the pubic symphysis and auricular surface of the os coxae, as well as to sub-adult individuals with preserved dentitions showing clear stages of dental development and eruption. Assessment of dental attrition, patterns of epiphyseal fusion, general size and development of skeletal material, and cranial suture closure also helped to generate age at death estimates of varying precision. For this preliminary report, skeletons were assigned to one of three age categories: Neonate/Infant, Juvenile/Adolescent, and Adult. Future analysis will aim to assign adult individuals to four sub-categories with more precise age ranges. A small number of in-



42. Age at death distribution.

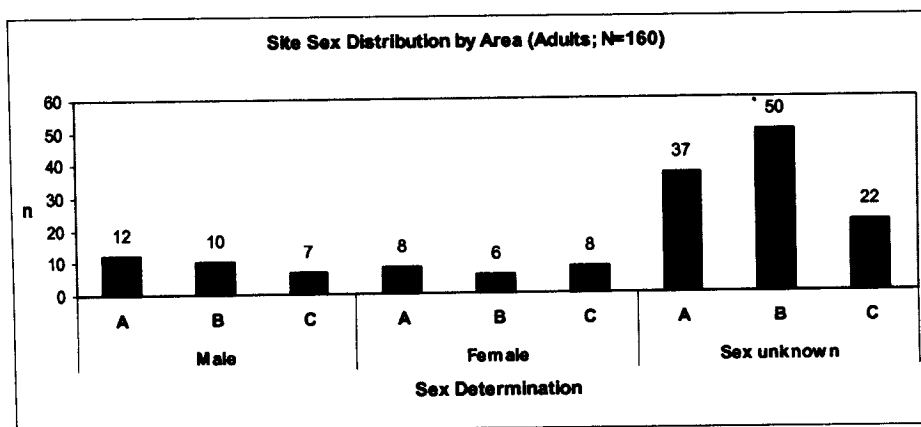
dividuals could not be assigned to any age category, invariably due to poor preservation. A total of 227 individuals were assigned to an age at death category.

Figure 42 shows the distribution of individuals assigned to each age at death category. The majority of individuals (n=160) recovered from the 2004 excavations of the Wādī Fidān 40 Cemetery are adults with age at death estimates between 18 and 50 years. Individuals in the Neonate/Infant category are assigned age at death estimates between birth and 3 years, while those in the Juvenile/Adolescent category receive age at death estimates between 4 and 17 years. Burials assigned to the Neonate/Infant category (n=27) and the Juvenile/Adolescent category (n=40) make up substantial proportions of the excavated burials.

### Sex Distribution

Assigning sex was only performed for adult individuals, since sub-adult individuals are skeletally immature, lacking the necessary sexually dimorphic characteristics. 29 skeletons were assigned a sex of male, while 22 were assigned a sex of female. This gives a male to female sex ratio of 1.32 for the population excavated in 2004. Of the 160 adult burials, 109 cannot be distinguished as male or female (Fig. 43). This is due to the large number of burials in poor condition, which lack the diagnostic elements with which sex is determined.

The most important skeletal elements for de-



43. Sex distribution.

termining the sex of an individual are the os coxae. These bones possess seven sexually dimorphic structures: the subpubic concavity, subpubic angle, ischiopubic ramus ridge, ventral arc, greater sciatic notch, and preauricular sulcus. The most heavily weighted characteristics were those comprising the Phenice Method: ventral arc, subpubic concavity, and ischiopubic ramus ridge (Phenice 1969). Unfortunately, the os coxae are also very fragile and often do not preserve well. In addition to os coxae morphology, cranial and mandibular morphological characteristics aided sex determination. The nuchal crest, mastoid process, supraorbital margin, prominence of glabella, and mental eminence of the mandible were all examined, where available.

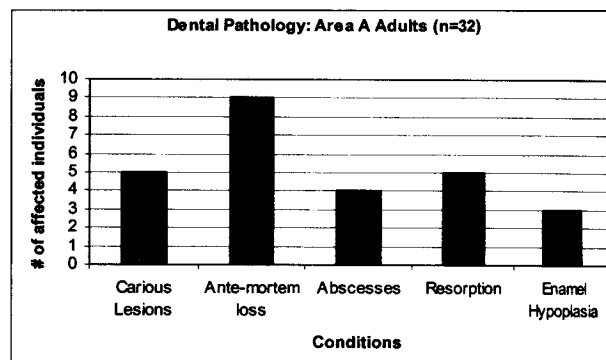
### Dental and Skeletal Pathology

A preliminary documentation of dental and skeletal pathological conditions was compiled for burials in Area A. Documentation of pathological conditions of burials from Areas B and C was begun in the field, but could not be completed due to time constraints. Therefore, we wish to report frequencies of conditions for Area A burials only.

#### Dental Pathology

Area A burials exhibited a number of dental pathological conditions. Observed conditions include carious lesions, ante-mortem tooth loss, alveolar abscesses, alveolar resorption, enamel hypoplasias, and dental calculus, though frequencies were not recorded for the last condition. Area A burials that did not have any preserved teeth were not included in the documentation of dental pathology. Also, neonates were not included because their teeth are not fully developed. Thirty-two adults and twenty-one subadults were available for the documentation of dental pathology. It should be noted that several of these individuals did not possess complete dentitions due to post-mortem damage and loss. This factor can affect the true frequencies of pathological conditions, since some will be rendered unobservable.

