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UNIVERSITY OF SOUTHAMPTON

**Mada'in Salih, a Nabataean Town in North West Arabia:
Analysis and Interpretation of the Excavation 1986-1990**

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Department of Archaeology
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ABSTRACT

FACULTY OF ARTS

ARCHAEOLOGY

Doctor of Philosophy

Mada'in Salih, a Nabataean Town in North West Arabia: Analysis and Interpretation
of the Excavation 1986-1990

By Dhaifallah Al-Talhi

This research concerns Mada'in Salih, an archaeological site in north-west Saudi Arabia. Historically, it was part of the Nabataean kingdom which flourished in north west Arabia (Jordan, parts of Syria, Palestine and some parts of Saudi Arabia), with Petra in Jordan as its capital. The Nabataeans were famous for their trading role, as they transported frankincense and myrrh and exported balsam and bitumen. They built monumental tombs in Petra and Mada'in Salih as well as other public buildings such as temples theatres and baths. They were also famous for their skills in hydraulic engineering and the production of very thin, distinctively painted pottery. Mada'in Salih was an important station on the trade route which linked south Arabia with Mediterranean countries. The main feature of the site is the monumental tombs, which are about eighty in number, some of them dated and bearing inscriptions. Those inscriptions are in Aramaic and usually contain information about the owner name, legal rights, and occasionally the mason's name.

Little was known about the site's history and other aspects such as the economy, culture, society and religions prior to the excavation. Various questions were raised which the thesis attempts to address.

The archaeological work conducted on the site included a survey, several trenches around the town wall and in front of some of the tombs as well as an excavation in the settlement area.

The excavation revealed a private house which furnished us with information regarding house planning, building techniques and materials. A large amount of pottery, small finds and coins were recovered, studied and classified. The results added some information to what was already known about the Nabataeans in general and Mada'in Salih in particular.

The site had witnessed its peak during the first century A.D. As most previous archaeological work had been carried out in the northern parts of the Nabataean kingdom, the results of this excavation are important for comparative studies between this, the largest Nabataean settlement centre in the south, to the centres of the north.

The trade which had been an important factor in the establishment of the site declined when the trade route was shifted from land to sea by the Romans during the last half of the first century A.D.

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Abbreviations

ADAJ	Annual of the Department of Antiquities of Jordan
BA	Biblical Archaeologist
BASOR	Bulletin of the American School of Oriental Research
BIAUL	Bulletin of the Institute of Archaeology (University of London)
IEJ	Israel Exploration Journal
IGN	Institut Géographique National
PEQ	Palestine Exploration Quarterly
RB	Revue Biblique
SHAJ	Studies in the History and Archaeology of Jordan

1. Introduction

1.1. Introduction

This research concerns an archaeological site located in the north-west of Saudi Arabia known as Mada'in Salih (which in Arabic means the town of Salih, Salih being a male first name). Mada'in Salih was an important station located on the caravan and trade route which linked the countries on the Indian ocean with the Mediterranean ports, and later on the route which continued to be used by both traders and pilgrims during the early Islamic period. It was known as the Egyptian-Syrian Pilgrimage route (Fakhri 1972, 2-6).

The site is better understood when we link it with the Nabataean kingdom which flourished in north-west Arabia (Syria, Jordan, Palestine and the north parts of Saudi Arabia), with Petra (in Jordan), its capital, and many other important cities and towns like Bostra, Khirbat Et-Tannur, Oboda, Dhiban, Rawwafah and Qurayyah (Map 1.1). Mada'in Salih was the furthest major extension of the Nabataean Kingdom towards the south. The first century A.D. was the peak of development of the site.

1.2. The site

1.2.1. Location

Mada'in Salih is located in the north-west of Saudi Arabia, about 20 km north of al-Ula town at 37°52' E 26°47' N (Map 1.2). It was originally known as Al-Hijr and mentioned as such by the historians. Al-Istakhri, a famous Arab geographer (died 346 A.H, 957 A.D.), wrote:

" Al-Hijr is a small village. It belongs to Wadi al Gura and is located at one day's travel inside the mountains. It was the homeland of the Thamudians. I have seen those mountains and their carvings. Their houses are similar to ours but are carved in the mountains, which are called the Ithlib mountains. It looks as if they are a continuous range but they are separated and have sand dunes around them. You can reach the top of the mountains, but this is extremely tiring. The well of the Thamudians which is mentioned in the Holy Quran is located in the middle of the mountains" (Al-Istakhri. *Al-Masalik*. 24).

Yaqut al-Hamawi, another Muslim geographer (574-626 AH, 1178-1228 A.D.), reports that:

"Al-Hijr is the name of the Thamudian Land in Wadi al-Gura located in between al-Madina, al Munawarra and Syria (Al-Hamawi. *Mu'jam*. 2.220-221).

1.2.2.The geology of Mada'in Salih

The area is generally sedimentary and belongs to the quaternary category of geological strata, consisting of gravel, sand, silt and undifferentiated wadi alluvium and coastal saline mud flats which include recent colluvial fans and is slightly elevated (less than 3 m). The mountains around Al-Heger are Quveria sandstone (Cambrian), yellow or buff thin bedded medium grained crossbedded sandstone containing pebbles of citrine translucent and milky quartz

The site is located at the meeting point of the Al-Hamda and Al-Mazaz valleys. The former originates in the mountains to the west of the site, and the latter from Hamar hill located to the north of Al-Hijr. These valleys join the Al-Dehais valley in the Arabian Peninsula (Al-Talhi 1988, 47) (Map 1.3).

1.2.3.Main Archaeological elements

The Tombs

The site gained its name and popularity due to the magnificent and most attractive tombs carved in the sand stone rocks. Mada'in Salih has a unique characteristic, which is not found on other Nabataean sites. It is that most of the tombs carved in the hills contain clear inscriptions and accurate dates. Thus, they may help in the study of the development of Nabataean writing. At the same time these inscriptions tell us about the social, cultural and religious values of the Nabataeans.

The Ithlib Mountain

The Ithlib Mountain acts as a beautiful backdrop to the site with its summits of different shapes and variant colours of red and rose (Photo. 1.1). The sunrise from behind the summits creates an unforgettable scene. The most prominent feature of the mountain is the location of "Diwan", a large religious room for performing rituals. It is carved in the mountain and is roughly rectangular in shape (12.8 m long and 9.8 m. wide), (Photo. 1.2). The front is open without any door. Similar types of structures are also located in Petra, Jordan. There are several water reservoirs on the top of the mountain to collect rainwater. Near the Diwan, several icons of deities are carved in the niches. It was probably the central and main ritual place in the area. There are some stone quarries located near the Ithlib mountains, where stones were exploited and shaped for use in the construction of the houses (Healey 1993, 11).

The Ithlib Mountain contains several inscriptions carved at different locations of the hill. These inscriptions are of Thamudic, Aramaic, Nabataean and early Arabic (Healey 1993, 9). In addition, some drawings of human and animal figures, camels and ibexes, are also located on the mountain (Kabawi *et al* 1989, 43)

The Settlement Area

The settlement area is located in a large flat area between the tombs nearby the remains of the old Hejaz Railway Station. It was surrounded by an ancient wall, part of which is visible in some places. The entire area of the archaeological site of Mada'in Salih has now been fenced off by the Department of Antiquities for protection against any illegal entry.

The Ottoman castle

There is an Ottoman castle near the site which contains one of the oldest wells of Mada'in Salih. The Ottoman castle (Photo. 1.3) is dated 1600 A.D. (Al-Ansari *et al.* 1984).

1.3. Previous studies on the site

One of the leading scholars to draw attention to the site after a long period of neglect was Charles Doughty. He came in 1876 with a pilgrimage caravan from Syria and stayed in the Ottoman fort, wandering around, copying some inscriptions, and writing his notes about the site (Doughty 1888). In 1880, the site was visited by Huber, who returned in 1884 with Euting (Huber 1884). In 1907, 1909 and 1910 the site was visited by two French Roman Catholic priests, Father Jaussen and Father Savignac. They recorded most of the inscriptions in the area, and studied and translated them. Their study is considered to be one of the most comprehensive studies in Mada'in Salih archaeology (Jaussen and Savignac 1909-1914).

Al-Ansari studied the al-Ula area; its inscriptions and archaeology were part of a thesis presented to the University of Leeds for Ph.D. in 1960 (Al-Ansari 1966). In 1962 Winnett and Reed studied the inscriptions of Mada'in Salih (Winnett and Reed 1970). In 1968, Parr, Harding and Dayton surveyed North West Arabia including Mada'in Salih (Parr *et al.* 1971). In 1977 Mirdad stayed in the site of Mada'in Salih for a short period, he investigated the area and wrote about it from a historical point of view (Mirdad 1977). In 1979 a general survey was conducted by the National

Geographical Institute of France under the auspices of the Department of Antiquities to register and number the tombs of Mada'in Salih. Al-Jasir discussed the history of the Nabataeans in which he mentioned the site of Mada'in Salih (Al-Jasir 1981). In 1984, Nasif studied the al-Ula area (20 km south of Mada'in Salih) for a Ph.D. thesis submitted to the University of Manchester (Nasif 1988). In 1984 Al-Ansari, Ghazal and King wrote about al-Ula and Mada'in Salih, their history, monuments and inscriptions (Al-Ansari *et al.* 1984).

John Healey visited the site in 1985 as consultant for a project of the Department of Antiquities to preserve and register the inscriptions. Later he wrote a book about the inscriptions of Mada'in Salih (Healey 1993). In 1986, the Department of Antiquities started an excavation program in Mada'in Salih which continued for four seasons and brief preliminary reports were published about the results (Al-Talhi 1988, 1996; Ibrahim, and Al-Talhi 1989; Ali, 1990).

1.4. The Importance of the study.

Almost all previous studies about Mada'in Salih were totally dependent on the external remains, either the tombs or the surface finds. The dating of the settlement of Mada'in Salih was based on the inscriptions on the tomb facades. No archaeological excavation had previously been conducted to understand the history and archaeology of Mada'in Salih until 1986 when the Department of Antiquities and Museums started well planned and organised excavations some of which were under the supervision of this researcher.

This study will try to explain in detail all the archaeological finds such as the pottery, coins, stone objects, glass, wood and other objects which were found during the excavations. Also, building material and house planning will be discussed. Many sites of the northern part of the Nabataean kingdom have been excavated such as Petra, Oboda and Khirbat Et-Tannur. Scholars have been awaiting eagerly the start of similar activities in the southern part of the Nabataean kingdom, especially at its largest site, Mada'in Salih.

This research allows comparative studies of excavated material to be established with regard to other Nabataean sites in the Kingdom. This study will try to provide answers to questions concerning the date of the first settlement and whether it was by the Nabataeans or another group. The study will try to determine the reason for

selecting the area of Mada'in Salih for settlement, and its importance geographically and economically to the Nabataean kingdom. With the help of the inscriptions and other archaeological finds from the excavations, an attempt will be made to investigate the social, cultural, economic and religious customs of the people of Mada'in Salih. It is yet to be shown when, how and why the area of Mada'in Salih was abandoned and deserted. The study will move after that to a broader view which looks at the site as a Nabataean urban centre through which we see the development of Nabataean urbanism. This could be achieved by comparing the site with other cities and towns of the kingdom to show the similarities and different aspects, which will enable us to place Mada'in Salih as an important location in the Nabataean Kingdom.

1.5. *Method of study*

The study firstly involved reviewing all available historical sources and surveying all archaeological references about the site. Then, the settlement area was selected for excavation in order to answer some of the questions previously raised, such as the settlement date, and the economy and character of the city. A grid was marked out covering the whole site with reference numbers using letters of the alphabet to denote the E-W direction, and numerical order for the N-S direction. The excavation started and the architectural sequence with all associated artifacts were recorded, analyzed then compared with other available material from other Nabataean sites. The record of the excavation and the finds were then deposited at the Department of Antiquities in Saudi Arabia.

The project did not involve a study of tomb construction and linguistic content of the inscriptions since they had been previously studied in detail by various scholars, and there is much published material about the subject. However, the present study will use the already available linguistic material to complement our knowledge of social and historical aspects. An attempt will be made to examine the town planning of Mada'in Salih based on the exposed building structures and house planning in ancient times. Carbon dating of material such as bones and charcoal from the sites will be obtained by laboratory analysis.

The thesis is constructed as follows. chapter one presents a brief description of the site, previous studies and methods of study. Chapter two is historical background

about the Nabataeans. The archaeological work is explained in chapter three, covering the survey of the site and the excavation. The finds which include the pottery, coins and small finds are studied in chapter four. Although linguistic aspects are beyond the scope of this study, the language of the inscriptions will be briefly introduced. Translations of the inscriptions and the valuable information they reveal will be studied in chapter five. Chapter six will discuss the development of Nabataean urbanism in order to understand the role of Mada'in Salih as a major Nabataean town in relation to other Nabataean centres. An attempt will be made to bring together all available information about the site, especially that derived from the excavation, in order to get a clearer picture about the site and its inhabitants. This will be discussed in chapter seven. Finally, a summary and conclusions will be provided in chapter eight.

2. Historical background

Since Mada'in Salih is one of many different towns and stations in the Nabataean kingdom, it will be better understood if we look at it in relation to the rest of the kingdom. Although little is known about the origin of the Nabataeans and their history since they left almost nothing in writing written about the area, it might be appropriate to give brief background about what is known about the Nabataeans, as historical information when combined with archaeological evidence might provide better understanding of the people. Various ideas have been represented as regards the origin of the Nabataeans. Historical sources mention different Nabataean kings, especially when they were involved with events concerning their neighbours. This information also helps towards a better understanding of the system of government as well as the major events which affected their life, such as wars. Trade was a major activity for the Nabataeans, taking them to different parts and creating reasonable wealth.

2.1. The Origin of the Nabataeans

The origin of the Nabataeans is still a debatable subject. Various ideas have been suggested to identify their homeland. The Arabic word “Nabat” means “water which springs from the well” (*Lisan al-Arab*. 9.287). However, there is some debate as to whether the name of the people has any connection with drawing water (Ali 1978, 3:12). The linguists identify Nabataeans as people who lived in middle and south Iraq (*Taj al-Arus*.5.299; *al-Qamous* 2.387).

A link was suggested between the word “Nabat” and the biblical reference to “Nebaioth”, a first born of Ishmael and perhaps the ancestor of the Nabataeans (*Gen.25-12*). Other links have been made between the Nabataeans and Nabatu mentioned in the records of Tiglathpilezer III. (Nabatu was an Aramaic Tribe believed to exist on the banks of the Euphrates in the 8th century B.C). In the 7th century B.C, another reference to the people appeared in the records of Esarhaddon and Ashurbanipal, who rose up against him (Hammond 1973, 10). However, in the view of some scholars (Abbas 1987:19; Ali 1978: 3,14; Hammond 1973,10; Graf 1990, 45) there is no relation between this Aramaic tribe and the people with whom we are concerned.

The first clear reference to the Nabataeans is found in Diodorus Siculus, who discusses General Antigonus' campaign against the Nabataeans in 312 B.C. He attacked Petra while the Nabataeans were celebrating one of their festivals and plundered the city (XIX.94). When the invaders left the Nabataeans followed them and made a successful surprise attack to recover stolen incense and myrrh. The Nabataeans tried to justify their action to Antigonus by writing a letter in Aramaic in which they blamed Athenaeus for the attack (XIX.96). However, a second invasion took place, in which Antigonus sent his son Demetrius, who, although not completely successful, made a deal with the Nabataeans and returned home with some gifts (XIX.97-98). What can be noted here is that the description by Diodorus of the Nabataeans would categorise them as a nomadic group without any knowledge of agriculture and permanent housing.

“They live in the open air, claiming as native land a wilderness that has neither rivers nor abundant springs from which it is possible for a hostile army to obtain water. It is their custom neither to plant grain, set out any fruit-bearing tree use wine, nor construct any house; and anyone is found acting contrary to this, death is his penalty”(XIX. 94, 3).

South Arabia has been suggested as the land of origin of the Nabataeans by various scholars (Glueck, 1965, 4; Ali 1978, 3:10; Hammond 1973, 11). Al-Theeb (1995) argues that there is some similarity between the Nabataeans and the people of South Arabia, particularly in terms of agricultural methods and the use of water channels and reservoirs. The question remains as to why the Nabataeans did not bring South Arabian writing with them. Furthermore, there is no similarity between Nabataean pottery and that of South Arabia (Al-Theeb 1995, 69-70).

North-eastern region of Arabia was suggested as their original homeland, according to similarity in the deity (SAcBU, the Fortune deity of the Nabataeans) who is recognised in the whole of the Persian Gulf (Graf 1990, 46). There is a suggestion that the Nabataeans came from Tayma. The archaeological evidence does not show any permanent settlement in southern Jordan either between the sixth and the fourth century B.C. It means that there is a gap between the Nabataean and Edomite archaeological remains. The archaeological survey which was conducted in the Alkarak plain in Jordan and recorded 148 sites, showed no archaeological remains attributed to the period 500-250 B.C. (Al-Theeb 1995, 68).

One view is that the Nabataeans came from the area between Hail and Al-qasim, in the north of Saudi Arabia, more precisely in the desert northeast of Al-qasim. This view is based on the records of Ashurbanipal, which mention that he entered an area where there was no water and that the king of the Arabs ran away to the south in the land of the Nabataeans (Al-Theeb 1995, 73). Knauf suggested that the Nabataeans is one of the Qedarite tribal confederation (Graf 1990, 47).

From intensive research and studies conducted by previous scholars regarding the origin of Nabataeans and their real homeland, it may be said that there is little in the way of concrete and conclusive evidence. Each suggestion has its merits, but the subject is still open to debate and awaiting further evidence and research. However, it may be said without any doubt that the homeland of the Nabataeans was in some part of the Arabian Peninsula, as almost all the researchers at least stand united on this single point.

The Nabataeans are of Arabic ethnic origin, in the view of most scholars (Hammond 1973, 10; Abbas 1987, 25; Ali 1978 3: 9). Many Nabataeans names are of Arabic origin. They worshipped the same deities as were known in Northern Hijaz, such as Dushares, Allat and al-Uzza. There is evidence that the Nabataeans used Aramaic script, as in the letter to Antigonus. As to why the Nabataeans used Aramaic, it may be said that Aramaic was a commonly accepted official language for commerce and government affairs.

2.2. Further Historical Detail

The Nabataeans left us with various archaeological remains such as their great tombs in Petra and Mada'in Salih, their distinctive thin painted pottery and coins, but unfortunately no written material about their origin, history, wars or development. Apart from their inscriptions, which were generally short and record certain aspects such as funerary arrangements and dedications, there were no inscriptions dealing with historical aspects.

Most of the historical information about the Nabataeans comes from other historical sources, such as Diodorus Siculus (80-20B.C.), Strabo (64B.C.-25A.D.) and the Jewish historian Josephus (37-97A.D.).

The first clear historical evidence about the Nabataeans is found in Diodorus, who describes Antigonus' campaign against them in 312 B.C., as follows:

“ He selected one of his friends, Athenaeus, gave him four thousand light foot-soldiers and six hundred horsemen ... and ordered him to set upon the barbarians” (XIX.94).

Antigonus successfully attacked the Nabataeans as described by Diodorus :

“ and of the frankincense and myrrh he gathered together the larger part, and about five hundred talents of silver” (XIX. 95, 3-6).

While Diodorus found them barbaric Strabo drew a completely different picture of the people, as being a well settled organised community:

“The Nabataeans are a sensible people, and are so much inclined to acquire possessions that they publicly fine anyone who has diminished his possessions and also confer honours on anyone who has increased them...The king is so democratic that, in addition to serving himself, he sometimes even serves the rest himself in his turn...their homes through the use of stone, are costly; but on account of peace, the cities are not walled (*Geography* 16.4.26).

Josephus furnishes us with information about the Nabataeans and their kings which he obtained during conflicts with the Jews. The inscriptions as well as the coins have expanded our knowledge regarding the Nabataean kings and the major events occurring during their reign. Our information in terms of a complete list of the Nabataean kings is still incomplete. However, the following is a list of the known Nabataean kings and their major accomplishments in the kingdom:

1 - King Aretas I

No accurate date is known to mark the beginning of the rule of Aretas I but he is known to be the first Nabataean king. He is mentioned with regard to a conflict which arose among the Jews about the high priesthood in 169 B.C. Jason had seized the position of high priesthood, but Menelaus managed to take it back from Jason and forced him to run away as a refugee to Aretas. Another reference to Aretas I is found in an inscription from Khalsah, dated 150 B.C. (Abbas 1987, 37-39). There is no other historical reference to this king.

2 - King Aretas II

The beginning of King Aretas II's reign is uncertain, although its end is determined by the exact date for his heir. This is clearly mentioned in an inscription inscribed by an inhabitant of Petra who built a ritual room in the first year of the next king, Obodas I's reign in 95 B.C (Abbas 1987, 40-41). During the reign of Aretas II, a territorial dispute began between the Nabataeans and the Jews. Alexander Jannaeus,

the Hasmonaean king, wanted to expand his kingdom and attacked Gaza around 100 B.C. The people of Gaza requested help from Aretas II who promised to participate in defending the city, but he did not, and Gaza fell into the hands of Jannaeus (*Antiquities XII*, 359-362).

3 - King Obodas I (95-88 B.C.)

King Obodas I faced the same threat from the Hasmonaeans. Alexander Jannaeus continued his expansionist ambitions towards the north which included Gilead and Moab. Finally, Obodas I had to face him in a battle near Gadara and defeated him. Jannaeus was seriously wounded and was almost killed by the Nabataean camel riders (Abbas 1987, 41).

4 - King Rabel I (88-87 B.C.)

He was the son of Aretas II and the brother of King Obodas. King Rabel I was mentioned during the second attack by Antiochus XII against the Arabs in which he was killed and his army defeated near Cana (Abbas 1987, 41).

5 - King Aretas III (87-62 B.C.)

Aretas III was the son of Aretas II. The Nabataean Kingdom spread rapidly during his reign and sometimes without great effort. This was because the people of Damascus were not united. They were suffering from interior disputes and some of them invited Aretas III to take over Damascus. Thus Damascus became part of the Nabataean Kingdom in about 85 B.C. It remained under Nabataean control for over 15 years. On the occasion, Aretas III minted his own coin on which was inscribed the name of the King and his picture. Aretas III had to face the continued Hasmonaean problem which he inherited from his father. Aretas III attacked Alexander Jannaeus and defeated him at Adida.

However, the policy of expansion of Aretas III could not continue for long, and gradually he had to draw back and abandon some of his conquered territories. Due to heavy pressure from Tigranes, the Armenian of Coele-Syria, Aretas III was to withdraw from Damascus. Alexander Jannaeus took advantage of this and took over 12 villages to the south of Damascus.

After the death of Alexander Jannaeus, a problem arose among his heirs. His wife, Alexandra, became the custodian of her two young sons, Aristobulus and Hyrcanus, but after her death, the younger son Aristobulus took over by force and his elder

brother Hyrcanus took refuge with Aretas III. Aretas III helped him in the hope of regaining the twelve lost villages in the south of Damascus, which the father of Hyrcanus had taken from him. At the very same time, the Roman attacks began. The Roman commander Scaurus attacked Petra and burnt areas around the city. Aretas III at last agreed to pay war compensation and fines to the Romans (*Antiquities XIV* 370-374). Scaurus was so happy with his victory that he minted his own coin, which carried an image of Aretas III on his knees beside a camel offering a branch to the Roman conqueror (Abbas 1987, 48). The first Nabataean coins are from the reign of Aretas III.

6 - Malichus I (62-30 B.C.)

The reign of King Malichus I intertwines with the history of the Jews, particularly with Antipater of Idumea, and the Romans. Antipater married Kypros, a woman from a famous Nabataean family and had four children by her. One of the sons was known later as Herod the Great and there was a daughter known as Salome. Antipater helped Julius Caesar in his war against Ptolemy XII. He also persuaded Malichus I to join the same cause. As a result of his help, Julius Caesar allowed him to rule over the Jews. After that, the Parthians entered the Jewish area and Antipater was poisoned. Herod had to run away, the nearest area for his escape being the land of the Nabataeans, but Malichus refused to give him asylum. He then left for Rome, where he was appointed ruler of the Jews by the Romans. When Herod returned as ruler, he became involved in problems with Malichus because he refused to pay rental on lucrative groves. Herod attacked him to collect the money. Herod faced Malichus I near Diopolis and defeated him, and later defeated him again in Kanatha in Coele-Syria. These conflicts encouraged Alexandra, the daughter of Hyrcanus, to recover the Kingdom of her father. She wrote to Malichus seeking help but this resulted in the death of her father, because Herod learned about her letter. Malichus minted coins bearing his image on one side and a falcon on the other side (Hammond 1973, 19-21).

7 - King Obodas II (30-9 B.C.)

Among the important events which took place during the rule of Obodas II was the Roman attack on Arabia, particularly on South Arabia (Yemen), under the command of Aelius Gallus in 25-24 B.C. The Minister of Obodas II, named Syllaeus, was conscripted as guide and companion to the Roman forces. This participation of the

Minister of Obodas II could be seen to be surprising because the Roman victory would have badly affected the economy and politics of the Nabataeans in the region. In fact, it seems that Syllaeus succeeded in misleading the Romans, and their attack resulted in failure.

Syllaeus subsequently became more famous and popular than King Obodas II and was called “the brother of the King”. He acted as the representative of the country in foreign affairs. He had connections with the Jews, especially with Herod the Great. Syllaeus asked the hand of the sister of Herod in marriage but was asked if he would become a Jew. Syllaeus refused to change his religion because it would have badly affected his position in his own country among the people. The outcome was damaging to Jewish and Nabataean relations. When Herod was in Rome, internal revolution took place which was supported by Syllaeus. However, the revolutionaries escaped the country and Syllaeus provided refuge and gave them asylum. Herod attacked the revolutionaries, pursuing them inside Nabataean territory.

Moreover, a debt was owing by the Nabataeans to Herod. The Nabataeans tried not to pay it when it was due. Herod took the matter to a Roman court in Syria which gave its judgement in favour of Herod, with one month to make settlement. When the time came, the Nabataeans refused to pay, so Herod attacked their land. Syllaeus took the matter to Rome and explained it in a way which made the emperor mad at Herod and he refused to meet his ambassadors. Later, Herod managed to send other ambassadors who explained their case in an acceptable way, referring to the cause of the attack, which was the refusal of payment. After that, the emperor asked Syllaeus to go back home and settle the problem. However, Syllaeus did not obey the order and stayed in Rome in order to change the emperor’s mind. It is not clear what the end of Syllaeus was, but most probably he was executed (Hammond 1973, 23-24).

It is mentioned by several writers that King Obodas was a lazy person who did not take interest in government affairs (*Geography* 16.4.24). Thus it is clear that most events and government affairs during the rule of Obodas were overseen by his Minister Syllaeus. Obodas minted two types of coin during his reign. The first had on one side the head of Obodas and a falcon, and on the other side the head of the queen. The second type bore the faces of the King and the Queen together and their

names, while on the other side was inscribed "Obodas, King of the Nabataeans" (Abbas 1987, 57).

8 - King Aretas IV (9 B.C-40 A.D.)

The reign of king Aretas IV lasted a long time, almost 50 years. It was stable politically and witnessed a development in economic and agricultural affairs, making his reign most prominent in the history of the Nabataeans. He was called "the Lover of His People". Aretas IV took special interest in the field of construction. This development was not confined to Petra, but extended as far as Mada'in Salih. The remains of his architectural developments can still be seen in Petra and Mada'in Salih. In Petra he built a magnificent theatre and the temple, which are still preserved until today. Most of the great tombs of Mada'in Salih date back to the period of Aretas IV. The majority of the tombs were allocated to army chiefs, which suggests that he planned to develop Mada'in Salih into a military base. This base could provide refuge and protection if any problem should arise in the capital. His suspicions were well grounded, for, 60 years after his death, the Romans attacked the Nabataeans.

Political relations between the Nabataeans and their neighbours the Jews were very stable. The reason for that was the marriage of Agrippa, the grandson of Herod the Great, to the daughter of Aretas IV. However, the peace did not last for long. Agrippa thought of marrying another woman, but the daughter of Aretas did not accept that. She ran away to her father, who decided to take revenge and battled with Agrippa and defeated him. Agrippa asked for help from Tiberius the Roman Emperor who ordered his governor of Syria, Vitellius, to attack the Nabataeans; but this attack never took place due to the death of Tiberius (Abbas 1987, 57-66)

9 - King Malichus II (40-70 A.D.)

He was the son of Aretas IV. During his reign, Titus attacked the Jews, with Malichus II's support. Malichus II minted his own coins in which he appeared with his wife Shaqilat, but he stopped minting coins during the last six years of his reign. He continued with construction development, especially in the south of the kingdom. His name is mentioned in 10 inscriptions (Abbas 1987, 67).

10 - Rabel II (70 A.D.-106 A.D.)

He became King at a very young age and therefore his mother acted as his custodian. The image of his mother appears on the coins, but when he got married, he replaced his mother's image with that of his wife Shaqilat. He was called "The life giver among his people". He spent most of his time in the city of Bostra in Syria. During his reign, the Roman General Cornelius Palma took over the Nabataean Kingdom by an order from Trajan in 106 A.D. and it was annexed to what was known as *provincia Arabia*. The capital was moved from Petra to Bostra (Ali 1978, 3:49). The Nabataeans had to spread to other areas. It should be noted here that even though the Nabataean Kingdom was annexed to the Roman Empire, life did not stop in the area. The people were involved in daily activities and even made inscriptions which date back to 126 A.D., that is twenty years after the fall of the Nabataean Kingdom (Abbas 1987, 69).

2.3. Nabataean trade

The Arabian Peninsula was famous for its trade. The domestication of the camel in the second millennium B.C. helped in the process of transporting goods (Al-Nayeem 1992, 207). A camel can carry heavy loads for long distances and can survive for several days without food and water. It also has the natural ability to cross the desert due to the nature of its feet being specially adapted to walking in the sand. Thus, it became an ideal means of transportation and was known as the ship of the desert.

The trade routes which linked different regions of the Arabian Peninsula usually follow the contour of big valleys. The reason for this is the availability of water in the valleys and fodder for the camels. Caravans had to rest along the track, so there were several rest stations all along the routes. At these stations, the food, water and other logically essential items were available both for the camels and the riders. With time, the camp stations gradually grew and developed into small villages and towns such as al-Fao (to the south), Dedan, Tayma and Mada'in Salih (to the north). One of the most important trade routes in the Arabian Peninsula was the one running between Yemen in the south and the Mediterranean countries in the north (Map 2.1). This route went towards Shabwah, Tatlith, Tabala, Dedan, Mada'in Salih, Tabuk, Petra and Gaza. A branch of the route extends from Tatlith eastward to the Gerrah on

the Arabian Gulf, while another subroute goes from Petra to Egypt (Groom 1981, 234).

Important items to be transported via these routes were frankincense and myrrh, which were only grown in South Arabia (Yemen) and Somalia in Africa. Incense was used by the Greeks as a substitute for sacrifice from the sixth century B.C (Groom 1981, 229).

Due to the specialisation of the Nabataeans in trade, they became rich, particularly as a result of the transportation of goods such as frankincense and myrrh over long distances, which was hugely profitable for them. This specialisation gave the Nabataeans a broad knowledge of trade affairs.

Mada'in Salih was a main station on the trade route and was located near the main Nabataean port called Leuce Kome (White village) on the Red sea. At this port, taxes were collected on goods, amounting to 25 percent of their value (*Periplus 19*). They extracted bitumen from the Red Sea and exported it to Egypt. They also exported balsam which was used in medicines. The Nabataeans had a very well organised transportation system, being able to provide fresh camels to the traders to replace exhausted ones. It is well known that tired camels were replaced after a journey of ten days at various stations (Al-Nayeem 1992, 208). It is also possible that the Nabataeans provided guards to caravans passing through certain areas, in addition to porters and other services like collecting taxes. It is noted that trade played an important role in the economic development of the Nabataeans. When the Romans took over the trade from the Nabataeans and changed the routes from land towards the sea, it badly affected Nabataean economic life, which gradually slowed down. This also resulted in the transfer of trade centres from Petra and Mada'in Salih to Bostra and Palmyra.

3. Archaeological work

3.1. The survey

An archaeological survey of the region was conducted on the 14th of February 1998 for one week. I used the I.G.N archaeological maps of April 1978 as a basis for this survey. Some of the I.G.N's readings and measurements were selected for re-examination: the results were identical. The tomb numbering which was used by the I.G.N was also used in this survey and on the maps which resulted from it, and they have been used in this thesis. New information was added to the plan, such as the location of the steel fence around the settlement area and the location of the excavation.

The archaeological survey carried out by the I.G.N has never been published before, nor has their numbering of the tombs. Those numbers are used by the Department of Antiquities and by scholars who have written about the site (e.g. Healy 1993). The reason is that the survey covered a large area, about 3,630,000 sq. metres, represented on fourteen plates of scale 1/1000. This format was difficult to use in the fieldwork or for publication of a book or in the Journal of Saudi Arabian Archaeology (Attal). So I have reduced the size of the maps, pasted them together and assembled them in a single map. By reducing the size, the tomb numbering was lost, so the numbers have been re-inserted at a suitable size. This work was done to the same level of accuracy as the original survey and also included the new information revealed by the recent survey.

I believe that the resulting map (3.1) and the new information from the survey, which is presented, is the first scientific publication of the numbering used by the Department of Antiquities. In this survey, the names recorded for the wells and other features are those in local use today, as they appeared in the I.G.N maps, although we believe that most of those names are modern names and some of them are not more than fifty years old, especially the names of the wells; some of the names belong to local farmers' families who have been living in the area recently (until almost 20 years ago), when the Department of Antiquities evacuated the local citizens and moved them outside the archaeological area.

3.1.1.The Tombs

The tombs of Mada'in Salih are carved in the red sandstone hills scattered around the settlement area, which is today covered with sand. The tombs are carved in the rocks and thus may face the ecological and environmental consequences of the extreme dry and hot climatic conditions which prevail in the area (Photo 3.1). The Tombs of Mada'in Salih differ notably from those of Petra, as most of them contain dated inscriptions on their facades. These inscriptions have helped in the study of the development of Nabataean writing, as well as that of the funerary architecture of the Nabataeans. For this reason, the scholars involved in Nabataean studies have concentrated on the analysis and detailed studies of these inscriptions, tombs, icons and other architectural details.

