

# A Late Iron Age Settlement in Mahleya, Oman

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## ABSTRACT

This paper presents the results of a survey and excavation carried out at a Late Iron Age/ Samad Period settlement situated on the western bank of Wadi Mahram, close to the village of Mahleya in the al-Mudhaybi region. The site was discovered and excavated in January 2004. The excavation proved to be very rewarding. Two stone structures were fully excavated, revealing the possible remains of a stone-and-mudbrick house. The two structures provide an indication of settlement organization, layout and economy during the Late Iron Age/Samad Period. The results suggest this was an agricultural settlement, as evidenced from the recovery of a number of date stones, the remains of a *falaj* channel and recessed areas of land perhaps specified for agriculture. There is also evidence of trade and contact with the coast, as attested by the recovery of shells. It is possible that some sort of exchange network existed between the interior oasis settlement of Mahleya and various coastal settlements, whereby dates, cereals and animal products (e.g. milk, meat [perhaps dried], leather and fat) were exchanged for dried and salted fish and shells from the coast.

**KEYWORDS:** Late Iron Age/Samad Period, Mahleya, Settlement, Dwelling Structures, Agriculture.

## مستوطنة من العصر الحديدي المتأخر بمنطقة محليا، سلطنة عمان

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### الملخص

تستعرض هذه الورقة نتائج المسح والتنقيب الذي أجري في يناير ٢٠٠٤م في مستوطنة تعود إلى نهاية العصر الحديدي/ فترة سمد. تقع المستوطنة على الضفة الغربية من وادي محرم بالقرب من قرية محليا في ولاية المضبيبي. كشف التنقيب عن مبنين حجريين يمثلان جزءا من وحدة بنائية واحدة؛ ربما بقايا منزل مبني بأساسات حجرية وجدران من الطين. قدمت هذه البقايا معلومات مهمة عن تنظيم المستوطنة وتخطيطها واقتصاد سكانها في نهاية العصر الحديدي/ فترة سمد. تشير النتائج إلى أن سكان المستوطنة اعتمدوا أساسا في اقتصادهم على الإنتاج الزراعي كما يستدل على ذلك من خلال العثور على كميات كبيرة من نوى التمر في طبقات المباني المنقبة، بالإضافة إلى الكشف عن بقايا قناة لفلج تحيط بالموقع، وأراضٍ منخفضة ربما خصصت للزراعة. كما أن هناك دليلا على تواصل سكان مستوطنة محليا مع سكان الساحل، حيث عثر على بعض الأصداف البحرية ضمن طبقات المباني، والتي تشير إلى احتمالية التبادل التجاري بين المجتمعين: سكان محليا قدموا لسكان الساحل منتجاتهم الزراعية - من تمر وحبوب - والحيوانية - من حليب ولحم وجلود - وزيت؛ واستبدلوا بها بالأسماك المملحة والمجففة والأصداف من سكان الساحل.

كلمات مفتاحية: فترة سمد / العصر الحديدي المتأخر، محليا، مستوطنة، تكوينات أبنية سكنية، زراعة.

## INTRODUCTION

Surveys and excavations have identified a large number of important Late Iron Age/Samad period sites throughout the Oman Peninsula. Settlements of this period have been located in different geographical zones of the peninsula, both on the coast and inland (the piedmont and mountains). The nature and conditions of the Late Iron Age/Samad settlements in Oman resemble those found in other parts of the Arabian Gulf. In Oman, settlements of this period, and particularly those located in the piedmont zone, include a variety of different kinds of structures: dwellings, fortifications, workshops, tombs, agricultural installations, storehouses and, most importantly, the *falaj* system, introduced during the Early Iron Age (cf. Magee 1998: 51–54, 2003: 9 and 2004: 41; al-Tikriti 2002a; Magee and Carter 1999: 174). The settlements are typically located on flat areas or higher elevations and vary in size, density and shape. A number have been occupied by sedentary populations, while other smaller settlements could have been inhabited seasonally (cf. Al-Jahwari 2008: 360-361).

Settlements are important in archaeological studies because they give crucial information about the level of activity within the period of study. Unlike tombs, settlements provide detailed and valuable information about the social, economic, religious (e.g. Bithnah 44 (Benoist 2007: 34-54) and Tell Al-Tha'abin or Mound of Serpents in Al-Qusais (Taha 2003: 224-238, 287-294)) and political (e.g. Muweilah (Magee 2004: 36)) aspects of the inhabitants who lived in them. The recovery of a large number of Late Iron Age/Samad period settlement sites all over the peninsula has enabled archaeologists to understand clearly the settlement pattern of this period and all its related aspects. The evidence indicates that the Late Iron Age/Samad period was a period of intense settlement and burial activity, as well as of economic growth in the Oman Peninsula (Kennet 2007: 103). However, it is possible that settlement growth had begun earlier, in the Iron Age. Boucharlat and Mouton (1991) suggest a cultural evolution occurring during that time, with some changes taking place at the end of the Late Iron Age. These included a shift from isolated

small settlements (hamlets or villages) to larger communal settlements (oases). Materials recovered from the Late Iron Age/Samad contexts within the peninsula indicate that, by the beginning of this period, the peninsula had witnessed the large-scale exploitation of iron, and a number of iron objects and fragments have been recovered from different contexts (Potts 1990: 272; Boucharlat 1991: 297; Mouton 1999: 22). It is further proposed that the inhabitants of these settlements were involved in local and regional exchange-and-trade contacts with neighbouring areas, such as the Gulf, South, East and North-East Arabia, Mesopotamia, South and South-Western Iran, India, Pakistan, the Near East and the Eastern Mediterranean countries (Mouton 1999: 21–23; Benoist, Mouton and Schiettecatte 2003: 72; Kennet 2005: 114). Coins are also an important mark of cultural and economic development and indicate the existence of local and regional trade networks (Mouton 1999: 21–23; Benoist, Mouton and Schiettecatte 2003: 72; Kennet 2005: 114).

Given this background, the intention of this paper is to present the results of an excavation carried out at a Late Iron Age/Samad period settlement close to the village of Mahleya in the al-Mudhaybi region (Figure 1). The settlement was recovered during a brief survey carried out in January 2004 (see below), while a rescue excavation was in process at a Late Iron Age/Samad tomb site located just 100 m east of the settlement. This paper will describe and highlight the importance of the Mahleya settlement for enhancing our understanding of a crucial period in the antiquity of Oman. It will also attempt to understand the relationship between this settlement and the tombs excavated on the eastern bank of the wadi at Mahleya village, as well as those located near to the settlement itself. Some attempt will be made to describe the different types of dwellings constructed in the settlement, based on recovered archaeological remains, but the main focus of the paper will be on the settlement structure itself, the recovered materials, and their significance for enhancing our knowledge of socio-economic structures during the Iron Age. As will be seen later, this settlement adds considerably to our knowledge of late Iron Age/Samad settlement patterns, layout and distribution, as well as social, economic and political aspects of the period.

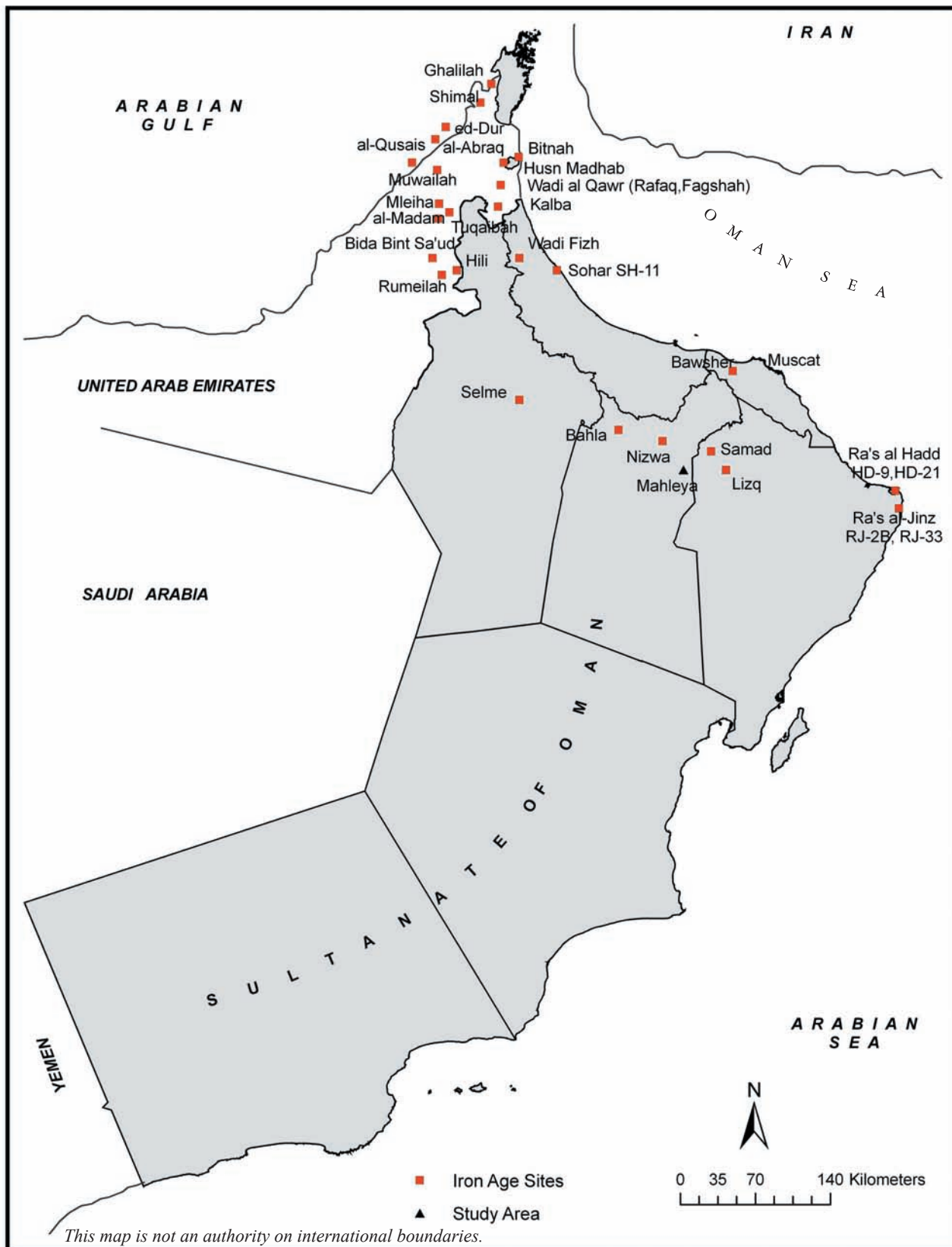


FIGURE 1. Location of Mahleya and other important Iron Age-Samad period sites.