In the adult sample (Fig. 44; Tables 7, 8), ante-mortem tooth loss was the most common condition, with nine individuals affected. Notable frequencies of carious lesions, abscesses, alveolar resorption, and enamel hypoplasia were also observed. Carious lesions can either be associated with advanced dental attrition and periodontal disease or strictly with the amount of cariogenic material (i.e., carbohydrates) in the diet. The two different etiologies are manifested in the location of the lesions. Occlusal lesions are linked to high-carbohydrate diets. In the current sample, occlusal



44. Adult dental pathology.

caries were very rare. In addition, dental attrition was often quite severe. This pattern suggests that observed cases of ante-mortem tooth loss, abscess, and alveolar resorption are associated primarily with advanced dental attrition leading to periodontal disease. As a health problem, attrition and subsequent periodontal disease probably outweighed dental caries associated with a carbohydrate-rich diet.

Enamel hypoplasias are lesions on the tooth crown indicative of defective enamel formation during development. This condition has a number of etiologies, but in general it is caused by systemic metabolic stress to the individual due to nutritional deficiencies, infection, or both. Enamel hypoplasias of the permanent dentition are formed in infancy and childhood, but are retained into adulthood.

In the sub-adult sample (Fig. 45; Tables 8, 11), carious lesions and enamel hypoplasias were observed on two individuals each. There were no instances of ante-mortem loss or abscesses in the sub-adult sample, which is consistent with the degenerative nature of these conditions, which usually occur at higher frequencies among older adult individuals. However, one sub-adult individual did exhibit alveolar resorption indicative of periodontal disease.

#### Skeletal Pathology

Area A skeletons also exhibited a number of skeletal pathological conditions, including *cribra orbitalia*, porotic hyperostosis, degenerative joint disease (DJD) of the temporal-mandibular joint (TMJ), cranial and post-cranial trauma, osteoperiostitis, DJD of the appendicular skeleton (limb joints), vertebral DJD, and a possible case of tuberculosis. Burials that were too poorly preserved were not included in the documentation of skeletal pathological conditions, since there is a much greater chance of failing to document a condition for these burials.

Table 7: Area A dental pathologies, adults.

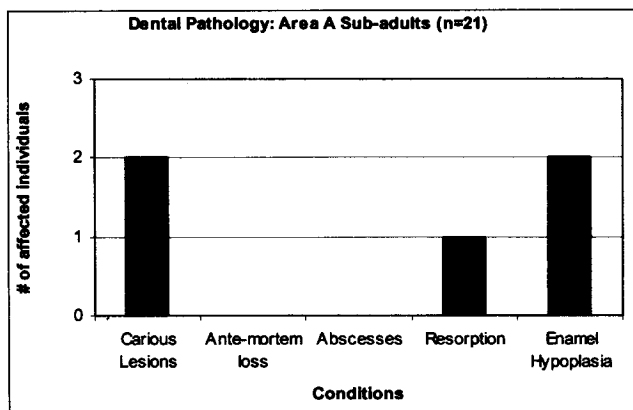
Grave number	Carious Lesions	Ante-mortem loss	Abscesses	Resorption	Hypoplasia
5					
9		1			
55			1		
59	1			1	
80					
84		1			
90					
91a	1	1	1		
300					
304					
307					
311a					
311b					
318a	1				
323					
329a					
331			1	1	
334					
335a	1	1		1	
337		1			
338a		1	1		
339					
340a					
346					
348					
356a		1		1	
357					
358	1	1		1	
362a					
363a		1			
364					
370					
<b>Affected</b>	<b>5</b>	<b>9</b>	<b>4</b>	<b>5</b>	
<b>N</b>	<b>32</b>	<b>32</b>	<b>32</b>	<b>32</b>	
<b>Frequency</b>	<b>15.63</b>	<b>28.13</b>	<b>12.50</b>	<b>15.63</b>	<b>9.38</b>

Thirty-two adults and eighteen sub-adults were available for the documentation of skeletal pathology frequencies. As with the sample of individuals included in the dental pathology survey, several of these individuals did not comprise complete skeletons due to post-mortem damage. This may artificially depress the frequencies of pathological conditions, since some will be rendered unobservable. In the adult sample (Fig. 46; Tables

9, 11), vertebral DJD was the most common condition, with lumbar vertebrae primarily affected. DJD of TMJ and DJD of the appendicular skeleton were also common. DJD of the appendicular skeleton and vertebrae is generally associated with repetitive work-related activities. DJD of TMJ is often associated with advanced periodontal disease and ante-mortem tooth loss, as the individual strains his or her chewing movements in order to

Table 8: Area A dental pathologies, sub-adults.

Grave number	Carious Lesions	Ante-mortem loss	Abscesses	Resorption	Hypoplasia
308					
319c					1
321					
322					
324					
327					
328					
330					1
336a					
336b					
341					
344					
345					
349a					
349b					
353					
355					
359					
361					
367	1				
371a	1			1	
<b>affected</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>2</b>
<b>N</b>	<b>21</b>	<b>21</b>	<b>21</b>	<b>21</b>	<b>21</b>
<b>Frequency</b>	<b>9.52</b>	<b>0.00</b>	<b>0.00</b>	<b>4.76</b>	<b>9.52</b>



45. Sub-adult dental pathology.

compensate for the loss of some chewing surfaces. Abnormal chewing motions lead to arthritic pitting, porosity, and osteophyte growth on the articular surfaces of the TMJ.