The study of Jaussen and Savignac (1909-1914) is considered to be a complete record of all the tombs, their typology and inscriptions. They photographed and drew all the tombs of the site in detail and copied the inscriptions. Most scholars have utilised the information published by Jaussen and Savignac in comparative studies of these tombs with those of Petra in Jordan. Thus the study of Jaussen and Savignac became the basis for all future research (Jaussen and Savignac 1909-1914). Puchstein compared the tombs of Mada'in Salih with those of Petra (Puchstein 1910). Negev later studied in detail the tombs of Mada'in Salih and prepared a chronology on the basis of the dates inscribed on the facades of the tombs (Negev 1976). Schmidt-Colinet studied the tombs of Mada'in Salih, especially the relationship between the stone cutters and the development of the style of the carver (Schmidt-Colinet 1983). Al-Ansari published some of the translated inscriptions of Mada'in Salih and some details on the tombs and their architecture, and mentioned foreign influences on the tombs (Al-Ansari *et al.* 1984). Judith Mackenzie studied the tombs of Mada'in Salih and Petra and investigated the school of each stone cutter and his working life period and the elements of architecture of the tombs (McKenzie 1990). John Healey studied in detail the inscriptions of all the tombs of Mada'in Salih. He translated all the inscriptions and commented on them. His book includes photographs and tracings of the inscriptions (Healey 1993). Joseph Patrich discussed the tombs of Mada'in Salih and external influences on architectural style and designs (Patrich 1990).

The unfinished tombs at Mada'in Salih suggest that the carving of the tombs started from top to bottom (Photo. 3.2). The carver used a chisel and hammer, the evidence

of which can be seen clearly in the still visible chisel lines. The style and the design of the tombs do not show any chronological development, but they were made according to the financial status of the owner. The tombs of Petra are classified by Brünnow and Domaszewski (1904) and at least five of their type can be compared to those of Mada'in Salih, but the sixth type, the Roman Temple Tomb, does not exist in Mada'in Salih. The tombs of Mada'in Salih are classified into five major types (Fig. 3.1):

- 1- Pylon with one or two rows of crenellations
- 2- Stepped tombs
- 3- Porto Heger Tombs.
- 4- Heger tombs
- 5- Arched tombs.

The influence of Greek architecture can be seen in some of the tombs of Mada'in Salih such as the presence of the Entablature, Triglyp, Metop and the Pediment. In addition, some Egyptian impact is also evident such as the Cavette Cornice. However, there are several original Nabataean architectural elements in the tombs of Mada'in Salih, like the Nabataean Capital (Photo. 3.3). The facades of the tombs bear images of vases. There are absolutely no human images on the tombs at all. Eagles are found on most of the tombs, especially at the entrances. The eagle represented the deity Dushara (Al-Ansari *et al.* 1984, 20). There are also figures of the solar disc, sphinxes and serpents (Healey 1993, 7).

The inscriptions on the facades of the tombs are usually depicted in (*tabula ansata*). The inscriptions are Aramaic. These inscriptions vary in length from one line to more than ten lines. They usually contain the names of the owner, the legal rights, and fines to be paid in case of violation, and sometimes the name of the carver. They are discussed in detail in chapter four.

After the entrance of the tomb (Photo. 3.4) is the burial chamber which is chiselled and contains niches on the wall and graves in the floor (Photo. 3.5). The floor is hard and rocky, cut deeply to make rectangular shaped burial places. There are several types of burial, such as floor burial (usually between 180cm to 200cm long and 35 to 65cm wide and 30cm deep) and wall burial (represented by a single burial carved horizontally in the wall at a height of about 2m.)

The tombs were usually covered with capstones and plastered. The upper level of the grave was cut out from all sides making a deep border around the grave to fix the capstone. Most of the tombs were opened and robbed long before the establishment of the Department of Antiquities and Museums, particularly during the time when the Hejaz Railway was laid in the Ottoman period. There were no building structures associated with the tombs as found in Petra (See 3.2.5).

The total number of tombs at Mada'in Salih as per the survey of the I.G.N is 138. (Map 3.1). However, the monumental tombs number only eighty. Out of these eighty monumental tombs, only thirty-six bear inscriptions; thirty-three tombs bear inscriptions with dates. The dates vary from 1 B.C./A.D. to 74/ 75 A.D. (Healey 1993, 6). It is clear that the I.G.N did not follow a consistent method in numbering the tombs, as the tomb numbers start in the upper northern part of the site with numbers from 1-16, while directly adjacent to the west are numbers 133-138, then numbers 17-48. The numbering then shifts back to the west side of the site for numbers 49-101, then to the south-west for numbers 102-108. After that the numbers go to the south-east for numbers 110-111, then a short distance to the north, almost to the centre of the site, for numbers 112-130 and 131-132. It is clear that the survey did not proceed in one orderly direction, either clockwise or, by some other method, such as from north to south or from east to west. The reason for that perhaps is because the work was done by several land surveyors, each of them covering a specific area, and then the work was collected together at the end.

To the north of the site is the Jebel al-Mahjar group (the Mountains of the Stone Pit), which comprise several mountains containing a total number of 17 tombs, which is about 12% of the total number of Mada'in Salih tombs. Tombs 1-5 and 16 are in one mountain, to the east of which (in the same group) are tombs 6-11 and 15. Tombs 13-14 are on a separate mountain of this range further to the east. Tomb no.12 stands alone on a separate mountain to the north of nos.13-14.

To the south of Jebel al-Mahjar are the Qasr Al-Bint mountain range, which contains tomb numbers 17-48 (32 tombs), about 23% of the total number of Mada'in Salih tombs. Tomb 17 is on the north side of the range, while numbers 18-33 are on the west side. On the southern side of the mountain are tombs 34-41, tomb no.36 being little further towards the top of the mountain. Tombs 42-45 are on the east side of

the mountain. To the north-west of this mountain range there is a small mountain, which contains tombs 47-48.

On the west side of the site is the group of Jebel Al-Khreimat mountains, which includes tomb no 49-101 (53 tombs), about 38% of the total number of tombs in Mada'in Salih. Tomb no. 49 is on a separate mountain towards the eastern edge of this range. Further to the east, are tombs no. 50-54 on the east side of the mountain. Tomb no. 55 is to the north of the range on a small separate mountain. Tombs no. 56-62 are to the south of no. 55 on a separate mountain, and on its western side. Tombs no. 63-79 are directly to the west of the group comprising nos. 56-62. Numbers 63-76 are on the eastern side of the mountain, while tombs no. 77-78 are on the western side. Tomb no. 79 stands alone on a separate mountain to the west of the previous group. Tombs no 80-86 are on a separate mountain of this range to the west of nos. 77-79 on the southern part of the mountain. Tombs no. 87-95 are to the south of nos. 80-86. Tombs no. 97-100 are to the west of nos. 87-95 on the eastern side of the mountain. Tomb no. 101 stands alone on a separate mountain of the al-Khreimat group, and it is the farthest tomb to the west of the site

Tomb no. 102, which is known locally as the al-Sana tomb is in the south-west part of the site; directly to its east are tombs no. 103-108. It seems that tomb 109 was missed on the plan. Tomb no 110 is on the south-eastern part of the site and is known locally as Qasr al-Farid ("the Unique") and it is the farthest tomb to the east of the site, at a distance of about 1650 metres from tomb 102. Both of these two fine tombs are on separate mountains. To the north-west of tomb no. 110 is tomb no. 111 and it is the only tomb on that mountain. To the north-west of it is a group of tombs (nos. 112-130): this group of tombs is the nearest group to the old city wall, about 200 m to the south of it. Tomb no. 131 is to the north and slightly west of no. 130. and no 132 is to the south-east of no. 131: these two tombs are the closest to the excavation; no. 132 is about 100m away and no 131 is about 150m. The last group of tombs is about 300m north of tomb 131 and consists of tombs no. 133-138.

It should be noted that the tomb concentration on the west side of the site is greater than on the eastern side; the next greatest concentration is on the southern side, while the least number of tombs are found in the northern part. Tombs are almost totally absent at the centre of the site near the settlement area, except for two non-

architectural tombs, which consist of only an opening in the rock without any decorated entrance.

3.1.2.The Wells

To the far north of the site, north of tombs no 1-7, seven wells are located; one of them is known as the al-Diham well (an Arabic family name). To the south of these tombs are 2 wells: one of them is definitely an old Nabataean one, as was suggested by the previous survey of the I.G.N and as can be clearly seen with the style of stone building inside the well. Medium size white dressed sandstone was used in a style similar to the residential unit. To the north west of the site, near tombs 133-138, there are 4 wells: 3 of them are to the north of the tomb group, one of which is known as the As-Salahmah well (probably a local family name); and the fourth well is to the south east of the tomb group. The eastern part of the site is without any wells, although containing the Qasr al-Bint tomb group, “the Girl's Palace tomb”, which contains 32 tombs, and the Jebel Ithlib Mountains, which are considered as a religious area, so more wells were expected to be found. In the middle of the site, in the settlement area inside the fence, 3 wells were located to the west of the excavation: one of them is known as the al-Janid well (an Arabic family name). The southern part of the site, like the eastern part, is without any wells. In the western part of the site, 10 wells were located: two of the wells are located to the south-east of the Jebel al-Khreimat range, near tombs 91-93. Three wells are almost in a line to the south of the same mountain range and to the north of tomb 102 on the al-Sana mountain. Two more wells are south of tomb 101, and there are three wells almost in a line to the far west of the site. Three wells are located near the excavation, at a distance of about 320m, 450m, and 460m. The total number of recorded wells is 27. This is not strange; as was mentioned in the introduction, the Nabataeans were famous for their exploitation of water resources.

3.1.3.The Stone Pit

A Nabataean stone pit was located in the western part of the site in the Jebel al-Khreimat area to the north of tomb 97.

3.1.4.Hijaz Railway

The Hijaz Railway line runs inside the archaeological area from north to south. It runs almost in the centre of the archaeological area for about 1300 m in a straight line, then it bends to the south-west and runs for about 1200m; after that it bends towards the south-east, and runs for about 300m. The total length of the line inside the archaeological area is about 2800m. Part of the railway line runs throughout the residential area near its western edge. The nearest point from the road to the tombs is about 50m (from tombs no 50-54). The railway line had affected the area. Some archaeological dunes were removed and part of the soil was shifted from the settlement area and used as filling under the railway line, unfortunately without any record of the work that had been done or the artefacts found.

3.1.5.The Old City Wall

The old city wall is clearly visible at the middle of the site and the survey has traced its course around the settlement area. The starting point of the still visible section of the wall is at about 250 metres east of the railway and about 600 metres west of tomb no. 130. It goes for about 250 metres towards the east, then bends to the north-east and goes straight for about 600 metres. After that, it bends to the north at an angle of 240 degree for about 570 metres. Those are the parts which are still clearly visible. Other parts of the wall are not as clear as the previous parts because they are located in a low area and have been washed out by the rain. We might expect that the wall went for about 400 metres further to the north, then turned at right angles to the west, going straight for about 800 metres, then bending again towards the south. After that it would have gone straight and met the southern part of the wall.

We might expect one gate in the southern part of the wall where the route comes from the town of al-Ula to the south and perhaps another gate to the north. Also, there might be other gates in the east and west sides of the wall. The western side of the wall might have gone very close to tombs no. 50-54. The railway might have affected and damaged some parts of the western wall.

3.2.Mada'in Salih Excavations

3.2.1.The Settlement Area

As a result of comprehensive archaeological surveys in Mada'in Salih and its surrounding area, a potential area for excavations was selected based on the exposed

stone structures, building foundations and large scattering of pottery sherds recorded in the area. The following report is based on the excavation seasons between 1986 and 1990, in which this researcher took part. Brief preliminary reports were published by the Department of Antiquities and Museums in Atlal (the Journal of Saudi Arabian Archaeology) Vols. 11, 12, 13 and 14.

The old settlement area is located between the Qasr al Bint tomb area to the east and the old Hijaz Railway on its western side. The foundations and stone structures can be seen from beside the railway line. Several mounds varying in size from small to large and covered with sand are scattered in the area. However, some mounds have been exposed by the wind and rain and large quantities of pottery sherds are visible on the surface. One such mound with many pottery sherds, coins and foundation walls was selected for the excavation. Other mounds were selected later, as well as some trenches around the wall of the city and around some tombs.

A grid was marked out covering the whole site, comprising twenty-nine 5X5 metre squares. These were assigned grid references numbers using letters of the alphabet to denote the E-W direction, and numerical order to denote the N-S direction. A balk of 0.5m was left on each side of the square for working and carrying away the rubble and the excavated soil and to present a clear section for Stratigraphy purposes.

Before starting the excavation all the visible structures were measured, photographed and recorded.

The excavation was almost in the centre of the settlement about 50 metres south of tomb no. 131. The area is almost rectangular in shape, measuring about 300X350 metres. Twenty-nine squares were dug in the area (Fig. 3.2):

I 23, I 22, I 21, I 20, I 19, I 18. H 23, H 22, H21, H20, H19. G23, G22, G21, G20, G19, G18. F22, F21, F20, F19, F18. E22, E21, E20. D22, D21, D20. The total excavated area is 725 sq.metres. Since it would take quite long to list in detail all the features of the 29 squares, it might be appropriate to give a brief description of the main archaeological features in each square, and then to discuss in detail the whole picture of the residential unit. Detailed information on the excavation and on those squares is kept in the records of the Department of Antiquities.

3.2.1.1. The squares (Fig. 3.2):

Square I23

The main features of this square are as follows:

Wall 1: This wall was visible on the surface of the square before the start of the excavation. It starts from the middle of the southern side of the square and goes towards the north-east for a length of 3.1m, then goes towards the east at a right angle for a length of 0.72m.; after that it bends again to the north east until it reaches the north side of the square. This wall is about 0.7m wide and 1.15m high. It consists of one course of undressed white sandstone on the top with mud mortar; the rest of the wall is of mud.

Wall 2: This wall appeared at a depth of 0.4m. It is about 1m south of the north-west corner, heading east until it connects with wall 1 at a right angle. It is about 1m long, built with one course of semidressed white sandstone, with mud mortar and small stones as bonding. This wall is narrower in width than wall no.1 (only 0.2m wide). It should be noted here that the stone course stops after about 1.3m, then the rest of the wall is of mud only, until it disappears inside the western balk of the square. This might be explained by the fact that this part might be an entrance.

Square I22:

W1: this wall is about 1.5m west of the south-east corner; its direction is south-north. It is about 4.1m long, 1m high, 0.64m wide. Three quarters of the wall (0.75m) is of mud but the upper part (0.25m) is of 2 courses of undressed sandstone.

W2: This is a small wall at the north-east side of the square which extends from east to west until it reaches W1. It is about 0.47m long, 0.60m wide and the preserved height is 1.23m. The lowest part (0.5m) is of mud and the upper part is of 3 courses of undressed sandstone.

W3: This wall extends from the north-west corner of the square towards the west until it meets with W1. It is about 1.8m long, 0.7m wide. The lower part of the wall (0.75m) is of mud, and the upper part is of 1 course of undressed sandstone.

W4: This wall is in the south western part of the square. Its direction is west-east. It goes straight until it connects with W1 at a right angle. It is about 0.9m long, 0.6m wide, and 0.91m high. This wall consists of 6 courses of semidressed from bottom to top.

Square I21

Wall 1: This wall appears from the north-east corner of the square heading towards the west. Its length is 2.2m and it is connected with wall 2 at a right angle. The wall is about 30 cm wide and 0.9m high. The upper part of the wall consists of 2 courses of undressed white sandstone and the rest of the wall is of mud.

Wall 2: This wall goes from north to south almost in the centre of the square. It is about 4m long, 0.45m wide, and 1.35m high. It is of two courses of undressed white sandstone and meets with W1 at a right angle.

Wall 3: This wall appears from the south western corner of the square and goes towards the east. A large part of it is covered beneath the southern balk. This wall is connected with W2 at a right angle and is about 1.8m long, 1.66m high and 64 cm wide on average. It consists of 10 courses of semidressed sandstone with mud and small stones as bonding. It is one of the few walls in the area with ten courses.

Square I20:

W1: This wall is about 1m south of the north-east corner; its direction is east to west. It is about 4m long, 0.62 m wide. It is of two parts, the lower is of mud and the upper part is of 3 courses of undressed sandstone. It meets with W2 at a right angle.

W2: this wall goes from south to north until it meets with W1 in a T shape. It is made of mud in the lower part and 2 courses of undressed sandstone blocks on the top.

W3: This wall is an extension of square I21 to the north. Its direction is north south, and it is made of mud in the lower part and 3 courses of undressed sandstone in the upper part.

Square I19:

W1: this wall starts at the south-western corner of the square heading north until it reaches the northern side of the square. The lower part of the wall is of mud and the upper part is of one course of undressed white sand stone. It is about 4.1m long, 0.7m wide and 1.05m high.

W2: This wall appears at the north western corner of the square heading east until it meets W1 at a right angle. It is of one course of undressed white sandstone on the top and the rest of the wall is of mud. The wall is about 0.75m long and 0.5m wide.

Square I18:

W1: This wall starts at the south eastern corner of the square heading west. It consists of 4 courses of semidressed sandstone and the lower part of the wall is of mud. It is about 4m long and 0.75m wide on average.

Square H23:

W1: This wall starts at the south-eastern corner of the square heading north-west until it reaches the western side of the square. It is about 4.2m long, 0.6m wide; most of the sandstone at the top had fallen and been replaced with mud and sand.

W2: The wall starts at the north-western corner of the square heading south until it meets with W1 at a right angle. It is about 2.7m long and 0.7 m wide on average.

Square H22:

W1: This wall is of the second Phase (the newest); it starts at the south-eastern corner of the square, going across the square in a north-westerly direction. It is about 4.3m long, 0.87m wide, and the preserved height is 0.85m. The lower part of the wall is of mud with 2 courses of undressed sandstone (0.36m above).

W2 : This wall is of the first Phase (the oldest). It is of mud, and is about 4m long, 0.5m wide. It extends from the north-eastern corner to the north-western corner of the square.

Square H21:

The walls in this square are of the first Phase (the oldest).

W1: This wall is about 1.5m north of the south-east corner and goes from east to west. It is about 2.94m long. More than half of the wall is missing. The lower part of the wall is of mud, then in the middle is one course of semidressed sand stone about 0.12m high; the upper part of the wall is of mud again.

W2: This wall is about 0.7m west of the north-eastern corner; its direction is north-south; it meets with wall 1 at a right angle. It is about 2.5m long and the preserved height is 0.75 m.

W3: It is parallel to wall no. 2, and the space between them is about 0.5m. It is about 2.1m long and 0.47m wide. This wall was built of 2 courses of undressed sandstone. It seems that this wall was not in use at the same time as W1, W2 according to its location relative to them. It might have been out of use by the time W2 was constructed.

Square H20

The main features of this square are as follows:

W1: It starts at the south-eastern corner of the square and travels north west for for 4.2m to reach the western edge of the square. It is 0.65m wide, The lower part of the wall is made of mud (0.35m) and the upper part is of 2 courses of semidressed sandstone (2 rows).

W2: This wall starts about 0.3m west of the north east corner, and goes south parallel to W3. It is about 3m long, 0.7m wide and 0.73m high. The lower part of the wall (0.35m) is of mud, and the upper part is of 2 courses of irregularly shaped sandstone, 2 rows at the northern part and 3 rows at the southern part.

W3: This Phase I wall starts at the north eastern corner of the square heading south. It is about 3.40 m long, 0.7m wide and 0.71m high. It connects with W1 at a right angle and is of mud only.

Square H19:

The main features of this square are as follows:

W1: From the south-eastern corner of the square, the wall goes towards the west and slightly to the north. It is about 4.1m long, 0.7m wide and consists of 1 course of semidressed white sand stone in a double row. Beneath it is the mud part of the wall.

W2: From the south western corner of the square, this wall goes north until it meets W1 almost at right angles. It is about 1m long and 0.7m wide.

Square H18:

The main features of this square are as follows:

W1: This wall starts at the south-eastern corner of the square widening towards the west. It consists of 1 course of various colours of soft sandstone. It is about 4.1m long, 0.4m wide on the eastern side and 0.7m wide on the western side.

(2) At the northern part of the square 5 courses of dressed sandstone are located, which are rectangular in shape (120x70 cm). One of the stones in the third course has a hole in it which might have been for a door socket.

Square G23:

W1: The upper portion of this wall was visible before the excavation. It starts about 1.35m west of the south-eastern corner and is about 2.1m long, 0.65m wide and 1.5m high. It goes north east, then bends at a right angle towards the east and slightly to

the south until it reaches the eastern edge of the square. The eastern part is about 1.93m long 0.65m wide and 1.07m high. The wall is of one course of two rows of white sandstone beneath which is a mud wall. Some ash was seen in between the mud. There is a small buttress at the western outside corner of the wall (0.4m long). (2): the second feature of the square is a group of stones, located at the south-eastern corner of the square, rectangular in shape (0.97X0.42m) consisting of 3 dressed sandstones going under the balk, which might be part of a floor.

Square G22:

The main features in this square are as follows:

W1: This wall starts about 1.8m north of the south east corner of the square, heading west and slightly to the north. It is about 3.75m long, 0.75m wide and connects with W2 in a T shape and is of undressed white sandstone.

W2: This wall goes from the south-western corner of the square towards the north-east. It is about 4.2m. long and 0.7m wide. It is suggested that this wall is part of the entrance to the residential area.

Square G21:

Two phases of building can be seen in this square:

Phase 1

(3) the only preserved element of Phase 1 (the oldest) is a stone floor which cannot be associated with any preserved walls at this stage.

Phase II

W1: This wall starts about 2m east from the south-west corner of the square. Its direction is north-east. It is about 2.17m long and 0.6m wide. The upper part of the wall is of 3 courses of undressed sandstone and the lower part is of mud.

W2: This wall is almost in the centre of the square heading east-west at a slight angle to the north; it meets with wall 1 in a T-junction. It is about 4m long; some parts of it are missing.

Square G20:

Wall 1: This wall is about 1.5m long. It starts just before the middle of the eastern edge of the square and goes west and slightly to the north. It is 2.1m long, 0.48m wide, and the preserved height is 0.93m. The upper part is of semidressed sandstones; one course is still preserved; the rest of the wall is of mud.

Wall 2: This wall is located in the north-west corner of the square; its direction is north-south and slightly to the west. It meets wall no. 1 at a right angle. Its length is 1.1m and the preserved height is 0.59m. The lower part of the wall is of mud and the upper part is of two courses of semidressed sandstone.

Wall 3: This wall is located in the north-western corner of the square and goes east to meet W2 almost at right angles. It is about 0.8m long, and varies in width (0.44-0.63m).

Square G19

The main features of this square are as follows:

W1: This wall starts about 0.74 m north of the south-eastern corner of the square heading north-west. It is about 4m long and 0.57m wide. The eastern part of the wall is built of mud and sandstone bricks together, while the west side is of mud only.

W2: It starts at the north-eastern corner of the square heading towards the south and slightly east until it reaches the edge of the square and meets with W1 at a right angle. It is about 4m long, 0.5m wide, and is built with undressed white sandstone.

(3) Also in this square, 3 well shaped sandstone bricks are located in the north-eastern part of the square. One of them is 0.77m long, 0.22m wide and 0.16 m thick. The second is 1.23m long, 0.18m wide and 0.09m thick. The third is 0.88m long, 0.18m wide and 0.16 m thick. It seems that they were part of a surrounding flooring that was removed in a former time, or door steps that could have been displaced.

Square G18:

The main features of this square are as follows:

W1: This wall starts at about 1.5m north of the south-east corner of the square heading north west. It is about 2.75m long, 0.70m wide and meets W4 in a T shape. It is built of undressed yellow and white sandstone.

W2: This wall is of Phase I (the oldest). It starts in the middle of the south edge of the square, heading north-west parallel with W1. It is about 2.45m long, 0.60m wide and consists of one course of 2 rows of undressed white sandstone.

W3: This wall is located almost in the centre of the square; it is of Phase I (the oldest). It is built of mud. Its direction is roughly south-north and it meets W1 in a T shape.

W4: This wall starts about 1.5m east of the north-west corner, heading south until it meets W2 in a T shape. The northern part of the wall (1m) is thicker than the southern part (0.5m). It is built of undressed sandstone.

Square F22:

In this square, there are two walls of 2 different periods. Wall 1 starts about 1m east of the south-west corner and is of Phase 2 (the newest); its direction is from south to north and slightly to the east. It is about 4.3m long and 0.88m wide and the preserved height is 1.04m. The upper part of the wall is of one course of sand stone (one row only).

Wall 2: is of Phase 1 (the oldest). Its direction is from south to north and it is parallel with the eastern edge. This wall is about 4.1m. long and 0.58m wide and its preserved height is 0.57m. It is made completely of mud, like most Phase 1 walls.

Square F21

W1: This wall extends from the southern balk towards the north-east corner. It is about 4.1m long, 0.7m wide and 0.72m high. It is of two parts. The upper one is of undressed white sandstone and the lower is of mud.

W2: Wall 2 joins Wall 1 at a right angle on the southern edge, from where its direction is west and slightly to the north. It is about 2.05m long and 0.69m wide and consists of four courses of undressed sand stone. Each course is of 3 rows of stones.

W3: This wall is connected with wall no 2 at a right angle. It travels northwards and slightly to the east. It is about 1.9m long and 0.75m high. The upper part of the wall is of undressed sand stone and the lower part is of mud. The wall would have continued until it met the northern edge, but this part is missing.

Square F20

The main feature of this square is a mud wall. It starts one metre north of the south-east corner heading north-west until it reaches the western edge. It is about 4.5m long and 0.58m wide. The preserved height is 0.42m. This wall is of the first Phase (the oldest).

(2) In the southern part of the square there is a group of semidressed stones in a straight line which may have served as a door step.

Square F19

The walls of this square are of Phase I (the oldest).

W1: This wall starts at about 0.72m west of the south eastern corner; its direction is to the north east. It is about 4.15m long 0.65m wide, and is built mainly of mud with stones which were usually of undressed sandstone and used mainly at the foundation of the wall, especially at the corners, with the mud used to fill in between. The wall starts as one course of undressed sandstone at the foundation, above which is the mud wall.

W2: This wall starts from the north-western corner of the square, heading south-east until it meets W1 in T shape. It is about 3.15m long, 0.70m wide and is built of mud only.

Square F18:

In this square there are 2 walls which meet in an X shape just west of the centre of the square:

W1: This wall starts about 0.75m east of the south-western corner, heading north and bending slightly east until it reaches the northern side of the square. The lower part is of mud and the upper part is of one course of yellow and white undressed sand stone (15 cm) thick. It is about 4m long, 0.62m wide at maximum. The middle part of the wall is of mud only.

W2: Wall 2 starts about 1m south of the north-western corner of the square, heading west and slightly towards the south. The first part of it (the western) is thicker (1m) than the other parts and is of undressed white sandstone. This part might be a buttress, the rest of which lies beneath the balk. The eastern part of the wall is only 0.2m wide, with one course of one row of undressed white sandstone. It is clear that W1 and W2 are parts of room walls, the rest of which are in squares G18, G19 and F19.

Square E22:

W1: This wall starts just east of centre of the southern side of the square, heading north with a length of 0.9m. It is 0.70m wide and 1m high. It connects with W2 at a right angle, and is built of 6 courses of white undressed sandstone with mud bonding.

W2: wall 2 starts about 1.18m north of the south-western corner, heading east and dipping very slightly south. Its length is 1.38m, and it is 0.65m wide and 1m high

and connecting with W1 at a right angle. It consists of 7 courses of undressed white sandstone with mud bonding.

W3: This is a small wall connected to the eastern part of W1 heading east. It is about 0.85m long, 0.40m wide and 1.2 m high. Around this wall there was a thick layer of ash. The southern face of the wall is of 7 courses of white sandstone, but the courses have been disturbed on the northern face.

W4: This wall starts near the middle of the northern side of the square, 1.7m east of the north-western corner. It is about 2.27m long, 0.6m wide and 1m high, heading south west until it meets with W2 at a right angle at the western edge. It consists of 8 courses of undressed white sandstone.

W5: This wall is located in the north part of the square; only a small portion of this wall is visible since the rest of it is covered by the northern balk. It consists of medium sized undressed white sandstone.

W6: This wall appears at a depth of 0.63m connecting with the eastern side of W4. It might have been used as a buttress since it is rectangular in shape (0.6x0.7m). It is of undressed white sandstone.

Square E21:

W1: This wall starts at 0.75m north of the south-eastern corner, heading west and slightly north for 3.05m. It is 0.65m wide on average and 1.1m high. The southern face of the wall is built of mud in the lower part and the upper part is of 2 courses of undressed white sand stone with mud mortar.

W2: This wall starts about 1m east of the north-west corner of the square, heading south until it meets with W1 almost at a right angle. It is about 2.1m long, 0.65m wide and 1.16m high and is built of 5 courses of undressed white sandstone.

W3: This wall starts about 2m south of the north-eastern corner of the square, heading east and slightly south like W1, with which it is connected at the outside face. It is about 0.50m long, 0.65m wide and continues in the neighbouring square to the west (D21). The wall is built of 5 courses of white sandstone.

W4: A hard layer of mud appeared at 0.5m depth on the west side of the square. It might be a mud wall heading north to south (of 1.1m length), but most of it is still lying beneath the balk, making it difficult to give a clear description of it.

W5: This wall starts on the southern edge of the square. It is of undressed sand stone. It heads west and slightly north until it meets W 4 at a right angle. Only a small

portion of it can be seen in the square (about 0.8m length). Most of it lies beneath the southern balk.

Square E20:

The walls in this square are of the first Phase (the oldest).

W1: The wall is at a depth of 0.45m. It starts 1m north of the south-eastern corner of the square, and goes west. It is about 2.1m long. It joins W1 at an angle. It is built of mud bricks (2 rows) one as a stretcher and the other as a header. The preserved height of the wall is 0.6m. Only one course can be seen clearly, while others are mixed with soil and badly affected.

W2 : This wall is unique in the residential area that it arches. It starts about 1.55m east of the south-western corner of the square heading north-west for about 3.2m, then curving to the west for 1.5m. It is 0.6m wide. The bricks are laid one as a stretcher, the other as header. The preserved height of the wall is 0.7m.

W3: This wall is about 1 m north of the south-western corner of the square, the rest of it is in the neighbouring square. It is of mud bricks, light in colour, 2 rows in a course. This wall is about 0.50m long, 0.75 m wide and the preserved height is 0.60 m.

Square D22:

W1: This wall starts about 0.7m west of the south-east corner, heading north for 1.65 m. It is 0.65m wide and 0.9m high. It meets W2 in a T shape. It consists of 4 courses of undressed white sandstone. At the western side of the wall there are some stones missing and the place where they were is now full of sand.

W2: This wall appeared at a depth of 0.2m. It starts at the middle of the east side of the square and travels west and slightly north for 1.3m. It is 0.6m wide and 0.55m high. It consists of 4 courses of undressed white sandstone on the southern side, while the northern side is of 3 courses only. Then, the wall bends at a right angle to the north-east, for 2.1m. This section is 0.65m wide. It disappears beneath the northern balk.

(3): In the southern part of the square, a group of sandstone forms a rectangular shape (0.75x 0.85m) consisting of 6 courses, resembling a buttress.

Phase II (the newest)

W4: This wall appears at a depth of 0.6m. It starts about 0.9m north of the south-western corner, and goes slightly south for 1.65m. It is 0.64m wide and 0.18 high. It meets with the buttress (3). It is of only one course of sandstone.

(5): A sandstone group starts about 0.22m east of the west side of the square and 0.8m south of the north side, heading south west until it reaches W2. To the southern end of this group there is a buttress in a square shape (1.1X1.1m) of undressed white sandstone.

Square D21:

Phase II (the newest):

W1: This wall was visible on the surface of the square before excavation. It continues in the neighbouring square E21 to the east. It starts about 2m north of the south-east corner of the square, heading north-west for about 1.35m. It is 0.65m wide and 1.05m high, consisting of 3 courses of undressed white sandstone bricks (50x30cm on average). The wall deviates north and slightly east at right angles, until it reaches the northern balk and continues in the next square. It is of 1.25m long. This wall forms, with other walls in the neighbouring squares, a rectangular room (3x4m).

W2: At a depth of about 0.3m, this wall starts about 1m west of the south-east corner, heading west and slightly north. It is about 2.75m long, 0.78m high and 0.76m wide. It consists of one course of big sandstone blocks. This wall is connected at its southern side with a group of stones which might constitute another wall inside the southern balk.

Phase I (the oldest):

W3: At a depth of 0.76m this wall starts about 0.5m east of the western balk and 2m north of the south side. 3 rows of sandstone go parallel to W3 and along the edge of the western side and under W2. It is about 2.4m long, 0.70m wide and above it is a big rectangular sandstone piece 1.1m long, 0.18m wide and 0.17m high.

Square D20: Nearly all the features in this square are from Phase I (the oldest), except for W2, which is from Phase II:

W1: This wall appeared at a depth of 0.23m on the western side of the square, 0.74 m south of the northern western corner. It goes east and a little south until it reaches the eastern side of the square. It is about 4.14m long, 0.66m wide and 0.7m high. The wall consists of 3 courses of mud bricks; the course is of 2 rows, one brick as a stretcher the other as a header until the middle of the wall. Then the system changes

to the opposite direction. The bricks were very weak, without any traces of straw, which is usually used as a bond. The foundation of this wall was of mud mixed with soil. Near the floor, large dressed white sandstone was located near the southern part of the wall (0.63x.0.43 m).

W2: This wall is of Phase II (the newest); it was visible at the surface of the square, about 0.74m east of the north-western corner of the square, heading south until it meets W1 at a right angle. It is about 0.92m long, 0.66m wide and 0.95m high. It was built of 2 courses of white sand stone and mud mortar.

(3) Near W1, at the northern side of the wall, there is a group of white sandstone bricks in a rectangular shape (0.85x.0.75m) full of sand. It might have fallen. The space around the stones is full of charcoal, which suggests that the place might have been part of a kitchen.

W4: This wall appeared at a depth of 0.9m in the north-eastern part of the square. It consists of one course of small white sandstone with mud as a bond. It is about 1.12m long, and 0.4m wide, going diagonally across the corner.

W5: Found at a depth of 0.45m, this wall starts on the western side of the square at about 1.05m north of the south-western corner, heading east for 4.1m. It is 0.55m wide. It is built of 3 courses of undressed white sandstone; each course is of a double row with mud as bonding.

W6: At a depth of 0.8m in the south-eastern corner, this wall appears to head east-west for about 1.05m. It is 0.5m wide. It is built of 2 courses of white sandstone.

3.2.2.The Residential Unit

Phase II (Fig. 3.3):

It is clearly seen that there were two phases of settlement one after the other in the area, the residential unit being from Phase II (the newest). It has an almost north south orientation with a slight rotation clockwise 30 degrees. It slopes east to west. The original soil in the area, before the settlement, was sandy yellow, as is evident from the Stratigraphy of some of the excavated squares. The excavation of the settlement was from south to north. On the southern side, the foundations of the houses were mostly poor, whereas on the northern side they were of better quality. In the second phase, semi-dressed stones bearing chisel marks were used. They were probably the by-product of the stone cut architecture of the tombs. House foundations were laid mostly on the previous mud foundations. Only at a few places were new foundations laid with stone and mud. The excavation shows that the walls of the houses were not straight. Hence, building and measuring skills were at a low stage of development.