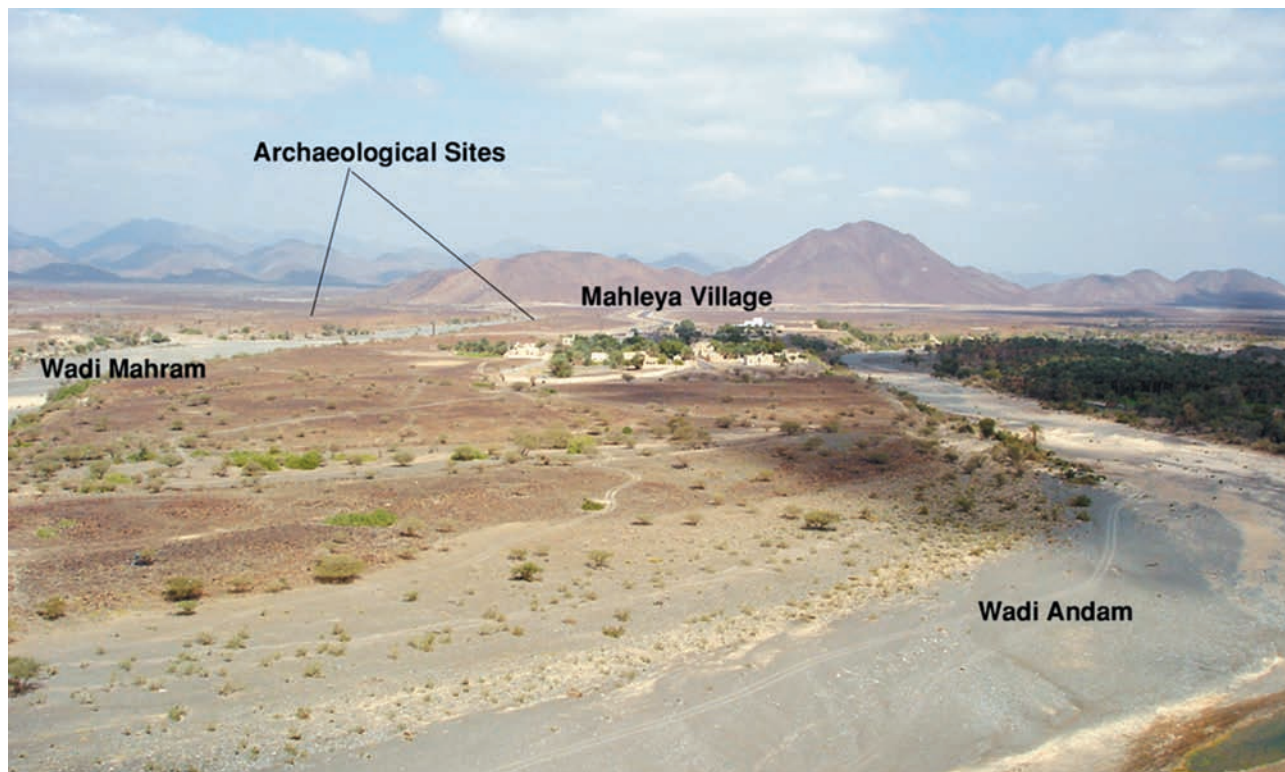


FIGURE 2. The location of Mahleya village between the western bank of Wadi Andam and the eastern bank of Wadi Mahram.

#### THE AREA OF MAHLEYA

The settlement is situated very close to the current village of Mahleya, on the western bank of Wadi Mahram. The village of Mahleya is set on an ancient terrace along the banks of Wadi Andam/Mahram in al-Sharqyah Region in the Sultanate of Oman (Figure 2). Wadi Andam, one of the very large wadis that cross the ophiolite complex of the Eastern Hajar Mountains (*Jebal al-Hajar al-Sharqi*), lies at approximately 22° 45' N and 57° 98' E, and is one of the major wadis crossing Wilayat al-Mudhaybi and Sinaw for hundreds of kilometres in the Sharqyah region. It passes most of the villages in al-Mudhaybi and runs into the Wadi Halfayn basin, reaching the Arabian Sea close to the Hijj area in Wilayat Mahout to the south. It includes a large mountainous area crossed by several wadi tributaries and gravel plains that have long formed the base for human settlements. All of these tributaries are dry for most of the year but, together with Wadi Andam, are the only locations in the area with surface and subsurface water (ElMahi and Al-Jahwari 2005: 57) (Figure 3).

The area in and around Mahleya has a number of thorny acacia varieties, in particular *Acacia tortilis* and *Acacia ehrenbergiana*. Although the mountain wadis form a different climate zone from the lower levels and desert, *Acacia*, *Ziziphus spina-christi*, *Pteropyrum scoparium*, *Euphorbia larica*, *Reptonia-Olea* and *Prosopis* sp. extend into this zone as well (cf. Mandaville 1975: 232-233).

The first archaeological investigations in Wadi Andam occurred during the early 1970s when the Harvard Archaeological Expedition carried out a rough survey using a traditional methodology with the aim of locating settlement sites, particularly those dating to the 3<sup>rd</sup> millennium BC (cf. Pullar 1974; Humphries 1974; Hastings, Humphries and Meadow 1975; Meadow, Humphries and Hastings 1976). Other investigations were carried out in this wadi at the time by the British Archaeological Mission (cf. de Cardi, Collier and Doe 1976; de Cardi 1977; de Cardi, Doe and Roskams 1977; Doe 1977). Later work carried out by the German Archaeological Mission in the al-Sharqyah region, mainly the Samad-Maysar area (cf. Weisgerber 1980, 1981; Yule and



FIGURE 3. *Surface water at Wadi Andam after heavy rain in 2004.*

Weisgerber 1988; Yule and Kazenwadel 1993; Yule 1993, 2001), focused on recording specific types of site, namely Late Iron Age/Samad tombs, in order to understand the distribution and chronology of activity in the Sharqiyah and al-Dakhliyah (Central Oman) of this period. It should, however, be pointed out that none of these early surveys, apart from the German Archaeological Mission, mentioned the site at Mahleya, and while the German Mission identified an Iron Age tomb field, no excavation was carried out at that time (Yule 2005).

Wadi Andam was described by Lorimer early in the 20<sup>th</sup> century. He gave details about the wadi and its importance, described some of the villages located along its banks and gave a detailed picture of their inhabitants and their economy, and some social and demographic features (Lorimer 1908: 77-79). The village of Mahleya was among these villages described.

#### THE SURVEY

A brief preliminary survey carried out in January 2004 enabled us to define the most important

archaeological features of the site and its surrounding areas (Figure 4). This survey was rough and covered only a small area (ca. 1500 m × 1000 m) around the current village of Mahleya. The technique used in this survey was to walk in zigzag lines to define visible archaeological remains and to collect random surface samples for dating. The whole site was called Mahleya at that stage and included the excavated cemetery on the eastern bank of Wadi Mahram. The settlement on the western bank of the same wadi was subsequently labelled 'MS' (Mahleya Settlement). It should be pointed out that during the more intensive and detailed survey carried out by the author during the period from December 2004 to March 2005, the cemetery on the eastern bank and its related remains were re-labelled CS.2.50, while the settlement and its related cemeteries and other remains were re-labelled CS.2.51. (For full details of this survey and its methodology and results, see Al-Jahwari 2008.) Briefly, this survey was carried out in Wadi Andam in the al-Sharqiyah region, where Mahleya is situated, and it covered a transect measuring 40 km x 100 km (Al-Jahwari 2008: 4, Map 2). The

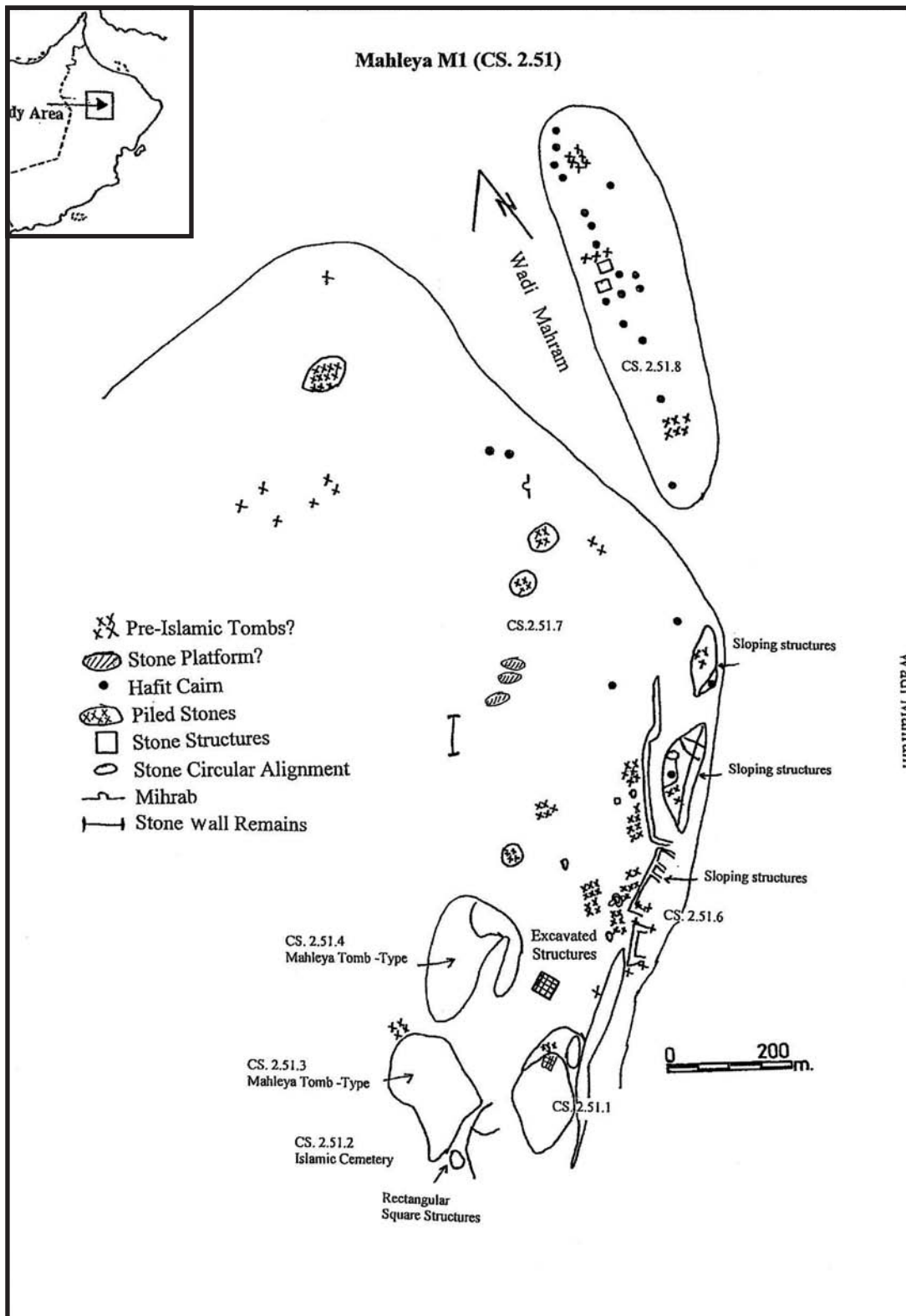


FIGURE 4. Sketch plan for Mahleya settlement (site CS.2.51) and its archaeological features.



FIGURE 5. *Late Iron Age/Samad Mahleya-type tomb.*

main aim of the survey was to employ a rigorous, probabilistic sampling technique to collect data that was not only free from period bias, but testable and suitable for quantified analysis, and that would allow an analysis of activity and settlement intensity over time. The survey was carried out by car and on foot in a variety of sample locations, as follows: six ‘wadi villages’ located on wadi banks in places where space permitted date-palm agriculture; a number of randomly located control surveys; a number of areas surrounding the wadi villages; and a variety of other sites and collection areas along the wadi system (*ibid.*: 108–114). Another aim was to record the location of all types of evidence or archaeological sites in the area of study using hand-held GPS. The settlement of Mahleya was among the recovered sites. During the first survey it was possible to define the boundaries of the settlement. These extend over an area of 28.5 hectares on and along the western bank of Wadi Mahram, which separates it from the excavated cemetery (site CS.2.50). It was also possible during this survey to define a group of

additional archaeological features on the settlement site (CS.2.51).