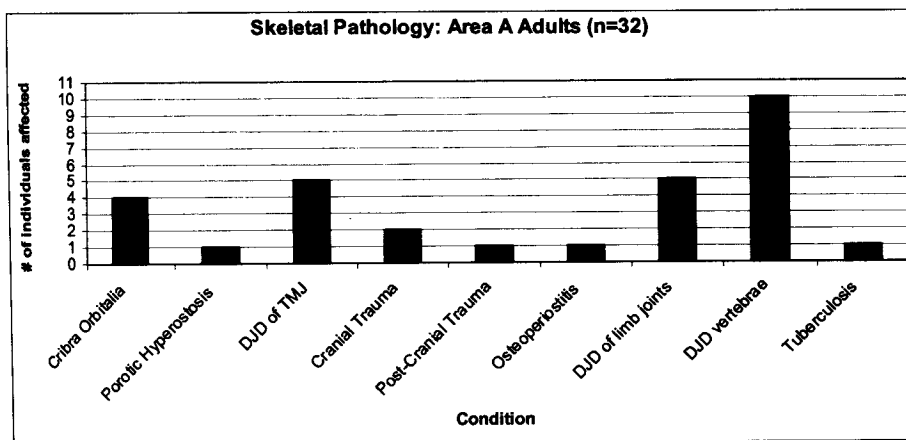
Two individuals exhibit cranial trauma in the form of well-healed depressed cranial fractures. Burial 59 possesses one healed depressed cranial fracture on the left side of the frontal bone above

the eye orbit. The location of this fracture is consistent with an etiology involving interpersonal violence. Face-to-face conflict between usually right-handed assailants often leads to depressed cranial fractures on the left side of the forehead. Burial 363 A possesses three healed depressed cranial fractures located posteriorly on the left and right parietal bones. Usually a depressed fracture located towards the back of the head is caused by accidental trauma (e.g., a fall). However, the presence of three well-healed fractures, located towards the back of the head, may involve other, as yet undetermined, factors.

Only one individual (Burial 335 A) possessed signs of osteoperiostitis. Osteoperiostitis is indicative of systemic or localized non-specific bacterial infection affecting the outer bone layer (periosteum). The low frequency observed in the present sample suggests that infectious disease was not a major cause of morbidity in the Wādi Fidān 40 cemetery population. Conversely, poor preservation may have destroyed evidence of periostitis

Table 9: Area A skeletal pathologies, adults.

Grave Number	Cribrā Orbitalia	Porotic Hyperostosis	of TMJ	Cranial Trauma	Cranial Trauma	Osteo- periostitis	Appendicular DJD	DJD vertebrae	Tuberculosis
9			1						
55									
59			1	1	1			1	
80									
82									
83a								1	
83b									
84			1					1	
90									
91a			1				1	1	
311a									
311b									
318a									
319b									
323	1	1							
331									
335a						1			1
337	1								
338a								1	
339									
340a									
343a									
343b									
348								1	
356a	1								
357							1	1	
358							1	1	
362a									
363a	1		1	1			1	1	
363b							1		
364								1	
370									
Affected	4	1	5	2	1	1	5	10	1
N	32	32	32	32	32	32	32	32	32



46. Adult Skeletal Pathology.

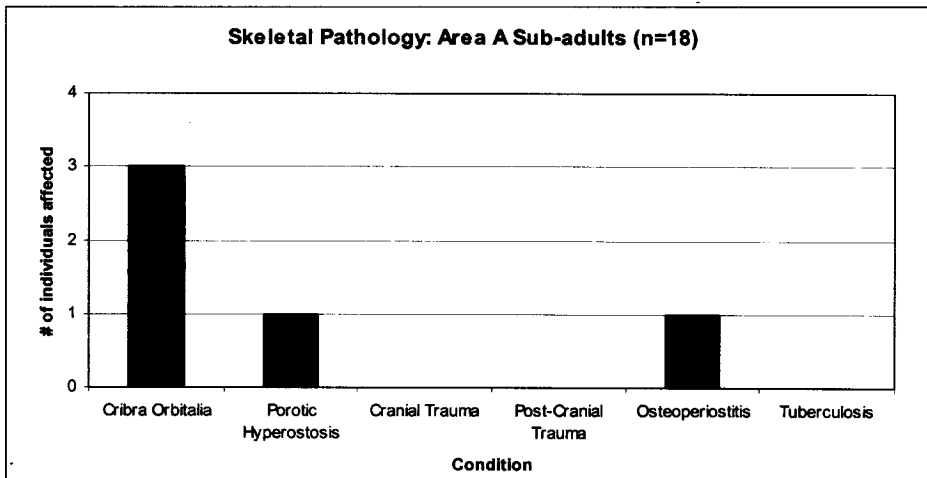
on some burials. The same individual (335 A) also possessed lytic lesions on vertebral body elements, in a pattern consistent with tuberculosis infection.