The entrance to this unit is at the north and is about 4.2m long, 2.25m wide and leads directly to room No 2. Rooms 1,2,3,4 and 5 are on the same row on the southern wall of the unit. Room No 2 is directly after the entrance. It is rectangular in shape (6x3.8m). To the west of room 2 is room No 1, which is also rectangular in shape (3.75x2.75m). Its eastern wall is 0.15m longer than the west wall. The entrance to this room is on the eastern wall, through room No 2.

Room No. 3 is to the east of room No. 2. It is rectangular in shape (3x3.25m). Its entrance is on the northern wall. Room No. 4, the third largest, is rectangular in shape (6.25x4.1m). The northern part of the room is totally open to the open area at the centre of the house.

Room No 5 is to the east of room 4, and is rectangular in shape (4.2x3m). There was no entrance to this room evident during the excavation. However, it could have been on the northern wall or most probably on the western wall through room No. 4.

The open area (6) is almost at the middle of the house. It is large in size (11x 6m); most of the rooms give out onto this open area. Room No.7 is the largest in the house; it is rectangular in shape (11x7m).

The outside walls to this unit are of sandstone; they are described one by one for a clearer picture. Part I of the southern wall extends east-west for 11.30m, then makes

a short bend (0.75m) to the inner side, with a right angle forming a buttress (Photo. 3.6). Then it continues towards the west. Part I consists of one course of undressed sand stone of different sizes and colours (red, yellow and white). The average size of stone is 0.45 x 0.23m.

After the wall bends, part II is 10m long, and consists of 3 courses of semidressed sandstone. The stones in this part are in a better condition than part I, especially the lower two courses, where the stones are more similar in size (0.40x0.2m). The third course (the upper) is of smaller stones (0.19 x 0.13 x 0.04). After that, the wall bends out again forming a buttress as in the previous part. Just before the buttress, only two courses are located, the lower one is of big stones (0.80 x 0.21m on average, Photo. 3.7) while the upper part of the wall is of a double row of smaller sized sandstone (Photo. 3.8).

The third part of the wall is directly after the buttress. It is about 4.25 m long and consists of three courses. The lower one is of large dressed sandstone (0.4 x 0.2m) with chisel marks. Above is one course of smaller sized stones (3cm thick) followed by mud mortar, then another layer of thin stones, followed by mud mortar. The last course is of undressed white sandstone, thin in size (Photo. 3.9, 3.10).

The western wall of this unit is severely damaged. The mud has pushed aside many of its stones. It consists of 3 courses. The middle one is of thin stones. There is a buttress at the centre of the wall (Photo. 3.11). The wall consists of five courses of white sandstone with mud mortar. The stones are of medium semidressed sandstone (0.40 x0.20 x 0.12m).

The northern wall (part I) has only one course still preserved, consisting of undressed sandstone of various sizes and colours (yellow, white, and red). It consists of two rows with mud mortar, similar in style to the southern wall. It has a slight bend to the outside forming a small buttress. Part II of the wall is of the same style, but with more fallen stones, and another buttress at its western part.

The eastern wall of the unit is divided for purposes of description into four parts. Part one is of one course of undressed sandstone varying in size and colour (white, red, and yellow). The second part of the wall is of the same style of building, but with two courses. The third part of the wall is of three courses. The lower course is of large dressed sandstone (0.4 x 0.12m), while the middle course is of smaller stones,

and the upper is of two rows, one laid as a stretcher the other as a header. The fourth part of the wall consists of one large undressed sandstone (0.6 x 0.4m).

The inside walls are similar in shape and style to the outside walls, except for Wall A in room no 5, which consists of ten courses. The lower one is a foundation. It is wider and goes slightly more to the outside (10 cm) than other courses, followed by nine courses of semidressed white sandstone with chisel marks and mud mortar (Photo. 3.12). Almost in the centre of the house in room no 6 there is a floor of thin slabs (3 cm) of white sandstone (Photo.3.13).

Phase I (the oldest; Fig. 3.4):

In the first Phase of settlement, the house walls were built mostly with mud, occasionally using stone pieces which were undressed. The floor of the house in this phase was built with mud, and around the floor adjoining to the wall, stone slabs were fixed (Photo. 3.14, 3.15). Within the house, low stairs were used, which were built of semidressed stone slabs. The stairs were protected by stone in the side (0.12m thick and 1.21m long), (Photo. 3.16).

In this phase there is no clear plan to the architectural unit. Most of the walls were damaged or reused as foundations for Phase II. One room can be seen in the plan (Fig. 3.4). This room (room 1) is at the southern western part, and is rectangular in shape (4x6 m). A water channel was located in this unit in the kitchen area. It forms a U-shape, carved at the inside with chisel marks. It is about 0.6m long and 0.11m deep (Photo. 3.17).

3.2.2.1.Wall Type:

The building style and methods cannot be described as advanced in skill in this residential unit. There was no evidence of advanced techniques of building with quality work for beautiful appearance. This is surprising; the masons of the region did not lack well-crafted and accurate models of fine work. Within a very short distance, even within eye sight, are very fine tombs which give an excellent example of a high standard of work, considered even today as a fine piece of carving.

However, there might have been more advanced methods of building on the site, the question being where those other buildings might be located. Were the well dressed stones taken from their original place to another area? We have observed a well-dressed stone with Maenean inscriptions used in the Islamic Fort. Did the residential

unit revealed by the excavation belong to a lower economic class of people, with its style accordingly quite poor. Perhaps greater attention was paid to the tombs because they contain dead bodies which the Nabataeans believed had another life after death. Many aspects of daily life may have taken place in public places such as the Diwan, used for sitting and dining as well being a religious place. Perhaps there were other public common buildings for the people to gather and celebrate. No great attention was paid then to decoration in the houses. The various types of walls in the residential unit may be categorised as follows:

1 Stone + Mud

- a- One course of undressed sandstone on the top with mud mortar; the rest of the wall is of mud. The examples of this type are: W1 I23, W3 I22, W1 I19, W2 I19, W1 H19, W1 G23, W1 F22, W1 F18.
- b- One course of semidressed sandstone with mud mortar. The example of this type is: W2 I23.
- c- Two courses of undressed sandstone at the top of the wall and the rest of the wall of mud. The examples of this type are: W1 I22, W1 I21, W2 I21, W2 I20, W2 H22, W2 H20, W1 H20.
- d- Three courses of undressed sandstone and the rest of the wall is of mud. The examples of this type are: W2 I22, W1 I20.
- e- Four courses of semidressed sandstone at the upper part of the wall and the lower part of mud. The examples of this type are: W1 I18, W1 D22, W2 D22.
- f- The wall is mainly built of mud, with stones used at the corners, and mud used to fill in the space between the stones. The example of this type is W1 F19.

2- Stone:

- a- Ten courses of semidressed sandstone with mud and small stones as bonding. The example of this type is: W3 I21.
- b- Eight courses of semidressed sandstone with mud and small stones as a bond. The example of this type is: W4 E22.
- c- Seven courses of semidressed sandstone with mud and small stones as a bond. The examples of this type are: W2 E22, W3 E22.
- d- Six courses of semidressed sandstone blocks from the bottom of the wall to the top. The examples of this type are: W4 I22, W1 E22.

- e- Five courses of semidressed sandstone with mud and small stones as a bond. The examples of this type are: W2 E21, W3 E21.
- f- Four courses of semidressed sandstone with mud and small stones as a bond. The example of this type is: W2 F21, W1 E21.
- g- Three courses of semidressed sandstone with mud and small stones as a bond. The examples of this type are: W1 D21, W2 D21, W5 D20.
- h- Two courses of undressed sandstone with mud and small stones as a bond. The examples of this type are: W3 H 1, W6 D20, W2 D20.
- i- One course of undressed sandstone with mud and small stones as a bond. The examples of this type are: W1 H18, W2 G18, W4 D22, W4 D20.

3- Mud-stone-mud.

The lower part of the wall is of mud, then in the middle is one course of semidressed sandstone about 0.12 m. high, then the upper part of the wall is of mud again. The example of this type is: W1 H21.

4- Mud.

- a- The entire wall is made of mud, without any stone courses. The examples of this type are: W3 H20, W3 G18, W2 F22
- b- Mud brick wall: in this type, the bricks can clearly be seen, usually one stretcher and one header. The examples of this type are W1 E20, W3 E20.
- c- Mud brick wall in an arch shape. One unique example has been found of this type: W2 E20.
- d- Three courses of mud bricks of two rows, one stretcher and one header to half of the wall, then the system changes to the opposite, one header and one stretcher. The example of this type is W2 E20.

3.2.2.2. Building Materials:

Clay:

Clay was and still is an important building material. It is a low cost material, flexible in use and easy to find. It was widely used in the Mediterranean countries, since the climate is not very wet and the percentage of rainfall is not very high. In Saudi Arabia, clay has been almost the main building material for the last hundred years, for houses as well as palaces and public buildings. In the Mada'in Salih area, mud houses can still be seen today, in local farms, and especially for storing tools.

Clay is usually obtained from valleys and used mainly in two forms. The first is in bulk and the other is in brick form. The preparation of each is similar. After suitable clay has been collected, it is placed in a pit and water is added with a tempering agent such as straw or sand. Then, all is mixed together well and trodden by foot or using animals. The reason for adding a tempering agent is so that the clay does not crack because of loss of water. After that, the clay is left for several days. In the case of mud bricks, the clay will be placed in a wooden frame, rectangular in shape, and filled to the top. When the frame is removed, the clay remains on the ground, in the same shape as the frame. The bricks are left to dry slowly in the sun for several days until they are ready to use. They are used usually in courses formed with mud mortar as a joint.

The other method of building with mud is with bulk clay. In this method, the clay is taken en masse and placed along the whole course of the wall. It is left to dry for one or two days and then another course is put in place until the whole wall is completed. Before the course becomes completely dry, it is smoothed and well shaped by the mason. However, the plastering clay for the outside wall is treated in a special way. It is usually pure clay with a small amount of salt and sand, and a tempering agent, which is usually straw. This type of clay is usually left for a much longer time after mixing with water (up to one month) until the colour of the clay changes to black. In this stage, the clay is more resistant to water and is suitable for the external walls. The same clay is used for plastering the floor and the inside walls (Riyadh Development Authority 1996, 30).

With the course technique, the building can attain multi-storey proportions; the mason can easily control the width of the wall, which is usually greater at the lower part than the upper. This type of building is more useful in castles and town walls, and generally in defences or public buildings.

Wood

Wood is used to great effect in combination with clay. Palm tree trunks are usually placed on top of the wall with specific spaces between them which are filled with palm leaves. Clay is fixed on top at a suitable slope for water to pass over.

Unfortunately, in the excavation no traces of building wood were found. However, some holes were found in the door lintels, which must have been for wood. Since the area is full of palm tree gardens we may speculate that palm tree wood was the main

source of wood in the area. This type of wood is known not to last for a long time. This might explain the reason for the lack of wood in the residential area as a building material. Wood was found as small findings in the excavation and will be discussed later.

Stones:

As expected sandstone was mostly used in the walls of the building, since the mountains around the area are of sandstone. The advantage of using sandstone blocks is that the nature of the stone is relatively soft and easy to work. The tombs might have been a major source for stones; as we know, tomb carving starts from top to bottom. In this method the mason needs to cut a large amount of stones to shape the tomb. The fallen stones are a good source for building material after a small amount of work shaping. It is known from the inscriptions of the tombs that there were a limited number of professionals specialists in this job. As professional in the field, with a lesser amount of work, they could have changed fallen stones into stone bricks for building purposes and gained more payment by selling the stones. Another source for the stones is the stone quarrying which is evidenced by the stone pit in the al-Khreimat Mountain (Map 3.1).

The stones used in the Mada'in Salih residential unit can be classified into three categories. The first is well dressed sandstone, and this is rarely evident. The second is semidressed sandstone; most of the walls in the unit are of this type. Chisel marks could be seen on the stones in various places on the walls. The third type is of small stones which were used usually to fill the spaces between the courses with mud mortar. The stones were usually of different sizes; variations in size might be explained by the desire to use cutting methods as little as possible.

There were various colours of sandstone which were used in the walls, such as white, red, and yellow. The white sandstone was the most common colour in use with variations in tone from light to dark. The red colour also has the same variation of colour from soft red to pink. The least used stone colour was the yellow which occurs rarely in some walls.

3.2.3.Stratigraphy and Dating

Phase II:

Section A-F , fig. 3.5) in square H 20 of the residential unit shows the layers of Phase II. It was noted that Layer 1 was of loose sandy soil. The layer varied in depth from one side to another. The maximum depth was 27cm at the middle of the square while the minimum was 18 cm at the eastern side. As for chronology, three coins were found in this layer but two (Nos. 35, 5) were not identified because they were badly eroded. Coin No. 18 is Roman and made of silver and dates back to the period around 110 A.D. This layer was followed by Layer 2 which was of hard sandy soil with calcium particles. It also varies in depth (47 cm near the west edge of the square and 30 cm at other parts). In this layer five coins were located. Coins 9 and 10 were not identified. Coin No. 14 is bronze but in very poor condition. It belongs to the period of Aretas IV and dates back to (9BC-40AD). Coin No. 17 is of silver and is in fine condition. It dates back to the reign of Rabel II (70-102). Coin No. 19 is silver and is in fine condition. It dates back to the period of King Rabel II (75-102).

Layer 3 was of soft sandy clay soil, brownish in colour. Its maximum depth was 55cm on the eastern side, and the minimum was 35cm on the western. Three coins were located in this layer. Coin No 11 could not be identified. Coin No.6 is bronze but is in poor condition; it is dated to the period of Aretas IV (20-40) A.D. Coin No. 7 is of the same period (king Aretas IV) and is dated to 20-106 A.D. Layer 4 was of hard sandy soil. Its depth varied between 20-35 cm. Three coins were located in this layer. The first one (No. 21) is silver and dates back to the period of king Aretas (16-40 A.D.). The second one is No. 30, a bronze coin from King Aretas IV's reign, dated 20 A.D.as far as could be made out. The third and last coin of this layer is No. 1; it is dated to the reign of king Aretas IV (the period 20-40 A.D.). Layer 5 was of soft clay soil of brownish yellow colour; its depth is 10 cm on average. It should be noted that a thin layer of ash was located near the eastern edge close to the wall. Four coins were located in this layer. The first one is No. 34, a bronze coin which could not be identified because it is badly eroded. The other three pieces (Nos. 2, 12, 32) are dated to the period of king Aretas IV and date to the period 9B.C-16A.D. According to the different types of coins located in this Phase, it can be dated to the period between the last quarter of the first century B.C. to the second quarter of the first century A.D.

Phase I:

The walls of this phase were almost destroyed or reused as foundations for Phase II. There is no reconstructable plan except for one room. Of the contemporary floors, some surviving traces show that it was of clay. In some parts of the unit the excavation went deeper to the virgin soil, which was mostly of soft red sand, yellowish in some parts. Little pottery was found from this phase. In Layer 1, two coins (3, 31) were badly eroded and could not be identified. Layer 2 had two coins (8, 27) which were also not identified. Layers 3 and 4 had no coins. In general, Phase I can be dated to a period prior to Phase II. It is possible to speculate that this period came to an end some time around the last quarter of the first century B.C.. It is difficult to give a date for the start of this period according to coins.

3.2.4. The old city wall

Mada'in Salih was a walled town; that is definite as the trace of the surrounding wall is obvious to see. In order to learn more about the building technique used for the wall and the building materials, it was determined to dig at two locations around the city wall: one at the southern part of the wall and the other in the eastern part. The location of the wall was mostly clear before the excavation. However, its width was not clear because the top of the wall was mixed with the surrounding soil.

The southern trench

This trench is 8x8m by about 1.6m deep. The stratigraphy revealed four layers of one building phase (fig. 3.6). The surface layer of the trench was of black mud and was very difficult to dig. Its thickness was about 16 cm. This layer was formed of the fallen wall mud mixed with the surrounding sand and calcium particles and water and it had become hard as a result of the sun's heat. The second layer is of soft red sand and is on average about 24 cm deep. The third layer is of black mud mixed with sand and is about 72 cm deep on average. The fourth layer is of soft red sand and is about 48 cm deep.

After completing the trench, the wall was very clearly visible. It was built directly on sand without a stone foundation. In the lower part of the wall there are two courses of mud bricks on the northern side of the wall. The mud bricks are about 23cm long, 15cm wide and 12 cm high on average. The rest of the wall has no mud bricks, only mud mortar without temper.

On the southern side of the wall, some stones are visible at the lower part of the wall. They might have served as a foundation to the wall on one side.

The width of the wall was 2.35 m and the height varied between 1.2-1.4m. The structure of the wall as seen from this trench does not suggest that it is a strong defence wall, for times of war. It might have been used in conjunction with watch towers which might have been located at the top of the mountains in the surrounding area.

The eastern trench

Before the excavation, a group of dressed stones were visible in a straight line on the surface. The trench is 1x6m by 0.9m deep. The stratigraphy revealed four layers of one building phase (fig. 3.7). The surface layer was of black mud mixed with sand, and about 15cm deep. A layer of soft red sand about 25 cm thick followed it. The third layer was of black mud mixed with sand about 25 cm thick. The last layer was of soft red sand about 36 cm thick.

The excavation revealed 2 different styles in the building of the wall. One side of the wall consists of 2 stone courses of well-dressed stones, big in size (80 cm x 35cm x 20 cm high). Mud mortar was used as bonding between the stones. These two courses were built directly on the sand. The rest of the wall on this side is of mud. The other side of the wall was built of 5 mud brick courses. The bricks were clearly visible and were of similar shape and size, the average brick being 40cm long x 10 cm high. There were no stones on this side of the wall. Mud mortar was used between the bricks.

The width of the wall in this area was about 2 metres, 35 cm less than the wall width at the previous section. Around the wall section there is a group of stones in a circular shape and the wall appears wider in this part. That suggests the possibility of a circular watchtower on this side. However, the excavation did not proceed due to lack of time.

3.2.5.Tomb area

Two trenches located in front of tombs no. 85 and 86 were examined in order to determine whether there were any attached buildings to the tombs as in Petra. These attached building used to serve a religious purpose by those visiting the tombs to commemorate the dead

Trench I

This trench is in front of tomb 86 and is 8x6m by 0.4m deep. The area was covered with soft red sand. It was cleaned carefully, after being photographed. The work continued until it reached the bed rock. No trace of any building walls or foundations was found, nor any artefacts or pottery sherds, only sand mixed with small stones and small pieces of wood from tree branches.

Trench II

This trench is in front of tomb no 85 and measures 5x5m by 0.5m deep. The same procedure of digging was followed as in trench I. There were no walls or foundations or artefacts in front of this tomb either. However, this does not mean that there were no buildings annexed to the tombs of Mada'in Salih. There might be such buildings at other places around other tombs in the area.

4.The Finds

4.1.The Pottery

4.1.1.Introduction

Pottery, especially its chronology, is perhaps the least studied aspect in Nabataean studies. Nabataean pottery was first identified by George Horsfield and Agen Conway when they made the first excavation at Petra in the spring of 1929. In this excavation they found a large quantity of fine red ware with some painting and called it “egg shell pottery”. They believed it was in common use by the people, and not only for religious services. They dated it 150 B.C.-100 A.D. (Horsfield *et al* 1930, 369-390). In 1934, Iliff described and represented some types of Nabataean pottery from Negev in Palestine, particularly at Auja, el Khalasa, Kurnub, and Tall es Sabi. Most of the pieces were fragments but represented different typical Nabataean patterns (Iliff 1934). In 1959, Hammond published an article about pattern families in Nabataean painted ware. He studied the decorated motifs of the painted ware, classified them in different groups and presented them with illustrations (Hammond 1959, 371-382). After three years, Hammond published another article about the classification of Nabataean fine ware in which he classified the ware into major groups according to forms . However, he did not discuss the chronology of the types (Hammond 1962). Further studies were carried out of the painted Nabataean pottery from Oboda, including the chronology of the painted ware by Negev in (1963). This unpublished study was presented for a PhD degree, but is unfortunately unavailable at present (Negev 1963).

One of the first strong attempts to establish a chronology of Nabataean pottery was that of Parr (1970). His article on a sequence of pottery from Petra gave a clear idea about the stratigraphy of the excavation and developed a chronology of the pottery using dated coins. His study contained 138 illustrations of the pottery according to the different phases of the excavation (Parr 1970).

Schmidt-Korte (1979) described a typological and chronological framework for different types of Nabataean painted and unpainted pottery. Painted pottery was classified into early ware of the 1st century B.C. Middle ware was attributed to the 1st century A.D. Late coarse ware was dated to the period 2nd /3rd century A.D.

Unpainted pottery was classified into different types. The first is fine red classical ware, which is dated to the 1st century A.D. The second type is coarse red or brownish ware, and green or greenish ware which is dated to the 1st-3rd century A.D. Moulded wares were dated to the period 1st century B.C./A.D. Nabataean Sigillata ware is dated to the 1st century B.C/A.D. Finally, ware of uncertain classification was dated to the period 1st/3rd and 4th century A.D. (Schmidt-Korte 1979).

Nabil Khairy studied the objects revealed in the excavation at Petra, particularly the form of the ware and surface treatment. Most of the material came from stratified deposits and represented one step further in developing the chronology of Nabataean pottery (Khairy 1990).

Zayadine (1982) wrote about the excavation work which he conducted in Petra between 1979-1981. He discusses the pottery, and especially the oil lamps. Khairieh Amr made a neutron activation analysis study of the pottery from Petra (Amr 1987). Francois Villeneuve studied the pottery from the oil factory at Khirbet Edh-Dhariah and evidence of dating derives from bronze coins. The pottery of the factory was dated to the period A.D 100-150 (Villeneuve 1990, 367-384).

4.1.2. The Pottery of Mada'in Salih

Pottery was scattered on the surface in large quantities over a large area of our mound as well as over the whole settlement area. After the surface material was collected, a high density of pottery continued to appear during the excavation at different layers but diminishing at the lower layers. In general, the pottery of the second phase (the newest) was larger in quantity than the first phase (the oldest). Sherds consisted mostly of the body of vessels in the first collection. The majority of the pottery was of coarse to medium texture. Fine texture was found in a lesser quantity. The assemblage contains a variety of complete pieces ranging from small dishes to big jars. Pieces were found of different parts of vessels, rim portions, body sherds, handles, and bases, in addition to plain and decorated vessels. The decoration varies from painted to incised with other designs of different patterns. In general the pottery collection from the Mada'in Salih excavation is rich in quantity, varying in types of form, fabric and decoration.

During the four seasons of excavation at the settlement site of Mada'in Salih a large amount of pottery was collected. Most of the sherds were tiny pieces with no

prominent recognizable features. Only unique and fine pieces were chosen for study. These are the only pieces which could be classified according to their identifiable features into different groups. They are classified primarily into rims, handles, body sherds, bases and complete pots. The percentages for each category were as follows: Rims 44 %, body sherds 16.76%, handles 12 %, bases 27 %, complete pots 0.24 %. The whole assemblage was divided into major groups, such as bowls, jars, cooking pots etc. Then, each major group was sub-divided into smaller groups. For example, bowls were divided into:

Small flaring deep bowls.

Small shallow plates.

Since much of the published material on Nabataean pottery was classified according to form, the same method was followed in order to make a clear picture for comparative study. There were many complete pots found in the excavation which have been included to support the classification based on form.

It is evident from the studied material that most of the objects (about 84% of the whole assemblage) found in the excavations had been manufactured on a wheel whereas hand-made pottery constitutes only about 16%. All the hand-made pieces are of coarse texture. Many of them are decorated with shallow engraved lines on the outside. It was noted that hand-made pieces were from large jars of coarse texture which were not so often decorated. They sometimes bear decorations of wavy or horizontal lines.

A second method of classification according to fabric was selected in addition to form. Fabric refers to the paste, as was described by Orton *et al* (1993) in their classification of pottery, which emphasizes on the characteristics of the clay body from which the pottery is made. The characteristics derive from the firing method, inclusions and the clay matrix (Orton *et al* 1993, 67). Selected pieces are included in the catalogue (Table 4.1), which consists of all the complete pots and some samples from each group of rims, handles, bases, decorated pieces and some distinctive body sherds. A detailed analysis of the above pieces was conducted on the basis of texture, form and paste colour.

4.1.2.1. Classification on the basis of fabric with special reference to paste colour

There was no previous study of the pottery of Mada'in Salih. This study will try to establish a fabric catalogue of the Mada'in Salih pottery. First of all, the pottery was divided into four major categories:

(1) Coarse, (2) Medium texture, (3) Fine texture, (4) Very fine texture. Subsequently each main category was divided into sub-categories according to paste colour. For example coarse texture was divided into:

1. Coarse

1.1.brown

A third sub categorisation refers to inclusions, if they are known, eg.

1.1.1 Coarse, brown, sand temper

1. Coarse texture:

This type was present in various colours of clay, ranging from brown to brownish, buff, greenish, grey, light pink, pink, light red and red. The following subcategries were observed:

1.1.1 Coarse brown sand temper:

This type is of coarse texture, tempered with large grits of sand. It is usually fired in an oxidised atmosphere and with medium fire. Some of the pieces were of creamy white slip (30). The pottery of this type was wheel-made.

1.1.2 Coarse brown, stone granule temper:

This is almost the same type as 1.1.1 except that the inclusions are different. This type is a stone granule temper instead of sand. Pieces of this type were made by hand (38). Some pieces have a light red slip.

1.2.1 Coarse brownish, stone granule temper:

This is a coarse type with large grits. It is usually tempered with large grits of stone granules. The pottery of this category is fired in an oxidised atmosphere. Some pieces are of hard firing and hand-made. One piece is noted to have a creamy white slip (31).

1.2.2 Coarse brownish sand with white flecked temper:

This type is similar to the previous one (1.2.1) with a few differences. The major one regards the white flecks temper, while the other difference concerns the medium firing and oxidised atmosphere. This type has a creamy slip (92).

1.3.1 Coarse buff, stone granules and sand temper:

The pottery of this type is rough and is tempered with sand and stone granules. The pieces of this type were fired in an oxidised atmosphere. They were made by hard firing. Some pieces have a brown slip outside (29). All the pieces of this type were wheel-made.

1.4.1 Coarse greenish sand temper:

This is a coarse type with a greenish colour paste. It is usually tempered with sand only. The pieces of this type were fired in an oxidation atmosphere and are of medium firing. Some pieces have a wash (33) outside, although other are without wash. All the pieces of this type are wheel-made.

1.5.1 Coarse grey, stones granules and sand temper:

This type is of coarse texture with a grey coloured paste. It is tempered with stone granules and sand. The pottery of this type is of medium firing in an oxidised atmosphere. Some pieces are noted to have grey slip on the outside (34). All the pieces of this type are wheel-made.

1.6 .1 Coarse pink, stone granule temper:

The pieces of this type are of coarse rough pottery. The colour of this type is pink and is usually tempered with stone granules. It is fired in an oxidised atmosphere using medium firing. Some pieces have a pinkish slip. The pottery of this type is wheel-made.

1.7.1 Coarse light pink, stone granule temper:

This type is similar to the previous type (1.6.1) with a somewhat light coloured paste. The inclusion for this type is of stone granules. This type of pottery is of medium firing in an oxidised atmosphere. One piece has a creamy slip outside and is hand-made (43).

1.8.1 Coarse red, stone granule and sand temper:

The pottery of this type is of a coarse rough texture with red paste colour. It is usually tempered with stone granules and sand. It is well fired, using mostly hard firing in an oxidised atmosphere. All the pieces of this type are wheel-made (85).

1.8.2 Coarse red, red pebble temper:

This type is similar to the previous (1.8.1). The difference is in the inclusions, which are red pebbles for this type. The pottery is generally well fired. Most of the pieces were of hard firing in an oxidised atmosphere. One piece has a creamy white slip (88). This type is wheel-made.

1.9.1 Coarse light red, white fleck temper:

This is a coarse rough pottery with a light red colour paste. It was tempered with lime flecks. This type was made by medium firing in an oxidised atmosphere. One piece worth noting (45) has a creamy white slip and is hand-made.

1.9.2 Coarse light red, stone granules and sand temper:

This type is similar in texture and colour to type 1.9.1 with different inclusions. It is tempered with sand and granite. The pottery of this type is of medium firing in an oxidised atmosphere. It is usually wheel-made, but some pieces were found to be hand-made (84).

Notes on Coarse Pottery:

The most common colour for coarse pottery is brown. Distinctive variations of brown are characterized as brownish and light brown. Red is the second most predominant colour with different degrees of colour ranging from light to dark red. Pink is also widely used, ranging from light pink to dark pink. Other colours also appeared in this type of pottery such as buff, greenish and grey. Coarse pottery was almost always fired in an oxidised atmosphere and it was generally well fired.

Among the coarse pottery, 61% was of medium firing and 39% of hard firing. No piece was recorded of low firing. Black core was noticed on a few pieces due to a lack of oxygen.

The most distinctive characteristic of the coarse type is the inclusions. It is difficult to assess whether they were added to the clay by the potter or whether they derive from the clay itself as a natural substance. These inclusions are usually of large sized

sand or stone granules. Some red grits were also observed on some pieces. Sand was the most frequent inclusion in this type, either alone or in combination with other substances. Large grits were evident in the section of some pieces, although the slip on the outside and the inside covered grits. Chaff was not observed as a tempering agent in the coarse type.

Although this type of pottery was of coarse texture, it does not mean it was all made by hand. On the contrary most of the pieces were made on a wheel. 30% of the pieces were made by hand (e.g. 38, 31, 43), and about 70% were wheel-made. Some pieces of the pots were made separately by hand, such as handles, which were attached to the pot later by molding with wet clay.

Slip was widely used in this type of coarse pottery to give a smooth natural surface to the pot. The most common colour of the slip was creamy to creamy white. In addition, red, brown, grey and pinkish slips were found. Wash was rare with this type. Only one piece was noted with wash (33). The coarse type was not always plain. On the contrary many decorated pieces were recorded. The decoration will be discussed in detail later on. However, it may briefly be mentioned that the pieces were decorated with incised groove lines, which were straight, wavy or zigzag. No painted decoration was noted.

This type of pottery appeared mostly in Phase II, the newest, but some sherds of Phase I were also apparent. Some sherds were recovered near the surface at a depth of 20 cm, meaning that the type did not belong to the old phase only. The potter at this stage did not lack professional skill and techniques in pottery making.

2. Medium texture:

This type of pottery has medium temper grains. It is found in various colours, mainly in brown, with different shades ranging from brown, brownish, light brown to brownish red. Buff appeared frequently in this type. Grey, light pink and pinkish red colours were also observed but pinkish red was more frequent. Red ware was also located but light red was the most common colour. The medium texture type was classified into the following sub-types, according to paste colour and inclusions.

2.1.1 Medium texture, brown paste, sand tempered:

The pottery of this type is of medium texture with medium sized sand grains. The objects were fired mostly in an oxidisation atmosphere with medium firing. In one piece, the slip was dull cream with a rippled decoration (89), while another piece has a brown slip with engraved multiple wavy lines bordered with multiple horizontal lines (82).

2.2.1 Medium texture, brownish paste, sand temper:

This type is of medium texture, with medium sand grains and greenish paste. The pieces of this type are well fired, using mostly hard firing in an oxidisation atmosphere. Some pieces have a creamy white slip. One piece is with a creamy white slip on the upper side, decorated with wavy lines, and bordered with multiple horizontal lines. All the objects are wheel-made.

2.3.1 Medium texture, brownish red paste, stone granules and sand temper:

The pottery of this type consists of medium texture and brownish red paste. It is tempered with sand and sometimes with sand and stone granules. It is of medium firing in an oxidisation atmosphere. Some pieces have a brownish red slip. One piece is of special interest (42). It is part of a small vessel and has smoke marks on its outside body, probably due to cooking. Another piece (80) was decorated with engraved multiple horizontal lines. All the objects of this type were wheel-made.

2.4.1 Medium texture, light brown paste, sand and white fleck temper:

Only one piece of this type was found (75). It was a handle with a dull creamy slip on the outside. The paste is of a light brown colour and medium texture, tempered with sand and white flecks. It was fired in an oxidisation atmosphere with medium firing. The piece is hand-made.

2.5.1 Medium texture, buff paste, sand and/ or stone granule temper.

The pottery of this type is of buff paste colour, medium texture, tempered with sand and medium stone granules. The pieces are well fired in an oxidisation atmosphere with medium firing. Some pieces have a buff slip (87). All the pieces are wheel-made. Some pieces were sand tempered only (e.g. 50) with a concave base and a round knob in the middle. Although this type was mostly of medium firing, some pieces were observed to have been low fired. One piece worth noting (68) has a flat

base. It is distinctive in that it is glazed on the inside with a blue colour. Another piece (39) consisted of a flat excurved rim, well fired with a light greenish slip decorated with incised horizontal and wavy lines. Most of the objects are wheel-made. A part of a handle (74) was observed to be hand-made.

2.5.2 Medium texture, buff paste, sand white fleck temper:

This type is almost the same as the previous one (2.5.1), except for the inclusions of white flecks and sand. This type is exemplified by a wheel-made ring base (55) of medium firing and with a light red slip.

2.6.1 Medium texture, grey paste, sand and stone granules:

This type is of medium texture and grey colour paste. It is tempered with sand and stone granules. It is represented by a goblet sherd (62), with a flat thick base. It is of medium firing in an oxidised atmosphere. It has a grey slip and was wheel-made.

2.7.1 Medium texture, light pink, sand and chaff temper:

The pottery of this type is of medium texture and light pink paste. It is tempered with sand and sometimes with chaff. One example of special interest is piece no. 5 which is a small flaring shallow bowl. It was tempered with chaff and sand and is one of the few examples in which chaff was used as a tempering inclusion. The pieces of this type were well fired in an oxidisation atmosphere with medium firing. On some pieces a light pinkish slip was applied. The objects are wheel-made.

2.8.1 Medium texture, pinkish red, sand temper:

The pottery of this type is of medium textured, pinkish red paste, tempered with sand. The pieces are mostly fired in an oxidisation atmosphere of medium firing. Some pieces were hard fired such as (22) which is a complete plate. A slip was observed on some pieces, either in the same colour paste which is pinkish red (15) or with a different colour paste such as (86) which has a grey slip. All of the objects are wheel-made.

2.8.2 Medium texture, pinkish red paste, sand and white fleck temper:

This type is similar to the previous one (2.8.1) except for the inclusions, which are white flecks with sand grains. One piece worth noting (9) has a wash, while other pieces have a slip with the same paste colour. All the objects are wheel-made.

2.9.1 Medium texture, light red paste, sand temper:

This colour paste is the most common in the medium texture of the pottery from Mada'in Salih. The pottery of this type shows different levels of firing from low to hard. Piece (12), which is a small shallow bowl was not very well fired. Many pieces have a creamy white slip, others have a red slip. Some pieces of this type have decorations. One piece of special interest (44) is decorated with appliquéd depressed motifs. Another sherd with a flaring rim (93) is decorated with incised wavy lines. All the objects of this type are wheel-made.