The site of the Mahleya settlement is covered with several archaeological remains, the most remarkable of which are pre-Islamic structures (Figure 4). The south-western part of the site is where the remains occur most densely, with hundreds of pre-Islamic and Islamic tombs. Here two cemeteries of the Mahleya-type (typical of the so-called Late Iron Age/Samad period tombs excavated in Samad area) (Figure 5) and one Islamic cemetery were located. The eastern and south-eastern parts exhibit many stone structures on the gravel terrace and along the wadi edge and slope, together with other, possibly pre-Islamic, tombs and piled stones. This site also includes four mounds with associated stone structures on the top and at the sides. These vary in height (2–3 m) and have a diameter of around 5–15m. There are also depressions on these mounds whose presence or function is not clear. They extend over an area of around 80 m x 50 m. Other stone structures and piled stones were found around the mounds. A further stone wall, approximately 50 cm thick, extends around the wadi edge and may mark



FIGURE 6. *Hafit cairn with white creamy soil at site CS.2.51.7.*

the boundaries of the mounds. The site is covered with large amounts of pottery, mainly coarse Late Iron Age/Samad ware. The western and northern parts of the site include scattered cairns (Figure 6), large numbers of Samad Period tombs, possible pre-Islamic tombs, piled stones, possible platforms, some stone structures or wall remains, possible agricultural fields and retaining walls, as well as structures along the wadi edge. The latter include a group of stone structures of different sizes and shapes built on the wadi edge and extending to the bottom of the slope on the wadi terrace to form 'sloped-structures' (See Figure 7). Identification of their function and use is thus difficult. Indeed, it is unclear whether they are remains of houses, field boundaries or retaining walls, or if they served some other function.

#### THE EXCAVATION

Some of the well-defined structure remains on the western bank of Wadi Mahram were chosen for excavation (Figures 4 and 8). Twelve squares were opened and excavated. The main aim of this

excavation was to try to understand the relationship between these settlement remains and the tombs located on the eastern bank of the same wadi, as well as those tombs located on the western bank where the settlement itself is. In other words, were these structures established and/or occupied by the same inhabitants? Were they built around the same time? It was also hoped that the excavation would help in defining the stratigraphy and chronology of the site and its occupational phases, as well as in defining the settlement's pattern, the layout and distribution of units, its overall function and cultural deposits. Another aim was to collect data that might provide some insight into the economic, administrative and social structure possibly common in the region during this time, particularly with regard to agriculture and its related systems, such as the *falaj*.

Initially, four squares (5 m x 5 m) were opened and excavated. As mentioned above, the whole settlement was labelled 'MS', while the excavated squares were labelled 'T' and numbered T1 to T4. These squares included what was called S1 (Structure 1), the first structure of the settlement. Later, eight





FIGURE 7. *Remains of stone structures on the edge and slope of Wadi Mahram at site CS.2.51.6.*

more squares were opened and excavated to the north of structure S1. These later squares were numbered T5 to T12; another structure was called S2 (Structure 2). The excavated area forms only a small part of a large occupational area along the Wadi Mahram banks, and was selected for excavation because the settlement remains are relatively undisturbed and more visible on the surface; it also provided a good opportunity to explore the relationship between the mounds and other surrounding remains found close to these structures.

The total excavated area was 300 m<sup>2</sup>. After excavation, two rectangular structures were recovered (Figures 8–10): structure S1 consists of two units, labelled S1A and S1B; structure S2 is located 4 m away from S1.

## THE STRUCTURES

### Structure S1

This is a rectangular structure approximately 10 m x 12 m, consisting of two units, namely S1A and S1B (Figures 8 and 11); it is connected to one of the

four mounds indicated above that include a group of stone walls. After excavation, it became clear that the wall of S1 is directly linked with this mound in the eastern and southern parts of the structure and that they both form part of one larger unit. The two units are linked by a joint stone wall (Figure 12) with an entrance in the middle paved with yellow-brownish limestone slabs that are different from the stones used to construct the foundations of the walls of the structure but similar to those used to cover the roofs of Late Iron Age/Samad burial chambers excavated on the eastern bank of Wadi Mahram.

The wall foundations are built of two courses of stones with a preserved height of up to 55 cm on the inside and up to 60 cm on the outside, and a width of 35 cm. The stones vary in size, but generally they are medium to large (on average 10–40 cm) brown and dark-brown wadi stones readily available on the surface of the site. Spaces between these larger stones are filled with small pebbles, stones and earth (Figure 12). It is argued (Ibrahim and ElMahi 1998: 131) that the use of different sizes of stone as infill in the walls of a structure might indicate the

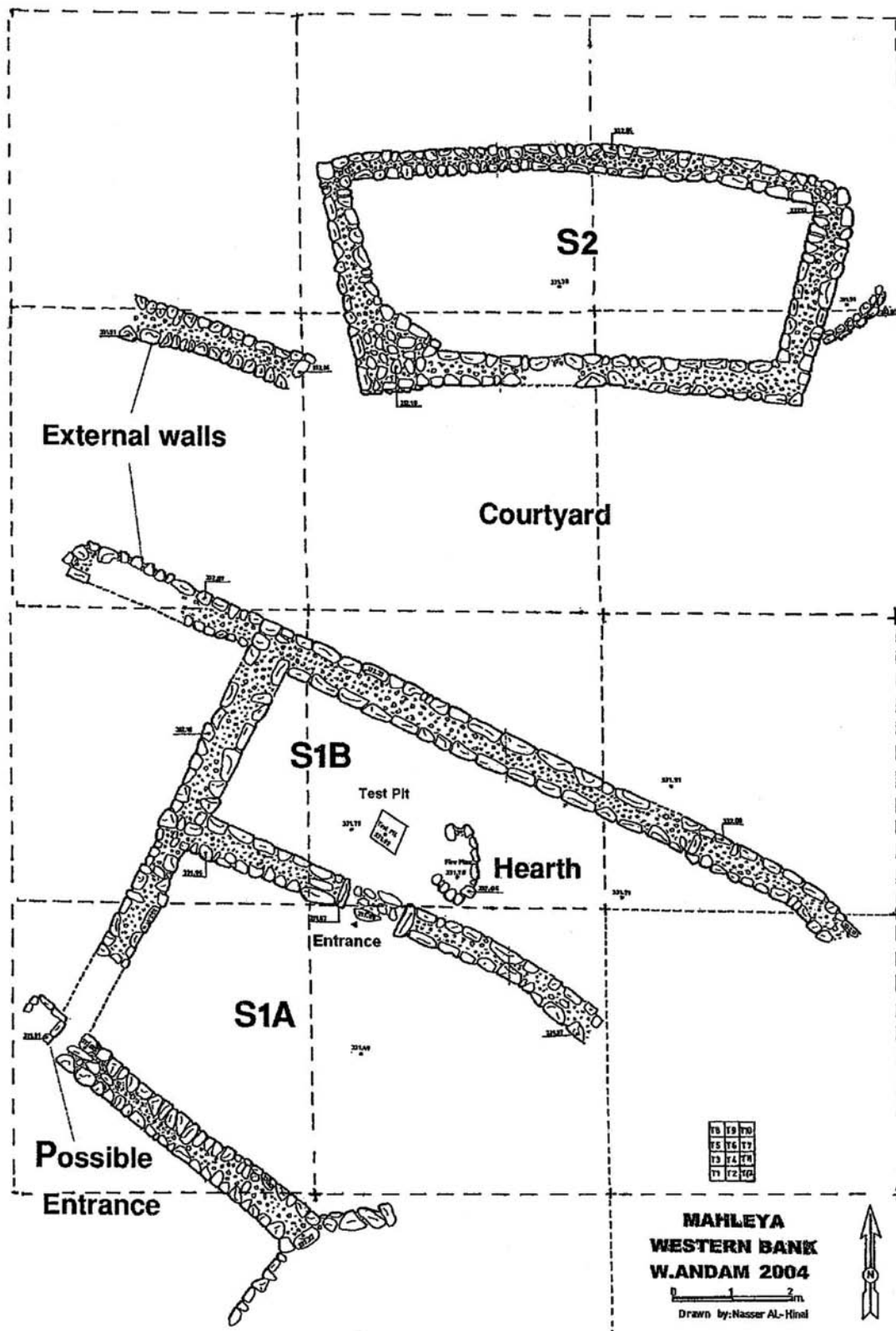


FIGURE 8. Plan of the two excavated structures (indicated in Figure 4 as excavated structures).

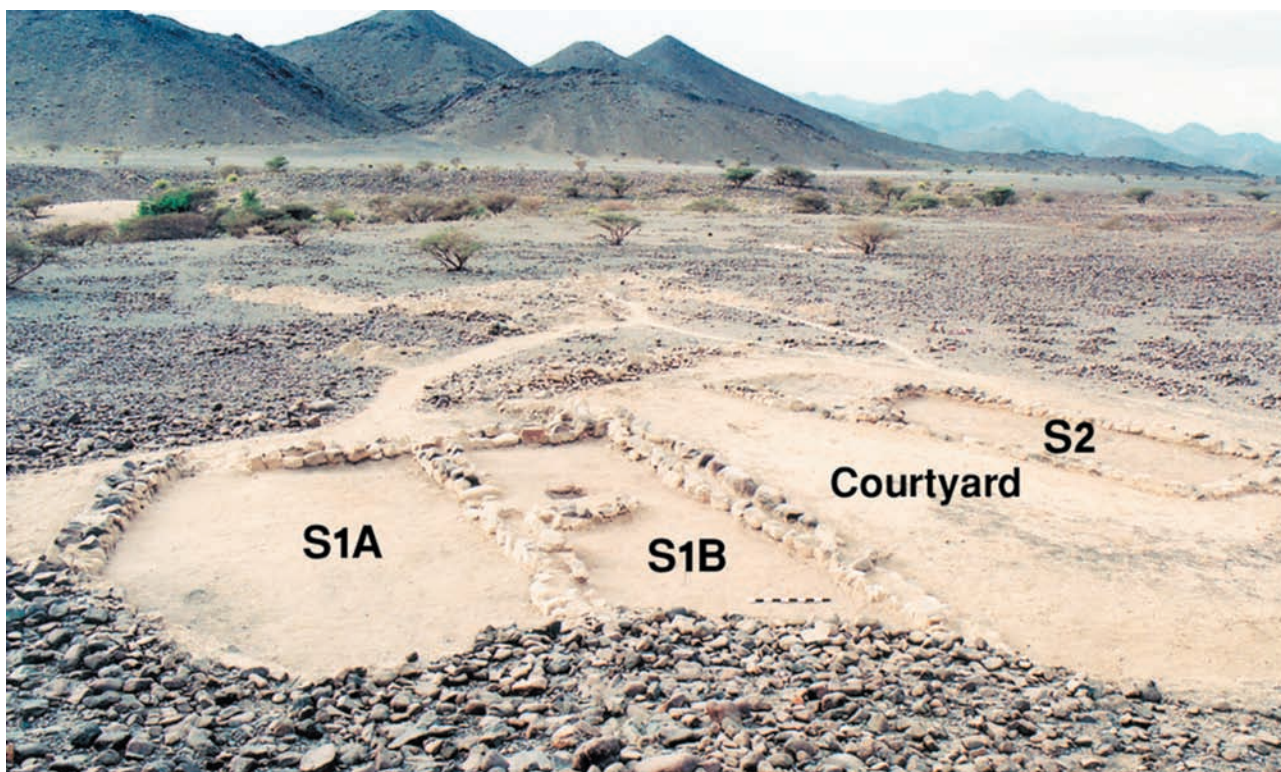


FIGURE 9. *The two excavated structures from an easterly direction.*

inhabitants' awareness of the engineering advantages of this construction method, which ensures an even temperature within the structure, generally cool in summer and warm in winter.

The excavated archaeological remains give no signs of the type of material used to complete the structures. However, it is possible that the wall foundations were built of stones to this height, the remainder of the wall being built up with mudbrick. It is also possible that the roofs were formed by placing date-palm trunks across the top of the structure walls and covering these with mats made from date palm leaves, held in place by branches of *Prosopis cineraria*. Later, the whole roof would likely be plastered with mud. This construction technique would provide protection against direct sun and rain (cf. Ibrahim and ElMahi 1998: 131; ElMahi and Ibrahim 2003: 87–89). Such a technique was no doubt common during the Iron Age, since most rooms range between 2m and 3m in width, allowing for the use of such trunks (cf. Boucharlat and Lombard 1985: 49). This technique has been in use until recent times.