We focused on a limited number of conditions for the sub-adult sample (Fig. 47; Tables 10, 11), since many conditions of adults are degenerative in nature and are not expected to show up in sub-adults. Three individuals possessed lesions in-

dicative of *cribra orbitalia*, while one exhibited a similar condition known as porotic hyperostosis. Both of these conditions are associated with iron-deficiency anemia, which in general is the result of the body's reaction to a non-specific bacterial infection. *Cribra orbitalia* is often found at higher frequencies in a population than is porotic hyperostosis, and it is therefore regarded as a more sen-

Table 10: Area A skeletal pathologies, sub-adults.

Grave number	Cribra Orbitalia	Porotic Hyperostosis	Cranial Trauma	Post-Cranial Trauma	Osteoperiostitis	Tuberculosis
316						
319c	1					
319d						
321						
322a						
324						
327						
328						
330	1					
336a						
344						
345						
355						
359						
361						
362						
367						
371a	1	1			1	
<b>Affected</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>
<b>N</b>	<b>18</b>	<b>18</b>	<b>18</b>	<b>18</b>	<b>18</b>	<b>18</b>
<b>Frequency</b>	<b>16.67</b>	<b>5.56</b>	<b>0.00</b>	<b>0.00</b>	<b>5.56</b>	<b>0.00</b>



47. Sub-adult Skeletal Pathology.

sitive indicator of the etiology, presumably iron-deficiency anemia (Aufderheide and Rodriguez-Martin 1998). One juvenile (Burial 371 A) exhibited clear signs of osteoperiostitis.

**Future Bioanthropological Research**

Bioarchaeological analysis is on-going and will take place in the near future in bioanthropology laboratories at the University of California at San Diego. The most pressing line of future research is to continue documentation of pathological condi-

tions for burials in Areas B and C. Partial study has already identified interesting conditions not present in Area A (e.g. osteoporosis), and several examples of similar conditions as well (e.g., *cribra orbitalia*, enamel hypoplasia, and depressed cranial fractures). A more in-depth study of pathological conditions from the site in general is needed, as time constraints limited the search and description of conditions from Area A. We are interested in testing hypotheses with paleopathological data, in light of the reconstructed subsistence behavior, diet, set-

Table 11: Area A Skeletal and Dental Pathology Summary.

Adults						
Condition	Cribra Orbitalia	Porotic Hyperostosis	DJD of TMJ	Cranial Trauma	Post-Cranial Trauma	Osteoperiostitis
Burial Numbers	323, 337, 356A, 363A	323	9, 59, 84, 91A, 363A	59, 363A	59	335A
Condition	DJD of Limb Joints	DJD of Vertebrae	Tuberculosis			
Burial Numbers	91A, 357, 358, 363A, 363B	59, 83A, 84, 91A, 338A, 348, 357, 358, 363A, 364	335A			
Sub-adults						
Condition	Cribra Orbitalia	Porotic Hyperostosis	Cranial Trauma	Post-Cranial Trauma	Osteoperiostitis	Tuberculosis
Burial Numbers	319C, 330, 371A	371A	None	None	371A	None
Area A Dental Pathology						
Adults						
Condition	Cariious Lesions	Ante-mortem Loss	Abscesses	Resorption	Hypoplasia	
Burial Numbers	59, 91A, 318A, 335A, 358	9, 84, 91A, 335A, 337, 338A, 356A, 358, 363A	55, 91A, 331, 335A	59, 331, 335A, 356A, 358	9, 59, 80	
Sub-adults	None	None	None	None	None	
Condition	Cariious Lesions	Ante-mortem Loss	Abscesses	Resorption	Hypoplasia	
Burial Numbers	367, 371A	None	None	371A	319C, 330	

tlement patterns, and social-demographic structure of the Wādī Fīdān 40 cemetery population.

Ancient DNA (aDNA) analysis is forthcoming. A number of tooth samples were secured in the field for future analysis, and more can still be collected. aDNA analysis will help to clarify the biological identity of the Wādī Fīdān 40 Cemetery population relative to other populations within the region and beyond. Skeletal and dental metric and non-metric data will also be collected to assist in this task.

The skeletal population excavated from the Wādī Fīdān 40 Cemetery in 2004 is conducive to in-depth bioarchaeological study. The remains will continue to be analyzed using the most current methods available to the field.

#### *Radiocarbon Dating (T.E. Levy, Kyle Knabb and T. Higham)*

One of the major aims of the 2004 season cemetery excavations was to try to increase the sample of material suitable for radiocarbon dating. Based on prior experience (Levy *et al.* 1999) in the cemetery, the best possible material for radiocarbon dating is pomegranates — a seasonal fruit

that provides a secure short-life organic sample. Although more than 150 tombs were excavated in 2004, only a few were found with pomegranate offerings. The best preserved samples were retrieved from Grave 59 ( $n = 7$ ) in Area A and Grave 701 in Area C ( $n = 1$ ; **Table 12**). The pomegranates were placed as part offerings inside the cist graves during the internment ritual. It can be assumed that they were picked from the tree within several weeks of the burial. Thus, the inclusion of the pomegranates as part of the burial ritual offers a unique temporal “snap-shot” concerning the date of internment.

#### *Radiocarbon Dating*

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**Table 12:** Radiocarbon dates obtained from the Wādī Fidān 40 cemetery excavations, 2004.