2.9.2 Medium texture, light red paste, sand and white flecks.

This type is similar to the previous one (2.9.1) in colour of paste but different in inclusions. Sand is used here with white flecks. The firing range is from low to medium and hard. Piece (10), a small shallow rough-shaped bowl with a thick and uneven wall is of low firing. Some pieces have a slip with the same colour paste. Other pieces have a slip inside and outside in different colours such as (69) which is creamy outside and light red inside. Piece (69) is decorated on the outside with brown oblique lines. All the objects are wheel-made except piece (72), which is a handle.

Notes on medium texture pottery:

This type of pottery represents the majority of the pottery from Mada'in Salih. The most common colour in this type is light red. Then comes buff and pinkish red. Brown with its variations to brownish and brownish red were also found in reasonable quantity. Pinkish red was also observed in the pottery of this type. Red and grey are the least represented colours of this type.

The inclusions in this type are medium grains. Sand was the most used tempering agent especially with buff and light red paste colour. Sometimes it is combined with white flecks in brownish red, buff, pinkish red and light red paste. Stone granules were also used with sand, more frequently with brownish red paste and buff. Chaff appeared in this type for the first time. Its marks could be clearly seen on piece (5), a small shallow bowl.

Most of the pieces were fired in an oxidation atmosphere with medium firing, especially the sherds of brownish and light red colour. Some hard fired sherds were observed of brownish colour (61) and pinkish red (22), light red (88) and red (63).

Low firing occurred also in this type but in very few pieces of light red paste colour (10 and 12). The pieces of this type were mostly well fired in an oxidisation atmosphere with medium firing.

Slip was used more frequently in this type. The most common colour of slip was creamy and creamy white. Creamy slip occurs most frequently, followed by light red, then brownish and brownish red, buff and brown. A light red slip, the second favourite colour, usually appears with a light red paste. Pinkish red paste is also represented, usually with a light red slip. One example was noted with a buff colour paste (53). Brown slip was also noted with brown paste and brownish red paste. The buff slip also occurs with a buff paste. A greenish slip was noted with buff paste. One example of glazed ware was found in piece (68).

The majority of the medium texture pottery is wheel-made, constituting 88% of the total assemblage. The handles are always hand-made, but the vessels themselves were often made by wheel. Hand-made pottery accounts for about 12% of the whole assemblage. As mentioned above, the handles were made separately by hand and then joined to the vessel by liquid paste.

Decoration appears more frequently in this type. About 10% of the total sherds of medium texture pottery has decoration. The most common decoration is usually horizontal engraved lines, but sometimes wavy engraved lines are also noted. On piece no. 79, the decoration consists of two wavy lines, while there are four lines on piece no. 82, bordered with horizontal lines. Another type is of horizontal lines only. Piece no. 80 is decorated with four horizontal lines. Sometimes the decoration consists of wavy lines incised underneath the horizontal lines e.g. piece 39. Sherd 93 is decorated with engraved wavy lines only. Another type of decoration was noted on a short thin flat rim, which consists of an appliquéd depressed decoration (44). One piece of special interest is (69), a sherd of a ring base painted on the outside in a brown colour.

3. Fine Texture:

This type of pottery is made of fine texture levigated clay. It is found in various colours. 45% of the total assemblage of fine texture pieces are of red colour; and 33% brown; 11% was buff and another 11% was pinkish red.

3.1 Fine texture, brown colour paste, levigated clay:

The clay of this type is well levigated without clear inclusions. The pieces are well fired in oxidisation atmosphere with hard firing. Slip was noted on some pieces of brown and pinkish brown colour. A ring base (47) of a shallow bowl, is coated with pinkish brown slip on the outside and inside. The vessels of this type are very thin, ranging from 2 to 4mm. All the objects are wheel-made, except for a handle (77), which is hand-made. No decoration was noted on the pieces of this type.

3.2 Fine texture, light red paste, levigated clay.

The clay is almost the same as in the previous type (3.1). The light red colour is widely used in this type as well as the brown. The pieces are well fired in an oxidisation atmosphere mostly by hard firing, but some pieces are of medium firing such as no. 24, which is a short slender flaring neck. Slip was common in this type, sometimes with different colours inside and out. Piece no. 96 has a whitish slip on the outside and red inside. However, creamy slip seems to be the favourite slip colour of this type. All the pieces are wheel-made. Decoration on this type appears more frequently. One piece of special interest (96), is a thin sherd decorated on the inside with a cluster of thick reddish dots and a few lines. Another piece (23), which is a short flaring neck is decorated with light oblique dots.

3.3 Fine texture, red paste, levigated clay:

Red is common in general in fine texture pottery. It is well fired mostly with hard firing. Many pieces were noted to have a slip with the same paste colour. The pottery of this type is wheel-made. Some pieces are of thin walled pottery (49) about 0.3 mm in thickness.

3.4 Fine texture, pinkish red paste, levigated clay.

The clay of this type is levigated. Pieces are well fired with medium firing. Slip was noted on different pieces mostly with the same paste colour.

3.5 Fine texture, buff colour paste, levigated clay.

The clay of this type is identical to the previous ones. Some pieces of this type are from the oldest phase I, such as no. 23, a sherd from a thin flaring rim with a pink slip on the inside. The pottery of this type is wheel-made. Decoration was noted on some pieces such as a very light oblique motif on the body of the above-mentioned (23).

Notes on fine pottery

The distinctive quality of this type is the clay, to which the potter gave special attention, it being well levigated. The potter did not add inclusions to this type of clay. The pieces were mostly thin-walled ranging from 0.2 to 0.4 mm.

The colour of pottery in this type is similar and homogeneous. Red was the most common colour in this type, followed by brown and then buff and pinkish red. Those colours are close to the typical red Nabataean pottery. Other colours represented in coarse and medium texture are absent here, such as grey and greenish.

The pieces of this type are mostly well fired throughout. No dark cores were noticed on the pieces. An oxidisation atmosphere was always used. The pieces are mostly hard fired but some are noted to be of medium firing.

Apart from handles, which were made separately and attached to the vessel later, we can say that all the pieces are wheel-made. The wheel was necessary to make thin-walled pottery.

Slip was widely used in this type, using the same paste colour and also different colours. Sometimes the colour on the one piece is different outside and in, such as piece no (96) of type 3.2, which is whitish on the outside and red inside. The creamy colour was not used as a paste colour but it was used as slip. Brown and pinkish brown colours were also used. Wash was not noted on any piece of this type.

Decoration was noted on some pieces of this type. Painted decoration was found for the first time in this type. An eggshell sherd (96), was decorated on the inside with a cluster of oblique motifs. Another piece (24), of a short flaring neck was decorated with light oblique patterns and dots.

This type of pottery appeared in the lower layers of the first phase, and the upper layers of the second phase.

4. Very fine texture:

This type of texture is the least represented type in the entire pottery assemblage. The clay is very fine without any grains of any kind. It is present in grey, pinkish red, light red, red and light brown.

4.1 Very fine texture, grey paste, levigated clay:

The clay of this type is very fine levigated without tempering; fine texture, outside body and inside paste colour the same. Firing is hard in an oxidisation atmosphere. The pottery is wheel-made. The vessels are usually thin-walled, about 0.2 mm in thickness. Some pieces have slip. The form consists of a small flaring deep bowl with excurved rim. No decoration was noted .

4.2 Very fine paste, pinkish red paste, levigated clay:

The clay in this type is the same as the previous one, with no clear inclusions, and is well levigated. Most of the eggshell pottery belongs to this category. The pieces of this type are well-fired in an oxidisation atmosphere with hard firing. This type features a painted design on the interior with brownish paint: there are geometrical motifs on the pots, such as thick bands, thin lines, dots, and shakers. Sometimes pots have a red burnished slip. All the pieces are wheel-made.

4.3 Very fine texture, red or light red paste, levigated clay:

The clay is the same as in the previous type (4.2). The pieces are of hard firing in an oxidisation atmosphere. Slip was noted of red colour. The decoration is usually of a brownish red colour. One piece of special interest is (78), a body sherd of egg-shell pottery decorated with small petals of a brownish red colour. All the pieces are wheel-made.

4.4 Very fine texture, light brown paste, levigated clay.

Pieces are of very fine well levigated clay with no visible inclusions, well fired in an oxidisation atmosphere with hard firing. Slip was noted on some pieces. The body sherd (98) of a bowl has a creamy slip. All the pieces are wheel-made. The decoration consists of thick wavy drawings.

Notes on very fine pottery:

The clay of this type is very well levigated, without any visible inclusions visible to the eye. The most prominent colour in this type is pinkish red. The famous egg-shell thin pottery comes from this type of texture, especially in a pinkish red colour. Other colours also occur, especially grey, which is not found in fine pottery. Red and brown paste is common in both types of fine and very fine texture. The common objects in this type are usually bowls or plates, which are small in size, with a height ranging from 4.5-5.2 cm. Thickness varies between 0.1 to 0.4 cm. The rim is either encurved thin or straight. The decoration in this type consists of painted geometrical motifs of thick or thin lines, dots or shakers. Piece 78, a small plate, has small petals of a brownish red colour. Slip was noted in creamy or red colour. All the pieces were wheel-made. Firing was well done; all the pieces were of hard firing in an oxidisation atmosphere.

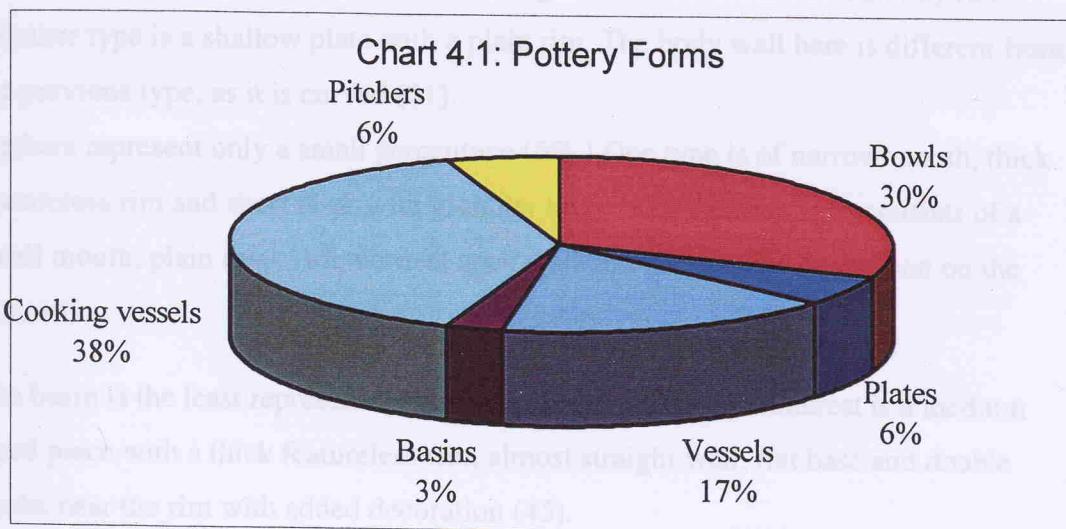
were found in complete form. Small vessels were the third most common and

4.1.2.2 Synthesis of the pottery:

The quantity of pottery was generally large on the surface, as well as in the various layers of the excavation. Complete and incomplete pots were found. Large sherds were also found and it was possible in many cases to reconstruct them.

Forms:

Different types of forms were represented in the assemblage of Mada'in Salih as summarised in the following chart (chart 4.1):



Two types of bases were found at Mada'in Salih. The one base was well

Cooking pots constitute the major part of the pottery collection, accounting for about 38% of the total assemblage. The site being a residential unit, it was expected to find such pots. Wide mouth types were more common, with a slightly excurred thick rim and globular body. Some pieces have incised thick wavy line decoration (30), while other cooking pots had of featureless rim and slightly curved necks with added decoration, such as piece (34). Another piece of special interest is (38), which has a wide mouth, thick excurred rim with multi-curved shoulder and added decoration. Another type of cooking pot consists of a small mouth, rounded handles on the shoulders and globular ribbed walls. A unique type was found, a small mouth bowl with a thick beaded rim and double deep curved body with carinated shoulders (11).

Bowls are the second largest represented type of pottery from Mada'in Salih. They constitute about 30% of the total assemblage. The most common type is the small shallow bowl with featureless rim, flaring wall and flat base. Ten pieces of this type

were found in complete form. Small vessels were the third most common and amount to 17% of the total assemblage. This type usually has a large mouth. Piece (26) has an excurved rim with a slightly rounded body and chain decoration on the rim. Another piece of special interest is (23), which is a small vessel with a large mouth, excurved rim and rounded body. It is decorated with small vertical strokes in a double band. Piece 24 is different from other vessels of this type because it has a small neck.

Plates were not commonly found on the site. They represent only 6%. One piece was a shallow plate with incurved rim and flaring wall with a multi-curved body (20). Another type is a shallow plate with a plain rim. The body wall here is different from the previous type, as it is curved (21).

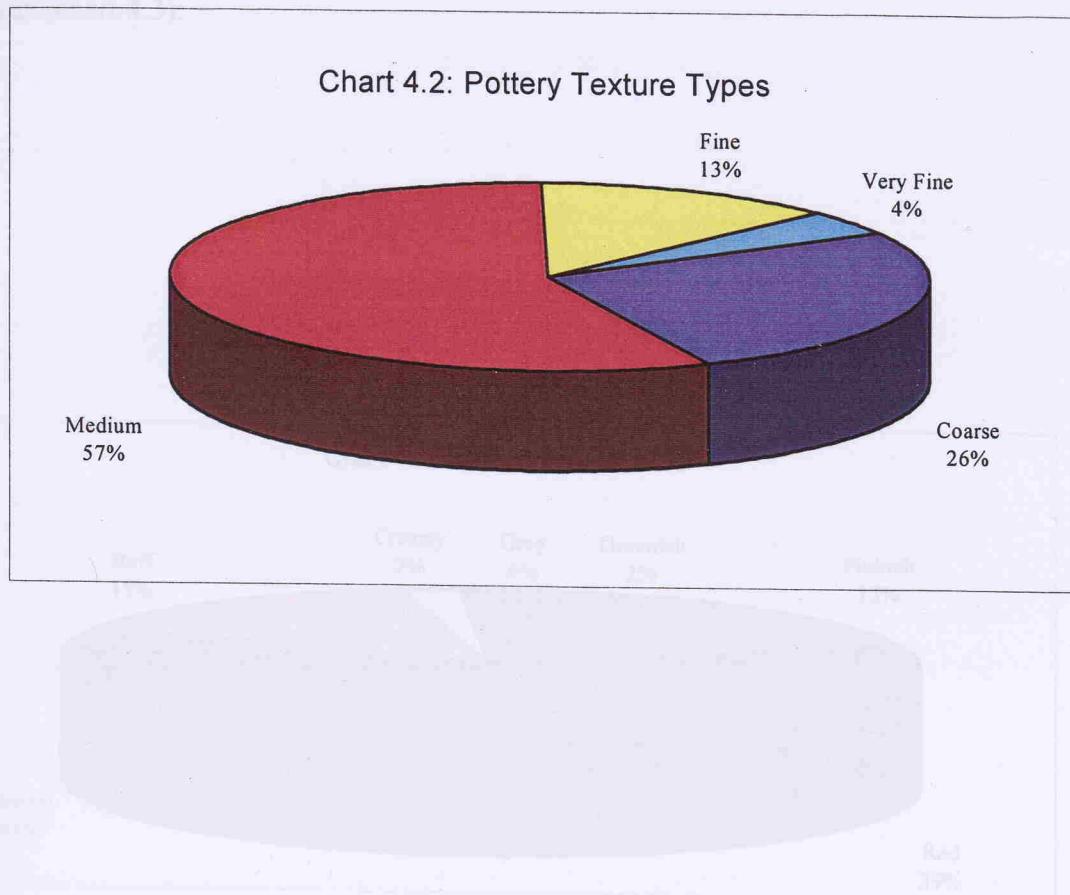
Pitchers represent only a small percentage (6%). One type is of narrow mouth, thick featureless rim and short neck with globular body (43). Another type consists of a small mouth, plain thick rim, vertical neck wall and incised line decoration on the rim (44).

The basin is the least represented type (only 3%). Of special interest is a medium sized piece with a thick featureless rim, almost straight wall, flat base and double knobs near the rim with added decoration (45).

Various types of bases were found at Mada'in Salih. The ring base was well represented, mostly in shallow plates such as pieces 46, 47, 48 and 49. Small curved bases were also found, such as pieces 50 and 51. Piece no.52 represents an interesting type of semi-flat, multi-curved base. Sagger base was also found in most of the globular water vessels with ribbed body, as in (53). A flat base was widely used such as in pieces 54, 63, 68 and 70. It seems that the most popular type of handle used was small and round (70, 71, 72, 74, 75).

Fabric

As far as fabric is concerned 57% of the pottery was of medium texture; the coarse texture account for 26% ; while fine texture constitutes 13% and very fine texture about 4%.(Chart 4.2).



Colour Paste:

Colour paste varies from red, which was the major paste colour, ranging from light red to dark red and accounting for 39%; brown, with its varying colour degrees, was the second colour used in paste and constitutes about 23%, while buff accounts for about 15% of the paste colour. Pinkish was represented in 15%. The grey colour was represented, but not in a high percentage (only 4%) as shown in the following chart (chart 4.3):

Chart 4.4 Pottery Slip Colours

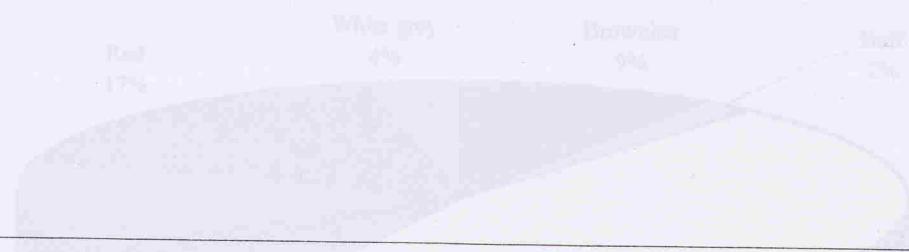
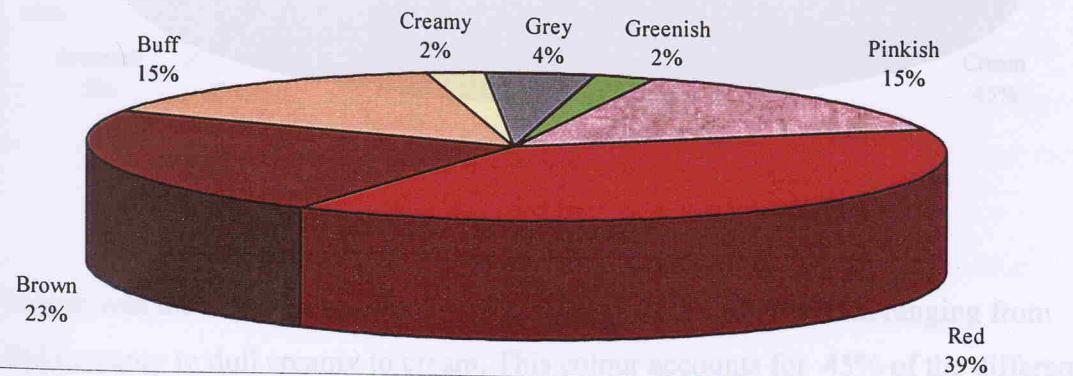


Chart 4.3 Pottery Paste Colours



Red slip appears more frequently with light red paste (45%), than with brownish paste (24%), brown paste (14%), pinkish (8%) and buff (8%), while the least frequently used, the original creamy colour paste accounts for only 4%. Red slip was the most popular colour. It forms about 17% of the total slip colour. It appears mostly in combination with red or light red paste colour 80%. In this type the texture is mostly medium to fine and very fine. Red slip was noted in low quantity with brown paste, pinkish and buff (10%). The texture of the brown paste was coarse, in example 51, the paste was brownish grey with a medium to coarse and deep texture. Pink slip the third

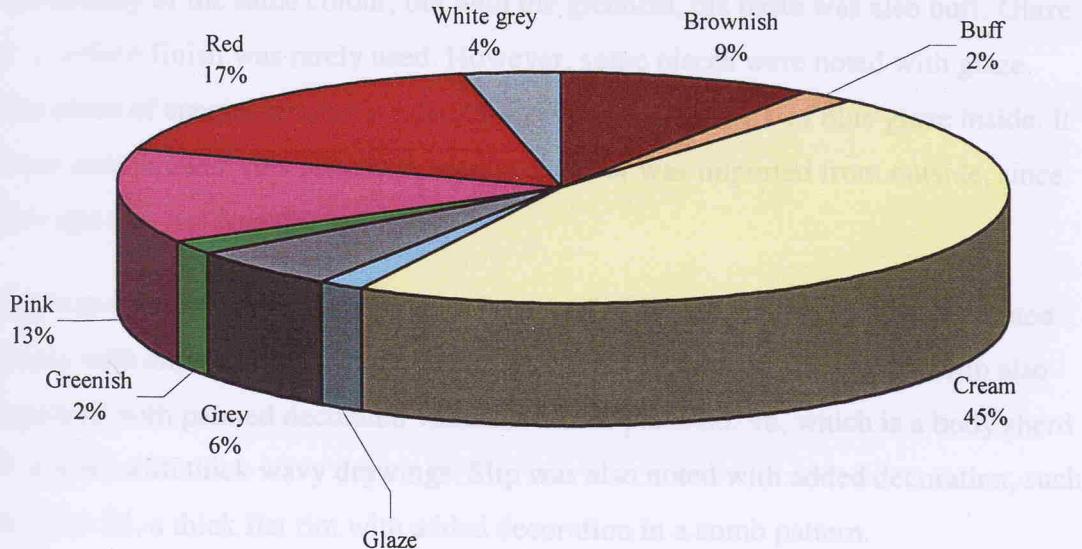
type slip appears more frequently with light red paste (40%), than with brownish paste (24%), brown paste (14%), pinkish (8%) and buff (8%), while the least frequently used, the original creamy colour paste accounts for only 4%. Red slip was the most popular colour. It forms about 17% of the total slip colour. It appears mostly in combination with red or light red paste colour 80%. In this type the texture is mostly medium to fine and very fine. Red slip was noted in low quantity with brown paste, pinkish and buff (10%). The texture of the brown paste was coarse, in example 51, the paste was brownish grey with a medium to coarse and deep texture. Pink slip the third

Slip

It seems that the potters of Mada'in Salih were well aware of using slip as a type of surface finish. This is attested by the high appearance of slip over the entire assemblage of pottery. Slip was noted on about 85% of the pottery. Slip is usually added to the vessel before firing at the so-called 'green hard stage'.

Slip colour is wide ranging as shown in the following chart (chart 4.4).

Chart 4.4 Pottery Slip Colours



Cream was the most common colour represented in different shades ranging from light creamy to dull creamy to cream. This colour accounts for 45% of the different colours of slip. Creamy slip appears more frequently with light red paste in different textures ranging from medium (such as pieces 25, 11, 93, 44), coarse (45), fine (24) and very fine with light brown paste (98).

Creamy slip appears more frequently with light red paste (46%), than with brownish paste (20%), brown paste (14%), pinkish (8%) and buff (8%), while the least represented, an original creamy colour paste accounts for only 4%. Red slip was the second favourite colour. It forms about 17% of the total slip colour. It appears more frequently with red or light red paste colour 80%. In this type the texture is mostly medium to fine and very fine. Red slip was noted in less quantity with brown paste (10%) and buff (10%). The texture of the brown paste was coarse; an example is a sherd from a large jar (38) with a thick flat rim and deep groove. Pink was the third

highest represented colour slip. It forms about 13% of the total slip colour. Pink slip was noticed with coarse texture as in piece (36), with medium texture (27), and fine (47) but not with the very fine texture. The pink slip colour appears more frequently with pinkish paste (60%) than with buff colour paste (30%) or brown (10%).

Brownish colour slip was the fourth most used colour (9%). This colour of slip occurs mostly with brownish paste (54%), brown (27%) and buff (19%). Grey slip was also used but in only 6%. It was represented more frequently with the grey paste colour, but some pieces were noted with creamy paste. Light grey was also noted in about 4% and usually with a light red paste. Greenish and buff are the least represented colour slips each being found in only 2%. With the buff slip, the paste was usually of the same colour, but with the greenish, the paste was also buff. Glaze as a surface finish was rarely used. However, some pieces were noted with glaze. One piece of special interest is a flat base (68), with the mark of blue glaze inside. It is not sure whether this piece was locally made or was imported from outside, since this type was not found in the area.

Slip was noted on the decorated vessels as well as on the plain ones. The decorated pieces with slip mostly had engraved lines, such as pieces 26, 29, and 82. Slip also appeared with painted decorated vessels, such as piece no. 98, which is a body sherd of a bowl with thick wavy drawings. Slip was also noted with added decoration, such as piece 31, a thick flat rim with added decoration in a comb pattern.

Slip was added to both surfaces of the vessels, inside and outside, with the same colour or in two different colours. Piece 69, a sherd of a ring base with a flaring wall, has a light red slip inside and creamy outside. Another piece (96) is a very thin egg-shell pottery piece which has a whitish slip outside and a red one inside. Some pieces were noted with slip on the outside only, such as (51), a concave base with creamy white slip outside, and (11), a sherd of a bowl with flaring rim and creamy slip outside. Some pieces have slip on the inside surface of the vessel such as piece 67, a small flat base with ribbed wall which has a creamy slip inside. The pieces with slip are in general well fired, either with hard or medium firing in an oxidisation atmosphere. Slip appears in both hand and wheel-made pieces.

Decoration:

Decoration was found on the pieces from Mada'in Salih. Decorated pieces formed about 36% of the total assemblage. There is a variety of decorations and designs

noted on different pieces. It seems that the most popular method was incision. This decoration method was usually applied to the vessel before firing, when the clay was still soft. The incision was made by either a sharp or a rounded tool. The tool could be of metal or bone or any other suitable material enabling the potter to make the desired grooves. The grooves are shallow or deep, depending on the amount of force which the potter applied with the tool. Sometimes deep grooves were created by a very sharp thin tool. Much wider and shallower grooves were made by a rounded object.

The most popular style of incised decoration consists of straight horizontal lines. The reason was perhaps that such a design could be easily created by holding the tool horizontally to the vessel while rotating it. This type of decoration appears more frequently on coarse texture. A sherd of a jar (95) was decorated with horizontal engraved lines. Another coarse piece (87) has the same pattern on the shoulder. This style appears also in medium texture pottery. Piece 91, a sherd with a rim and short neck is decorated with engraved thin horizontal lines. Piece no. 80 is decorated in the same style and is of the same texture. This style appears with buff, red and brownish colour paste; but it is not noted on pieces with fine or very fine texture. Horizontal lines were not always executed accurately. The space between them is not the same all the time. Multiple lines could consist of three or four lines or more. They appear more frequently on the shoulder below the rim. After executing horizontal lines, the potter must have cleaned the rest of the clay from the vessel, either with a special flat tool or by hand.

Another design in incision decoration is the wavy line. It appears on pieces of coarse and medium texture. The paste colour on such decorated pieces is usually red, pink, brownish or buff. Wavy single lines are created above thin horizontal engraved lines, as in piece 81, a body sherd of coarse texture. Here, thin horizontal parallel lines were made, first by a sharp thin tool, and then the potter made a wavy line with another tool with a thicker, rounded head and placed this line above the horizontal line. The curves of this line are executed carefully. Wavy lines also occur in double rows, as in 85, under two horizontal parallel lines. The wavy lines are thicker than the horizontal ones. The curves of the wavy lines are so sharp that they form an angle and roughly create a zigzag form. Piece 39 is a sherd with a thin flat excurved rim decorated with a wavy line beneath the horizontal parallel lines. The upper line is

thicker than the lower one. Its edges are fairly rounded, while the lower line is thinner and curves sharply. In piece 84, a piece with an encurved flat rim, only a zigzag line was noted not accompanied by horizontal lines. The angles here are sharp. Another style of zigzag line can be seen in piece 83, a sherd of a jar with a tapering flat rim. The line here is single with a rounded edge, the curves are not regular in shape. It is accompanied by a lentoid above it. Piece no. 93 is a sherd with a flaring flat rim of the same style with a single wavy line. Sometimes the zigzag lines have sharper angles, such as piece 30, a sherd with a thick flat excurved rim. In this piece, there are multi-wavy triangular lines in a double row. This style appears more clearly in piece 29, a sherd of coarse buff texture with a thick flat rim and body. The shoulders are decorated with open triangles in a double row. Wavy lines are also noted in the middle, bordered with multi-horizontal lines. Piece 62, a sherd of a pot shoulder of medium texture and brownish colour, is decorated with double wavy lines, bordered with double horizontal lines at the top and bottom. Another sherd (82) of medium texture and brown colour is decorated with four thin wavy lines bordered with four horizontal parallel lines at the top and bottom.

Oblique decoration:

Oblique decoration is noted in piece 32, a sherd with a thin excurved rim. Piece 6, a small ring base of a shallow bowl, is decorated in the same way on the outside; and piece 54, a sherd with a short rim and flaring wall has a very light oblique decoration.

Triangular incision.

This style is rare, and consists of an incison on the body just below the rim with a sharp instrument. This is represented by piece 92, a flat featureless sherd with a rim, in brownish paste and of coarse texture. The triangles are homogenous and well executed. They are not very deep in the wall.

Applied decoration:

This style of decoration is executed by applying a band of clay to the wet surface of the vessel. It is represented here by piece 37, a thick flat rim of coarse texture and greenish paste. The pattern of this added decoration is wavy, going around the pot in double lines. Piece 33, a thick flat rim, is also decorated with the same pattern, except that the wavy line is single on this piece.

Another interesting piece is no. 34, a thick flat rim of coarse texture and light red paste which is decorated with added decoration in a comb pattern.

Folded decoration:

This is a rare and interesting style. Only one piece was noted, which is a neck and rim portion of a water pot (86). It has a double rim and the lower rim is folded in a regular pattern with the top rim.

Painting:

Painted decoration is the least represented type of decoration. It is present in medium, fine and very fine texture. It was never found in coarse texture. Painting was done with light red and light brown paste. It occurs most frequently on the inside of the vessel. The colour of the paint ranges usually from brownish red to red or dark red. Of special interest is piece 78, a body sherd of a plate of very fine texture and light red paste, decorated with small petals in a brownish red colour. This piece is typical of the famous Nabataean thin pottery. Another piece of this type is (98), a body sherd of a bowl of very fine texture and light brown paste decorated with thick wavy geometrical motifs. Another example of this type of decoration is a ring base (64), decorated on the inside with crossed thick red lines.

4.1.2.3 Pottery Typology

The Pottery is classified according to form into major types and sub-types as follows:

Bowls

Type 1: fig. No. (4.1-4.2) Pieces 1-10.

Small shallow bowls, with featureless rim, flaring wall, flat base.

Type 2: fig. No. (4.2) Piece No 11.

Small mouthed bowl, thick beaded rim, double deep curved body with carinated shoulders.

Plates

Type 1: fig. No. (4.2) Piece No 20

Shallow plate, incurved rim, flaring wall with multi-curved body.

Type 2: fig. No. (4.2) Piece No 21

Shallow plate, plain rim, curved body wall.

Vessels

Type 1: fig. No. (4.3) Piece No 23.

Small vessel with large mouth, excurved rim, rounded body with small vertical stroke decoration in double band.

Type 2: fig. No. (4.3) Piece No 24.

Small vessel with large mouth, neck and globular body.

Type 3: fig. No. (4.3) Piece No 25.

Small vessel, small mouth with excurved rim and curved neck wall.

Type 4a: fig. No. (4.3) Piece No 26.

Small vessel with large mouth, excurved rim, slightly rounded body with chain decoration on the rim.

Type 4b: fig. No. (4.3) Piece No 27.

Small vessel with large mouth, thick beaded rim, rounded body.

Type 5: fig. No. (4.3) Piece No 28.

Small vessel with lobed multi-curved rim and slightly curved neck with horizontal incised lining.

Cooking Vessels

Type 1a: fig. No. (4.4) Piece No 29.

Large mouthed cooking vessel, with slightly excurved rim and single curved body with incised thin wavy decoration.

Type 1b: fig. No. (4.4) Piece No 30.

Wide mouthed cooking vessel, slightly excurved thick rim, globular body with incised thick wavy line decoration.

Type 2a: fig. No. (4.4) Piece No 31.

Large mouthed cooking vessel, featureless rim, slightly curved neck with a slightly pointed protrusion and curved body, with added decoration.

Type 2b: fig. No. (4.4) Piece No 32.

Large mouthed cooking vessel, featureless rim, slightly curved neck with a rounded protrusion and curved body with added decoration.

Type 2c: fig. No. (4.5) Pieces 33-35

Large mouthed cooking vessels, featureless rim, slightly curved neck with triangular protrusion and added decoration.

Type 3: fig. No. (4.5) Piece No 36.

Wide mouthed cooking vessel, thick incurved featureless rim, globular body, wavy line incised decoration.

Type 4: fig. No. (4.6) Piece No 37.

Wide mouthed cooking vessel, thick excurved rim with multi curved shoulder and added decoration.

Type 5: fig. No. (4.6) Piece No 38.

Wide mouthed cooking vessel, small excurved beaked rim with small multi-curves and rounded shoulder with deep incised haphazard line decoration.

Type 6a: fig. No. (4.6) Piece No 39.

Cooking vessel with small mouth, excurved featureless rim, rounded handle on the shoulder, globular ribbed wall.

Type 6b: fig. No. (4.6-4.7) Pieces 40-42.

Cooking vessels with small mouth, plain rounded rim turned to form a handle.

Pitchers

Type 1a: fig. No. (4.7) Piece No 43.

Narrow mouthed pitcher with thick featureless rim and short neck with narrow globular body.

Type 1b: fig. No. (4.7) Piece No 44.

Small mouthed, plain thick rim and vertical neck wall with incised line decoration on the rim.

Basin

Type 1: fig. No. (4.8) Piece No 45.

Medium sized basin with thick featureless rim and almost straight wall, flat base, with double knobs near the rim and added decoration.

Bases

Type 1: fig. No. (4.8) Pieces 46- 49.

Ring bases of a small shallow plate.

Type 2: fig. No. (4.8) Pieces 50-51

Small curved bases of a plate.

Type 3: fig. No. (4.9) Piece No 52.

Semi flat small multicurved base.

Type 4: fig. No. (4.9) Pieces 53-54.

Sagger bases of globular water vessel with ribbed body.

Type 5: fig. No. (4.9) Pieces 55-63.

Small flat bases.

Handles

Type 1: fig. No. (4.10) Pieces 71-76.

Small rounded handles.

Decorations

Type 1: fig. No. (4.11) Piece No.64

Geometrical decoration with criss-cross thick red lines.

Type 2: fig. No. (4.11) Piece No.65.

Floral motifs (stylised).

Type 3: fig. No. (4.11) Piece No.80.

Engraved multiple horizontal lines.