The excavation also showed an occupational layer of around 20 cm thick, with large quantities of ash, charcoal and burned date stones (Figure 13), as well as hundreds of pottery sherds (see below). In the middle of unit S1B, the excavation recovered a group of stones (Figure 12) just opposite the entrance linking the two units (S1A and S1B). This structure is a single layer of stones placed in the shape of a horseshoe. Here the excavation yielded a layer of ash, burned date stones and charcoals, possibly indicating a hearth. This ash layer is not confined to the hearth area but extends over the entire floor of both units. It is less thick than unit S1A, suggesting the structure may have been a living area.

A small test pit (Figure 12), measuring 50 cm x 50 cm, was dug close to the supposed hearth to ascertain the thickness of the ash layer and whether a different archaeological layer lay under the major layer. The ash layer was found to be about 3 cm thick; no other layer was revealed, just a single major occupational layer of the Late Iron Age/Samad period (see dating below) represented by the ash layer.

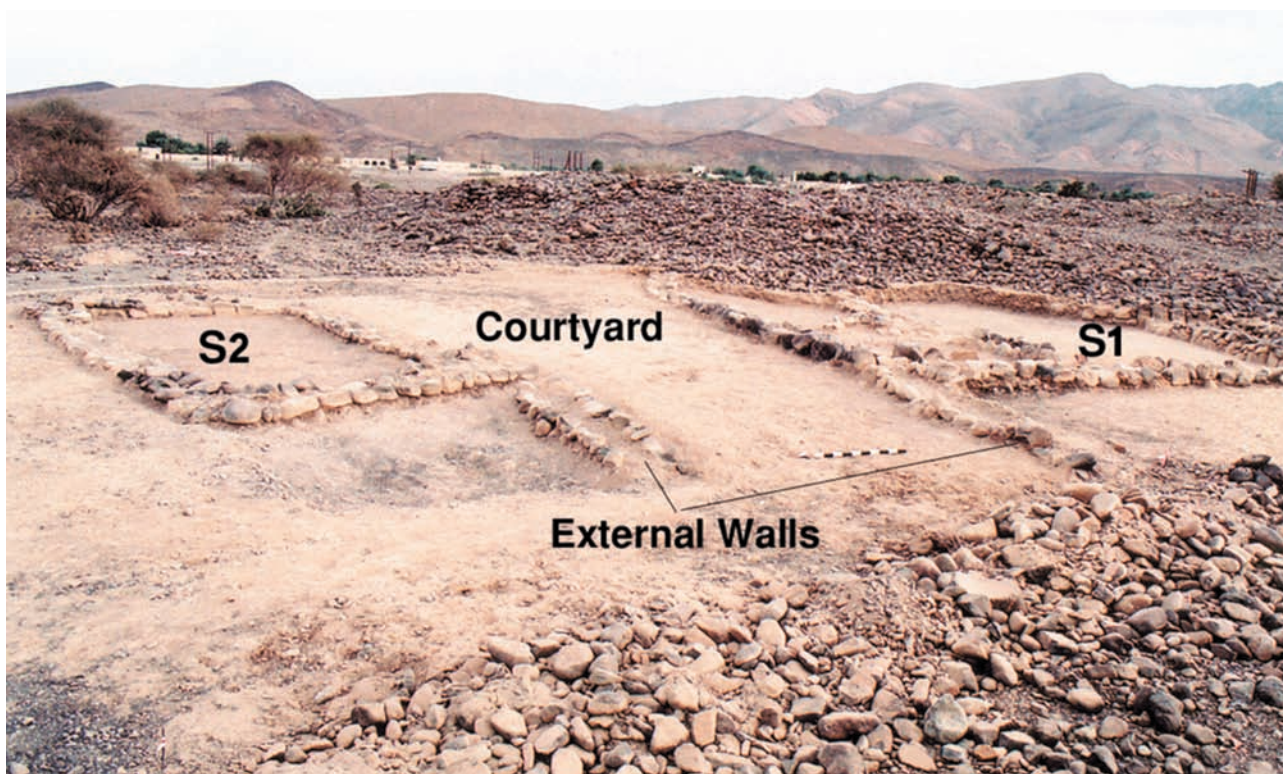


FIGURE 10. *The two excavated structures from a westerly direction.*

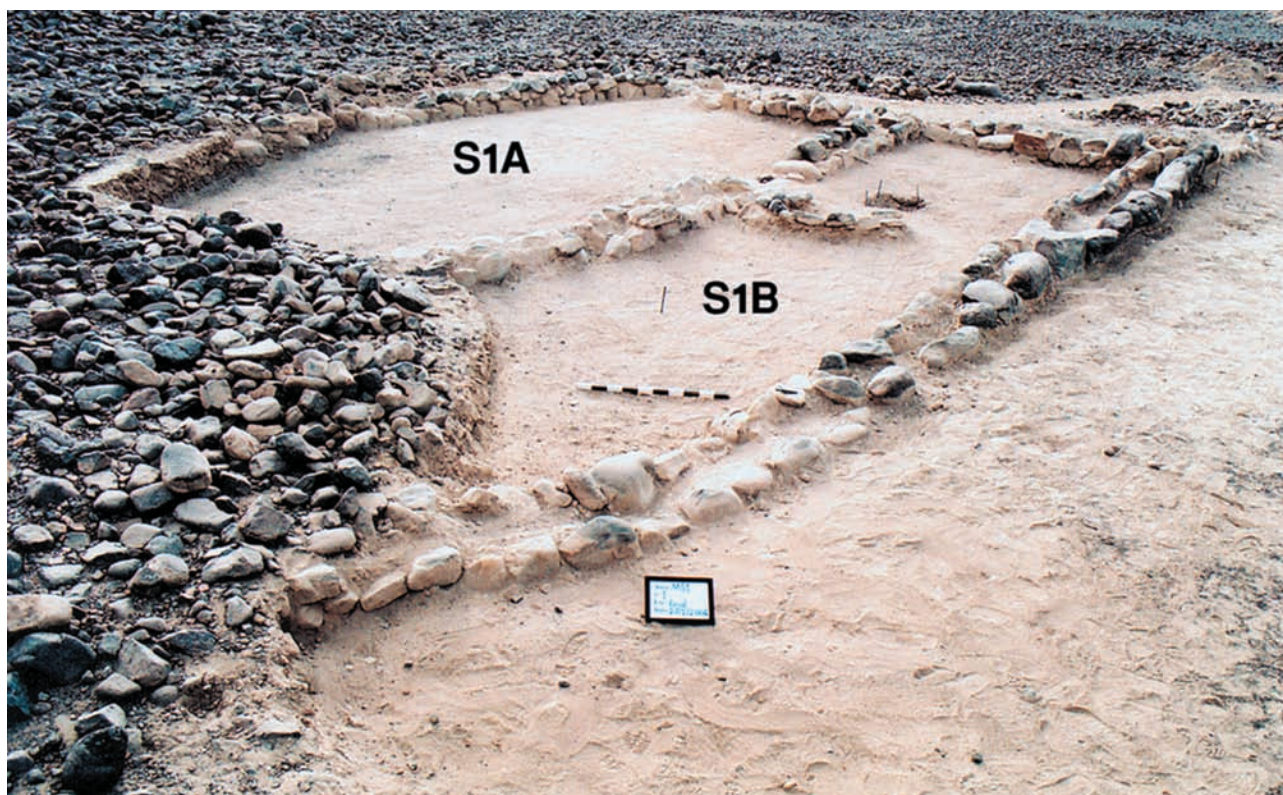


FIGURE 11. *Structure S1 from a north-easterly direction.*

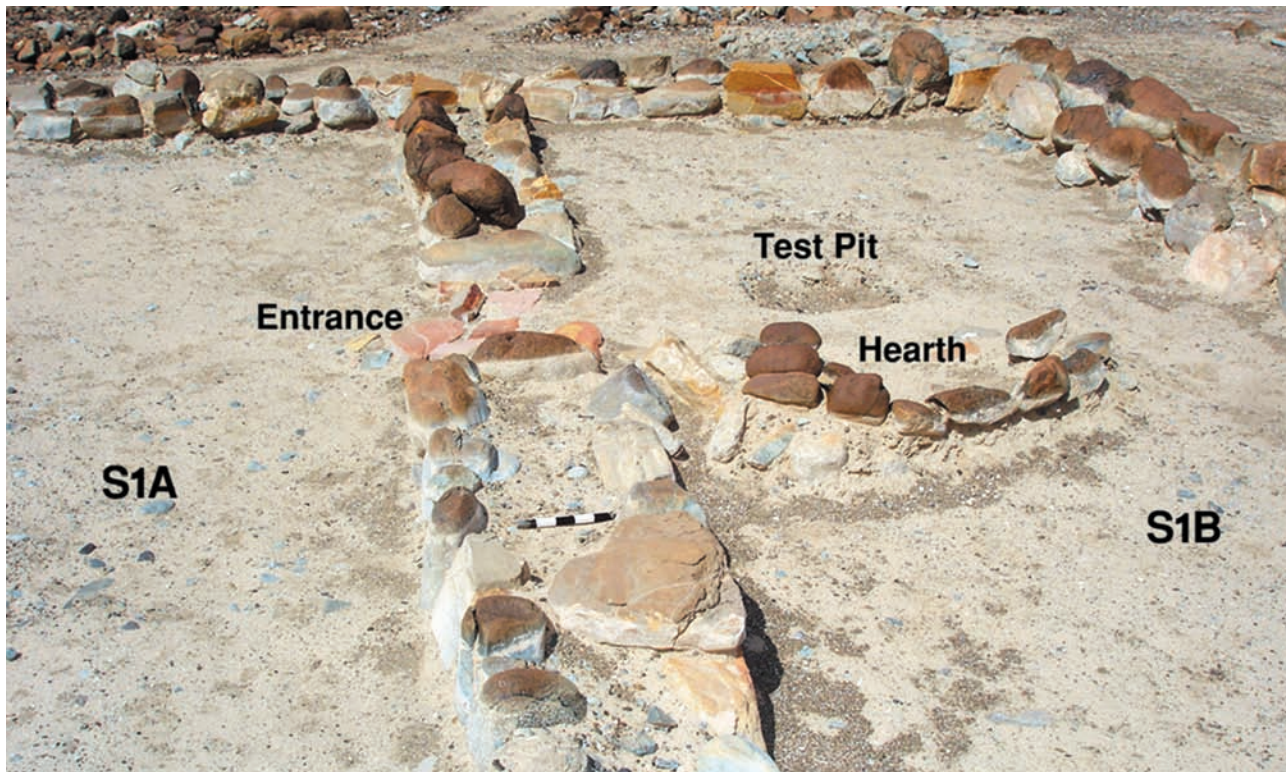


FIGURE 12. *The joint stone wall between units S1A and S1B, built of two courses of stones with small pebbles or stones and earth. In the middle is the entrance linking units S1A and S1. The structure at the right is a hearth in unit S1B. A test pit was dug in front of this.*

It was not possible to identify the main entrance to this structure, but it was probably built facing the south, as possibly evidenced by the opening found in the south-western corner of unit S1A (Figure 8).

### Structure S2

Structure S2 was excavated to determine its relationship with structure S1 and to define the extent and layout of the entire settlement (Figures 8 and 14). S2 is similar to S1 in that it is a rectangular structure approximately 4 m x 9 m. The wall foundations are built from two courses of stones to a height of around 50 cm by 35 cm wide, and the spaces between the walls are filled with small stones and earth. Here the stones on average are smaller than those in S1, but again brown and dark-brown wadi stones can be seen. Here again it is possible that the wall foundations were built of stones to this height and that the wall was completed with mud bricks and roofed with date palm trunks.

The excavation also showed an occupational layer around 20 cm thick, comprising large quantities of pottery sherds and a few fragments of shells and charcoals. It was not possible to define the main entrance of this structure either.

It should be pointed out that, unlike structure S1, this structure is not linked with, or part of, any mound. Moreover, it contains no inner partitions, and no traces of hearths were found. A wall with two courses of stones projects from its south-western corner. These structural features might indicate it had a different function from S1, but this cannot be ascertained at this point, given the lack of recovered material.