Lab no.	Site	Area Locus	Basket	EDM no.	Material	Delta value	<sup>14</sup> C date	68.2% probability
OxA-14233	WFD 40	A_L2172 Grave 59	B2778	EDM86451	seeds, pomegranate	d13C=-23.4	2839±28	1050BC (51.3%) 970BC  960BC (16.9%) 930BC
OxA-14234	WFD 40	A_L2172 Grave 59	B2779	EDM86452	seeds, pomegranate	d13C=-22.9	2819±26	1005BC (68.2%) 925BC
OxA-14235	WFD 40	A_L2172 Grave 59	B2780	EDM86453	seeds, pomegranate	d13C=-23.3	2795±30	995BC ( 6.6%) 985BC 980BC (61.6%) 905BC
OxA-14236	WFD 40	A_L2172 Grave 59	B2782	EDM86455	seeds, pomegranate	d13C=-25.5	2859±26	1110BC ( 1.5%) 1100BC 1070BC (64.4%) 970BC 960BC ( 2.3%) 940BC
OxA-14237	WFD 40	A_L2172 Grave 59	B2783	EDM86456	seeds, pomegranate	d13C=-24.6	2863±27	1120BC ( 5.0%) 1100BC 1090BC (63.2%) 970BC
OxA-14431	L. 2172/ B. 2781	2758±35	970BC – 840BC	1000BC – 820BC	OxA- 14431	L. 2172/B. 2781	2758±35	970BC – 840BC
OxA-14238	WFD 40	A_L2172 Grave 59	B2784	EDM86457	seeds, pomegranate	d13C=-23.7	2779±31	980BC (65.8%) 890BC 870BC ( 2.4%) 850BC
OxA-14239	WFD 40	C_L2492 Grave 701	B6831	EDM88464	seeds, pomegranate	d13C=-26.1	2784±28	980BC (68.2%) 895BC

best preserved samples were retrieved from Grave 59 (n = 7) in Area A and Grave 701 in Area C (n = 1; **Table 12**). The pomegranates were placed as part offerings inside the cist graves during the internment ritual. In Grave 59, 4 pomegranates were found carefully placed in a wooden bowl near the chest of the deceased. The three remaining fruits may have spilled out of the bowl during or sometime after burial (see **Fig. 4**). It can be assumed that the pomegranates were picked from the tree within several weeks of the day of burial. Thus, the inclusion of the pomegranates as part of the burial ritual offers a unique temporal “snap-shot” concerning the date of internment. The dating samples were prepared at UCSD by extracting seeds from each of the seven pomegranates found in Tomb 59. The sample from Tomb 701 consisted of the outer rind of the fruit as no seeds were found with this pomegranate. All of the samples were then processed at the Oxford Radiocarbon Accelerator Unit. One sample was contaminated by equipment in the lab so it was re-run (OxA-14431). The new

result is reported here along with the six dates other dates from Tomb 59 and all the dates are presented in **Table 12** and **Figs. 48 and 49**.

The program OXCAL (v. 3.10 - (Bronk Ramsey 1995b, Bronk Ramsey 2001c) was utilized to calibrate the radiocarbon dates. Bayesian statistical analyses were applied to analyze the data more exhaustively. The result is a higher degree of exactitude when converting the radiocarbon determinations to calendar dates. The applications of Bayesian statistics are far-reaching, and can be quite complex. It is possible to bias the data unintentionally so that it is no longer useful or valid (Bronk Ramsey 2001a, Steier and Rom 2000). However, averaging, the technique used to refine the eight determinations, is on the simpler side of Bayesian applications and biased results are unlikely. Thus, averaging was carried out using the seven dates from Tomb 59 and one date from Tomb 701.

Independently calibrated samples generated date ranges of approximately 150-200 years cal BC