Type 4: fig. No. (4.11) Piece No.83.

Lentil and zigzag line decoration.

Type 5: fig. No. (4.12) Piece No.84.

Double zigzag engraved lines.

Type 6: fig. No. (4.12) Pieces 79, 82

Wavy lines bordered with multi horizontal lines.

Type 7: fig. No. (4.12) Piece No.81

Thick heavy grooves with thin horizontal engraved lines.

Table 4.1: Pottery Catalogue

Serial No.	Description
1	Complete bowl, light pinkish paste, tempered with sand, medium firing, oxidised, slip on upper part, wheel-made.
2	Complete bowl, coarse texture, red paste, tempered with sand and stone granules, medium-firing oxidised, red slip on upper part, wheel-made.
3	Incomplete bowl, coarse texture, light red paste, tempered with stone granules and sand, medium firing, oxidised, wash, wheel-made.
4	Incomplete bowl, coarse texture, light red paste, stone-tempered, medium firing, oxidised, slip, wheel-made.
5	Complete bowl, medium texture, light pinkish paste, tempered with sand, stone granules and chaff, medium firing, oxidised, slip, wheel-made.
6	Complete bowl, medium texture, light pink colour paste, tempered with sand, medium firing oxidised, wheel-made.
7	Complete bowl, coarse texture, red colour paste, tempered with sand and stone granules, medium firing, oxidised, slip, wheel-made.
8	Incomplete bowl, coarse texture, red paste, sand and stone granule tempered, hard firing, oxidised, slip, wheel-made.
9	Complete bowl, medium texture, red colour paste, tempered with sand and stone granules, hard firing, oxidised, wash, wheel-made.
10	Complete bowl, medium texture, red colour paste, tempered with stone granules, low firing, oxidised, slip, wheel-made.
11	Sherd of a bowl with flaring rim, short neck and carinated body, medium texture, light red paste, sand temper, medium firing, oxidised, creamy outside slip, wheel-made.

12	Complete bowl, medium texture, light red paste colour, tempered with medium grain, light firing oxidised, wheel-made.
13	Complete bowl, fine texture, tempered with sand, medium firing, oxidised, slip, wheel-made.
14	Complete bowl, very fine texture, grey paste colour, fine levigated clay, hard firing, oxidised, wheel-made.
15	Complete bowl, medium texture, pinkish red paste, sand-tempered, medium firing, oxidised, pinkish red slip, wheel-made.
16	Incomplete bowl, very fine texture, pinkish red paste, levigated clay, hard firing, oxidised, wheel-made.
17	Complete bowl, medium texture, light red paste, sand tempered, hard firing, oxidised, wheel-made.
18	Complete bowl, medium texture, pinkish red paste, sand tempered, medium firing, slip, wheel-made.
19	Complete bowl, very fine texture, grey paste, fine levigated clay, hard firing, oxidised, wash, wheel-made.
20	Sherd of shallow plate with flaring wall, short rim perpendicular to the neck, very fine texture, red paste, levigated clay, hard firing, red slip, wheel-made.
21	Inverted thin rim, fine texture, light red paste, levigated clay, hard firing oxidisation, creamy slip on upper part.
22	Complete plate, medium texture, light pinkish red paste, tempered with small stone granules and sand grains, hard firing, oxidised, slip, wheel-made.
23	Sherd with thin flaring rim, with very light oblique decoration on the body, fine texture, buff paste, levigated clay, medium firing, oxidised, pink slip inside, wheel-made.

24	Thin short flaring neck with featureless rim, body decorated with oblique lines and dots, fine texture, light red paste, black grains and chaff temper, medium firing, oxidised, creamy slip outside, wheel-made.
25	Flat excurved rim with short neck, medium texture, light red paste, sand temper, medium firing, oxidisation, creamy slip outside, wheel-made.
26	Sherd with flaring excurved rim, with incised wavy decoration, medium texture, brownish red slip, sand temper, medium firing, oxidisation, brown slip outside, wheel-made.
27	Thick triangular rim of a small vessel, medium texture, pinkish red paste, sand and small red grains, medium firing, pinkish slip, wheel-made.
28	Sherd with flaring beaked rim, with double row of grooves on the inner part of the rim, medium texture, light red paste, sand temper, medium firing, oxidised, creamy slip, wheel-made.
29	Sherd with thick flat rim and body, shoulder decorated with open triangles in double rows, coarse texture, buff colour paste, sand and black grain tempered, hard firing, oxidised, brown slip, wheel-made.
30	Sherd with thick flat excurved rim, body decorated with incised multi-wavy triangular lines in double row, coarse texture, brown paste, sand and small red grains, medium firing, oxidised, creamy white slip, wheel-made.
31	Thick flat rim with added decoration, wavy pattern, coarse texture, brown red paste, tempered with stone granules, hard firing oxidisation, creamy white slip, hand-made.
32	Sherd with thin excurved rim with oblique decoration near the neck, coarse texture, brown paste, medium firing, oxidisation, wheel-made.
33	Sherd of thick flat rim with added decoration, wavy pattern in single line, coarse texture, greenish paste, sand tempered, medium firing, wash, wheel-made.

34	Thick flat rim with added decoration in comb pattern, coarse texture, grey paste, tempered with stone granules, medium firing oxidisation, grey slip, hand-made.
35	Flat faced, slanting thick rim, coarse texture, sand temper, hard firing, oxidisation, wheel-made.
36	Thick encurved rim with straight wall, engraved double wavy lines outside, coarse texture, pink paste, sand and stone granule tempered, medium firing oxidisation, pinkish slip, wheel-made.
37	Sherd of thick flat rim with added decoration, wavy pattern in double line, coarse texture, greenish paste, sand tempered, medium firing, wheel-made.
38	Sherd of large jar with thick flat rim and deep broad groove, lentoid decoration, many grooves on the body in different shapes, coarse texture, brown paste, white grains, medium firing, oxidisation, light red paste, hand-made. There are two holes in the body.
39	Sherd with thin flat excurved rim with short tri-lobed handle and body, decorated with incised horizontal and wavy lines, medium texture, buff paste colour, sand temper, hard firing, oxidised, light greenish slip, wheel-made.
40	Part of a rim with flat handle joining the shoulder, beaded rim and short depressed neck, medium texture, brownish red paste, tempered with white grains and sand, medium firing, oxidisation, brownish slip, wheel-made.
41	Part of a rim with flat handle joining the shoulder, peaked rim and short depressed neck, medium texture, brownish red paste, tempered with white grains and sand, medium firing, oxidisation, brownish red slip, wheel-made.
42	Part of a rim with flat handle joining the shoulder, beaded rim with a groove on the top and short depressed neck, medium texture, brownish red paste, tempered with white grains and sand, medium firing, oxidisation, Brownish slip, wheel-made.

43	Sherd of a rim with very short neck and body (whole mouth), thick wall of uneven surface, coarse texture, light pinkish paste, stone granule tempered, medium firing, creamy slip outside, hand-made.
44	Thin short flat rim with appliqué depressed decoration, medium texture, light red paste, sand tempered, hard firing, creamy white slip, wheel-made.
45	Sherd of large basin with beaded rim and short horizontal handle with three deep grooves and flat base, coarse texture, light red paste, white flecks, medium firing, creamy white slip, wheel-made.
46	Sherd of a small ring base, shallow bowl, brownish red paste, fine texture, levigated clay, brownish red slip, 0.2cm thick, thin engravings on the body, wheel-made.
47	Ring base, shallow dish, fine texture, brown paste, levigated clay, hard firing, oxidised, pinkish brown slip, 0.2 cm thick, wheel-made.
48	Ring base, flaring bowl, medium texture, light red paste, sand, hard firing, slip ,0.3 cm thick wall, wheel-made.
49	Small ring base, flaring wall, fine texture, red paste, levigated clay, wheel-made.
50	Concave base with round knob in the centre, medium texture, buff paste, sand tempered, medium firing, oxidised, light pinkish slip outside, wheel-made.
51	Concave base with round knob in the centre, medium texture, buff paste, sand, medium firing, oxidised, white creamy slip outside, wheel-made.
52	Very shallow base of a bowl with three rings, medium texture, light red paste, lime flecks, hard firing, pinkish slip, wheel-made.
53	Sherd with globular base, medium texture, buff paste, sand tempered, hard firing, oxidised, pinkish slip outside, wheel-made.
54	Flat base, medium texture, creamy paste, sand temper, medium firing, oxidised, creamy slip, wheel-made.

55	Ring base with flaring body wall, medium texture, buff paste, lime flecks, medium firing, oxidised, light red slip, wheel-made.
56	Thick ring base, medium firing, light red paste, sand tempered, medium firing, oxidised, light red slip, wheel-made.
57	Ring base, fine texture, brown paste, levigated clay, hard firing, oxidised, brown slip, 0.3 cm thick, wheel-made.
58	Ring base, fine texture, pinkish red paste, levigated clay, medium firing, oxidised, pinkish red slip, 0.3 cm thick, wheel-made.
59	Thick ring base, medium texture, light red paste, sand tempered, medium firing, light red slip, wheel-made.
60	Ring base, medium texture, pinkish paste, white flecks, hard firing, pinkish slip, wheel-made.
61	Concave base, medium texture, brownish red paste, sand temper, hard firing, oxidised, creamy white slip, wheel-made.
62	Sherd of a goblet with thick flat base and wall, medium texture, grey paste, sand and stone granules, medium firing, oxidised, grey slip, 0.5 cm thick, wheel-made.
63	Flat base and part of body wall, medium texture, red paste, white flecks, hard firing, red slip outside, 0.3 cm thick, wheel-made.
64	Ring based sherd of a small bowl, decorated from inside with criss-cross thick red lines, fine texture, light red paste, levigated clay, medium firing, oxidised, wheel-made.
65	Excurved rim of whole mouthed bowl, medium texture, light red paste, sand temper, medium firing, oxidisation, light red slip, wheel-made.
66	Slightly projecting flat base with flaring thick wall, medium texture, buff paste, sand tempered, medium firing, creamy white slip, wheel-made.

67	Small flat base with ribbed wall, pinkish red paste, sand temper, medium firing, oxidised, light creamy slip, wheel-made.
68	Flat base with mark of blue glaze inside, buff colour, medium texture, buff colour paste, sand temper, medium firing, oxidised, blue glaze inside, 0.4 cm thick, wheel-made.
69	Sherd of a ring base, with flaring wall, medium texture, light red paste, white flecks, medium firing, oxidised, creamy slip outside, light red inside, 0.6 cm thick, wheel-made.
70	Flat base, medium texture, buff paste, sand temper, hard firing, oxidised, dark brown slip outside, wheel-made.
71	A sherd of a rim with handle, medium texture, creamy paste, medium firing, oxidised, grey slip, hand-made.
72	Semi circular tri-lobed handle, with body sherd, medium texture, light red paste colour, medium firing, oxidised, creamy slip, hand-made.
73	Semi circular handle, coarse texture, pinkish buff paste, stone granule tempered, medium firing oxidisation, hand-made.
74	Semi circular handle, medium texture, buff paste, sand temper, medium firing, greenish slip, hand-made.
75	Small round handle with two grooves, medium texture, light brown paste, white flecks, medium firing, dull creamy slip outside, hand-made.
76	Semi circular tri-lobed handle, with body sherd, medium texture, brown paste, white fleck temper, medium firing oxidisation, creamy slip, hand-made.
77	Flat ribbed handle of a small vessel, fine texture, brown paste, levigated clay, hard firing, oxidised, brown slip, hand-made.
78	Body sherd of a plate (egg shell), decorated with small petals in brownish red colour, very fine texture, light red paste, levigated clay, hard firing oxidised, red burnished outside, wheel-made.

79	Sherd of a pot shoulder, decorated with wavy lines, bordered with multi-horizontal lines, medium texture, brownish paste, sand tempered, medium firing, oxidised, creamy white slip outside, wheel-made.
80	Body sherd, decorated with engraved multiple horizontal lines, medium texture, brownish red paste, sand temper, medium firing, oxidised, brownish red slip, wheel-made.
81	Decorated sherd, thick heavy grooves on the exterior side depicted on thin horizontal engraved lines, coarse, sand tempered, medium firing, oxidised, wheel-made.
82	Body sherd, decorated with engraved wavy lines, bordered with horizontal lines, medium texture, brown paste, sand temper, brown slip, wheel-made.
83	Sherd of a jar with tapering flat rim, coarse texture, buff colour, below the rim lentoids and zigzag line decoration, tempered with stone granules, medium firing oxidisation, slip, hand-made.
84	Sherd of incurved flat rim, decorated with double zigzag engraved lines, coarse texture, light red paste, tempered with small pieces of stone granules, medium firing, oxidised, hand-made.
85	Sherd of a big jar, flat rim with shallow groove on the outside, below with engraved lines in zigzag pattern, coarse red paste, sand and stone granule tempered, hard firing, oxidised, wheel-made.
86	Neck and rim portion of a water pot, double rim, the lower folded at regular intervals, medium texture, sand tempered, medium firing, reduction, whitish grey slip, wheel-made.
87	Neck and rim sherd of globular vessel (pitcher), horizontal engraved lines on shoulder, medium texture, buff paste, tempered with stone granules, medium firing oxidisation, buff slip, wheel-made.

88	Thick short flat rim with appliquéd depressed decoration, coarse texture, red paste, tempered with sand and stone granules, hard firing oxidisation, creamy white dull slip, wheel-made. There is a hole near the rim probably to enable carrying or hanging of the pot.
89	Excurved rim with ribbed body, medium texture, brownish paste, medium firing oxidisation, dull creamy slip, wheel-made.
90	Plain rim with neck and body, broad depression, below which are two thin grooves, globular body with roulated line depression, medium texture, light red paste, sand tempered, medium firing oxidisation, creamy slip on upper part, wheel-made.
91	Sherd with a rim and short neck, decorated with engraved thin horizontal lines, medium texture, light red paste, sand and white fleck tempered, medium firing, light red slip, wheel-made.
92	Sherd of flat featureless rim, decorated with incised triangular motifs made by sharp instrument, coarse texture, brownish paste, sand and white flecks, medium firing, oxidisation, creamy outside slip, wheel-made.
93	Sherd of flaring flat rim with incised wavy decoration, medium texture, light red paste, sand temper, medium firing, oxidised, creamy white slip, wheel-made.
94	A sherd of a rim and handle, medium texture, light red paste, sand temper, medium firing, oxidised, hand-made.
95	Sherd of jar decorated with horizontal engraved lines, coarse texture, buff paste, tempered with sand, medium firing, oxidised, slip, wheel-made.
96	A sherd of egg-shell pottery decorated on inside with cluster of thick reddish dots with a few lines, fine texture, light red paste, levigated clay, hard firing oxidised, whitish slip outside, red inside, wheel-made.

97	Body sherd of a large jar, coarse texture, dull brown paste, sand and stone granules and chaff, hard firing, oxidised, creamy slip outside, hand-made.
98	Body sherd of a bowl with thick wavy drawings, very fine texture, light brown paste, levigated clay, hard firing, oxidised, creamy slip, wheel-made.

4.2. The Coins

4.2.1. Introduction

The work of Meshorer (1975) is considered as a landmark in the studies of Nabataean coins. He discussed the beginning of Nabataean minting and the aspects of its similarity with previous minting such as the coins of Aretas III along with the Seleucid coins. He also described both the silver and the bronze of each Nabataean king. His study tried to trace the development of minting through the various stages of each king's reign and the metal quantity in the coins through these stages. The quantity of silver in the coins showed a sharp decrease in the coins of Aretas IV. Moreover, Meshorer studied the inscriptions on the coins as well as the symbols and tried to find an explanation for them. The catalogue contains about 190 coins classified according to the periods of each king and it includes almost all the Nabataean coins which were known at the time of the study. So the book is considered as a main reference in studying Nabataean coins.

Schmitt-Korte *et al.* conducted serial studies concerning Nabataean coins. Part I of the studies aimed to test the silver content in Nabataean coins by X-ray fluorescence analysis. They found a decrease from 95% to 50% in the reign of Aretas IV and the lowest silver content found according to the tests was 47%. There were traces of gold and lead in the silver coins deriving from the source of the silver and its refining (Schmitt-Korte *et al.* 1989). In part II of the series they catalogued about eighty coins of silver and bronze and provided historical and descriptive details with reference to each Nabataean king (Schmitt-Korte 1990). Part III dealt with the Nabataean Monetary System and looked for equivalents in foreign currencies as well as developments and changes in the Nabataean monetary system. The study was based on a large number of coins, 301 silver and 396 bronze (Schmitt-Korte *et al.* 1994).

However, the study of Nabataean coins goes back to earlier dates. Lenormant (1857) was the first to list Nabataean coins in his catalogue without correctly identifying them because he did not understand the Nabataean inscriptions. These coins were subsequently identified correctly by Duc de Luynes (1858) although he had no idea about the meaning of the inscriptions on the coins.

Later, M. de Vogue (1868) conducted correction and re-reading for the previous work and related the coins to the historical context. His knowledge of Nabataean

writing helped him in this matter. Also, he drew up a list of the Nabataean kings, which was not very far from the accepted list at present. F. de Saulcy (1873) was able to distinguish between the coins of king Aretas I and Aretas IV and to provide a list of the Nabataean kings. The work of R. Dussaud (1904) is distinct in the field of Nabataean coins. His enumeration of the Nabataean kings, which he established according to coins and historical references, is still accepted. G.F.Hill (1922) conducted a study about Nabataean coins within the British Museum Catalogue in which he added some comments on the list of Nabataean kings. Bowsher (1990) discussed some of the early Nabataean coins about which he disagreed with Meshorer's ideas concerning the first issues of Nabataean coins

In 1996, Lubna Hashim conducted a study on bronze Nabataean coins in the Al-Salt museum in Jordan as a thesis for MPhil. The study included ninety-six bronze pieces which were classified according to the period of the kings. The researcher claims to have identified some new types of bronze coins which had not previously been examined, of which one piece bore the mark (X) behind the head of king Aretas IV. This sign may indicate the fourth year of this king's reign. She also claimed to have identified some new symbols which appear for the first time on the Nabataean coins as a spike (Hashim 1996:99).

4.2.2.Nabataean monetary system

The Nabataeans struck coins from the beginning of the first century B.C until the end of the first century A.D. During this period of almost 200 years they produced coins of silver and bronze, but no gold coins were recorded. Meshorer believes that in the beginning, the Nabataean coins were imitations of the gold issues of Alexander the Great (Meshorer 1975, 79), while Bowsher has an opposite opinion of the chronology to Meshorer's. He believes that the earliest coins were quite crude with clearer oriental design (Bowsher 1990, 226).

The minting of Nabataean coins was started in Damascus by Aretas III, 87-62 B.C. However, the coins of this issue did not bear any Nabataean character. After the loss of Damascus, anonymous coins were then struck at Petra. The coins of Obodas II 62-60 B.C are all of silver and are distinct from all previous coins because they bear the first Nabataean inscriptions. However these coins were not widely used since they were found in small quantities (Meshorer 1975, 80). Obodas II dated the coins according to the year of his reign. His portrait on the coins appears with a more

oriental shape. His title was depicted on the coins as follows: "Obodas the king, king of the Nabataeans". Thus his coins are believed to be the first Nabataean coins to bear the Nabataean identity (Schmitt-Korte 1994, 96-97). The silver coins of Malichus are inscribed with his title "Malichus the king, king of the Nabataeans". In the reign of Obodas III, 30-9 B.C., the coins witnessed a change in the method of minting. This change had a social meaning for the community. For the first time, the head of a queen appears on the coin. Also, the symbol of an eagle does not occur any more and was replaced with the bust of the king. The inscription of the king's title was as follows: "Obodas the king" or "Obodas, king of the Nabataeans". The dates on the coins changed from numerical to alphabetical writing. Syllaeus (9 B.C.), the minister of king Obodas III, who was a powerful man in the kingdom, issued his own coins. However, he was not depicted on the coins. Some issues show the initials of Syllaeus and Aretas IV together while others show the full name of Syllaeus.

The reign of Aretas IV (9B.C.-40A.D.) was relatively long during this period he issued a large quantity of coins. It is estimated that almost 50% of the different known Nabataean coin types are of the king Aretas IV period and almost 80% of discovered Nabataean coins belong to this period (Schmitt-Korte *et al.* 1994, 103). His reign also witnessed a decline in the quantity of silver. One of the interesting issues of this king is the coin of "Hagra" or "Mada'in Salih" which is considered as a rare type (ME 87) and was described by Meshorer as follows:

Obv: Head of Aretas IV, with long wavy hair hanging down to nape of the neck
Rev: Unidentified object, resembling bell with fringes that look like five fingers hanging down and ending in drops; on top of object, a kind of flower or handle; below, inscr. (Hagra).

Meshorer believed that the coin was struck to commemorate the foundation of the city of Hagra (Meshorer 1975, 53-55).

Malichus II (40-70A.D.) continued to issue silver coins, which suffered from a sharp decline in silver quantity. His coins were described as crude monotonous coinage (Schmitt-Korte *et al.* 1994, 107). Rabel II (70-106A.D.) is the last Nabataean king. On the first issues of his coins his mother Shuqailat is mentioned, then his first wife Gamilat, after that his second wife Hagru. The amount of silver in his coins reached the minimum in Nabataean coinage (Meshorer 1975, 76). Schmitt-Korte argues that the amount of the silver in Nabataean coins was about 95% in the first issues, then 90%, 85%, 75% and the lowest 50% according to his study which he conducted on

Nabataean silver coins (Schmitt-Korte 1994, 118). He claimed that silver never reached a level of 20% as reported in previous studies (Schmitt-Korte *et al.* 1989, 58).

After the end of the Nabataean kingdom at the hands of the Romans in 106 A.D., it seemed that the Nabataean coins had lost their place and declined gradually. It is evident that the Roman coins overstruck the Nabataeans ones. That can be clearly seen from the Kurnub hoard which includes some Trajan coins overstriking Nabataean coins after the establishment of the 'Provincia Arabia' (Meshorer 1975, 82).

4.2.3.The coins of the excavation

Coin may have an important role in dating the excavated levels of the site on the one hand or by providing new types of coins in addition to the well known types on the other hand. The coins of the excavation of the settlement area of the site in fact did not add new types of coins to the Nabataean monetary system so their role will be mainly in helping the dating of the phases and its different layers.

The excavation of Mada'in Salih revealed thirty-five coins as listed in (table 4.3), (Photo. nos. 4.1-4.12) The coins were generally of poor condition and eroded probably due to moisture and the salty soil. Twelve pieces were Nabataean and represent the largest group of the total. Nine coins were Roman; fourteen pieces were of very poor condition and could not be identified. Fourteen coins were of surface collection.

The coins were distributed among the squares on the grid as follows: two pieces in I22, G20, H19 and F19; one piece in I23, G23, G22, I21, H21, G21, F21, E21, D21, H20, F20, E20, D20 and I18, as shown in table (4.2) below:

	I	H	G	F	E	D
23	7		35			
22	6		18			
	2					
21	14	30	12	34	9	5
20		21	1	11	8	31
		10				
19		17		3		
		19		27		
18	32					
total: 22						

Pieces were distributed among the two phases and the different layers. However, the coins were few in number, and some layers contained no coins. A large number of the coins were of surface collection (e.g. 14). Thus they do not help very much in dating the layers, although they could be useful in dating the site as a whole, and in studying coin development. In addition, there are some coins which are obscure and

badly affected by weather. All these factors impede accurate dating for the layers, although an attempt was initiated to establish a preliminary dating as follows:

Phase II (9B.C.-110A.D.)

L1 No. 35, 5 unidentified, No. 18 (110 A.D.)

L2 No. 10, 9 unidentified; No. 14 (20-106); No. 17 (70-102A.D.); No. 19 (75-102 A.D.)

L3 No. 6 (20-40 A.D.); No. 7 (20-106 A..D.); No. 11 unidentified

L4 No. 21 (16-40A.D.); No. 30 (Ca 20 A.D.); No 1 (20-40 A.D.).

L5 No. (34) unidentified; No. 32, 12, 2 (9B.C.-16A.D.)

Phase I

L1 No. 3, 31 unidentified.

L2 No. 8, 27 unidentified.

L3 No coins.

L4 No coins.

4.2.3.1.The Nabataean coins:

The Nabataean coins included twelve pieces (Nos. 1, 2, 6, 7, 12, 14, 15, 17, 19, 21, 30 and 32), of which five were silver (12, 15, 17, 19 and 21); the rest were bronze. These coins belong to two kings, Aretas IV and Rabel II, and three of them (7, 14 and 15) might be from Malichus or Rabel II.

The coins of Aretas IV are as follows:

NO.

2 9B.C.-16A.D. Bronze

32 9B.C.-16A.D. Bronze

12 9B.C.-16A.D. Silver

21 16-40A.D. Silver

15 16-106A.D. Silver

1	20-40 A.D.	Silver
6	20-40 A.D.	Silver
14	20-106 A.D.	Silver
7	20-40 A.D.	Bronze
30	Ca 20 A.D.	Bronze

We know that during the reign of this king, the Nabataean Kingdom reached its peak in architecture and art in general. The great tombs of Mada'in Salih belong to the period of this king. The fact that most coins derive from this period is not surprising. As stated above, out of every ten Nabataean coins approximately eight belong to the Aretas IV period (Meshorer 1975,41).

Rabel II Coins:

Rabel II is the last Nabataean king and his coins are the last of the Nabataean Kingdom, which is considered as a sign of continuing political independence. Afterwards, the Nabataean monetary system was replaced by the Roman system. Few Roman coins were found in the excavation, as will be discussed later. The coins of Rabel II are as follows:

No.

17	70-102 A.D.	Silver
19	75-102 A.D.	Silver

4.2.3.2. Roman coins:

Finding Roman coins within the excavation, was expected, or at least not completely surprising. The annexation of the Nabataean Kingdom into what was known as "Provincia Arabia" in 106 A.D. caused the Nabataeans to lose their political independence and all other aspects associated with it, such as military and economic matters particularly coin striking. Nabataean coins were collected from the market and over struck as was noted on some coins of the Kurnub hoard (Meshorer 1975:82). The Roman coins which were found in Mada'in Salih are of silver and bronze only. They are represented by nine pieces (Nos. 16, 18 and 20, which are silver) and (Nos. 4, 22, 23, 28, 29 and 33 which are bronze) and were identified as follows:

No.	Ruler	Date
33	?	4 century A.D.

23 Constantinvsg 4 century A.D.
29 Gallienus 256-2598 A.D.
4 ? 1-2 century A.D.
22 ? 1-2 century A.D.
28 ? 3-4 century A.D.
16 Trajan Ca 110 A.D.
18 Trajan Ca 110 A.D.
20 Trajan Ca 110 A.D.

Table 4.3: Coins of the Mad'a'in Salih excavation

No	Metal	Condition	Group	Ruler	Type	Date	Weight (Gram)	Diameter (Millimetre)	Square	Layer
1	Bronze	P	Nabataean	Aretas IV	Me 112-114	20-40 AD	2.8	17	G 20	P II L VI
2	Bronze	P	Nabataean	Aretas IV	Sk 44	9BC-16 AD	1.7	14	I 22	P II L V
3	Bronze	Un	Unidentified				5.2	19	F 19	P I L I
4	Bronze	Vp	Roman?			1/2 Ce. AD	21.3	33	SU	SU
5	Bronze	Un					5.5	21	D 21	P II L I
6	Bronze	Vf	Nabataean	Aretas IV	Me 112-114	20-40 AD	3.1	18	I 22	P II L III
7	Bronze	P	Nabataean	Aretas IV	Me 112-164	20-106 AD	3.3	15	I 23	P II L III
8	Bronze	Un	Nabataean	Aretas IV			2.3	15	E 20	P I L II
9	Bronze	Un	Nabataean	Aretas IV			8.1	26	E 21	P II L II
10	Bronze	Un	Nabataean	Aretas IV			5.6	22	G 20	P II L II
11	Bronze	Un	Nabataean	Aretas IV			2.2	18	F 20	P II L III
12	Silver	F	Nabataean	Aretas IV	Me 49-98	9 BC-16 AD	4	17	G 21	P II L V
13	Bronze	P	Unidentified	Nabataean	Aretas IV		5.9	22	SU	SU
14	Bronze	Vp	Nabataean	Aretas IV	Me 112-164	20-106 AD	1.5	14	I 21	P II L II
15	Silver	P	Nabataean	Aretas IV	Me 100-151	16-106 AD	2.5	15	SU	SU
16	Silver	F	Roman	Aretas IV	RIC 147-148, Vol.II, Plate VIII-IX	Ca 110 AD	1.8	19	SU	SU
17	Silver	F	Nabataean	Trajan?	Me 142-161	70-102 AD	2.7	14	H 19	P II L II
18	Silver	P	Roman	Rabel II	RIC 147-148, Vol.II, Plate VIII-IX	Ca 110 AD	1.8	17	G 22	P II L I
19	Silver	F	Nabataean	Trajan	Me 147-161	75-102 AD	2.8	13	H 19	P II L II
20	Silver	F	Roman	Rabel II	RIC 147-148, Vol.II, Plate VIII-IX	Ca 110AD	1.8	20	SU	SU

No	Metal	Condition	Group	Ruler	Type	Date	Weight (Gram)	Diameter (Millimetre)	Square	Layer
21	Silver	P	Naabataen	Aretas IV	Me 99-111	16-40 AD	3.5	17	H 20	P II L VI
22	?	P	Roman	?		1-2 Ct. AD	2.3	16	Su	Su
23	Bronze	F	Roman	Constantinvsavg	RIC 314-326, Vol. VII, PL. 16	324-330 AD	2.3	19	Su	Su
24	Bronze	P	Unidentified	?			3.4	18	Su	Su
25	Bronze	P	Unidentified	?			3.3	16	Su	Su
26	Bronze	Vp	Unidentified	?			1.6	15	Su	Su
27	Bronze	Vp	Unidentified	?			1.3	12	F 19	P I L II
28	Bronze	P	Roman	?			1.7	21	Su	Su
29	Bronze	P	Roman	Gallienus	RIC 31-45, Vol. V, pl. II-III	256-259 AD	2.1	20	Su	Su
30	Bronze	F	Nabataean	Aretas IV	Me 113	Ca. 20 AD	2.2	18	H 21	P II L VI
31	Bronze	F	?				4.1	16	D 20	P I L I
32	Bronze	P	Nabataean	Aretas IV	Sk 44	9 BC-16AD	1.7	14	I 18	P II L V
33	Bronze	P	Roman?	?		4ct AD	1.8	17	Su	Su
34	Bronze	Un					4.1	22	F 21	P II L VI
35	Bronze	Un					5.5	19	G 23	P II L I

Key to abbreviations:
Conditions:

EF = Extremely fine, complete, legible, well-centred

VF = very fine, legible, motif (fairly) clear

F = Fine, partly legible, motif visible
P = Poor, hardly legible, motif recognisable
VP = Very poor, illegible, motif hardly recognisable

Type:

Me = Meshorer, Nabataean coins, Qedem No3,1975
SK = Schmitt-Korte, Nabataean Coinage-part II: New Coin Types and Variant, The Numismatic Chronicle 1990, 105-134,pl.10-15
RIC = H. Maattingly, E.A. Sydenham et.al., The Roman Imperial Coinage, 9 vols., London, 1923-1981.

Layer:

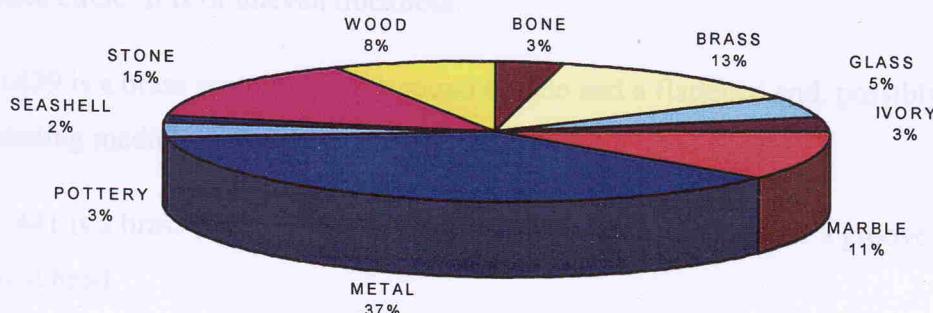
Su = Surface collection
P = Phase
L = Layer

4.3. Small finds

Small finds are described by Crummy as excavated objects which need more detailed initial recording, more detailed description in publications, and possibly a more controlled environment for storage (Crummy 1983, 2). The excavation revealed many small finds. Some items were selected as examples from each function category and are presented in this study as listed in table (4.5) (Photos. 4.13-4.44). The whole collection of small finds and its archive information is kept in the record of the Department of Antiquities in Saudi Arabia.

Metal items represent 37% of the total collection. Stone objects account for 15%, and brass objects about 13%. Marble items occupy the fourth place with 11%. Wood artifacts total about 8%. All the glass finds consisted of small sherds. No complete glass vessel was found and glass sherds account for about 5% of the collection. Pottery, bone and ivory artifacts each represent 3% of the total. Seashell items number 2%. The following chart (Chart 4.5) represents the distribution of small finds according to material.

SMALL FIND MATERIAL



4.3.1. Classification of small finds according to material

Bone Items:

Item 1417 is a bone bead of square shape with rounded edges. flat at the top and bottom. It is 1.2cm in length.

Item 1435 is a bone spindle whorl, circular in shape, with a diameter of three centimetres. It is 1.5cm thick. It is a convex object with a 0.5-cm hole in the centre for the spindle. It has two pairs of narrow and shallow concentric grooves about 0.8cm and 1.3cm from the centre. The edge or lip of the item is slightly concave. The edge is slightly broken at one part.

Brass Items:

Item 1419 is a regular round brass ring, 5.5 cm in diameter, probably used as a bracelet.

Item 1424 is a brass object 6.1 cm in length. One end is curved with a short piece extending like an apple stem. The object broadens out to a flatter ending which is broken. The function is not known.

Item 1426 is a brass ring 9mm in diameter of uneven thickness.

Item 1427 is a corroded piece of brass jewellery of a round shape, but not forming a complete circle. It is of uneven thickness.

Item 1439 is a brass spatula. It has a round handle and a flattened end, possibly used for grinding medicinal powders.

Item 1441 is a brass pin 4.5 cm in length with a rounded point. It has a groove in the flattened head.

Object 1446 consists of two pieces of brass. The first piece resembles a nail about 7.2cm long and 0.3cm thick. The second piece is a broken fragment. Its upper part is round with two holes and the lower fragmented part is flat.

Glass items:

Item 1410 is a broken piece of glass. It was originally round, and formed the base of a vessel. The piece that remains represents roughly one quadrant of the original round section. The colour is green, with a raised motif in relief, in zigzag shape.

Item 1413 is a broken piece of glass, round at the base, but broken at the edges. It was probably used as a vessel for holding liquids. It has a green colour with marks of erosion.

Item 1418 consists of seven sherds of glass of green colour, with brass traces caused by laying for a long time in the sand. They are probably fragments of glass vessels used for storing liquids.