### The courtyard/passage

During the course of excavation, two stone walls were recovered outside the main borders of the two structures (Figures 8 and 10). One of them extends from the north-western wall of structure S1 (Figure 15), while the other extends from the south-western



FIGURE 13. A layer of ash with charcoal and date stone remains in Structure 1.

wall of structure S2. Both these walls were built in the same manner as structures S1 and S2 and similarly filled with rubble. It may be that some sort of passage or courtyard once linked the two structures. The approximate size of this courtyard is 6 m x 12 m, and the two extended stone walls are 2–3 m in length. The relatively large size of this courtyard area might indicate that it was open, with no roof.

#### THE FINDS

Finds were recovered from the site during the survey and excavation. Altogether, these recovered materials contribute considerably to our existing knowledge of this area and the important Late Iron Age/Samad period within the Oman Peninsula.

#### 1- Pottery

A large number of pottery sherds were recovered from the surface and the excavated areas (cf. Table 1). All sherds found during the excavation were collected, while only random samples were taken from the



FIGURE 14. Structure S2 after excavation.

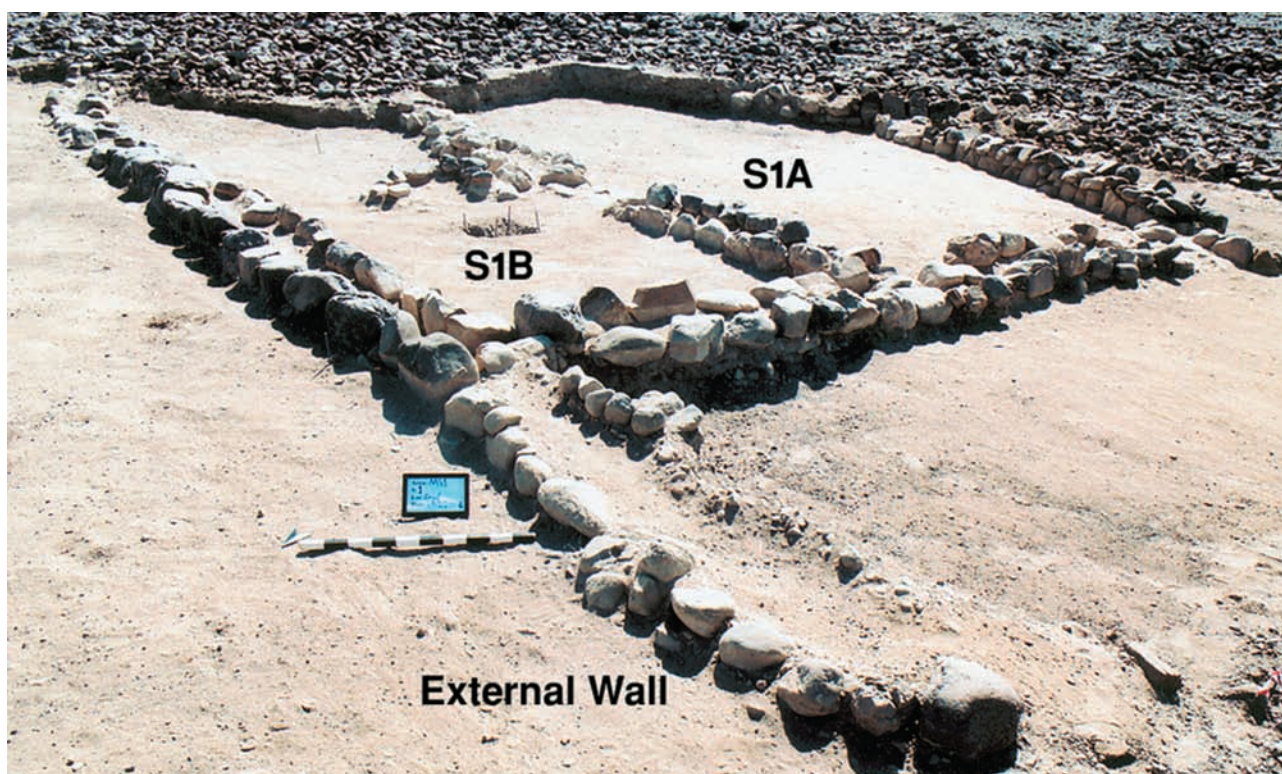


FIGURE 15. *The stone wall at the north-western side of structure S1.*

large quantities of sherds covering the surface. The random surface samples were taken to help define the settlement history of the site. Over 1500 pottery sherds were collected from the excavated areas (Table 2), and more than 250 sherds from the surface of the whole site. All the pottery recovered from the excavated areas is from the Late Iron Age/Samad period (300 BC–200 AD) (cf. Yule 2001; ElMahi and Al-Jahwari 2005: 61-64), while pottery from the surface can be attributed to different periods; the majority, however, is from the Late Iron Age/Samad period (cf. Al-Jahwari 2008: Appendix C).

Pottery of other periods collected from the surface can be attributed to the Umm an-Nar, Early Iron Age, Early Islamic and Late Islamic periods (Table 1)<sup>1</sup>.

Period	Total Sherds	Figure
Umm an-Nar	1	---
Early Iron Age	37	16–17
<b>Late Iron Age/Samad</b>	<b>213</b>	<b>18–25</b>
Early Islamic	4	26
Late Islamic	14	---

TABLE 1. *Surface pottery sherd counts by period*

The Late Iron Age/Samad pottery is thick or thin, medium to very coarse handmade ware with large grits and smooth, medium or rough fracture, as well as soft or hard firing (cf. Figures 18–25). The surfaces are red (10R, 5/8 or 2.5YR, 6/6 or 2.5YR, 6/8), light red (Munsell 2.5YR, 7/8 or 2.5YR, 7/6), reddish yellow (Munsell 7.5YR, 7/6 or 5YR, 7/8 or 5YR, 7/6), grey (Munsell 5YR, 6/1) and reddish grey (Munsell 10R, 5/1). By contrast, the core is red (Munsell 10R, 4/8 or 2.5YR, 6/8) to light red (Munsell 10R, 7/8), reddish gray (Munsell 10R, 6/1 or 10R, 5/1 or 2.5YR, 6/1), grey (Munsell 2YR, 6/1) and dark reddish grey (Munsell 2.5YR, 5/1) (cf. *ibid*: Appendix C). Almost all the pottery sherds display grey, brown and white angular, rectangular and rounded inclusions of 1 to 4 mm in size, typically covering around one to six percent of the sherd, and sometimes including traces of chaff/straw prints. Many of the recovered sherds bear decoration, such as incised herring bones with and without hatched or pitted design, incised wavy line(s) and/or irregular lines drawn between horizontal lines, and incised motif-like sunflower and leaf decoration (cf. Figures

18–22). The sherds also show raised clay or applied plain bands and circles to strengthen the vessels and facilitate lifting. Many of these bands or circles have incised decoration of crossed wavy or oblique lines in hatched, net, cross-hatched or herring bone design (cf. Figures 18–20). The sherds are 1 mm–1 cm thick.

Square	S1	S2	Courtyard
T1	137	---	---
T2	250	---	---
T3	300	---	---
T4	241	---	---
T5	---	---	28
T5/6	---	---	59
T7	---	---	42
T8	---	118	---
T9	---	208	---
T10	---	121	---
T11	---	---	---
T12	---	---	---
<b>Total/unit</b>	<b>928</b>	<b>447</b>	<b>129</b>

TABLE 2. Total number of Late Iron Age/Samad pottery sherds recovered from all the excavated squares.

Form	S1	S2	Courtyard	Figure
Rim	11	15	5	21 and 25
Base	23	28	6	24
Neck	2	---	---	25
Incised decoration	18	11	1	18–22
Raised bands	51	22	14	19–20
Lug/handle	8	2	---	23
<b>Total/unit</b>	<b>113</b>	<b>78</b>	<b>26</b>	<b>---</b>

TABLE 3. Total number of pottery forms of Late Iron Age/Samad period recovered from all the excavated squares.

Several diagnostic sherds (Table 3) are among the pottery sherds recovered from the excavated squares (c. 217 sherds, representing 14 percent of the total



FIGURE 16. Rim sherd of fine-painted Early Iron Age ware with dusky red painted bands on both interior and exterior surfaces.



FIGURE 17. Rim sherds of coarse red-on-light Early Iron Age ware with raised bands and incised finger/nail prints and herring-bone decoration.



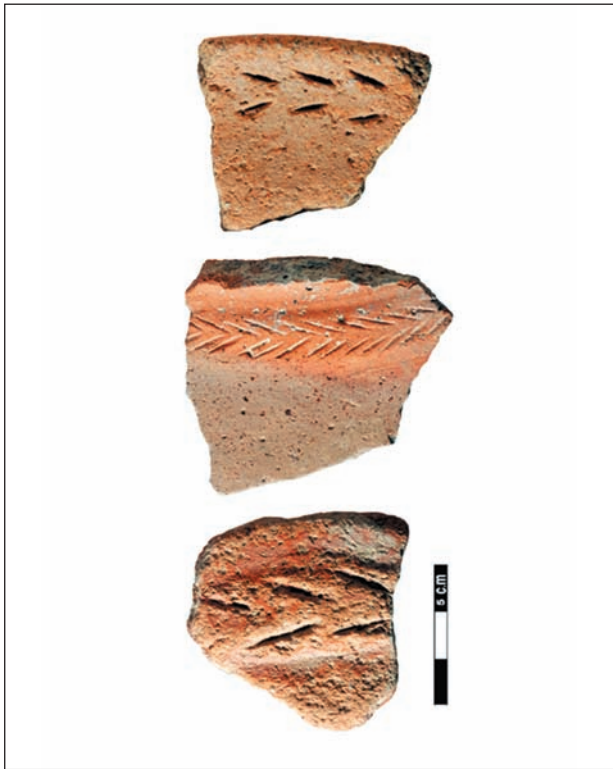


FIGURE 18. Late Iron Age/Samad ware with raised clay or applied plain bands and incised decoration.

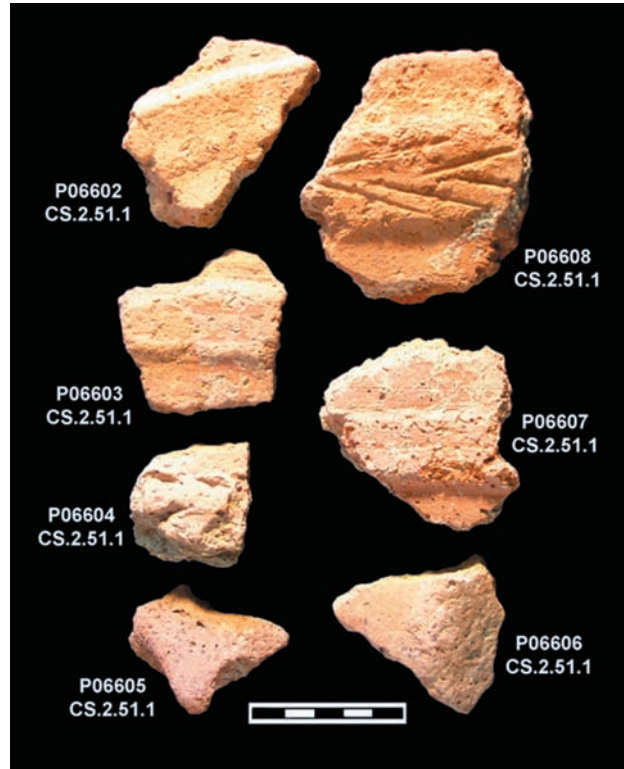


FIGURE 20. Sherd decorated with raised clay or applied plain bands and the incised decoration of Late Iron Age/Samad vessels.



FIGURE 19. Sherd decorated with possible incised motif-like sunflower of Late Iron Age/Samad vessels.



FIGURE 21. Late Iron Age/Samad vessel rim sherd decorated with an incised wavy line.