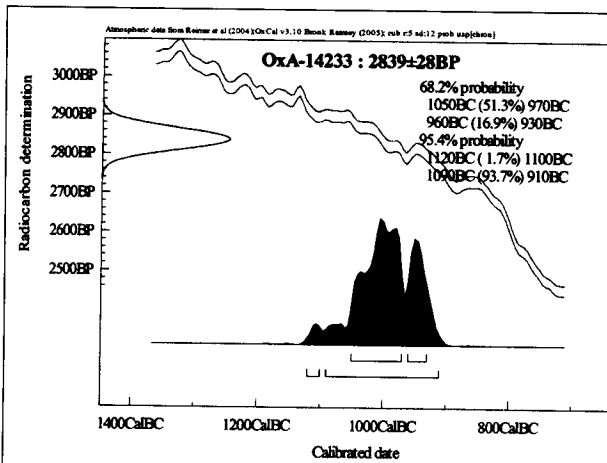


Fig. 48 a

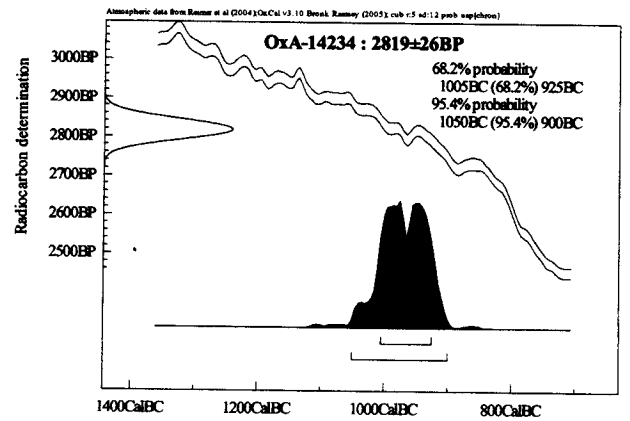


Fig. 48 b

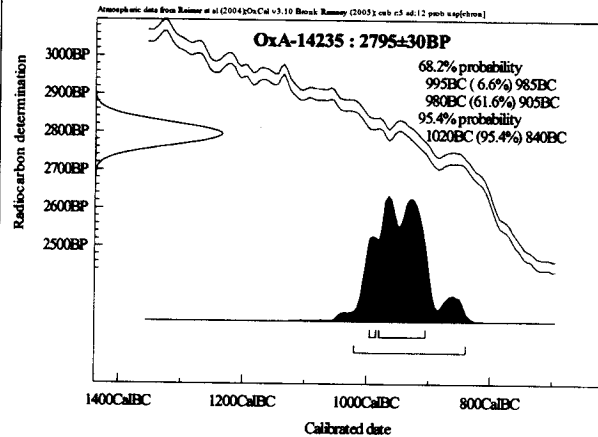


Fig. 48 c

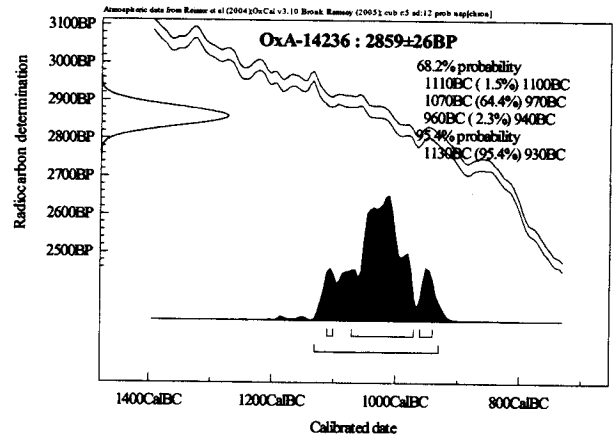


Fig. 48 d

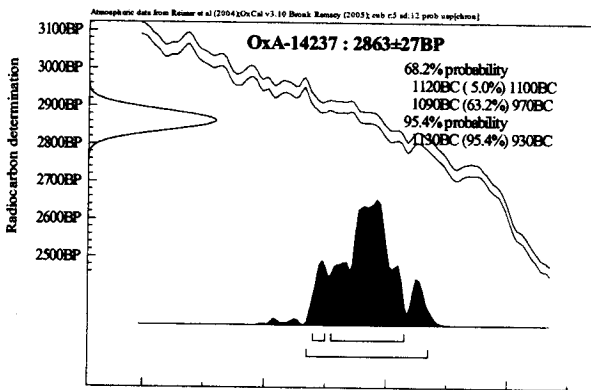


Fig. 48 e

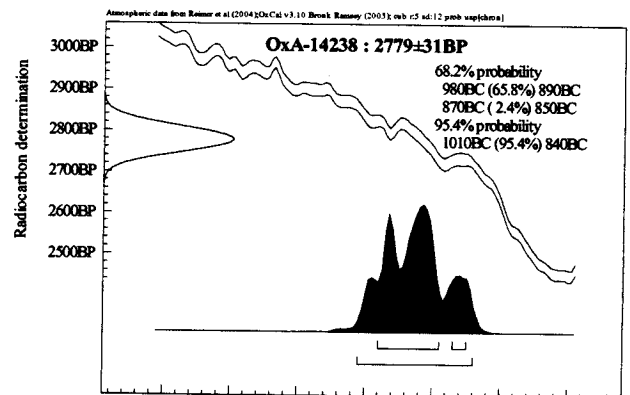
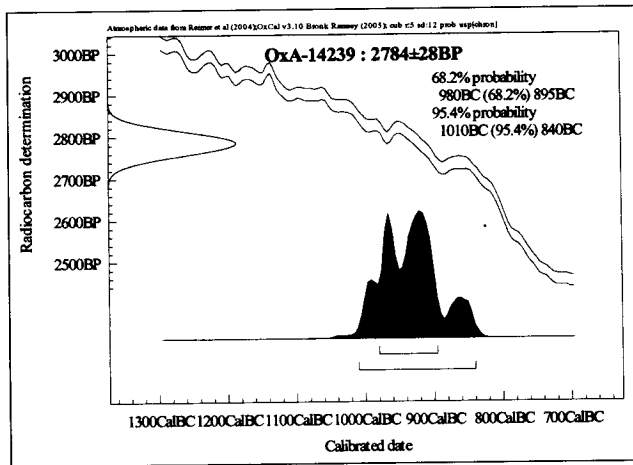


Fig. 48 f

48 a - 48 f. OxCal calibration of dates from Tomb 59.