Ivory items:

Item 1431 is a small ivory container 4 cm in diameter and one cm high. It is round, with a base which is very slightly larger in diameter than the wall. It was probably used to hold powder or beads.

Object 1448 is made of ivory. It is a ring 2.5cm in diameter and 9mm thick which was worn on the finger.

Marble Items:

Item 1423 is a smooth marble container with one side broken off. It has a diameter of 4.1 cm and a height of 1.6 cm. It was probably used as a container for grinding powders.

Item 1437 is a square marble stone 4cm by 4 cm by 1cm high. It is smooth and polished. It may have been used as a weight.

Item 1443 is a round marble piece probably used for a spindle. It has a hole passing through its centre.

Object 1444 is a marble bead, of cubic shape, with a hole bored for carrying a string. It is 1.2 by 1.2 by 1 cm.

Object 1447 is made of marble. It is 2cm long and 1cm thick with a hole through the middle, probably for attaching a string to be worn around the neck. There are a few small holes on the surface. Possibly caused by imperfections during the polishing.

Item 1451 consists of nine pieces of marble varying in size between 2 cm and 4 cm in diameter. The object also varies in height (from 2 cm to 3 cm). Some of the objects are round, but others have an almost rectangular shape. All the pieces have a hole in the centre which sometimes extends from the centre. They are probably beads through which a string was passed.

Item 1452 consists of two marble stones, the larger of which is 4.2 cm in diameter and 1.5 cm thick. The smaller is 3.5 cm in diameter, and 0.5 cm thick. The smaller object is more regular in shape; the larger is oval. The smaller stone is a plain light colour, whereas the larger is slightly speckled. Both stones are polished. They were probably used as weights.

Metal Objects:

Item 1397 consists of three pieces of irregular shape. One is metal, like a badly corroded bent nail. One is a fragment of light coloured wood and the last is a piece of darker wood which is stained with green, as if it has been in contact with corroding metal.

Item 1398 consists of eleven pieces of various shapes. One is a broken nail. There are three small pieces of badly corroded metal of a dark brown colour. There are six other metallic objects of lighter colour, and indeterminate function, mostly fragments. The last object is about half the circumference of the neck and shoulder portion of a pot.

Item 1399 consists of four metal pins of various thickness and length.

Item 1400 is a flat metal object resembling the head of a spear. It is broken four centimetres along the shaft. The tip has rounded edges and a rounded point, and is ridged down its length.

Item 1401 is a rectangular piece of metal with curved irregular edges. It has two small holes, one at each end, in the centre. It may have been used to fasten adjoining pieces.

Item 1405 consists of three metal pieces. The largest has the shape of a car key but with a tapering rounded end. It may have been used as a tool for making holes. The other two small pieces have pointed ends, and may be fragments of arrow heads.

Item 1406 consists of two metal pieces 3.8 cm and 3.1cm in length and 0.7cm and 0.55 cm wide respectively. Both pieces are slightly broader at one end. They could be nail fragments.

Item 1408 consists of three metal pieces. One is a round mushroom shape, which could have been used as a door knob. The second is a long round piece 3.8cm in length which has curves resembling those of a stair balustrade. The ends have what resembles a thicker ring (close to the end). The third piece is curved, and round with a tapering rounded end. Near to the thicker end, which is broken, there is an "offshoot" resembling a twig on a branch. The function is not known.

Item 1409 is a metal object which is L- shaped, but with curved corners. The short end is rounded and has a hole near the end. The longer end tapers to a round point and has three grooves running around it. It may have been used as part of a door.

Item 1412 is a piece of metal 4.9cm long. Its shape, tapering at one end, suggests that it might have been used as a pin. The fatter end is broken down the middle and corroded.

Item 1415 is a metal object which is crescent shaped on one side. The inside has a toe-like protuberance which curves out. The top surface is flat, except for a conical protuberance in the middle, which is brown. It has probably used as a decoration for a door.

Item 1425 is a metal object 6 cm in length, whose shape suggests that it may be the blade of a knife. The blade broadens slightly towards the middle. The end is curved on one side and straight on the other. There is a break about one third of the way along.

Item 1429 consists of sixteen metal objects resembling nail heads of a size ranging from 0.5 to 0.8 cm in diameter.

Item 1430 consists of nineteen metal objects of various shapes and sizes. Because the pieces are fragmented, their original function is not clear.

Item 1432 is a metal object 6 cm long and one cm thick. It is a curved object with a smooth inside surface and a decorative outside surface. One end tapers to a

narrowish point. The other end tapers to a thicker point. It may have been used as a hair grip or a brooch.

Item 1433 is a metal object 14 cm in length and 3 cm in wide. One end of the object is square, with only slightly rounded edges. The other end is also flat, but has a rounded corner on one side and a broken corner on the other. It is badly corroded. There is a groove all around the edge, and a round depression at the wider end. The function is not certain, but it may have been a fastener.

Item 1434 is a metal pin, 8.7 cm long and slightly less than half a centimetre thick. The end of the pin tapers very slightly, which would possibly make it suitable for use as a hairpin. The top is flat. The pin has a slight curve in the middle.

Item 1436 consists of thirty small metal objects or fragments of miscellaneous shapes ranging in size from one to three centimetres. They are in a bad shape of oxidised. Some of them may be nails.

Item 1438 is a small piece of fractured and corroded metal with a pyramidal head or tip widening to a flat base. The sides are uneven. It may have been used for fastening. It is 4.5cm high.

Object 1445 is a flat metal implement 11cm in length and 2 mm thick.

Pottery Items:

Item 1402 is a piece of coarse pottery 3.5 cm long, of light colour marked with green. The shape suggests that it is a fragment of the foot and lower leg of a statue.

Item 1411 is a semi-circular fragment of pottery which has probably worn as a bracelet. It is light brown in colour, with grooves around the outside surface.

Sea Shells:

Item 1420 consists of four different sea shells probably used as costume decoration.

Stone Items

Item 1403 is a light-coloured stone bead of irregular shape, with a hole passing through it.

Item 1414 is a collection of fifteen beads of different sizes, shapes and colours. All of them are stone, except for one, which is a shell. The largest one is a flat round stone. Another is cylindrical. One is pear-shaped and of a blue colour. Most of the others are round. They were used as jewellery.

Item 1416 is a round marble stone of light colour, with darker veins circling irregularly, used as a bead.

Item 1421 is a stone spindle whorl 3.5cm in diameter.

Item 1422 is a dark round stone of 4.4 cm in diameter, 3.4 cm high, probably used as a weight. Its surface is smooth.

Item 1428 consists of two stone spindle whorls, one 2.25cm and one of 4.1cm in diameter, and one white stone bead.

Item 1442 is a piece of stone of mostly dark brown colour with a variation of lighter tones and veins. The surface is polished but it is of slightly uneven shape. It is rectangular and flat, with slightly rounded edges. The top right centre is broken. The dimensions are 3.5 cm by 2.5 cm, with a thickness of 0.6 cm. Two holes pass through the full length. It is thought to be the centre piece of a necklace.

Object 1450 is a stone piece 9cm high, 4 cm wide at the base, widening to 7.3cm at the top. The object is flat in shape and its function is not known.

Object number 1453 is a round stone object 4.2 cm in diameter and 1.2 cm thick. The edge of the object is rounded in an irregular fashion, and has grooves around it. The top of the object is conve, and appears to constitute a lid, probably with a string attached as a carrying handle. The object is generally of a light colour with two dark lines of semi-circular shape around the side.

Wood Items:

Item 1404 is a wooden piece, 11cm long which may have been used as a pin. The shape is irregular, with a jagged end. The head is broken, and the surface is rough.

Item 1407 is a rectangular piece of light coloured wood, 4.5x5 cm, and 5mm thick. The longer edges are straight, while the shorter sides are slightly rounded. The surface is smooth, with two cracks going right across.

Item 1440 is a round wooden pin 7cm in length. It has a round tapered point and two grooves going around the head.

4.3.2. Function of small finds

The small finds were of various materials as described above, according to the purpose for which they were made. They may represent the needs and demands of the inhabitants of the town and give an idea about some of the daily activities of the people who lived on the site.

In order to understand the small finds more clearly, it is helpful to look at them as tools used in daily life and to try to determine the function of each. However, this is not an easy task. Some of the pieces are only tiny, making it difficult to reconstruct function. Also, some of the metal pieces were badly eroded. In looking at the assemblage and to try to determine some aspects of use, Crummy's (1983) method of classifying the small finds from the Colchester excavation was adopted, there are similarities in some aspects. The classification is as follow:

1-Building and service materials:

This group is may be exemplified by item 1408, a metal piece which may have been used as a door knob. Item 1409 is a metal object may have been used as a part of a door for one of the residential units.

2-Household utensils and furniture:

This group is represented by item 1410, a broken round piece of glass which formed the base of a vessel. It may have been used to keep liquids in the house such as perfumes. The other item is 1413 which is a broken round piece of glass and was probably a vessel for holding liquids. Item 1418 also consists of pieces of glass. They are small sherds of glass of brown colour and were probably part of different vessels used for storing liquids. Item 1425 is a metal object whose shape suggests that it may be the blade of a knife. Item 1453 is a round stone object, probably a lid for a stone vessel.

3- Military equipment:

This group is represented by item 1400, the head of a spear. Item 1405 consists of two fragments of arrow heads.

4-Nails and studs:

Many objects fall into this category. Item 1446 consists of two pieces one of which resembles a nail; the other part with two holes is probably for fastening items. Item 1397 is a badly corroded bent nail. Item 1398 consists of many objects, one of which is a broken nail. Item 1401 is of metal with two holes. It may have been used to fasten adjoining pieces. Item 1406 consists of two metal pieces which could be nail fragments. Item 1429 consists of sixteen metal objects resembling nail heads of different sizes. Item 1433 is a metal object might have been used as a fastener. Item 1436 consists of many different items in a bad state of oxidisation. Some of them may be nails. Item 1438 may have been used as a nail. It has a pyramidal head.

5- Objects of personal adornment or dress:**5A-Beads:**

Beads were used mostly as parts of necklaces or bracelets and are exemplified by the following items: item 1417 is a bone bead of square shape with rounded edges. Item 1444 is a marble bead of cubic shape. Item 1447 is a marble bead cubic in shape. Item 1451 consists of nine pieces of marble beads some of which are round while others are rectangular. Item 1403 is a light coloured marble bead of irregular shape. Item 1414 is a collection of fifteen beads of different sizes, shapes and colours, all of them stone, except for one, which is a shell.

5B-Bracelets:

Item 1419 is a regular round brass ring probably used as a bracelet. Item 1427 is brass of round shape but not forming a complete circle. It may have been used as a bracelet. Item 1411 is a semi-circular fragment of pottery which was probably worn as a bracelet.

5C-Pins:

Item 1441 is a brass pin with a rounded point which may have been used as a hairpin. Item 1399 consists of four metal pins of various thickness and length. Items 1412 and 1434 are metal pins. Item 1404 is a wooden piece, which may have been used as a pin. Item 1440 is a round wooden pin. It has a round tapered point and two grooves going around the head. It should be noted here that this pin is similar to piece 177 (Crummy 1983, 21).

5D-Rings:

Item 1426 is a brass ring. Item 1448 is an interesting piece, being a rare example of an ivory ring.

5E-Necklaces:

Item 1442 is a piece of stone, dark brown with veins. Its surface is polished. It is rectangular in shape with two holes passing through the full length of the piece. It is thought to be the centre piece of a necklace.

5F-Jewellery containers:

They are exemplified by item 1431, a small ivory container, round in shape. It was probably used to hold powder or beads.

5G-Costume decoration:

Represented by item 1420, which consists of four different sea shells probably used as a costume decoration.

6-Manufacture or working of textile:

This category is represented by item 1435, which is a bone spindle whorl, circular in shape. Another item is 1443 a round marble piece which was probably used for a spindle. Item 1421 is a stone spindle whorl. Item 1428 consists of two pieces, one of which is a spindle whorl.

7-Toilet, surgical or pharmaceutical instrument:

This category is represented by item 1439 a brass spatula possibly used for grinding medicinal powders. Item 1423 is a smooth marble container, probably used as a container for grinding powders. Item 1445 is a flat metal implement. It was probably used as a pharmaceutical instrument.

8-Objects associated with religious beliefs and practices:

Item 1302 is a piece of coarse pottery. It is a fragment of the foot and lower leg of a statue. Probably it was a part of a religious figurine.

9-Objects employed in weighing and measuring:

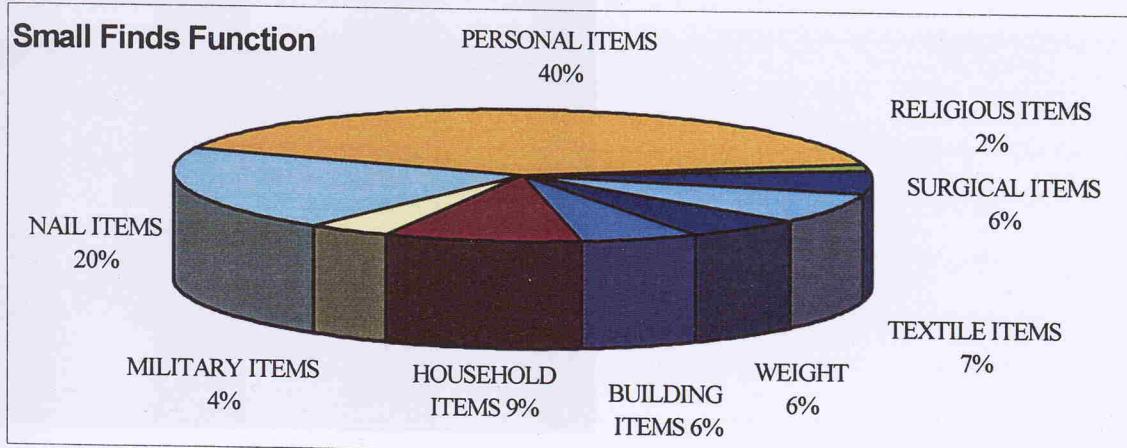
This category is represented by item 1437, a square marble stone. It is smooth and polished and may have been used as a weight. Item 1452 consists of two marble

stones. The smaller object is more regular in shape. The larger is oval. Both stones are polished. They were probably used as weights. Item 1422 is a dark round stone with a smooth surface. It was probably used as a weight

The following table (table 4.4) represents the distribution of items among the

4.3.3. Synthesis of small finds

As far as function is concerned, most of the items were personal objects (40%). Nails and studs account for 20%. The household category represents 9% and textile items 7%. Stone weights, building items and surgical items each number 6%. Military and religious items account for 4% each. The following chart (chart 4.6) represents the percentage for each function.



The distribution of items among the squares does not signify any special relation. The items were distributed over many squares. Six items were found in square F18, the largest number of items found in a square.

Square F20 contained five items, while F19, F22, G18, G19, H19, I19 and I20 contained 3 items each. Squares E20, E21, E22, F21, G21, H18, H20, H21, H22, I18 and I21 contained two items each. Squares G20 and G22 contained one item only.

The following table (table 4.4) represents the distribution of items among the squares:

	I	H	G	F	E	D
23						
22		1447 1430	1428	1426 1411 1404	1445 1429	
21	1401 1410	1422 1405	1442	1446 1400	1440 1443	
20	1450 1413 1408	1418 1407	1424	1451 1439 1436 1415 1397	1444 1432	
19	1448 1403 1402	1419 1409 1396	1421 1399 1398	1453 1423 1414		
18	1443 1412	1417 1416 1441	1435 1427 1438 1437 1434 1425 1420	1452		

The distribution of items among the squares does not signify any special relation between adjacent items. There is not sufficient concentration of items in one place to specify an idea for the use of a particular room or place. The distribution was quite random. Nails were found at the top of the site in D22 and at the bottom of the excavation in square I18. Square F18 was the richest square for small finds. However, the relationship between these finds is not specific. There were stone weights, a brass hairpin, a blade of a knife and sea shells as costume decoration. Beads were found in H22, E20, F19, I19, F18 and H18. Thus they were not concentrated in one area of the excavation.

A general look for small items reveals that building and service materials are rare except for some pieces like piece 1409 which may have been used as part of a door. Glass is noted on the site but in little quantity. No clear shape of vessels could be drawn, because the sherds were of tiny pieces. Piece 1413, which is a broken round

piece of glass suggests that the vessel was of round shape. Glass is believed to have been used to store liquids such as perfumes or medical liquids.

Pieces of military equipment are few. One clear example is item 1400, the head of a spear. Nails and studs of various shapes and sizes are one of the biggest categories of the small finds collection. They are scattered all around the site. Most of them are badly eroded. Nails were commonly used in carpentry work and furniture.

Unfortunately, wood items such as doors and windows do not last for a long time, so nails and studs are the only proof of the carpentry work.

Items of personal adornment or dress form an even bigger (indeed) category of small finds. They divide into sub-groups, the largest of which is the beads. Beads are of various material: bone, marble, stone and seashell. As far as the shape is concerned, beads are found in square shapes with straight edges or curves. Round beads were found, as well as cubic and rectangular. The beads usually had holes all the way through, for the string. They were used as jewellery for ladies, worn around the neck as necklaces or as a bracelet around the wrist. Jewellery is found in different shapes and materials. For example item 1419, is a brass bracelet. Item 1411 is of pottery. There is a strikingly large number of hairpin items. Some of them are of brass, such as item 1441, or metal (1399, 1412 and 1434). Item 1440 is a noteworthy piece a hairpin of wood which has a round tapered point and two grooves around the head. This item is similar to item no 177 from the Colchester excavation (Crummy 1983, 21). It is similar in shape function and manner of manufacture. The question raised here is whether this item was imported or a copy made locally. In either case, there is a relation which is worth noting.

Rings are another sub-category of this group. Two pieces worth noting are item 1418, which is a ring of ivory, and another piece which is a small ivory jewellery container. Ivory was for sure not local material. It must have been imported from outside, whether from India or from Africa. It is known that goods came from the Indian Ocean to the South of Arabia, and were then carried by camels through stations until they reached the Mediterranean countries. Another question arises here as to whether this ivory was imported as raw material, then manufactured in the town, or whether it was imported ready made. Material like ivory is of luxury status. It is not for daily needs.

Spindle whorls were found in quite large quantities on the site. They varied in material from bone, to marble and stone. This gives an indication of textile manufacturing. This manufacturing could be for family members only (by the housewife) or it could be for broader use. We know from the inscriptions that there were some families which specialised in tomb carving. There might also have been some families who specialised in textile manufacturing for the whole city. Or maybe it extended beyond the border of the city as a form of exporting to neighbours using the caravans.

One interesting area is objects associated with surgical or pharmaceutical instruments. It is a very specialised area and we know from the inscriptions that one of the tombs was for a physician (IGN 44). Specialisation was known in the city, as is known from the builders of the tombs. A clear example of such specialised objects is a brass spatula (no. 1439). Another item is a smooth marble container probably for grinding powder which might have been used as medical powder.

Of the interesting items associated with religious beliefs and practices is item 1302 a piece of coarse pottery. Unfortunately the only piece left is a fragment of the foot of the lower leg of a statue. It could represent a Nabataean deity.

The last category among the selections is objects employed in weighing and measuring. The main items of this category are weights. These weights are of different materials of marble and stone. As a trade centre, scales are expected to be used to weigh goods consumed locally or for export.



Table 4.5: Catalogue of Small finds (Photos. 4.13-4.44)

No.	Item Description
1379	Item 1397 consists of three pieces of irregular shape. One is metal, like a badly corroded bent nail. One is a fragment of light coloured wood and the last is a piece of darker wood stained with green, as if it has been in contact with corroding metal.
1398	Item 1398 consists of eleven pieces of various shapes. One is a broken nail. There are three small pieces of badly corroded metal of a dark brown colour. There are six other metallic objects of lighter colour, and indeterminate function, mostly fragments. The last object is about half the circumference of the neck and shoulder portion of a pot.
1399	Item 1399 consists of four metal pins of various thickness and length.
1400	Item 1400 is a flat metal object resembling the head of a spear. It is broken four centimetres along the shaft. The tip has rounded edges and a rounded point, and is ridged down its length.
1401	Item 1401 is a rectangular piece of metal with curved irregular edges. It has two small holes, one at each end, in the centre. It may have been used to fasten adjoining pieces.
1402	Item 1402 is a piece of coarse pottery 3.5 cm long, of light colour marked with green. The shape suggests that it is a fragment of the foot and lower leg of a statue.
1403	Item 1403 is a light-coloured stone bead of irregular shape, with a hole passing through it.

1404	Item 1404 is a wooden piece, 11cm long which may have been used as a pin. The shape is irregular, with a jagged end. The head is broken, and the surface is rough.
1405	Item 1405 consists of three metal pieces. The largest has the shape of a car key but with a tapering rounded end. It may have been used as a tool for making holes. The other two small pieces have pointed ends, and may be fragments of arrow heads.
1406	Item 1406 consists of two metal pieces 3.8 cm and 3.1cm in length and 0.7cm and 0.55 cm wide respectively. Both pieces are slightly broader at one end. They could be nail fragments.
1407	Item 1407 is a rectangular piece of light coloured wood, 4.5x5 cm, and 5mm thick. The longer edges are straight, while the shorter sides are slightly rounded. The surface is smooth, with two cracks going right across.
1408	Item 1408 consists of three metal pieces. One is a round mushroom shape, which could have been used as a door knob. The second is a long round piece (3.8cm in length) which has curves resembling those of a stair balustrade. The ends have what resembles a thicker ring (close to the end). The third piece is curved, and round with a tapering rounded end. Near to the thicker end, which is broken, there is an "offshoot" resembling a twig on a branch. The function is not known.
1409	Item 1409 is a metal object which is L- shaped, but with curved corners. The short end is rounded and has a hole near the end. The longer end tapers to a round point and has three grooves running around it. It may have been used as part of a door.
1410	Item 1410 is a broken piece of glass. It was originally round, and formed the base of a vessel. The piece that remains represents roughly one quadrant of the original round section. The colour is green, with a raised motif in relief, in zigzag shape.

1411	Item 1411 is a semi-circular fragment of pottery which has probably worn as a bracelet. It is light brown in colour, with grooves around the outside surface.
1412	Item 1412 is a piece of metal 4.9cm long. Its shape, tapering at one end, suggests that it might have been used as a pin. The fatter end is broken down the middle and corroded.
1413	Item 1413 is a broken piece of glass, round at the base, but broken at the edges. It was probably used as a vessel for holding liquids. It has a green colour with marks of erosion.
1414	Item 1414 is a collection of fifteen beads of different sizes, shapes and colours. All of them are stone, except for one, which is a shell. The largest one is a flat round stone. Another is cylindrical. One is pear-shaped and of a blue colour. Most of the others are round. They were used as jewellery.
1415	Item 1415 is a metal object which is crescent shaped on one side. The inside has a toe-like protuberance which curves out. The top surface is flat, except for a conical protuberance in the middle, which is brown. It has probably used as a decoration for a door.
1416	Item 1416 is a round marble stone of light colour, with darker veins circling irregularly, used as a bead.
1417	Item 1417 is a bone bead of square shape with rounded edges, flat at the top and bottom. It is 1.2cm in length.
1418	Item 1418 consists of seven sherds of glass of green colour, with brass traces caused by laying for a long time in the sand. They are probably fragments of glass vessels used for storing liquids.
1419	Item 1419 is a regular round brass ring, 5.5 cm in diameter, probably used as a bracelet.
1420	Item 1420 consists of four different sea shells probably used as costume decoration.

1421	Item 1421 is a stone spindle whorl 3.5cm in diameter.
1422	Item 1422 is a dark round stone, 4.4 cm in diameter, 3.4 cm high, probably used as a weight. Its surface is smooth.
1423	Item 1423 is a smooth marble container with one side broken off. It was a diameter of 4.1 cm and a height of 1.6 cm. It has probably used as a container for grinding powders.
1424	Item 1424 is a brass object 6.1 cm in length. One end is curved with a short piece extending like an apple stem. The object broadens out to a flatter ending which is broken. The function is not known.
1425	Item 1425 is a metal object 6 cm in length, whose shape suggests that it may be the blade of a knife. The blade broadens slightly towards the middle. The end is curved on one side and straight on the other. There is a break about one third of the way along.
1426	Item 1426 is a brass ring 9mm in diameter of uneven thickness.
1427	Item 1427 is a corroded piece of brass jewellery of a round shape, but not forming a complete circle. It is of uneven thickness.
1428	Item 1428 consists of two stone spindle whorls, one 2.25cm and the other 4.1cm in diameter, and one white stone bead.
1429	Item 1429 consists of sixteen metal objects resembling nail heads of a size ranging from 0.5 to 0.8 cm in diameter.
1430	Item 1430 consists of nineteen metal objects of various shapes and sizes. Because the pieces are fragmented, their original function is not clear.
1431	Item 1431 is a small ivory container 4 cm in diameter and one cm high. It is round, with a base which is very slightly larger in diameter than the wall. It was probably used to hold powder or beads.

1432	Item 1432 is a metal object 6 cm long and one cm thick. It is a curved object with a smooth inside surface and a decorative outside surface. One end tapers to a narrowish point. The other end tapers to a thicker point. It may have been used as a hair grip or a brooch.
1433	Item 1433 is a metal object 14 cm in length and 3 cm wide. One end of the object is square, with only slightly rounded edges. The other end is also flat, but has a rounded corner on one side and a broken corner on the other. It is badly corroded. There is a groove all around the edge, and a round depression at the wider end. The function is not certain, but it may have been a fastener.
1434	Item 1434 is a metal pin, 8.7 cm long and slightly less than half a centimetre thick. The end of the pin tapers very slightly, which would possibly make it suitable for use as a hairpin. The top is flat. The pin has a slight curve in the middle.
1435	Item 1435 is a bone spindle whorl, circular in shape, with a diameter of three centimetres. It is 1.5cm thick. It is a convex object with a 0.5-cm hole in the centre for the spindle. It has two pairs of narrow and shallow concentric grooves about 0.8cm and 1.3cm from the centre. The edge or lip of the item is slightly concave. The edge is slightly broken at one part.
1436	Item 1436 consists of thirty small metal objects or fragments of miscellaneous shapes ranging in size from one to three centimetres. They are in a bad shape of oxidisation. Some of them may be nails.
1437	Item 1437 is a square marble stone 4cm by 4 cm by 1cm high. It is smooth and polished. It may have been used as a weight.
1438	Item 1438 is a small piece of fractured and corroded metal with a pyramidal head or tip widening to a flat base. The sides are uneven. It may have been used for fastening. It is 4.5cm high.
1439	Item 1439 is a brass spatula. It has a round handle and a flattened end, possibly used for grinding medicinal powders.

1440	Item 1440 is a round wooden pin 7cm in length. It has a round tapered point and two grooves going around the head.
1441	Item 1441 is a brass pin 4.5 cm in length with a rounded point. It has a groove in the flattened head.
1442	Item 1442 is a piece of stone of mostly dark brown colour with a variation of lighter tones and veins. The surface is polished but it is of slightly uneven shape. It is rectangular and flat, with slightly rounded edges. The top right centre is broken. The dimensions are 3.5 cm by 2.5 cm, with a thickness of 0.6 cm. Two holes pass through the full length. It is thought to be the centre piece of a necklace.
1443	Item 1443 is a round marble piece probably used for a spindle. It has a hole passing through its centre.
1444	Object 1444 is a marble bead, of cubic shape, with a hole bored for carrying a string. It is 1.2 by 1.2 by 1 cm.
1445	Object 1445 is a flat metal implement 11cm in length and 2 mm thick.
1446	Object 1446 consists of two pieces of brass. The first piece resembles a nail about 7.2cm long and 0.3cm thick. The second piece is a broken fragment. Its upper part is round with two holes and the lower fragmented part is flat.
1447	Object 1447 is made of marble. It is 2cm long and 1cm thick with a hole through the middle, probably for attaching on a string to be worn around the neck. There are a few small holes on the surface. Possibly caused by imperfections during the polishing.
1448	Object 1448 is made of ivory. It is a ring 2.5cm in diameter and 9mm thick which was worn on the finger.
1450	Object 1450 is a stone piece 9cm high, 4 cm wide at the base, widening to 7.3cm at the top. The object is flat in shape and its function is not known.

1451	Item 1451 consists of nine pieces of marble varying in size between 2 cm and 4 cm in diameter. The objects also vary in height (from 2 cm to 3 cm). Some of the objects are round, but others have an almost rectangular shape. All the pieces have a hole in the centre which sometimes extends from the centre. They are probably beads through which a string was passed.
1452	Item 1452 consists of two marble stones, the larger of which is 4.2 cm in diameter and 1.5 cm thick. The smaller is 3.5 cm in diameter, and 0.5 cm thick. The smaller object is more regular in shape; the larger is oval. The smaller stone is a plain light colour, whereas the larger is slightly speckled. Both stones are polished. They were probably used as weights.
1453	Object number 1453 is a round stone object 4.2 cm in diameter and 1.2 cm thick. The edge of the object is rounded in an irregular fashion, and has grooves around it. The top of the object is conve, and appears to constitute the lid, probably for fixing string as a carrying handle. The object is generally of a light colour with two dark lines of semi-circular shape around the side.

5. Inscriptions

The aim of this chapter is to examine the inscriptions to provide further information on the city and its inhabitants. First, a brief description of the inscriptions will be given, including their number, location, size, dates and style. After that, the language of the inscriptions will be discussed briefly. Then, the indications of the inscriptions will be discussed according to their religious, social, economic and law perspectives. Finally, an attempt will be made to determine how the inscriptions further our knowledge about the site, and how the information collected relates to the archaeological context.

5.1. Description

The inscriptions in the Mada'in Salih tombs are thirty-eight in number. They are usually framed outside the tomb at the entrance above the door, although there are some inscriptions located inside the tombs.

The inscriptions vary in length from one line (H21) to fourteen lines (H34), with every intervening number of lines represented except 13, which never occurs. It is not clear whether there is a special reason for this or whether it is only a coincidence. It seems that very short texts and very long ones are not preferred, as only one of each was found. The most common length is 5 lines (H2, 10, 14, 22, 25, 26 and 37) and 10 lines (H1, 3, 9, 11, 19, 30 and 36). Among the inscriptions are thirty-three dated to the period between 1 B.C/A.D. to 74-75 A.D (Healey 1993, 6). Those inscriptions are considered as a main record for different aspects of Nabataean life, especially in the absence of other historical sources left by the Nabataeans. Their importance goes far beyond their role as an ownership document, to reveal many aspects of religious values, social life, economy and law.

The most common style of beginning is: "This is the tomb which ..." followed by the owner's name. After that, other beneficiaries allowed to use the tomb and the name of a deity, if any, is written. The Nabataean king's name is also mentioned in many inscriptions, as well as the mason who built the tomb. Fines were mentioned in some inscriptions, with specific amounts payable to the king or the deity or the priest in case of a change in the will. Most inscriptions were dated according to a Nabataean king's reign.

The study depends mainly on the translation of Healey, a copy of which is listed in the appendix. His study is one of the latest about Mada'in Salih in general, and especially the inscription translations.

5.2. Language of inscriptions

The Nabataeans used Aramaic in their writing. Aramaic was the official language of the Persian Empire, and, with the spread of Persian power in the area, it became the official language for trade and diplomatic affairs. Aramaic is considered to be one of the Northwest Semitic group of languages (Al-Theeb 1993, 24). Nabataean script evolved from the Imperial Aramaic script. After the fall of the Persian Empire, several local dialects sprang up in the area, such as in Petra, and flourished all over the Nabataean Kingdom from the first century B.C to the fourth century A.D. The script is usually written from right to left, as in Arabic writing. Arabic writing is believed to have developed from Nabataean script (Healey 1993, 59).

5.3. Social indications

5.3.1. Status of women

Inscriptions tell us about an important aspect of the Nabataean community, which is the status of women. Women had enjoyed a high status in the Nabataean period. They practised the right of ownership. Many Mada'in Salih tombs were owned by women. Inscription H11 is for a burial-niche owned by Wushuh, daughter of Bagrat, who had it built for herself and for her daughters. She also owned a main tomb with her own daughters Qaynu, Nashkuyah and Amirat, Usra'nat and Al'alat their half-sisters. Inscription H12 shows clearly a group of females without male partners. H13 was for a burial-niche made by Hagaru for her brother Maslamu. H14 tells us that the tomb belongs to two females, Hagaru, daughter of Hafi, and Mahmiyyat, daughter of Wa'ilat. Kamkam, daughter of Wa'ilat, and her daughter, Kulaybat, made a tomb for themselves and their descendants, as mentioned in H16. Sukaynat, daughter of Murrat, made a tomb for herself and her sons and daughters (H23). Inscription H26 tells us about another female, Hinat, daughter of Wahbu, who made a tomb for herself and her children and descendants. H34 belongs to Hinat daughter of 'Abd'obodat who made the tomb for herself and her children and descendants. Finally, H35 belongs to Amat, daughter of Kamulat, who made the tomb for herself, her children and descendants. Nine of the thirty-eight (about 23% of the total of inscribed tombs) were owned by females. These inscriptions show clearly that

women had the right to own property equally as men. Another indication is that some women of the community were wealthy enough to buy or to hire someone to build the tombs for them. This wealth might have been the result of trade activities, not necessarily by active participation, but by providing money and hiring experts to act on their behalf.

Another sign of the high status of women in Nabataean society emerges from the late stages of the Nabataean monarchy, with the appearance of the queen on coins beside the king. In the time of Obodas III (30-9B.C), the portrait of the queen appears on coins for the first time without mentioning her name. Then in the time of Aretas IV (9B.C-40A.D.), his two wives, Huldu and Shaqilat appear (Schmitt-Korte and Price 1994, 99-105). Another indication from the coins as to the status of women is evident from depictions in the reign of Rabbel II (70-106 A.D.). He ruled from a young age, with his mother acting as custodian. A coin from his period has on the reverse side the following inscription: Shuqailat his mother, the queen of the Nabataeans (Meshorer 1975, 72). This shows that women could reach the highest political position and act on behalf of the king.

Another aspect which indicates the high position of women in the community is the matrilineal descent which is evident several times in Mada'in Salih inscriptions. In inscription H16, Kamkam mentions not her father but her mother Wa'ilat instead. The same case occurs in H12, when Wushuh claims descent through her mother Bagrat.

Johnson argues that Nabataean women reached this high status after their men became deeply involved in wars and long periods of trade and travelling. This allowed women responsibility for various activities on behalf of the men (Johnson 1987, 130-31).