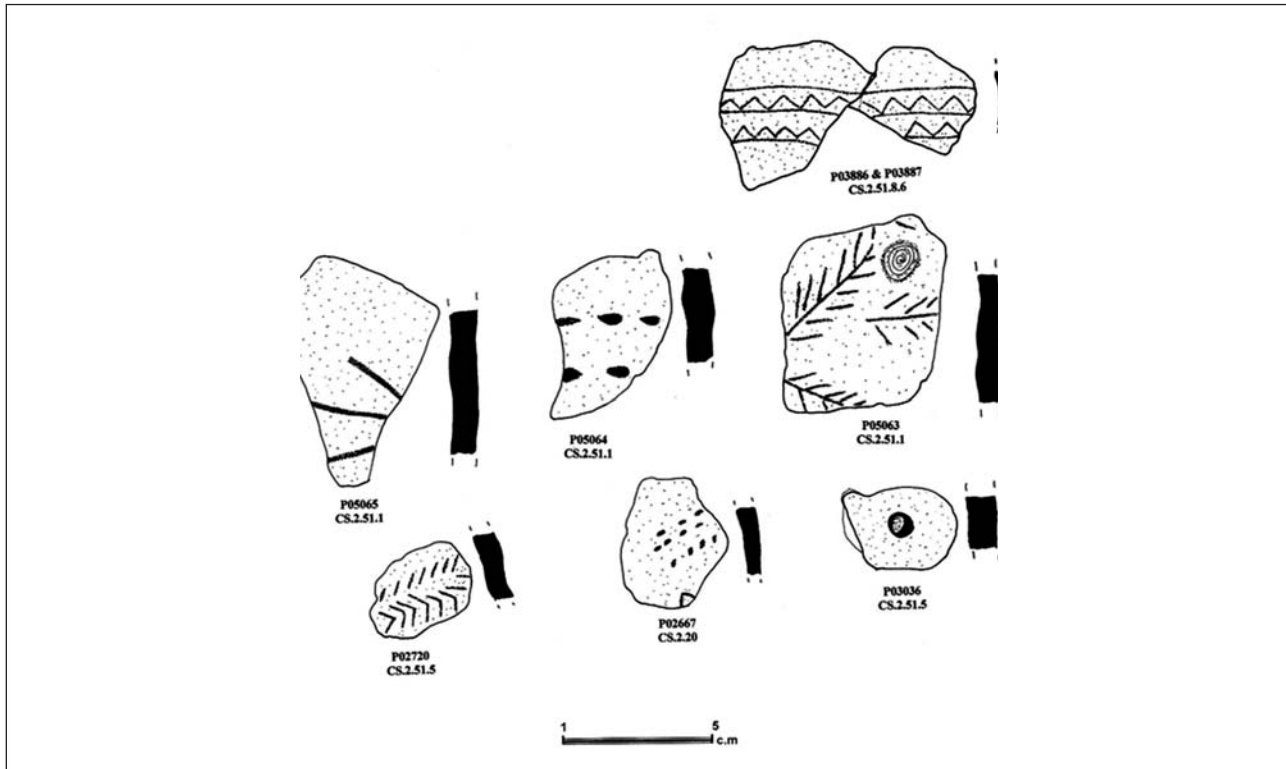


FIGURE 22. Late Iron Age/Samad pottery sherds decorated with incised decoration.

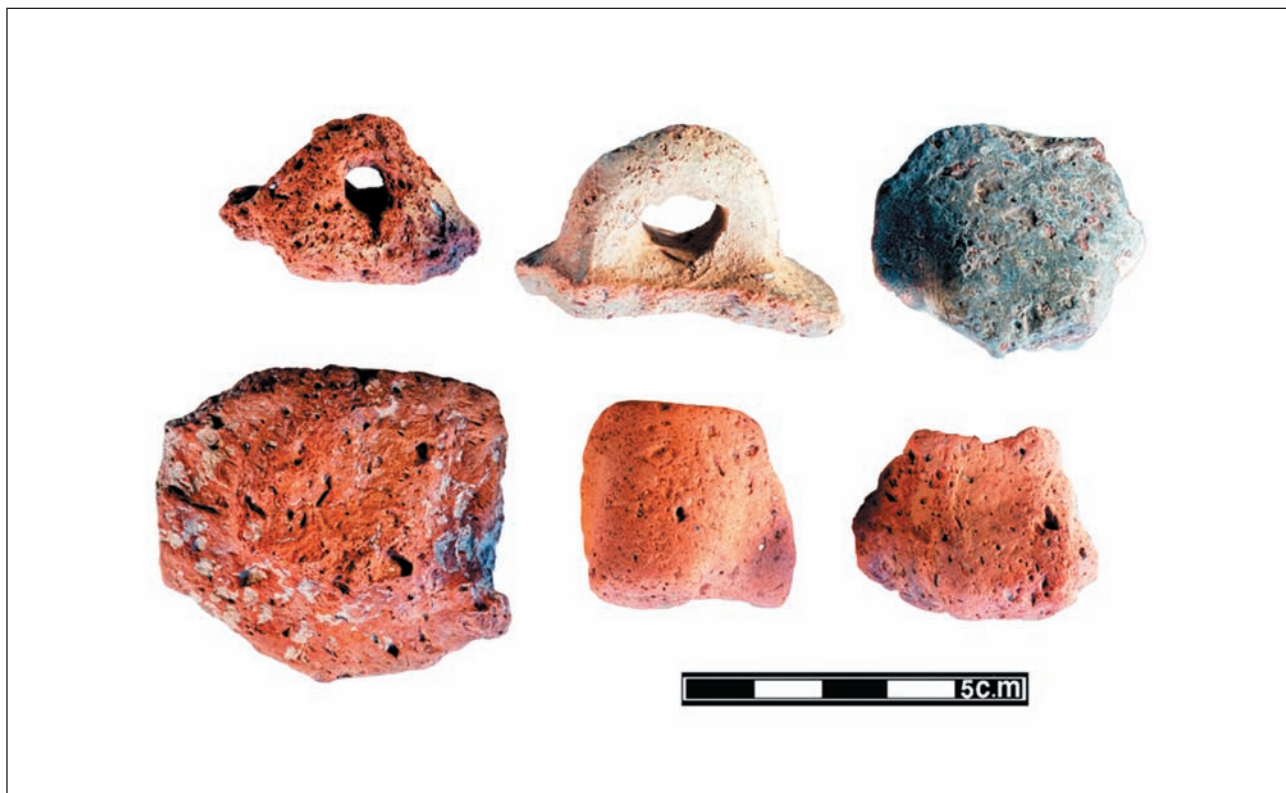


FIGURE 23. Lugs and knobs of Late Iron Age/Samad vessels.

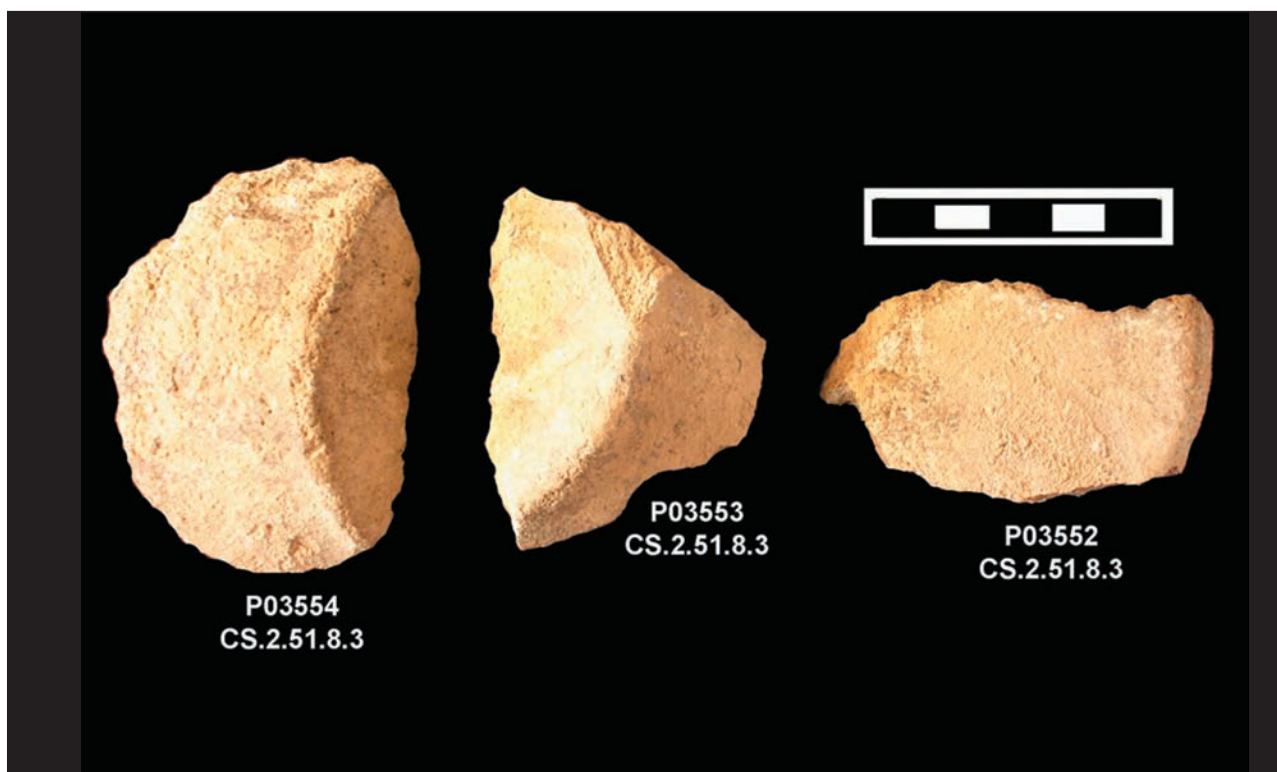


FIGURE 24. *Bases of Late Iron Age/Samad vessels.*

sherds), which might help to define the different types of pottery vessels used in the settlement. Most of these sherds belong to locally-made domestic jars, particularly large storage jars with wide, medium and small mouths, thickened everted rims (Figures 21 and 25) and flat bases (Figure 24). Jars of the same type were recovered from the excavated tombs of the same period on the eastern bank of the wadi (cf. ElMahi and Al-Jahwari 2005: 62, Figures 1 and 2). Other recovered diagnostic sherds might belong to smaller vessels, such as bottles and pitchers, and have slightly everted rims. Some of these vessel remains have small and medium-sized pierced handles or lugs. The necks are generally narrow and high, while rim shapes vary, some having everted rims and others a flaring or band-like rim. Also identified among the sherds are elongated or twisted handles with single or double strands and pierced lugs fixed horizontally on the body for holding or hanging the vessel (Figure 23).

Comparable examples of pottery can be found at other excavated sites in the Oman Peninsula, such as Samad and Maysar (Yule and Weisgerber 1988: 17, Fig. 4/1–5; 19, Fig. 5/6–9; Yule 1993: 147, Fig. 5;

Yule and Kervran 1993: 92, Fig. 12/3; Yule 2001), Rumailah (Boucharlat and Lombard 1985: 55, pl. 47/11), Bawsher (Al-Jahwari and ElMahi 2007: 19–21; Al-Belushi and ElMahi 2008: 63–67, Table 3) and Mahleya (ElMahi and Al-Jahwari 2005: 61–64).

Whilst all the recovered pottery from the excavation, and the majority of that taken from the surface, date to the Late Iron Age/Samad, some pottery sherds belonging to different periods were collected from across the surface of the whole site; among these are thirty-seven Early Iron Age, four Early Islamic and fourteen Late Islamic sherds. Although only a few such sherds were collected, and were found in different parts of the site, they indicate that the site may have been inhabited, or used in some way, at times earlier than the Late Iron Age/Samad. However, such occupation may have been small, perhaps by a nomadic or semi-nomadic population.