(2σ). **Figure 48 (a-f)** shows the six calibrated pomegranate samples from Tomb 59 and **Figure 49** illustrates the Tomb 701 sample. The rough parallel lines are the calibration curve for the selected time period; this is part of the prior information used when calibrating the radiocarbon sample. The Gaussian distribution on the left (y axis) is the probability density function (PDF) for the uncalibrated radiocarbon determination. Along the

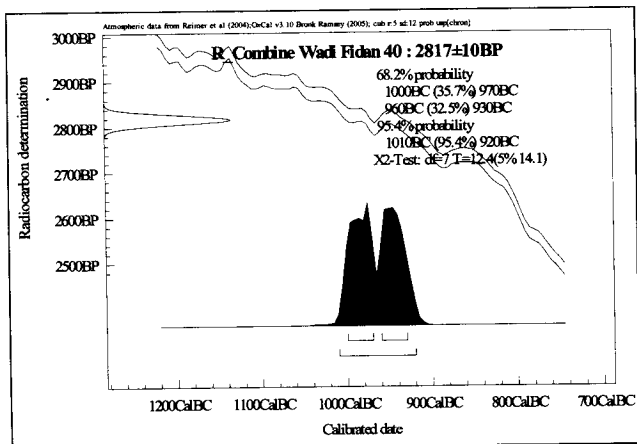
horizontal axis is the posterior PDF for the calibrated date. This is calculated using the Bayesian method to combine prior information with new data. **Table 12** displays the set of individual calibrated dates. Super-century ranges such as these are generally inadequate for dating archaeological sites in historical periods such as the Iron Age (ca. 1200 - 500 BC). The sort of precision needed to resolve historical chronological issues are sub-



49. Calibration for sample from Grave 701, Area C.

century and even half-century date ranges.

Unlike the '97 excavation (Levy *et al.* 1999) with its small radiocarbon date sample, we are now able to average the expanded sample of radiocarbon determinations using OXCAL's R\_Combine function. By doing so the error estimate for the un-calibrated determination was significantly reduced and we obtained an error-weighted value of 2817±10BP (Fig. 50). Note the Gaussian distribution on the vertical axis is considerably narrowed compared to the individual dates from Figs. 48 and 49. Regrettably, the calibration curve causes a bi-modality even at this level of precision, which results in less resolution. The result is 1000BC - 970BC (35.7% probability), 960BC - 930BC (32.5% probability), and 1010BC - 920BC (95.4% probability); the latter range is the degree of precision sought after in radiocarbon dating of historical periods. Were it not for the wiggle in the calibration curve that corresponds with our data, the results would be even more precise. Nevertheless, the increase in chronological precision has important ramifications for archaeological re-

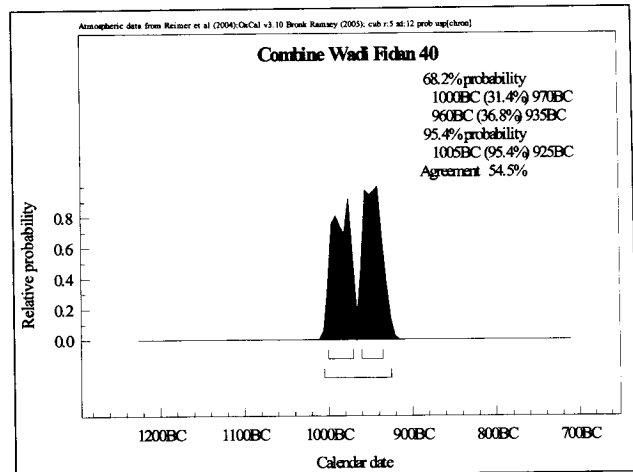


50. Radiocarbon date for averaged samples (Bronk Ramsey 1995a, 2001b).

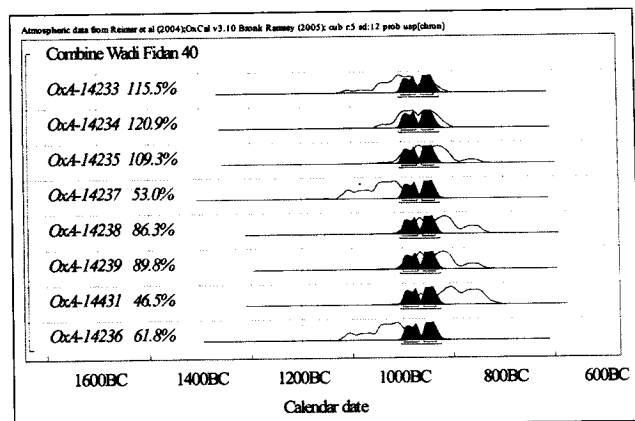
search in Edom and the southern Levant.

One other method of combining data was used in the analysis - OXCAL's Combine function, which averages the probabilities of the calibrated samples. The result was even more precise than the previous method of averaging: 1005BC - 925BC. The wiggle in the calibration curve still caused a bi-modality in the PDF, but this is unavoidable. The result of the combination of probabilities is a range of 80 years (95% probability), some of the highest precision obtained from a radiocarbon analysis of the Iron Age of Jordan. Figures 51 and 52 show the increase in precision over single calibrated dates.

The dating analysis done on the short lived samples from two graves at the WF40 cemetery demonstrated how archaeologists can achieve a higher degree of resolution by combining multiple measurements — especially when they come from sealed stratigraphic contexts. We obtained close



51. Post-calibration probability average. Note the bi-modality caused by a wiggle in the calibration curve (Bronk Ramsey 1995a, 2001b).