5.3.2. Immigrants

The inscriptions tell us that there were foreign elements in Nabataean society. Tomb (H1) belongs to Hawshabu, son of Nafiyu and grandson of Alkuf, the Taymanite. He had it built for himself and Habbu, his mother, and Rufu and Aftiyu, his sisters, and their children. Here it is clearly mentioned that this family is from Tayma. Tayma is a large ancient town about 140km to the north east of Mada'in Salih. The town is surrounded by a large stone wall with an area inside of about 800 ha. There are many stone structures inside the town walls. The period between the 5th and 6th century

B.C. witnessed the Neo-Babylonian occupation of Tayma, with Nabonidus settled in the city for about ten years (Edens and Bawden 1989, 53-60). So, this large family perhaps immigrated to Mada'in Salih from Tayma. We might assume that they practised trade or other professions referred to in the inscriptions. They preferred to stay in Mada'in Salih to enjoy the peaceful environment during the period of Aretas IV, to which the tomb is dated (4-5 A.D.).

Another Taymanite presence in Mada'in Salih is evident from H12. If there were immigrants from Tayma, they would have settled in Mada'in Salih for its trade activities and political stability. Building a tomb gives an indication that the owner had a desire to live and die and be buried in the city and was not only working there on a temporary basis. Some of these immigrants believed in the local deity (Dushara), and so participated in the local religion.

Another indication of foreign elements in the community comes from H4, which was built for Shubaytu, son of Ali'u the Jew, for himself and for his children and Amirat his wife. This inscription suggests that this family might have immigrated from Jewish territory to the north-west, seeking peace and settling down in Mada'in Salih. On the other hand, it is also possible that the family might have been a local one who believed in Judaism. However, this is not sure, since it is known that Syllaeus, the Nabataean minister, was unable to give up the local religion in order to marry Salomi, Herod's sister, because he was afraid that his people would no longer accept him and he might be stoned to death. On the other hand, inscription H4 gives the impression that the Nabataeans were tolerant towards religions. This Jew clearly mentions his religion on an inscription visible to the public. Freedom of religion may have been practised in the Mada'in Salih community. It is not known whether this was a single Jewish family in the community or whether there were many such families practising their religion in their own temples. They might have had a rabbi to arrange their civil affairs such as marriages and divorces. Relations between the Nabataeans and the Jews are known to have existed in the northern part of the Nabataean kingdom, especially in the capital Petra. It is worth noting the Jewish presence in this far location in the southern part of the Nabataean kingdom. The inscriptions contain foreign names which may indicate the presence of foreign elements in the community. In inscription H6, the word "strg" is of Greek origin, meaning "general". H7 belongs to a tomb which was built by Arus, son of Farwan

for himself and his father and his mother and sisters. The name Arus is of Greek origin however, while his father's name, Farwan, is of Arabic origin. This does not suggest that this family was of Greek origin, but gives a clear indication of the Greek influence on Nabataean personal names. The same influence of Greek names occurs in H8, the tomb made by 'Aydu, son of Kuhaylu and grandson of Alkasi, for himself and his children and descendants. The name Alkasi, is of Greek origin.

H9 is an inscription on the tomb which 'Abd'obodat son of Aribos made for himself and his daughter and her daughters and their children. The name Aribos is not a common Nabataean name and is probably of Greek origin. Inscription H24 belongs to Arsaksah daughter of Taymu the governor who built the tomb with 'Animu son of Guzay'at on behalf of Ruma and Kalba her brothers. Arsaksah is a name probably of Greek origin. H29 belongs to a tomb which Malkion made for Hunaynu Hephaestion the commandant, his father and his children and descendants. The name Hephaestion is of Greek origin. @ Refrencee

5.3.3. Professions

The inscriptions tell us about some of the professions which were known in the community of Mada'in Salih. These professions cover a wide range of specialisms. Some jobs required physical strength, such as masonry, while others depended on more intellectual ability, such as medicine. Other officials referred to include the governor and army officers. The main professions which can be determined from the inscriptions are as follows:

Masons

Masonry is mentioned in the inscriptions and proof of its existence is still visible to date, showing the level of art and accuracy that the Nabataean masons had achieved. It seems that this job was limited to a few people who were real experts in the field and who made a lifetime career of it. There were ten masons in Mada'in Salih who built tombs. The most active was Aftah, who built eight known tombs alone (H9, H15, H24, H28, H31, H32) and shared two more tombs with other masons (H7, H19).

The work of Aftah supports the idea that masonry was a professional career because, by tracing his work, we find that it spans a long time. His first tomb (H19) was made in 26/27 A.D. and the last one (H32) was in 39/40 A.D., which means that he worked in this job for almost 14 years.

After Aftah comes 'Abd'obodat, who built one tomb alone (H4) and three tombs with other masons (H3, H20, and H36). He built his first tomb in 31/32 A.D. and the last one in 49/50 A.D., in a working period of about 19 years.

Huru the mason is mentioned twice, once on a tomb which he built alone (H5) in 31/32 A.D., and one which he built with Aftah and Wahbu (H7 in 27/28 A.D.). Halafallahi the mason built a tomb in partnership with Aftah (H19) in 26/27 A.D., and another one (H12) alone in 34/35 A.D. Ruma the mason did not build a tomb on his own, but, in partnership with 'Abd'obodat, built two tombs (H3, H36) in 31/32 A.D. The mason Hani'u, son of Ubaydat, built tomb H10 in 48/49 A.D., then in partnership with Afsa and 'Abd'obodat built tomb H20 in the next year, 49/50 A.D.

Four masons each built one tomb. 'Abdharetat, son of 'Abd'obodat, built tomb H29 in 8/9 A.D. Wahballahi, son of 'Abd'obodat built tomb H16 in 1 B.C./A.D., the oldest tomb in Mada'in Salih. Afsa son of Hutu with 'Abd'obodat and Hani'u built tomb H20 in 49/50 A.D. Finally, Wahbu, son of Afsa the mason, built tomb H7 in 27/28 A.D. with Aftah and Huru.

It is not known whether or not the mason owned the location either through purchase, inheritance or authorisation from the governor before building the tomb and selling it later. The idea of ownership is supported by inscription H15, which bears only the mason's name. Alternatively the owner of the tomb by purchase or official authorisation might have contracted the mason to build the tomb. This suggestion is supported by various inscriptions which bear the name of the person who had acquired the place. Inscription (60, JS 100) relates that "this place was taken by Mr?rh (Al-Theeb 1998, 60). Inscription (4, JS39) says: "Rabel the governor took over the place" (Al-Theeb 1998, 39). It is not known how such property was acquired. Al-Theeb believes that places were acquired for various reasons: to build a tomb, to build a religious edifice, or to build a private house (Al-Theeb 1988, 90).

Prefect

The word prefect is mentioned in the inscriptions several times. It appears firstly in H7, the tomb which Arus son of Farwan, made for himself and his father, who was described as the prefect. The word is mentioned again in H17, some parts of which are missing. In H20, 'Aydu, the owner of a tomb, was described as prefect. The word also appears in H32, the tomb which Matiyu the governor, son of Euphronios the

prefect, made for himself and his family. In this inscription the title “prefect” appears with another official title “governor”, which indicates that this family was probably of political importance.

Physician

Physician is mentioned in H19, an inscription for the tomb which Kahlan, son of Wa’lan, made for himself, his children and his descendants. The word probably signifies doctor. The inscriptions mention different military titles, which leads to suggest that this was an army doctor (Healey 1993, 167). Kahlan might have been both a military doctor and a community doctor. This conclusion is supported by small finds from the excavation which are classified as surgical or pharmaceutical instruments. Among these is item 1439, a brass spatula possibly used for grinding medical powders. Another item (1423) is a smooth marble container, probably used as a container for grinding powder. Item 1445, which serves the same medical purpose, is a flat metal implement.

Omen-diviner

This vocation is mentioned in H29 (Malkion’s tomb). The original word in the text (PTWR) may have different meanings, such as money-changer (Healey 1993, 197). Al-Theeb prefers the interpretation of omen-diviner, because such men have known importance in military aspects (Al-Theeb 1998, 274).

Centurion

This is a military title of Greek origin (Healey 1993, 209). It is mentioned in H31, a tomb built by Sa’dallahi

Governor

The word governor appears several times in the inscriptions of Mada’ in Salih. H6 tells us about the tomb which Sullay the governor son, of ‘Aydu the prefect, made. Inscription H32 tells us about another governor, Matiyu, son of Euphronios, who built the tomb during the reign of king Haretat (Aretas IV). H34 is a long complicated text written by Hinat, daughter of ‘Abd’obodat, who built the tomb for her and children and descendants. She mentions various members in her family, going back to Rsym Maliku the governor and her uncle, son of Rabibel the governor. It is not evident whether these people described as governors were actual governors

of Mada'in Salih, or whether they were serving in different cities of the Nabataean Kingdom.

Weaver

This word is mentioned in a very short inscription (151; WR125) of only two words. The inscription was made by Sells, whose profession was weaver (Al-Theeb 1998, 141). In fact weaving must have been known in the community, as evidenced by small finds from the excavation. Of the examples which support the inscription is item 1435, a bone spindle whorl, item 1443, a round marble piece of a spindle whorl, and item 1421, a stone spindle whorl. Even though many spindle whorls were found in the excavation, it was thought that this activity was only for housewives. It might be assumed to have been a profession for some people, but there has been no prior supporting evidence. If the reading of the inscription is confirmed, it would give strong evidence that this was indeed a career for some members of the community.

Goldsmith

Goldsmith is mentioned in one short inscription (19, JS 58) which consists of only one line. Wahballahi the goldsmith states that he made a place for the deity Dushare (Al-Theeb 1998, 55). This type of profession requires the raw material of gold and silver. It is not known whether there were any sources of these two valuable elements near Mada'in Salih. This profession also requires a high standard of art and imagination and has its own tools. It also requires a wealthy community who can purchase the items, unless these products were for export only.

Palm tree worker

This word is mentioned in inscription (55, CIS 294). Al-Theeb suggests that the word might indicate a new profession in the community associated with agriculture and particularly cutting the dates from palm trees (Al-Theeb 1998, 87). Al-Ula and Mada'in Salih are famous for their palm tree orchards even today and there is good reason to suggest that the same might have been in the old days. However, we know that harvesting palm trees only takes place once a year for a short season. The question arises as to what such workers would do for a living for the rest of the year.

5.4. Religious indications

The inscriptions of Mada'in Salih shed some light on Nabataean religion. One of the main information areas is about the Nabataean deities in general and those of

Mada'in Salih in particular. Different deities were mentioned in the inscriptions, such as Dushara, Manotu, Tadhay and Allat. In one inscription (H11) all deities were mentioned in general without referring to a particular name, and we presume that this refers to Nabataean ones.

5.4.1. Deities

Dushara

Dushara was the main Nabataean deity. He is mentioned in the inscriptions of Mada'in Salih as well as in other Nabataean inscriptions all over the kingdom, and sometimes outside its borders. Dushara is mentioned in the inscriptions of Mada'in Salih twelve times. He is mentioned individually in the text six times (H 1, 2, 12, 28, 30, 36) and alongside other deities, such as the female deity Manotu, whose name appears three times on its own (H19, 31, 34) while two other references (H8, 16) also mention her (Qaysha). Dushara is directly mentioned by name or described as the God of Our Lord (H 11, 28, 36). He is also described as the one who separates night from day (H 2). His throne is also mentioned once in the inscriptions (H 16). In some inscriptions he is called the God of Gaia, the ancient name of Wadi Musa. He is called the Lord of the World (Healey 1993, 32). Some inscriptions call him the Lord of the House (Al-Theeb 1998, 5).

Dushara means “the one of ash-shara”, which are the mountains of Petra (Knauf 1990, 175). Dushara is represented mainly in the form of solid stone, probably to avoid representing the deity in human shape. Many niches with stone pillars are located at Mada'in Salih and Petra representing Dushara. However, towards the end, when the Nabataean kingdom was annexed to the Roman Empire, Dushara was represented in the form of a young man. This form appears on some Bostra coins (Bowersock 1990, 31). Offerings might have been made to him, including blood and other items such as milk, oil or other food items (Hammond 1973, 102).

It seems that Dushara was respected even after the annexation of the Nabataean Kingdom. There was an athletics competition in Bostra called *Actia Dusaria* during the emperor Philip's reign to honour his name (Bowersock 1983, 121-22). Dushara was identified with other deities such as Hadad and Ba'al-Shamin (Hammond 1973, 95).

Manotu

Manotu is mentioned in the inscriptions, three times alone (H 19, 31, 34) and twice with her Qaysha (H 8, 16). The cult of Manotu continued after the fall of the Nabataean kingdom and was adopted by other Arab nations to the south in Mecca. There was a temple for her on the Red Sea coast between Mecca and Medinah. She might be the deity who was said to spread clouds and send winds and rain, or the deity of the dead (Hamarneh 1990, 31).

Allat

The deity Allat is mentioned in one Mada'in Salih inscription (H16). She was an important Nabataean deity and was the supreme goddess of the Temple of the Winged Lions (Hammond 1990, 124). Allat at a later stage was worshipped by the Hijaz people. There was a temple dedicated to her in Taif near Mecca (Hamarneh 1990, 31). Allat was identified with Athena as a powerful goddess with a military and a fertility role (Hammond 1973, 97).

Al-Kutbay

There are other Nabataean deities which are not mentioned in the tomb inscriptions, but are known from other sites. Al-Kutbay is a Nabataean deity mentioned in an inscription at Wadi Ramm “to Al-Kutbay, the one who is in Gaia”. The deity is mentioned in another inscription from Tell esh-Shuqafiyah in Egypt, which reads: This is the temple built by X, son of Bwl Al-Kutbay, the god. The name was also found at Tayma, which is further north of the site. It was inscribed on the stele of a person (Abd'l Kutb, which means the servant of Al-Kutbay). This suggests that the worshipping of this deity was practised in Tayma. The name refers to the word “to write” in Arabic. There are other deities from different parts of the area who share the same area of interest in writing, such as the Egyptian deity Thot, the Assyrian Nabu, the Palmyrene Arsu and the Safaitic Ruda (Zaydine 1990, 154, 55)

Shay'-Al-Qawm

Shay'-Al-Qawm is mentioned in an inscription (CIS II 3973) by Ghanim, son of Ubaid, a cavalryman: (Shay'-Al-Qawm, the good and grateful god who never drinks wine). The reason for him not drinking might be that he was the war deity and should be alert at all times (Knauf 1990, 176-77). Hammond believes that the deity did not drink because he reflects the nomadic state of the people (Hammond 1973, 98).

Shay'-Al-Qawm is mentioned in Mada'in Salih in the Ithlib area in a short inscription in front of the Diwan (Healey 1993, 33).

Oboda

At some stage, the Nabataeans worshipped king Obodas, as is evident from some inscriptions. This custom may have been adopted from Egyptian culture (Hammond 1973, 104).

The Sun, Ashar, Qos and others

The Nabataeans worshipped the sun, as is mentioned by Strabo, and made altars in their houses. Other deities are also mentioned in the inscriptions, although we do not have additional information about them. They include Ashar and Qos. Tadhay is mentioned in tomb inscription (H 12), but there is little known information about him.

5.4.2. Places of worship

The Nabataeans worshipped their deities in a variety of places. Temples were the most advanced form and were scattered around different sites in the kingdom. They were found in Petra, Khirbat adh-Dharih, Rawwafah, Wadi Ramm, Qasr Rabbah and Oboda. Brief descriptions of temple building styles are given in section (6.2.1.1).

Temples were of two forms, square and rectangular, orientated North-South or East-West. Temples had priests to conduct religious prayer and to look after buildings and administrative affairs. The priest was called ('pkl'), a similar term being used in Mesopotamia and South Arabia (Healey 1993, 36).

High places are another form of cultic structure. A number of them were located at Petra, among them the great High Place, which is considered as an open temple in the open air. Niches were also located at Petra and Mada'in Salih. Stele and altars were also part of the cultic structure.

5.4.3. Burial customs

Strabo claimed that the Nabataeans did not pay attention to the dead: "They have the same regard for the dead as for dung" (Geog. 16.2.26). This description does not fit with the great tombs which the Nabataeans made to preserve their dead.

It is clear that the Nabataeans practised two types of burial, the first being direct, where the body is interred and then left in that place. Examples of direct burial

methods were found in Mampsis. The tombs were dug in the ground to a depth of about 4m, ranging from 1 to 2m wide. The body was laid on its side, oriented east-west with the feet towards the east. The body was put directly into the ground, sometimes in a coffin (Negev 1986, 75-6).

A recent discovery showed how the Nabataeans buried their dead. The body was discovered wrapped in a cloth, laid with out-stretched arms and legs (Photo. 5.1). The C14 analysis provides a dating of 1770 ± 95 before present (1988 date of analysis). Thus it may be attributed to a period between 123-313 A.D.

At Petra, there was a tomb (I trench V) built of stone slabs with a gable shape. A body was found whose whole pelvis was missing, the remaining parts consisting of a mutilated skeleton. In another place (Tomb 11) there are two chambers and remains of a wooden coffin (Parr 1960, 133-34).

The second burial method is where the bones are removed from the original place to a new one, as exemplified in various Nabataean towns. Tomb A6 at Mada'in Salih has a large hall and various loculi. These loculi are divided into small spaces (30X40cm) which are not large enough for a corpse. It was suggested that these loculi were used for children or body urns. However, the size still seems too small for children's bodies. The Nabataeans were not familiar with body burning. The size of the loculi is a clue that a second burial occurred, with the bones shifted to new place to allow space for new burials.

Another type of second burial was known in Mampsis in the form of a charnel house. Bones were deposited in groups of skeletons or assorted bones. Some artefacts such as pottery, vessels and lamps were found. Stone boxes were also found where bones were collected or deposited, as for example in Mampsis. The tombs were either built above ground level, as in Mampsis, or below the surface, as in Elusa (Negev 1986, 72-82).

The Nabataeans usually buried their dead without offerings. Women sometimes wore their jewellery. At one of the tombs in Mampsis, an alabaster jug was found, and a Denarius was found in the mouth of one body (Negev 1986, 77).

At Mampsis different artefacts were found in the tombs. Earrings and a dolphin pendant were found at tomb 101. In tomb 107, a nose-ring with a bell shape as well

as the remains of a wooden box and seal impressions on a clay body were found (Negev 1986, 94). At Petra, in trench V there is a tomb of a young person wearing jewellery, an anklet and an earring in the coffin (Parr 1960, 134).

A reference to religious meals is made by Strabo “ They prepare meals in groups of thirteen persons” (XVI.4.26). The religious meals were held at *triclinia* and probably at the high places. In Negev, stone tables were found near the Nabataean tombs for the serving of religious meals. Many pottery sherds were also found near them. Lamps were not usually to be found near the eating areas, which suggests that the meals were taken in daylight. The pottery might have been broken intentionally, since a stone which might have been used for this purpose was found on top of the broken sherds. Food might have been prepared near the tombs to create a happy environment near the dead and share happiness with them. In a tomb at Elusa there were two built *triclinia*. Near the *triclinia* is a tower with four rooms. One of the rooms has an oven which might have been used for preparing religious meals (Negev 1986, 89-93). At Mada'in Salih, in the Jebel Ithlib, there is the Diwan which is a *triclinia* with benches, a place which was probably used for religious meals (Healy 1993, 35).

Another aspect of burial customs is depicted in some signs with special religious meanings. Inside tomb 825 in Petra, on the north wall, five incised shapes are depicted. They consist of a pedestal with a triangular shape above it. One of them has an inscription below it which reads as follows: “ Nefesh of Zaid-Qawmo, son of Yaqum.” Nefesh may be translated as “soul, person”. It seems that these shapes have religious meaning related to the dead person (Shaer and Aslan 1997, 227-228).

5.5. Financial and legal indications

The inscriptions contain information relating to financial matters regarding levels of fines and to whom they should be paid. When a burial occurred, a number of problems could arise for the owner of the tomb (the person who paid for the tomb to be built) and his or her family. Several forms of violation could occur, and, according to the frequency in which they are mentioned in the inscriptions, these illegal acts are as follows:

1. The tomb could be illegally sold to or bought by another person.
2. The tomb could be given away by pledge.

3. The tomb could be given as a gift.
4. False written documents could be made.
5. Existing documents could be altered.
6. The tomb could be borrowed by another party
7. Limbs or the whole body could be removed from an existing tomb.

To guard against such illegal acts, the inscriptions on the tombs contained warnings that those responsible would be punished, and that the punishment would be by fines. The fines could be paid to a deity (which means that the money would be managed by a priest of the temple) or to a Nabataean king (administered by an authority). The tombs were therefore under the protection of either the state or the temple, and collectively the fines would contribute to public services rather than returning to individual families.

Perhaps one of the priest's duties was to collect fines, like those mentioned in tomb inscriptions, where cases of violence or mismanagement of money had led to debt. One example is the inscription found at the Atargtis/ Al-Uzza Temple in Petra (Hammond *et al.* 1986 77,8). It reads as follows: "1.1 Whatever comes to him of silver, or gold, or offerings, or provisions, altogether, or of silver (coinage) or bronze (coinage). 1.2 And to the priests, the other portion [will be allotted]; on condition that a proclamation of delinquency be completed before this [time]; then shall they allot. 1.3 concerning the one who did other than all of that which is written above, then shall he repay that which was discovered (neglected/forgotten). 1.4 on the fourth day of 'Ab, the 37th year of Aretas, (A.D. 27/28), king of the Nabataeans, who loves his people. And...". The inscription shows that there was a system to deal with financial resources and the authority of the priest.

Almost 30% of the inscriptions contain information about fines. Fines are mentioned in 13 inscriptions (H 1, 5, 9, 11, 12, 16, 19, 28, 30, 31, 34, 36 and 38). All mentioned fines were to be paid in Sela's, except part of one (H16) which was in Shamads, while strangely the other part was to be paid to the exorcist-priest was in Sela's.

There is no clear explanation for Shamads. Healy believes that it is a monetary measure of some sort (Healey 1993, 160). The same problem applied to Sela's, since no Nabataean coin of this name was found. Korte (1994) argues that the word Sela's means rock in Aramaic and indicates a weight, while the word also has a general meaning of Nabataean money (Schmitt-Korte and Price 1994, 91).

Fines vary between 100 and 3000 Sela's. The most common is 1000, which is mentioned 8 times (H 1, 5, 11, 28, 30, 31, 34, 38). A fine of 2000 is mentioned once in (H9) and 3000 is also mentioned once (H 19). The smallest fine is 100, as mentioned in (H 12). Fines were mostly paid to a deity or a Nabataean king or sometimes to both. Aretas is the most frequently mentioned king that fines should be paid to. Fines to be paid to him are mentioned 9 times, while Maliku and Rabel are mentioned once each. Dushara is the most frequently mentioned deity that fines should be paid to, whether just to him or sharing with other deities such as Hubalu and Manotu. Only once was a fine due to a different deity (Tadhy, in H12).

Insisting on fines as an important method of punishment is a sign that the financial affairs had an importance among the people, and that the monetary system was stable at the time and involved most of the community members in the different parts of the kingdom. As far as the amounts of fines are concerned, it is not sure whether it was left to the owner to specify them randomly or whether there was a special value related to the cost of the tomb. Inscription (H31) indicates that the fine is double the price of the tomb. There is also a mention of how to deal with delinquency. We assume that after a violation occurred, there must have been an authority charged with repairing the violation and returning the situation to what it was. We might conclude that since fines were not returned to the inheritances of the tomb, they were used to support public services. That may lead us to think that there were fines for other violations concerning damaging public proprieties. However, further information on the financial system has not reached us, since it might have been written on papyri. It may be concluded that some Nabataeans towns might have enjoyed some political and economic independence, since a fine was once paid to the local governor of Mada'in Salih (H38).

Law

Tomb inscriptions are considered as a legal text in some way. They usually specify the owner who built the tomb (either a single owner or partners). Then the text specifies other beneficiaries who were usually family members. Children are mentioned frequently in the texts after the owner. Wives are also mentioned, followed by the brothers or sisters of the owners, then the father, aunt and nieces and nephews. This order of relations might apply to the heredity system.

Some inscriptions add more specific information to clarify the owner's special needs. H9 states clearly that "it is incumbent on Wa'ilat and her sons that if Huru, her uncle, should be in Hegra and the change of death should befall him, they should bury him in this tomb, him alone, and no-one shall remove him". H14 specifies the share of the partners in the tomb "Hagaru is allotted five cubits on the right and Mahmiyyat five cubits on the left". H24 tells us about the same case of accurate distribution. It states that "to 'Animu belongs a third of this tomb and burial-chamber and to Arsaksah two thirds of the tomb and burial chamber". It goes on further to state the exact location of each share inside the tomb. In H26, the person who changes the will has to hand over his rights to his legitimate heir. In H36, the burial right is only for the male children of the owner. Also in this inscription there is an important piece of information about a copy of the inscriptions, which was deposited in the temple of Qaysha, which means that the temple might have been a forum for legal affairs.

6. The development of Nabataean Urbanism

The aim of this chapter is to establish the broader urban context of Mada'in Salih, and to attempt to establish the genesis and decline of Nabataean urbanism. It will also try to answer why the Nabataeans transformed from a nomadic to a sedentary urban society and whether there were any outside influences. An attempt will be made to establish the character of the main Nabataean towns and their location with respect to major natural features. To look at Mada'in Salih in the broader Nabataean context will help us to understand the site and the role which it played in the Nabataean kingdom.

6.1. Genesis and decline of Nabataean urbanism

Tracing the development of Nabataean urbanism is not an easy task. The Nabataeans did not leave written materials about their history and heritage. Most of our information about them is from the classical writers and some Jewish sources. However, these sources mention them with particular regard to major historical events, political conflicts or wars, and do not provide us with information regarding daily life and communal activities. Our main source regarding this area is the evidence revealed by archaeological work, but this is still at an early stage in some major Nabataean sites and not yet established at other sites. Some parts of the Nabataean kingdom have not even received a proper archaeological survey until now.

The Nabataeans were, according to the first clear and evident descriptions of them in 312 B.C, in a nomadic state. They were described by Diodorus, at the time of the Antigonus attack, as follows: "It is their custom neither to plant grain, set out any fruit-bearing tree, use wine, nor construct any house; and if anyone is found acting contrary to this, death is his penalty" (Diodorus XIX.94). They subsequently changed slowly from this nomadic state to a more sedentary one, and by the end of their kingdom in 106 A.D., when it was annexed by the Romans, they were a really developed society. This development took place during a period of about four centuries. Scholars have set up various stages for the development of Nabataean urbanism.

Parr (1970), based on his excavation results at Petra, distinguished three main stages of architectural development of the city, which reflect the development of Nabataean urbanism. The first stage took place in the middle of the third century B.C. to the mid-first century B.C., in which there was no clear civic plan in the city of Petra and the buildings were of smaller size and showed no evidence of local pottery production. The second stage extended from the mid-first century B.C. to the mid-first century A.D. This phase is contemporary to the famous monumental buildings and to the production of fine Nabataean pottery. The last phase started at the end of the first century A.D. in which both architecture and pottery production declined, leading to total abandonment towards the fourth century A.D. (Parr 1970, 369).

Negev (1969) classified the Nabataean settlement into three periods according to his archaeological work in the Negev area. This classification was based on the study of ceramics, pottery, coins and architecture. The early Nabataean period extended from the end of the fourth or the beginning of the third century to the beginning of the first century B.C. The middle Nabataean period extended from the last quarter of the first century B.C to the middle of the first century A.D. The late Nabataean period extended from the last quarter of the first to the beginning of the second quarter of the second century A.D. (Negev 1969, 5). Then, in a later period, Negev amended the second period of development because of new archaeological evidence from the Negev area. He established an accurate date for Nabataean pottery in the region, based on his discovery of a pottery workshop. His results were confirmed by the results of archaeological excavations in Diban. The start of the second period was in 30 B.C and the end was shifted to 50/70 A.D. (Negev 1986, 23-24).

According to Negev (1977), the Nabataeans entered a first period of development for nomadic people. They became responsible for transporting Arab-Indo trading commodities in the Hellenistic era and perhaps earlier. They raised sheep and camels for food and transportation. They had developed hydraulic skills. At this stage, which lasted about 400-500 years, the Nabataeans still practised nomadic habits, since they did not build houses, nor drink wine, produce pottery or practise agriculture. In the second period of development, the Nabataeans formed an army to protect the kingdom and the trade routes. They established an economic system to support trade affairs. Stations were established along trade routes which provided water facilities. At this stage, temples were built in various parts of the kingdom as well as the

monumental tombs at Petra and Mada'in Salih. Nabataean fine pottery can be attributed to this stage. The last stage of Nabataean development took place at the time of the annexation to the Roman Empire. At this stage, trade fell into decline because of the Romans shifting trade routes from land to sea. The Nabataeans utilised their hydraulic skills and switched to agriculture. They moved to Negev and the Sinai. Their settlement in Negev is evident by the temple erected at Oboda which was built by Nabataean masons in the third century A.D. In Sinai, many Nabataean inscriptions were found from the third century A.D. At the eastern and northern sides of the former Nabataean kingdom, there were no clear Nabataean presence at this final stage of development (Negev 1977, 679-684).

Bowersock (1983) argues that not much was known about the Nabataeans in their dark age of history before 312 B.C. Then, as can be concluded from Diodorus' description, they were nomads in a dry region working in pastoral activities, providing transport for traders and exporting asphalt. Antigonus' attack is a proof of their existence in southern Trans-Jordan in the fourth century B.C. In the middle of the third century B.C., the Nabataeans were in the area of Hawran, to the north, as is evident from the papyri, and at the same time they headed west to the Negev area, where their presence is attested by an early inscription from Elusa, dated to the first half of the second century B.C. In the first half of the second century B.C., the Nabataeans had a monarchic system, the first mentioned Nabataean king being Aretas, who was mentioned in the history of the Maccabees around 168 B.C. (Bowersock 1983, 15-20).

In the middle of the first century A.D., the Nabataeans enjoyed the peak of their development. They carved the fine monumental tombs. In this period, Nabataean trade started to decline, which caused the Nabataean king Aretas IV to look for other alternatives. He launched a sedentary policy and established new centres in various places in the kingdom. Mada'in Salih was one of those centres, and may be the most important of all, as the occasion was commemorated by a special coin bearing the city's name. Other centres in the Negev area, such as Oboda, Mampsis, Nessana, Elusa and Sobata showed signs of flourishing during this period. These urban centres were supplied with water and there was large scale development of water sources and hydraulic engineering (Bowersock 1983, 60). During the reign of Rabel II (70-106 A.D.), there was expansion in developing water resources in Negev, while

the Nabataean capital was transferred from Petra to Bostra. However, Petra continued to be an important Nabataean city as well as Mada'in Salih. There is a fine tomb in Petra, which belongs to Florentinus, who depicted his name in Latin. The tomb is dated to 127 A.D. The excavation of Petra suggests that the settlement pattern continued in the city during the Roman period until the fourth century A.D. The annexation of the Nabataean kingdom was carried out by Cornelius Palma, the governor of Syria and mention is made in a short text of him “making Arabia a subject of Rome”. There was no mention in history of a big battle between the Romans and the Nabataeans, which may indicate that the transformation was done peacefully. The reason for this annexation may be attributed to Trajan’s desire to exercise complete control over the whole Mediterranean region, including Egypt, Judaea and Syria, and Nabataean land was the only missing part of the picture (Bowersock 1983, 73-84).

6.1.1. Reasons for Transition to sedentary life

The transformation from nomadic to sedentary life took place over a long period of time. Various factors played a considerable role in this transformation which can be summarised as follows:

- At the end of the second century B.C. the Seleucid Kingdom lost its grip in the region. The nations of the region competed to gain political power and land. The Jewish king Alexander Jannaeus expanded his kingdom towards the west and included the port of Gaza; such an act forced the Nabataeans to expand towards the north as far as Damascus, to gain access to the Mediterranean ports (Negev 1977, 680).
- After living as a nomadic people for such a long time, the Nabataeans grew tired of this style of living and started to settle down (Negev 1977, 681).
- In their travels for trading reasons to other countries, the Nabataeans had been influenced by other cultures. They were also influenced by the Hellenistic heritage in neighbouring countries such as Syria and Egypt.
- Trade played a considerable role in transmission. First, trade routes were established. Then, they had to be protected by an organised army. Stations were constructed along the routes to provide logistical services to the caravans. These stations were supplied with water sources which encouraged the local Bedouins to settle down nearby.

- The transformation from nomadic to full sedentary might have taken place during the end of the Hellenistic era and the beginning of the Roman period. A clue for this can be found from the military terms which were used in Nabataean military language such as *strategoi*, *hipparchoi* and *chiliarchoi* (Negev 1977, 681).
- The shift towards agricultural activities increased during the reign of Aretas IV. A sophisticated irrigation system was essential for the development of agriculture. The reason for the shift to agriculture was because trade declined when the Romans changed the trade routes and used the sea (Bowersock 1983, 64).
- It was the policy of King Aretas IV to shift the Nabataeans to full agricultural independence. In order to achieve that, he developed a network of urban centres in different parts of the kingdom (Bowersock 1983, 65).
- Nabataean sedentarisation was a response to economic factors and not as a result of military development. This transformation to urban society was as a result of two main factors working together at the same time, namely agriculture and trade. Men were most of the time on trade routes far from the settlement areas, which made it necessary to develop water sources and agriculture to a stage where they would not be affected by the men's absence (Hammond 1982, 264).
- The transformation was as a result of great demand for Nabataean trade commodities and the strong competition from sea trade. The Nabataean shifted to full time trading. This expanded the trade routes, leading to political and military control in Northern Hijaz and Sinai. The Nabataeans also created trade enclaves in the southern parts of Arabia to deal directly with incense sources. The Nabataeans at the same time started to sell their products directly to the Mediterranean markets without middlemen, which increased their wealth (Johnson 1987, 79).

6.2. Location of towns with respect to major natural features

6.2.1. Routes of communication

Trade routes played a considerable role in Nabataean life. These routes were the main source for the economic development of the kingdom as well as a career for many members of the society. Through these routes, Nabataean trade was carried to different parts of the world, as well as customs, traditions, information and other contact influences. Along these routes, stations were established to provide logistical

assistance, water and security. With time, some of these centres became large towns, with large populations, offering a variety of religious, economic, security, judicial, cultural and recreational services.

At the beginning of the first century B.C. the settlement stations along the trade route had extended to northern Hijaz (Johnson 1987, 92). Stations were selected on the route according to a special distance calculated basically on the camels' ability to travel. Camels can travel loaded for about 15 miles a day and for six days without drinking, which equals a distance of 90 miles. Most of the settlement centres on the trade route are about this range. The distance between Petra and Humayma is about 50 miles, from Humayma to Qurayyah is 90 miles, then to Rawwafah 80 miles, and from there to Mada'in Salih, 100 miles and to Tayma 75 miles (Johnson 1987, 33).

The trade routes from southern Arabia went along the east side of the Red Sea coastal mountains, through different valleys and oases, which extended from Medinah to Hisma in Jordan, with three major settlements Mada'in Salih, Rawwafah and Qurayyah. After receiving goods at the port of Luke Kome, they were transported to Mada'in Salih. From Mada'in Salih the route went north west to Petra or through the eastern branch to Tayma then to the Persian Gulf (Johnson 1987, 103-108). On the north west route there are several stations. To the north of Mada'in Salih there is the oasis of Shawaq, where there are various inscriptions, long water channels and Roman/Nabataean pottery. About 20km north-east of Shawaq, there is the town of Disa with a single tomb with a crow-step style, similar to the one which was well known at Mada'in Salih in the 1st century A.D. About 10km north of Disa is the site of Rawwafah with its temple, dated by an inscription to 165 A.D. The inscription commemorates the peace between the Romans and the federation of Thamud. The site has a water source in a nearby cave.