## 2- Stone objects

A few stone materials were recovered from the surface and the excavated contexts. Among these is a body fragment of a chlorite vessel (Figure 27) that was recovered from S1B (Square T2). However,

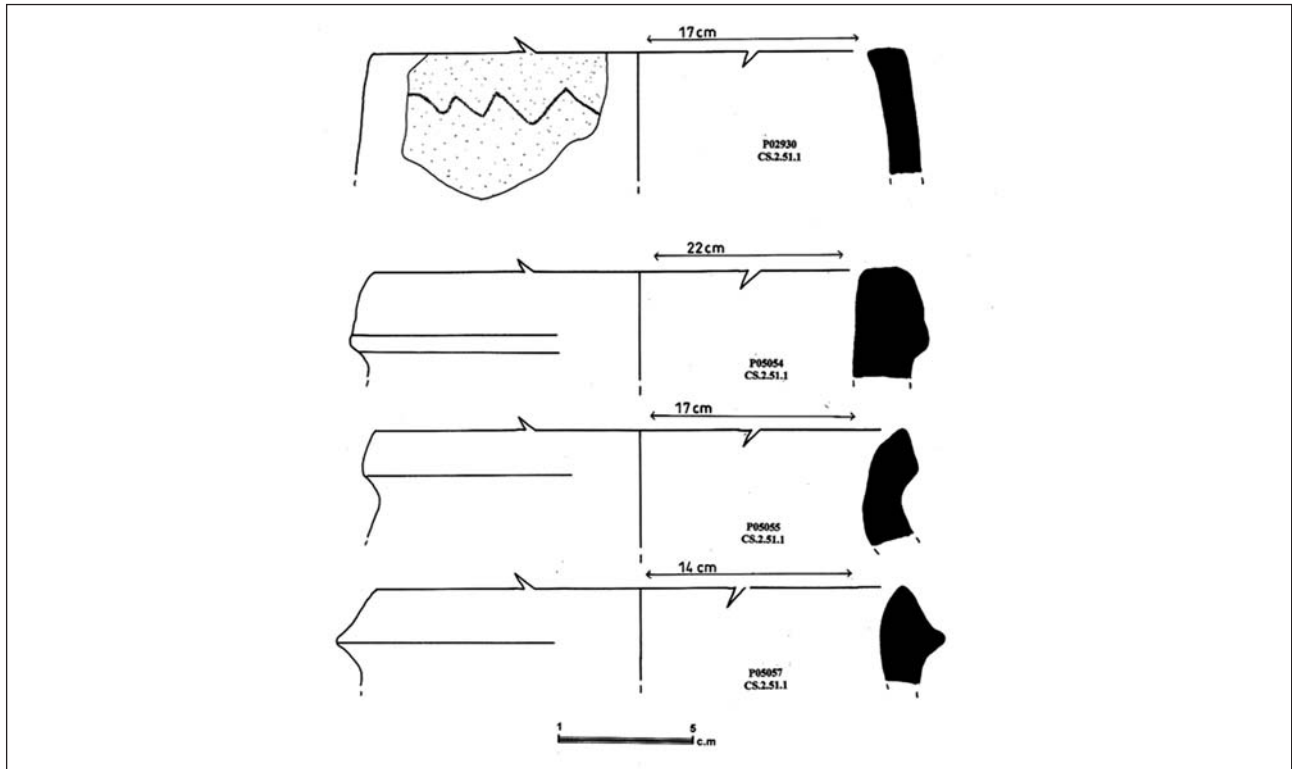


FIGURE 25. Rim sherds of Late Iron Age/Samad vessels.

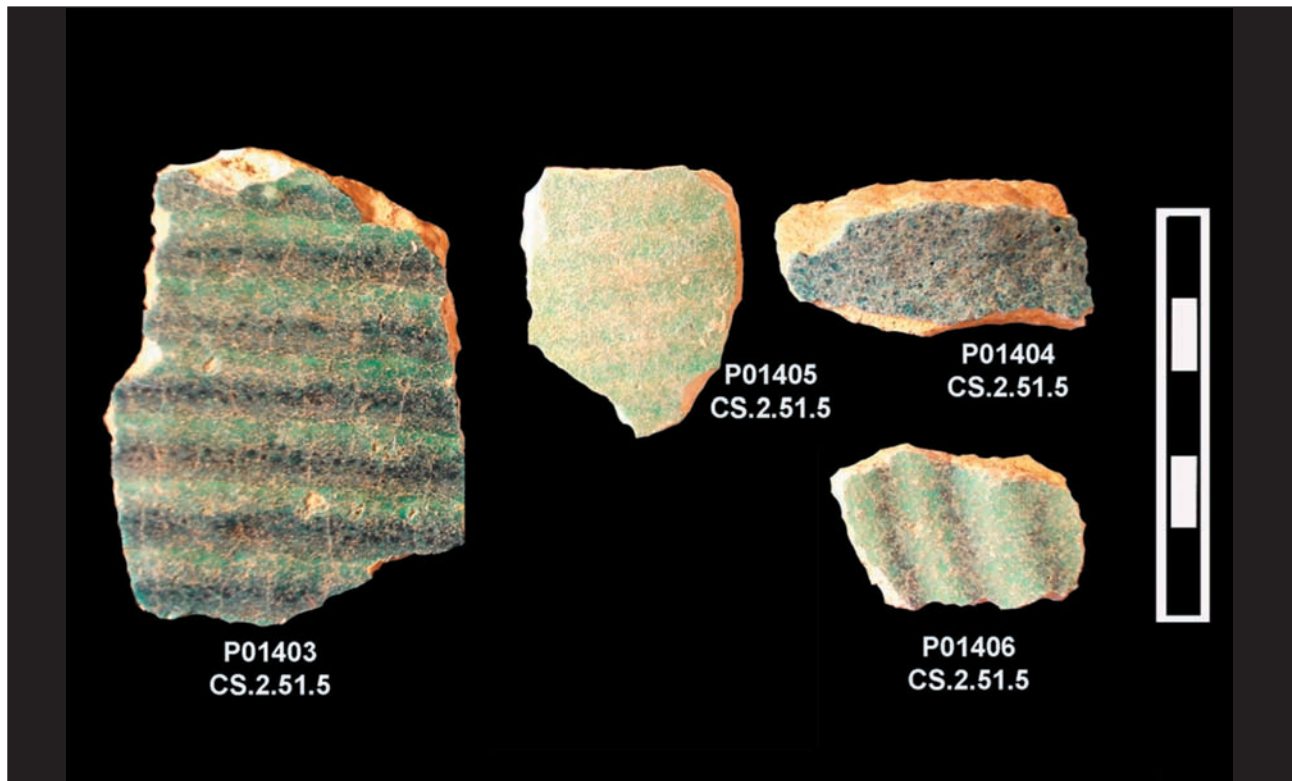


FIGURE 26. Early Islamic green glazed sherds.

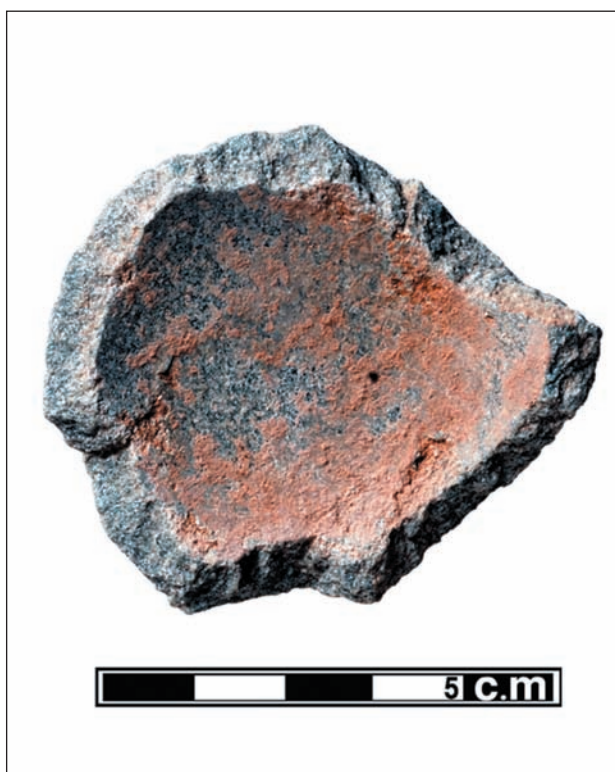


FIGURE 27. Body fragment of a chlorite vessel recovered from S1B (Square T2).



FIGURE 28. Perforated circular stone (bead or pendant) found in unit S1B (Square T3).

since it does not bear any sign of decoration, it is difficult to determine its exact date. In unit S1B (Square T3), a perforated piece of circular stone was found during the excavation (Figure 28), which could have been used as a bead or pendant. A fragment of a grinding stone was also recovered on the surface during the survey.

### 3- Organic materials

An extensive layer of ash was encountered

during the excavation in both S1A and S1B. This layer provided a number of charcoals and burned date stones (*Phoenix dactylifera*).

### 4- Shells

Marine shells, including both gastropods and bivalves (Figure 29), were encountered in the excavated structures as well as on the surface. Eleven complete shells and other fragmentary shells were found (cf. Table 4).

Group	Species	Total	Notes
Bivalves	<i>Macra ovalina</i>	3	2 complete and 1 fragment
	<i>Ctenocardia fornicata</i>	2	Complete
	<i>Barbatia perinesa</i>	1	Complete
	Unidentified	4	Fragments
<b>Total</b>	<b>10</b>		<b>5 complete and 5 fragments</b>
Gastropods	<i>Odostomia eutropia</i>	3	Complete
	<i>Strombus (Conomurex) persicus</i>	2	Complete
	<i>Architectonica perspectiva</i>	1	Complete
	Unidentified	2	Fragments
<b>Total</b>	<b>8</b>		<b>6 complete and 2 fragments</b>

TABLE 4. Shell count by group and species.



FIGURE 29. *Gastropod and bivalve marine shells from the excavation.*

They can be classified as follows (cf. Bosch et al. 1995):

#### A. Bivalves

- *Maetra ovalina* is found along the Gulf of Oman.
- *Ctenocardia fornicata* is found along the coasts of the Gulf of Oman, Masirah and Southern Oman (the Arabian Sea).
- *Barbatia perinesa* is found along the Gulf of Oman and Masirah (the Arabian Sea).

#### B. Gastropods

- *Odostomia eutropia* is found along the coasts of the Arabian Gulf, the Gulf of Oman and the Arabian Sea.
- *Strombus (Conomurex) persicus* is found along the northern, north-western and south-western coasts of the Arabian Gulf as well as the Gulf of Oman. It is known locally in Oman as *umm awainah*. Coastal communities in Oman still collect this molluscan species for food (cf. ElMahi 1999: 46; ElMahi and Ibrahim 2003: 94).

- *Architectonica perspectiva* is found along the northern and south-eastern coasts of the Arabian Gulf as well as the Gulf of Oman and Masirah.

Many species of shells are coloured, which could have attracted the inland inhabitants for their use as decoration. It is probable that part or all of these shells were so used at Mahleya. Moreover, their occurrence in Mahleya's excavated graves (e.g. grave G2) suggests they may have had some spiritual significance for the inhabitants. In several ancient and traditional coastal and inland communities, beliefs and ideas are still symbolized by these marine organisms (cf. ElMahi and Al-Jahwari 2005: 66–67).

#### 5- Other finds

Surface material was encountered around badly disturbed, perhaps reused, cairn burials in the northern part of the site. It comprised glass fragments: three green glass and two glass bracelets with green, light-green, yellow and brown colours. These glass fragments might be of a Late Islamic date.