52. Combined probabilities — Shows the increase in precision over single radiocarbon dates. The average of the probabilities (black fill) juxtaposed with the PDF of the single radiocarbon dates (Bronk Ramsey 1995a, 2001b).

agreement between the eight short lived pomegranate samples dated by ORAU. The two methods of averaging outlined above combine the set of data to generate a single, more accurate result. Our goal of sub-century precision was achieved through the use of Bayesian statistics to increase chronological precision. A wiggle in the calibration curve corresponding to the same time period as our data significantly reduced chronological precision. Were there a distinguishable site stratigraphy that could yield ordered samples “wiggle-matching” might have been an option to get around the fluctuation in the calibration curve.

The results of the research show that the cemetery was used during the 10th century BC. Thousands of burials are estimated to exist at WF40, and the site could have been in use for centuries. Unfortunately, it is difficult to make inferences regarding the span of occupation without a larger sample of short-life organic remains. Nonetheless, the nature of the burials and the confirmation of an early Iron Age occupation lend support to Levy *et al.*'s (1999a) previous notion that the site, and probably the geographic region, was occupied by pastoral nomadic societies during the transition from the Iron I to Iron IIa periods.

### Conclusion

The 2004 excavations at the Wādī Fidān 40 cemetery have contributed a great deal to understanding and modeling the nature of Iron Age communities of the lowlands of Edom. The expanded sample of graves provides one of the largest Iron Age mortuary assemblages in Jordan and the neighboring areas. Although only a preliminary report, we have attempted to provide as comprehensive an overview of the material culture recently discovered. Some of the most significant results have to do with the absolute dating of the cemetery based on high precision radiocarbon dates of short-life samples and the discovery of a datable Egyptian stamp seal that has parallels with samples from over 20 Iron Age sites in the southern Levant. Our discoveries draw the Edomite lowlands into an as yet undefined relationship with sites in northern Jordan such as Saḥāb and Tall as-Sa'idiyya and a wealth of Palestinian sites such as Gezer, Tall al-Fār'a (south), Timna and others. Equally important is the dating of the seal to the 19th-20th Dynasties (Fig. 37; ca. 1292-1075BC according to Munger above; or mainly Dynasty 21, ca. 1075 - 945BC according to B. Brendl (personal communication)). The date of this Egyptian artifact is very close to the radiocarbon determinations discussed above (average date, 1005BC - 925BC,

95.4% probability, Fig. 51) — especially according to Brendl's assessment. The suite of radiocarbon dates come from tombs located at opposite ends of the cemetery (Fig. 2). While we have not yet succeeded in establishing the chronological depth of the cemetery, the similarities in mortuary rituals found across the site along with the available radiocarbon dates, indicate a significant 10th century BC occupation in the Faynān district during the transition from the Iron I to Iron IIa periods.

The 2004 excavations shed new light on some aspects of Iron Age burial practices in the Edomite lowlands. The discovery of additional graves with pomegranates is important. The pomegranate is one of the “Seven Species” mentioned in the Hebrew Bible. As Zohary (Zohary 1982) points out, there are many praises related to the pomegranate in the imagery of the 10th century BC King Solomon. For example, “Your lips are like a scarlet thread, and your mouth is lovely. Your cheeks are like halves of a pomegranate behind your veil” — *Song of Solomon 4:3*. Pomegranates are cultivated in the Faynān district today, especially in gardens situated along secondary drainages such as upper reaches of the Wādī al-Ghuwayb where the al-Managa family has a large “bustān” (Arabic: garden) with large numbers of cultivated pomegranate trees. In Jordan and the surrounding regions, as this fruit ripens relatively late in the season (around August – September) it can be assumed that the people buried in Tombs 59, 701 and others were laid to rest sometime in the fall. Leaving aside the problems of dating the Hebrew Bible (Friedman 1988), the general consensus that it was codified during the seventh – sixth centuries BC, gives import to the ancient author's view of the importance of pomegranates in late Iron Age society, making it no surprise that these fruits are associated with female burials.

The discovery of over 15 anthropomorphic standing stones with beautifully carved noses and ears both inside and outside the stone grave circles adds a new element to understanding burial rituals in the Wādī Fidān 40 cemetery (Figs. 38 – 40). Whether these represent individuals or some eponymous ancestor will require significant research. However, the discovery of these standing stones enhances the assemblage of known standing stones from the deserts of the southern Levant (Avner 1984) by demonstrating their close contextual association with Iron Age mortuary ritual in lowland Edom.

It is too early to identify the intricate relationship between the Wādī Fidān 40 cemetery population, the copper producing sites of Faynān (Levy *et al.* 2003), and the Iron Age settlement

sites located on the highland plateau (Bienkowski 2001; Bienkowski and Bennett 2003) of Edom. However, the 10th century radiocarbon dates from the cemetery associated with tombs containing earrings, bangles, a spiral pendant other jewelry similar to finds at highland sites such as ʿTuwaylān (Ogden 1995), highland the highland — lowland interaction that must have occurred during the Iron I/II transition in this part of Jordan. Future research concerning the ancient DNA of the human remains from the Wādī Fidān 40 cemetery, more large-scale Iron Age high precision radiocarbon studies of stratified deposits from both highland and lowland sites in Edom as well as other parts of the southern Levant (Levy and Higham in press, Levy *et al.* in press), and other science-based studies will help researchers clarify the historical and cultural evolution of Edom during the Iron Age.

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