## DISCUSSION

### Settlement Layout

The two excavated structures and the other unexcavated ones on the surface of the site give a good idea of the settlement pattern existing during the Late Iron Age/Samad period and add to our growing knowledge of Iron Age settlements in the Oman Peninsula. The whole layout might point to a housing complex of several units, of which the two excavated structures are part. These two structures might have shared a large open courtyard. The settlement layout might show some variation in the distribution of these and other related structures. Some structures are divided into inner partitions, or units, as in the case of structures S1 and S2, suggesting they could have been part of one larger unit or house linked by a possible open courtyard or passage. Examining the distribution of the excavated structures at Rumeilah (Boucharlat and Lombard (1985: 48) indicates that several courtyards or open spaces exist between the structures and form one complex. In the Mahleya settlement, structure S1 itself is divided into two inner units (S1A and S1B) and is linked to a mound consisting of a group of stone walls that form one larger unit. Other isolated structures were identified on the surface during the survey; as yet unexcavated, they might yield a different idea and pattern. It is also possible that the whole site was surrounded by a wall whose remains can still be seen along the edges of the western bank of Wadi Mahram where the settlement is located, as well as on the eastern bank where the previously excavated tombs are located. The wall appears to be more visible on the eastern bank, where its height reaches around 80 cm above the surface; on the western bank it is around 50 cm high. This wall and the mounds with stone walls attached lead us to suggest that the site had a defensive purpose.

In addition to these excavated and unexcavated structures, which extend over an area of around 700 m, the site also contains a very large number of Late Iron Age/Samad tombs. Two cemeteries were found containing a combined total of around 300 tombs, and a further 500 tombs were counted at the partly excavated cemetery on the eastern

bank of the wadi—a surprisingly large number for what was an apparently small settlement, as indicated by these structures. How could a small settlement produce such a large number of tombs? The likely answer is that the inhabitants of the Late Iron Age settlement at Mahleya did not only inhabit stone-mudbrick structures; some may have lived in perishable structures, being perhaps semi-nomadic people without the ability or inclination to build stone-mudbrick structures. Ancient and traditional societies in Oman can provide us with some information about such settlement patterns. At Wadi Suq, for example, the evidence from the northern Emirates suggests the existence of a settled population with stone-mudbrick buildings and a semi-nomadic population with small perishable structures (cf. Al-Jahwari 2008: 345–346).

### Dating

The available archaeological evidence suggests that the site might have been inhabited or visited over several periods. The survey along the eastern and western banks of Wadi Mahram indicates that the occupation at Mahleya extended over a long period. Hafit period cairns of late fourth/early third millennium BC are located on the wadi terrace in the northern part of the settlement. They can also be found on the mountains east of the village. It should, however, be stated that these cairns, particularly those found in the northern part of the settlement, did not yield any material from the Hafit period: all the recovered materials date back to the Iron Age, and mainly the Early Iron Age. This might indicate that the tombs have been reused over time, making their identification and dating problematic (cf. *ibid.*: 72–73). In addition, a large Umm an-Nar tower, tombs and settlement remains were noted about 1 km south of Mahleya at the site called al-Ghoryeen CS.2.52. As stated above, the surface of the excavated site also yielded pottery sherds from different periods. While Late Iron Age/Samad sherds are the most common, there are also sherds from the Early Iron Age, the Early Islamic, Middle Islamic and late Islamic periods, although these are found in very small quantities, indicating a low level of activity, perhaps that of a small nomadic population. We can

thus conclude that this site and its surrounding parts have been occupied continuously from the Hafit period up to most recent times, but with varying intensity.

The major period of occupation at the site is Late Iron Age/Samad. The excavated squares yielded a large quantity of material culture (see above): pottery sherds, fragments of chlorite vessel, shells, ash, charcoals and burned date stones. These, and the type of structures identified, make it possible to date the site as the Late Iron Age/Samad period (300 BC–200 AD), pottery being the most useful means of dating the site and its contents. The pottery sherds recovered from this excavation site were of different types, but mainly large storage jars. The excavated tombs on the eastern bank of Wadi Mahram, just opposite the settlement, support this dating, and the archaeological materials recovered from these tombs could also be dated to the Late Iron Age/Samad period (cf. ElMahi and Al-Jahwari 2005). The pottery recovered from these tombs was similar to that encountered in the excavated structures.

### **The subsistence economy**

A number of indicators provide information about the subsistence economy of Mahleya inhabitants. They show that the inhabitants employed a variety of economic strategies during their life in the Late Iron Age/Samad period. Before going into further details about these strategies, it is important to clarify the excavation sampling strategy used to recover the palaeobotanical and palaeozoological materials. Dry sieving was used during excavation. This method increases the possibilities of finding very small items not easily noted with the naked eye, such as bone splinters and pieces of palaeobotanic materials (seeds, date stones, charcoals, etc.), since even the smallest items can provide data about the subsistence economy of the inhabitants. In this process, large quantities of soil were sieved from the recovered layers. The sieves used in the operation were small, with a mesh size of 1-2 mm. Soil samples were collected using standard 10 L buckets to ensure accuracy in recording the quantity of samples. Almost 80 percent of the recovered soil layers were sieved in this way by three teams working in pairs.

The first team collected the soil samples and took them to the other two teams, who then carried out the dry sieving. A number of date stones and pieces of charcoal were recovered in the sieving, but no animal bone remains.

Field observations showed that the area of Mahleya is surrounded by Wadi Andam and Wadi Mahram, the two major wadis in the area. As with other wadis in Oman, (cf. Al-Jahwari 2008: 6–8 and 106–108; Al-Jahwari and Kennet 2008) the channels and terraces of these wadis have been modified over time, leaving soil deposits suitable for agriculture. Fertile soil, together with the presence of surface and underground water, has led people to establish settlements in such localities where date palm trees can be cultivated.

The recovered remains of burned date stones (*Phoenix dactylifera*) indicate probable cultivation and consumption of the fruit by the inhabitants of the site during that time and provide a glimpse of their importance in the diet not only of the Late Iron Age/Samad inhabitants of this site, but of other inhabitants of this and other habitation sites. The current village of Mahleya and its neighbouring villages are surrounded by date palm trees. This must also have been the case during earlier times, perhaps as early as the Umm an-Nar period (cf. Al-Jahwari 2008: 328). During the course of the survey, cleared plots of land for agriculture were noticed in the eastern part of the site along the western bank of Wadi Mahram, extending over an area of around 85 m x 20 m. It was noted that the land chosen for agriculture was low lying, perhaps in order to conserve the rainwater, and situated close to the settlement, i.e. about 30 m east of the two excavated structures. A test pit, 50 cm x 50 cm, was dug to a depth of 40 cm in one of these low areas or depressions. As no archaeological remains or traces of distinguished layers were encountered, it is possible that the inhabitants of Mahleya may have created “water trapments” in these depressions to reserve rainwater for irrigating the agricultural land. However, no traces of such trapments were identifiable from the surface. Nevertheless, given the above-mentioned evidence from Hafit to recent times, since the site afforded both fertile land and



water, it is quite likely the place was inhabited at different historical periods by different groups of people.

The recovery of remains of an old *falaj* channel along the edge of the wadi bank surrounding the settlement can also be considered a good indicator of agricultural practice. Several current *aflaj* can be seen today in Mahleya and other villages along the wadi. It is known and accepted among scholars working in Gulf Archaeology that the *falaj* system was introduced during the Iron Age (cf. Boucharlat 1984; Lombard 1985; Magee 1998: 51–54, 2003: 9 and 2004: 41; Magee and Carter 1999: 174; al-Tikriti 2002a-b); thus the *aflaj* in Mahleya today, as well as those in the neighbouring villages, may have been established during that time, with the inhabitants using them to irrigate their agricultural fields.

In light of this evidence, it seems likely that Mahleya was one of many agricultural Iron Age villages established along Wadi Andam and along other wadis all over the foothills of Al-Hajar Mountains. As indicated earlier, occupation and settlements intensified at this time, and this has been attributed to the introduction of the *falaj* system in Oman.

It is also possible that the economy of the Mahleya inhabitants was complemented by domesticated animals (goats and sheep) and their products (milk, meat and leather). However, no animal bone remains were recovered during the excavation, which might indicate that the inhabitants did not largely depend on these animals, perhaps slaughtering them only occasionally and discarding the limited food waste (animal bones). On the other hand, weathering factors have affected the preservation of faunal remains in inland archaeological sites and consequently do not permit us to have a holistic view of the economy practiced within a particular community (cf. Ibrahim and ElMahi 1998: 135; ElMahi 1998: 45).

Mahleya is located hundreds of kilometers from the sea, with Muscat the nearest northern point (c. 100 km) on the coast along the Gulf of Oman, and Ja'lan Bani Bu Ali nearest on the eastern coast (c. 160 km) along the Arabian Sea; despite that distance, the inhabitants of Mahleya clearly had strong contact with coastal inhabitants and their marine resources.

Marine shells, including both gastropods and bivalves, were encountered in both the excavated settlement and graves (for a description of shells from Mahleya graves, see ElMahi and Al-Jahwari 2005: 66-67).

The existence of shells at the site indicates that the inhabitants may have engaged in some exchange with coastal inhabitants. It is likely that they exchanged agricultural produce, particularly dates, and animal products (e.g. meat, leather, wool, fat, etc.) for marine products (shells and both salted and dried fish). Coastal communities presumably carried their marine products to the inland communities during their summer seasonal movement (April-September), perhaps using camels or donkeys. Mahleya would likely have been part of such an exchange network.

Many inland sites (e.g. Manal, Wadi Al-Safafir, Mahleya, Reumeilah, Hili, etc) have provided a number of gastropods and bivalve shells. Conversely, excavations at a number of coastal sites (e.g. Ras al-Jinz, Dalma Island, etc.) have yielded date stones. Such evidence from both inland and coastal sites is a strong indication of a network of exchange between their communities which may have existed from early times, perhaps as early as the 3<sup>rd</sup> millennium BC (cf. Al-Jahwari 2008: 334-335; Potts 1978, 1993a, 1993b: 423–427 and 1994; Cleuziou and Tosi 1989 and 2007: 184–191). Molluscan fauna may have constituted a major part of their diet (dried meat or *dauk*) as well as having other daily uses. Coastal traditional communities in Oman collected and harvested many marine species of mollusc which some communities presumably consumed immediately, while others preserved some to keep in reserve or traded/exchanged them with the inland communities (ElMahi 1999: 45). Once arriving inland, molluscan fauna very likely played a significant role in the inhabitants' diet and their shells might have been used as food vessels or for decoration and as charms (cf. ElMahi and Ibrahim 2003: 95).

As well as molluscan fauna, fish was important for the inland communities. Some historical and ethnographic accounts in the literature refer to salted, grilled and dried fish as having played a significant role in the exchange of goods between

the coastal communities and other communities in the inland and desert zones (e.g. Lorimer 1908: 65 and 679; University of Durham 1978: 70; Wilkinson JC 1977: 17, Table 7: 67; ElMahi 1998, 1999, 2000; Cleuziou and Tosi 2007: 167–177). ElMahi (2000: 107–108) maintains that, although it is not the sole source, fish is the major source of protein in the diet of all traditional communities in Oman, regardless of their ecological background and adaptation, and that coastal societies are the major suppliers of protein for the inland societies. In this respect, coastal communities have long been able to provide a surplus that can be exchanged with inland communities (cf. ElMahi 1999: 45–53; 2000: 107–108, Table 3).

To conclude, the material recovered from the excavated structures has indeed added to our knowledge of the Late Iron Age/Samad period in the Oman Peninsula. Although it is still inconclusive, the evidence from the recovered structures on the western bank of Wadi Mahram strongly suggests some direct relationship with the tombs on the eastern bank of the wadi. Further detailed fieldwork on the settlement itself, the tombs and their associated structures is needed to enhance our picture of the whole area of Mahleya and its inhabitants during this time. The evidence indicates without doubt that the inhabitants engaged in agriculture and probably exchanged goods with coastal settlements. It also clearly demonstrates that Mahleya has been a strategic and attractive place for occupation from the late 4<sup>th</sup>-early 3<sup>rd</sup> millennium BC to recent times.

#### NOTES

<sup>1</sup> A further more detailed section on the pottery is intended for publication in the near future.

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