After leaving Rawwafah the road goes north through Wadi Shiqry to Tabuk. About 20km north of Tabuk, there is a station in Wadi Uweinid with architectural remains, Thamudic inscriptions and a well. The next major settlement was Qurayyah about 70km north of Tabuk. There is a church at the site which is dated to the first millennium B.C., as well as canals. At the site, various kilns were found as well as a large number of pottery sherds scattered on the surface and what may have been a water cistern. There are buildings bearing typical Nabataean chisel marks. Water sources are of different types, such as dams and canals, and the amount of water must

have been sufficient for both the local people and the caravans. After that, the route heads north-east towards Wadi Zaita to connect with the coast road. About 30 km north of Qurayyah is the site of Umm Awadthir, from where the road heads to Hisma in Jordan, then to Wadi Rum, Humayma and to Petra (Johnson 1987, 111-13).

The other route extends through Wadi Sirhan. Along this route, there is the station of Al-Kaf, which has Nabataean pottery dated to the first century A.D. To the south-east of this site there is another settlement which is called Athra. It has various water devices and Nabataean buildings, one of which is similar in design to the temple of Khirbat Tannur. Several inscriptions were located on the site in Kufic, Minaean and Sabean. Fine Nabataean pottery sherds were found at the site dated to the first century A.D. The other main settlement area on the route is Al-Jawf which was known as Adummatu. Nabataean presence at the site is evidenced by various inscriptions as well as building remains and pottery. One of the inscriptions is similar in style to the tomb inscriptions of Mada'in Salih. The text mentions that the tomb was built by Shulaitu for himself and his children in the 35th year of Aretas, king of the Nabataeans. Another inscription mentions that a temple was built by the leader of the camp in honour of Dusares in Dumat, in the fifth year of the reign of king Aretas (Johnson 1987, 116).

As the Nabataeans established settlement areas along the trade routes, they also established colonies in far places near import or export sources, to look after their interests. Such colonies were found in Somalia and Ethiopia. Nabataean pottery was found at different places in the Arabian peninsula such as Farsan island, Najran and Al-Faw. Nabataean inscriptions were also found in different places in Mediterranean towns such as Delos, Tenos, Cos and Puteoli. Puteoli was an Italian port receiving trade from Egypt and the East. It was also a centre for manufacturing raw materials into perfumes and unguents. A settlement in this port would have been very useful for the Nabataeans in order to have a presence near the market. The first inscription there is about offering two camels as a sacrifice to Dusares in year 20 of Aretas' reign. The second inscription is about the restoration of the temple which was carried out in the reign of Aretas and queen Huldu in the 14th year of his reign. Establishing a Nabataean temple at the site is an indication of a large Nabataean community, probably to deal with trade affairs (Johnson 1987, 118-28).

6.2.2. Water sources

In a region with a typical desert climate, with neither rivers, lakes nor even a reasonable amount of rain around the year to provide the essential requirement of water either for settlers or caravans, the need arose to find solutions to the water problem before establishing a station. A number of stations needed to be established along the trade route, spaced out at reasonable intervals. There were no convenient locations with natural water sources, which meant that the Nabataeans had to find a way to supply water, which they did by means of the following two methods. The first was to get as close as possible to existing sources, although this was rarely convenient. The second was to use hydraulic engineering to overcome the problem. Cisterns were very useful device for water storage. Water was delivered to cisterns by aqueducts or channels. Aqueducts were built of stones or cut into the rocks. They sometimes travelled for a long distance, which required special attention to be paid to the slope, to guarantee the smooth travel of water. When the aqueduct passed through different levels, a sort of bridge was constructed to carry it. Some aqueducts were covered, as protection against pollution. Water basins were found, with channels to distribute water among different beneficiaries. Of the longest known examples of aqueducts is the Humayma aqueduct, which was about 23km long. Another aqueduct was found in Petra connected to the al-Ramila cistern. Another one was found in Khirbat al-Dharih which is about 6km long.

Another source of water for the Nabataeans was well water. Wells were found in Humayma, al-Yaduda and Mada'in Salih. Another technique was to install wall barriers to slow down the run-off of rain and allow it to seep into the ground to water crops. Such a technique was found in the A-Naqab. Dams were also used by the Nabataeans. They were found in al-Humayma, Mampsis, Sabra and Petra.

Cisterns were used for storage when water was brought from far away sources such as springs and wells or when rainwater was collected in small canals and brought in. Hydraulic engineering was used to provide continuous water storage from temporary sources. Cisterns were ideal for water storage and were found in different parts of the kingdom. They were sometimes entirely dug out of natural rock or built of stone. Humayma has a large number of cisterns, some of which are large in area (30 x 14m). At Petra, both types (dug and built cisterns) were found. In some cases, a cistern was partly dug in the rock and the rest of it was built with stones. Most

cisterns had stairs which gave access for cleaning purposes or to reach the water level when it went low. At Mampsis, various cisterns were located in private houses as well as a public cistern to serve the whole town. The public cistern was of a roofed type resting on columns, with stairs for access. It also had nicely executed rounded corners, which made it easy for cleaning purposes. At Abu Khusheiba there is a cistern with a connected canal. The Rawwafah cistern was built of stones.

When Nabataean engineers discovered that open cisterns were susceptible to pollution and that animals and humans could easily fall into them, they invented arched roofing made of the available material which was stone. Negev believes that these advanced skills in cistern building were acquired by the Nabataeans in their original homeland, South Arabia (Negev 1986, 5-6).

Parr has another suggestion about the original irrigation systems. He believes that they might be attributed to the site of Qurayyah. The town is mostly famous for its distinctive decorated pottery with black, brown, red and yellow colours with geometrical, natural, floral, and bird motifs. Qurayyah is the only place in northern Arabia with this type of pottery. However, in addition to the pottery, there are examples of architectural and irrigation systems. All of these can be dated to the late second millennium B.C., the suggestion being that the water system of Qurayyah might be older than the one in south Arabia and might be the model by which the Nabataeans were influenced (Parr 1968/69, 240-241).

Regardless of the origin of the cistern building techniques, the discovery of roofed cisterns with arched transverse ceilings helped the Nabataeans to attain freedom in selecting the desired area for settlement. They were no longer tied to cisterns dug out of rocks.

6.2.3. Mountain locations

In certain parts of the kingdom, especially at Petra and Mada'in Salih, settlements were selected near mountain ranges. These mountains were of sand or limestone. It was known that these types of stones are easy to work with in terms of cutting and shaping. The magnificent tombs in these two centres were carved into the rocks. The settlement area appears to have been selected almost in function of the hills being in the centre, as in Mada'in Salih. The hills have a very attractive colour tone, ranging from light red to pinkish and red; sunrise or sunset gives them a beautiful aspect. The natural formation of the Ithlib mountain in Mada'in Salih is very beautiful,

resembling a natural curtain behind the tomb ranges of Qaser al-Bint, the largest group on the site.

6.3. Character of Nabataean towns

A main characteristic of Nabataean towns, is the ratio of public buildings to private buildings. Public buildings appear in the Nabataean towns more frequently than private buildings. There are not too many examples of private Nabataean buildings across the territory. The best examples are in Mampsis.

At Petra, small houses were found with cooking facilities as well as at Khirbat adh-Dharih and Mada'in Salih. As regards the size of Nabataean houses, they are relatively large. This fact was noted by Negev, who considers that the large size of Nabataean houses accorded with the desire to live in an environment similar to that experienced in large tents (Negev 1986, 49).

The known private houses in Petra and other Nabataean sites are limited in number, which gave Negev to wonder where the population of Petra lived. He believes that Petra was not a residential city, but a religious centre with many public buildings, such as theatres, baths and tombs. He believes that most of the people lived in tents, because living in the city was not very pleasant, with a lack of freedom, narrow streets and a bad sanitary system. Living in tents was much more comfortable, with the camels and sheep in sight. The tents could be easily shifted in summer and winter according to the direction from which the wind was blowing (Negev 1986, 36; 40; 46-48). It may also be observed that private houses were not of the same high architectural standards as the tombs or public buildings.

At the top of the public building list is temple architecture. Temples were found in different parts of the kingdom. They were built in two main shapes, square and rectangular. Among the square temples are the temple of Qaser el Bint and the temple of the Winged Lions in Petra. The Khirbat adh-Dharih, Rawwafah, Wadi Ramm, Qasr Rabbah and Oboda temples were of rectangular shape. Most of the temples were orientated North-South while some were East-West, such as the temple of Qasr Rabbah. The main parts of the Nabataean temple usually consisted of the Adyton, Cella and the Altar. Other religious structures represented in Nabataean towns include high places, altars and triclinia for religious meals.

Other public buildings were known in Nabataean towns. Hydraulic facilities were found in different Nabataean towns, especially aqueducts and cisterns. Defence architecture was represented mainly by city walls in large towns such as Mada'in Salih and Petra; towers were used in some other towns. Cultural and social buildings such as theatres and baths were known to the Nabataeans and are represented at the capital Petra.

6.4. Range of Nabataean building types

In the previous pages, general ideas were represented regarding the genesis and decline of Nabataean urbanism, the location of towns with respect to major natural features and some characteristics of Nabataean towns. A balance of private and public building was discussed in general. The precise architecture is now described in more detail, beginning with hydraulic systems, then various types of public building such as temples, high places, towers, city walls and theatres. After that, various examples of different private houses will be discussed. As part of the development of Nabataean urbanism, technology, especially in architecture, will be looked at and some examples of this technology will be represented.

6.4.1. Hydraulic Systems

The desert environment in which the Nabataeans lived is characterised by limited rainfall time in the year, making it difficult for agriculture and crops to prosper. The Nabataeans had to find other sources of livelihood such as raising herds and trading. As regards water resources each rain drop caught was transferred through a canal to a cistern for use. Spring water was carried for long distances until it reached the towns, as referred to by Strabo when discussing Petra: "The inside parts have springs in abundance, both for domestic purposes and for watering gardens" (*Geography* 16.4.21). Nabataean knowledge about water resources, and how to conceal them from other people was mentioned by Diodorus: "The eastern parts are inhabited by Arabs, who bear the name of Nabataeans and range over a country which is partly desert and partly waterless... they have dug wells at convenient intervals and have kept the knowledge of them hidden from the peoples of other nations" (Diodorus II.48). The hydraulic system which they established contained various different elements which will be discussed as follows:

6.4.1.1.Cisterns

Cisterns were found in different parts of the Nabataean kingdom. Al-Humayma is a Nabataean site located in an area of catchment where it receives annual rain. It is about 1 km from a local spring and it is a station on the so-called Via Nova Traiana, the road which linked Bostra and the gulf of Aqaba. The site is near the Shera mountain slope which receives a good amount of rain and has many springs. Many Nabataean pottery sherds are scattered around the town which spreads over 1 km². There are about 20 cisterns in the town, some of which have been restored and reused by local inhabitants. Usually the location of a cistern is selected carefully in a water catchment area which could be a concave area in a valley. Of two cisterns on a slope at the edge of the city, the largest is about 6 x 10m, dug into the rock with a stairway at its corner which is also cut into the rock. It is covered with slabs of stones resting on arches.

In Al-Humayma there is another cistern built of stones with stucco on the inside. Diodorus described the Nabataean reservoir as having stucco: "Since they have prepared subterranean reservoirs lined with stucco" (XIX.94 6-9). This type is not dug into the rock but is built in such a way as to give the advantage of free choice of location, shape and size. The size is larger than the first cistern (30m x 14m) and is built of sandstone in the form of courses with specially cut stones at right angles placed at the corners. The stucco from the inside, which works as a waterproofing agent, is about 0.02m thick. Cistern 2 is about 27.6m x 17m and is built of seven courses of red sand stone blocks. Traces of steps could be noted at the southwest corner of this cistern. It is fed with water by an aqueduct in its northern wall (Eadie *et al.* 1985, 57-58)

Cisterns were also located at Petra in the Al-Ramila area. There is one known locally as Al-Birka and is of a mixed building technique of sandstone courses and parts of natural rock. This cistern is connected to an aqueduct and might supply the city with its need for water. Another cistern from Petra is located in Baidha on the cliffs near some chambers and traces of high places of worship. It is large in size (12.9 m long from north to south and 9.14m wide and 12.9 m deep). It contains about 1520 cubic metres. The base of the cistern is on the cliff and is reached by a flight of steps at the southern part of the cistern. The cistern on the inside has two walls as dividers and is

supplied by an aqueduct which comes from the mountains above (Kennedy 1925, 14-18).

Cisterns were also found in private houses to serve domestic needs such as in building II in Mampis. The cistern is dug in the rock under the inner court, whose floor was used as a roof for the cistern. It was supplied with water by a channel carved underground and reaching the outside of the house, so that the cistern could be filled with water from the outside. In another building (I) there were two cisterns at the front of the house, one of which was excavated and had a capacity of 200 cubic metres. Building XII in Mampis has a cistern under the floor of one of the rooms, with a depth of 6m. and a capacity of 300 cubic metres. It is supplied with water from two sources, the first one being rain water collected from the roof, then filtered in a small pool. After that, the water reaches the cistern through a channel underground. The second way of supplying the cistern with water is through an opening in the north side of the room to the cistern. The public cistern of Mampis building VII is about 10m long, 8m wide and 3m deep. In its eastern part, there is a pool for filtering the water. The western wall is built of large dressed stones. The cistern was covered by a ceiling resting on arches. There is a flight of stairs in its western part. After the city wall was built, in a period later than the cistern, an opening was made in the wall to allow a channel to carry the water through. This cistern also provides water to the public bath. The cistern represents a good example of Nabataean engineering because its corners were cut to a round shape for the purpose of easy cleaning; and it was well plastered with grey plaster for water proofing. The place where the water falls into the cistern was protected by harder stones (Negev 1986, 53-66).

Open cisterns were not ideal for water storage, as stones and other materials can easily fall into them. They are also not safe for people or animals who can easily fall into them. When the water is not running it can easily become stagnant and will not be ideal for drinking. Evaporation is another difficult issue, especially in hot climates such as the Nabataean land. Roofing was a problem for Nabataean engineers. There was a shortage of suitable timber in the land. The ideal solution was to use stone in the shape of arched roofs then covered with thin slight stone slabs (fig. 6.1). The engineers discovered that they were restricted to a certain limit of width and depth. Six or seven metres was the maximum span that could be achieved and the arches

carrying the stone slabs could not go down to a depth of more than 5-6 metres. When large cisterns were required, the solution was to extend the length (fig. 6.2), which was almost limitless (Oleson 1995, 716-17). The chronology of cisterns is difficult to establish, since excavations in this field are only beginning.

Negev (1986) believes that the high skills which appeared in executing the Nabataean cisterns with their perfect cubic shape, sharp corners and the technique in roofing via supporting columns in measured size is an advanced skill of engineering. It must have been developed over a long period, more than one hundred years. In other words those cisterns were executed in the non-settlement period when the Nabataeans were nomadic. Their skills must have been brought from their place of origin which might have been South Arabia.

Negev suggests that some of Strabo's testimony on how the Nabataeans used water for domestic purposes and watering gardens, might reflect the situation in Petra in the middle Nabataean period, where the domestic purpose could be the supply to temples, theatres and baths and the gardens might refer to the one mentioned on the inscription of the Qaser el-Turkman tomb (Negev 1986, 5-6; 45).

At Abu Khusheiba, a site 7.5km south-west of Petra, a vaulted cistern was located. It is about 7 x 7m. There is a channel connected to it which brought water from the valley (Lindner 1992, 264).

At Rawwafah, which is located about 75km south-west of Tabuk, there was a cistern north of the temple. It is rectangular in shape (5.25 x 3.81m). It was built of stones which have survived badly and are almost completely covered with debris, which makes it difficult to give a further description (Parr *et al.* 1968/69, 218).

It is clear that great efforts were made to bring water from far away cisterns to the city. This might give an indication that this water was only used for drinking purposes. There were other sources to provide water, for purposes such as watering animals and cleaning for example house roofs or street gutters (Eadie and Oleson 1985, 71). How the water was delivered from the cistern to the private or public buildings we do not know for sure. It might have been delivered by a network of canals or by human effort. We know from the inscription that there was a job called a water carrier (Negev 1986, 10). This water carrier might have been responsible for

carrying the water from public cisterns using animals such as donkeys or mules and delivering to certain places for money.

6.4.1.2.Aqueducts

The aqueduct of Al-Humayma, as archaeological work shows, is connected to cistern 2 (fig. 6.3). The part nearer to the city is of white sandstone, while it is a yellow colour at the other end. In the centre of the aqueduct there is a channel for carrying water which was cut in the stone, the last part plastered from the inside with stucco. The covered part of the channel towards its connection with the cistern suggests that it might have been covered over all its distance. To travel all this long way the canal needed special attention to be paid to the slope and great engineering skill must have been used. In some parts between two different level areas a sort of bridge was laid, as near cistern 2 (fig. 6.4). It was about 1.5 m high. In some unstable areas, the aqueduct rests on the structure of a 4-course wall or on a bridge. One of the bridges which carried the aqueduct had a span of 1.5m. Another feature of this system is a water basin with one main line which continues to the main cistern. This basin might have served the purpose of distributing the water between different beneficiaries, either public buildings or private houses. In some parts, the channel was made of roof tiles of red bricks fitted into each other with an overlap between them of 0.05m, each piece being about 0.015m thick and 0.41m long.

The soundings which were conducted by Eadie and Oleson did not provide any archaeological evidence for the chronology. However, parallel examples in other Nabataean sites such as the Wadi Ram aqueduct with its inscription attributed to Rabel II (70-106 A.D.) is a clue for dating. The total length of the canals at Al-Humayma is about 23 km, the longest known Nabataean canal system (Eadie and Oleson 1985, 61-70). A similar style was found in Petra connected with the al-Ramila cistern, where the channel is cut in the rock, and in some low places it was carried over arches (Kennedy 1925, 14).

At Khirbat al-Dharih, a site which is 85 km south of Khirbat et-Tanur, many springs are located. One of these springs was mentioned in an inscription from Khirber et-Tannur which tells us about the person who was responsible for controlling water distribution. The site might have been a settlement area for the people who were in charge of the temple in Khirbet-et-Tanur. The site contains many water canals which

were carved in stone. One of the canals is about 6km long and carried the water from the Shydhm area. The canal was supported by walls in some areas for levelling and protecting the soil underneath (Al-Muheisen and Villeneuve 1990, 7-10).

6.4.1.3.Wells, valley barriers and other elements:

Wells

In Humayma, one ancient well is located 2km north of the city. It has a circular shape 2.5m in diameter. The top stones which appear at the surface are of undressed limestone. It is a method of benefiting from the water beneath the surface, especially that which is stored after rainy seasons.

The wells of Mada'in Salih, as revealed by the survey, were 27 in number, scattered all around the site. Some of them are built with dressed white sandstone and are of circular shape.

In a site called al-Yaduda in Jordan there is a well which is known as Bi'r al-Baydar. The well is cut into the rock. It has a narrow mouth and widening towards the bottom. At the mouth opening there is a large stone which is composed of four pieces of white sandstone with a hole in the centre. This hole is about 0.7m in diameter and allows a bucket to be used. The well is about 7.5m deep (Abujaber 1995,742). Although the date of the well is not certain, it fits with Diodur's description of Nabataean narrow-mouthed, hidden wells.

Wall barriers

Another technique for benefiting from water is by establishing wall barriers which allow the rain to seep into the ground, and allow some crops to grow. None is found at Humayma.

For the benefit of water for agricultural purposes, terraces of sandstone were built on mountains. These walls decrease the flow of the water and catch the fertile soil carried by water. In the an-Naqab area, stones were collected and put together in the form of lines or heaps. The removal of stones allowed the soil to break easily during rainfall and helped the moving of fertile soil to the required places. This technique might have occurred in the first century B.C. (Oleson 1995, 713). In the Wadi Raliya area, wall barriers were found. They were built of undressed stones of square shape. The wall heights were about 1.6-1.8m (Negev 1988, 17).

Dams

Another source of Nabataean water was the dams. In the al-Humayma area, a dam was located to the south west of the city. It is called the Kalkha dam. It was built of large sandstone which was well dressed. The courses were large and the spaces between the stones were filled with smaller stones and mortar. There is a flight of seven steps leading to the upper part of the dam. Thamudic and Nabataean inscriptions were located at the site. The total length of the wall is 9.4m, the width 4.36m and the height 3.65m. In front of the dam, there is a small basin about 2m long, 1-2m wide and 0.5m deep used for watering the animals (Al-Farjat 1991, 22). Near the stairs at a rock face there is a large carving of Dushara and Nabataean inscriptions which suggest a Nabataean period dating to the structure (Oleson 1992, 270).

Large dams were located at Mampsis, three of which provide about 10,000 cubic metres of water. In the plain of Mampsis rain runs rapidly down the rocks. This fast and strong movement of water, if left unchecked can damage the soil of the valley which is ideal for agriculture. Thus for controlling the water, dams were erected at a distance of about 100 metres. The first two dams were mainly to hold the silt, and then followed the large dam. This dam is 24m long, 11m. high and 7.8 wide. It is built of fine ashlar stones in lime mortar. The dam was well supported and buttressed. Of the other two dams, one is about 20m long, built in a similar style as the large dam, and the other is 53m long and 3.4m wide. In the eastern valley, there is a fourth dam about 20m long and 3m high. It is built with stones and mortar and is not as strong as the previous dams. The reason for this is that the run of the water in this area is not as strong as in the big valley. As far as the date is concerned, there is no certain date for the structure due to lack of excavation. However, it might be attributed to the late Nabataean period in which the same method of building, using mortar, was applied (Negev 1988, 6;17-18).

At Sabra, a Nabataean site located south-west of Petra, a dam was located near the theatre mount, about 100m above the theatre. The dam was built of fine ashlar stones. The stones were laid in mortar in a header-stretcher technique. The water outlet is at the lower course. The dam is about 14m long, 1.8m high and 2.1m wide. Its capacity is about $370m^3$ of water. A group of channels are connected to the dam which provide water to the town (Linder 1982, 237).

A dam was constructed near the city entrance at Petra in the area which is known locally as the Siq. It was built during the Nabataean period to protect the narrow cliff entrance from flood water. There is a water outlet ten square feet by a quarter of a mile long leading from the dam and carrying overflow water to Wadi Musa (Hammond 1967, 42)

Water controlling devices

Runoff water can damage properties and public buildings. For this reason, protective devices were established. At Petra theatre, the excavation revealed a hydraulic system which was applied to protect the theatre against water. The theatre itself was constructed beside the slope of a mountain and the rainstorms which occur in the area made such a system necessary. A channel was chiselled in the upper gallery in order to prevent the water from falling down to the *summa cavea*. About 60m of the canal is still preserved. In other parts of the theatre runnels were located, one of which is rectangular in shape (16 x 24 cm). In trench I.22B three superimposed drains were located. The upper one which is known as drain A is built of undressed stones. The stones were smoothened on two sides. The canal rests on rubble fill and its pieces are connected with mortar and plastered. Canal B is located underneath canal A. The canal is made of tiles in the form of a circle. Many parts of the canal were destroyed when canal A was constructed. One of the pipes is 37cm long 22cm in diameter and 1cm thick. The ends are thicker than the other parts. The tiles are of reddish ware with white grits and a black core. The tiles were connected by mortar between the overlapping. Canal C is the lowest, and in good shape. It was laid in cut red bedrock. Contemporary with this canal is a retainer wall built in the shape of stairs. It served two purposes, the first to prevent water from going inside and the second to serve as stairs to the exit. The tiles of the drain are about 44cm long, 18.5cm in diameter and 0.75m thick. It was made of reddish ware with white grits and there is a black core. The parts of the canal were held intact by black mortar which contained charcoal, the same as the mortar which was used in the earlier phase of the theatre (Hayes 1965, 52-54).

At the southern temple of Petra, a water management system was discovered in the area of the temple forecourt. It consists of various channels which are labelled A-G. The main channel runs north-south and is called channel A. it was covered by top

soil followed by a hexagonal pavement. The main and original phase of the structure was followed by a second phase in which more courses were added at the top of the wall for containing a greater amount of water. The walls consist of 5-7 courses, which are built without mortar, of dressed sandstone 60-70cm long and 30-40cm wide. The walls of the second phase were not as good as the older ones as regards the shape of stones and courses. The tunnel parts were covered by slabs of limestone 0.75m long, 0.57m wide and 0.18m thick, which were in turn covered with sand and then top soil.

Channel A carries the water from inside the temple area underground down the slope until it probably reached a cistern. However this is not certain because the excavation did not reach this area. The last part of the channel continued to the colonnaded street, then discharged to Wadi Musa. The Channel is about 0.6-0.7m wide and 1.7-1.9m deep with a mortared floor. Inside the channel, pieces of pottery were found of the Roman and Nabataean periods as well as a lamp which is dated to the first century A.D.

Channels B and C are connected to the main channel A on its two different sides to the east and west with a space of 0.75m between them. They are narrower than the main one (about 0.5m wide) and their level is 0.3m higher than channel A's floor. Strangely, the slope of these two channels is contrary to the slope of the main one which could be explained by the fact that they served as alternatives in case the main one had overflowed.

The way in which the system is executed regarding the connections of the branches suggested that the whole system was constructed at the same period. The channel walls were supported from behind by a filling of rubble and stones. The water which ran inside the channels was of a high percentage of calcium as is clear from the lime deposits on the inside walls. The purpose of the tunnel system is to drive the water from inside the temple area and protect the area from flooding (Joukowsky 1997, 303-11).

At tomb 825 in Petra there was a ceramic pipe installed in the tomb façade. An opening of a size larger than the pipe was made; then the pipe was inserted. The space was filled with smaller stones and mortar. The pipe continued before and after the tomb and was supported by a stone structure (Shaer and Aslan 1997, 223-224).

6.4.2. Architecture

6.4.2.1. Public buildings

6.4.2.1.1. Temples

Qaser el Bint

The temple of Qaser el Bint in Petra (fig. 6.5) is square in shape (32 x 32m). It is built of fine pink stones. The courses are about 40-60cm high. Between the ashlar faces there is a rubble filling with mortar. The building technique of the temple is similar to the one used in the Temenos Gate. Timber was used within the stone courses for tensile reinforcement. The main architectural elements of the temple are the vestibule, cella and tripartite adyton. There are steps leading to the temple, at the bottom of which is a drain. The adyton is separated into three sections and its floor is about 1.4m high. It is reached by seven steps of marble-finish stones. The cella is roofed. Stucco with a decorative design was found in the anta area (McKenzie 1990, 136-38).

Some of the wall stands at a height to 23m. There is a colonnaded portico along one side of the temple and probably on the other two sides as well. This portico is roofed to half the height of the building. This style of temple plan was found in such far places as the temple of Jeha in Ethiopia. The Rawwafah temple to the south of Petra is also of the same plan (Wright 1961a, 8, 30).

The excavation conducted by Parr in the area of the temple revealed that the masonry under the temple was of large stones. Some of the stones were about two metres long. The outer wall was veneered with marble. The excavation also proves that the temple had been restored (Parr 1960, 133)

The date of the temple was assured by an inscription dedicated to Aretas IV (9B.C-40A.D.). Hand-made pottery sherds were found at the excavation in the temple area as well as a piece of marble statue. The excavations of the temple revealed some finds of a period later than the Nabataean, such as pieces of Ayyubid Pottery (Zayadine 1982, 374-76).

The Temple of the Winged Lions

The Temple of the Winged Lions in Petra (fig. 6.6) is square in shape (17.42 x 17.42m). Its entrance is about 4.36m wide. The orientation of the temple is north-

south. The outside walls are built of ashlar stones in the header-stretcher method. The inner walls are of undressed stones. The area of the cella has tiles and columns. Deep niches were used as decoration for the cella walls. The columns are about 3.62m high with decorated capitals. The temple altar is about 1.31m higher than the cella and has marble tiles of black and white colour (Hammond 1982, 233). The capitals depicting winged lions gave the temple its name (Hammond 1977, 47).

The date of the temple is evident from an inscription discovered by Hammond at his excavation of the temple in 1981. The inscription was found in the marble workshop at the temple. The recovered piece is of white marble and only four lines remain. It focuses on the distribution of offerings coming into the temple. The fourth line is of special importance and reads as follows:

“On the fourth day of Ab, the 3rd year of Aretas (A.D. 27/28), king of Nabataeans, who loves his people. And...”(Hammond *et al.* 1986, 77-8)

Khirbat adh-Dharih Temple

Khirbat adh-Dharih is an archaeological site located in Jordan about 8km south of Khirbat at-Tannur. The site has a temple which is located on the north side of the town. It was excavated by Al-Muheisen and Villeneuve (Al-Muheisen and Villeneuve 1990). The temple (fig. 6.7) is rectangular in shape (16.8 x 22.8m). It has a main elevation decorated with floral, geometrical motifs and human figures similar in shape to those on the Petra tomb façade.

The temple’s cella is square in shape and surrounded by columns. It is reached by two flights of stairs which are located on both sides of the paved cella (Peterman 1994, 541). Beneath the cella there are two small rooms. There is an aisle around the cella about 0.75m wide decorated with floral and geometrical motifs similar to those of Khirbat at-Tannur. Column capitals which were recovered from the temple debris are similar in shape to the Temple of Winged Lions at Petra (Al-Muheisen and Villeneuve 1990, 10-11)

Rawwafah

Rawwafah is located about 210km north west of Mada'in Salih. The temple of Rawwafah (fig. 6.8) is rectangular in shape (11.20 x 13.20m). Its entrance is about 1.55m wide and is on the eastern wall. After passing the entrance there is an open courtyard which is rectangular in shape 7.50 x 9.60m. After passing the courtyard on

the far west side of the building there are three rooms in a row. The middle room is the temple adyton which is about 4m deep and 2m wide. Two square rooms (3 x 3m) flank the adyton on the north and south sides. Judging from the wall building technique (bonding the inner walls with the outside ones) it looks obvious that all the temple walls are of the same period. The height of the temple might have been 4.6m, to judge by the height of some still preserved walls.

The outside walls are about 0.8-0.9m wide and thicker than the interior walls. They are built of ashlar white sandstone blocks with a core in the middle of small stones and mortar, while the inner face of the wall is of smaller stones. The inner stone courses are not in finished straight lines. The stones of the western outside wall are dressed in combing style with smooth narrow margins. Some of the temple stones are large in size, up to about 1m long. The height of the courses varies from 0.19- 0.39m. It seems that the temple was not plastered from the outside as there were no traces of plastering material. However, the interior walls are so rough as to make it difficult to believe they were left without plaster. The temple is accurately dated to the period 166-169 A.D. by a Greco-Nabataean bilingual dedicative inscription from the Thamudean Federation of people. The Nabataeans are considered the civilised branch of the nomadic Thamudean tribes. The temple is attributable to the Nabataean period according to the plan and the diagonal marks on the stones.

There was a cistern north of the temple. It is rectangular in shape (5.25 x 3.81m). It was built of stones which have survived badly and are almost completely covered in debris, making it difficult to give a further description (Parr *et al.* 1968/69, 215-18).

Wadi Ramm

Wadi Ramm is an archaeological area situated in the southern part of Jordan. There is a Nabataean temple at the site. It is rectangular in shape (11 x 13m). The temple has a cella which has a room on its eastern side. The cella has walls with columns. The walls of the cella have wooden beams in between the stone courses, which provide protection against earthquakes. There are traces of stucco on the columns as well as yellow and red colour. Some columns bear signs which refer to the mason's identity. In the temple, various artefacts were found mostly thinly painted Nabataean pottery, a piece of sandstone goddess, as well as metal objects, one of which is a part of a dolphin similar to those found in the temple of Khirbat et-Tannur. An altar base

was also located in the temple. The structure was dated to the first century B.C. (Hammond 1973, 63)

Qasr Rabbah Temple

The temple of Qasr Rabbah is located in the plain between Kerak and Wadi el-Mojib, about 100km north of Petra. It is rectangular in shape (26.90 x 31.60m) and is oriented east-west. It is built of fine, large, well-cut limestone. The west and the north walls of the temple are well-preserved to a height of 7-8 courses. The main entrance to the temple is on the east wall, with another smaller one to its right. The same style was found at the temple of Khirbat et-Tannur. On the eastern wall there are two corner towers. Column bases were located at the temple as well as Corinthian capitals on the eastern side of the vestibule. The column diameter is about 1.3m. Most of the decorated stones were taken by the local inhabitants and re-used in modern houses. A lion spout was found. Gazelle and panther reliefs, which must have been taken from the temple, were located in some modern houses of the village. The temple has many elements such as vine motifs and sculpture. The plan is in parallel with Phase III of the Khirbat et-Tanur temple. This phase was dated to the first quarter of the first century A.D. (Glueck 1939, 381-87).

The Temple of Obodas:

The temple of Obodas was excavated by Negev in 1989 (Negev 1991). It is part of a large religious complex (fig. 6.9) with a portico. At a later period, a church was erected over the temple which resulted in the loss of many of its features. The remaining part of the temple is small in size (fig. 6.10), rectangular in shape (8.75m x 13m.) and built of limestone blocks. The outer walls are thicker than the inner ones and are about 1.17- 1.15m. thick, while the inner walls vary between 0.60-0.75m. The temple is reached through a porch (room 1), of which only the foundation is left. It is made of large stones which are hammer dressed. At the southern wall there is a drainage channel.

The temple adyton consists of two rooms (3&4) in which pottery sherds from the middle Nabataean period were located. The rooms are small in size (4.35 x 5.25m and 4.35 x 2.70m). The entrance to the adyton is through the large room, where the opening is about 1.26m wide. The adyton area has niches on the interior walls. The

height of the building could have reached 5-6m according to the diameter of the columns.

The division of the adyton into two rooms of different areas is unusual in Nabataean temples. Most of the mouldings in the temple were of floral or architectural motifs. Human figures were extremely rare. As far as the dating is concerned, the temple might have been founded in 20 B.C (Negev 1991, 62-80).

Khirbat Tannur

The temple of Khirbat Tannur is located on a high summit about 70km north of Petra. It was excavated by Glueck in 1937 (Glueck 1937). The size of the temple and its fine sculpture made it one of the most important known Nabataean temples. The temple consists of an outer court and an inner one (fig. 6.11). The outer court has a triclinia attached to it and the inner court has an altar-pedestal. The altar construction was laid in three different phases. Each phase is surrounded by a later one (McKenzie 1988, 81).

The chronology of the temple architecture is of three phases. The oldest is the phase of the original plan, which started around the end of the second century B.C. In the second phase, there were some changes in the plan, and new decorative elements were added. It dates back to the year 7-8 B.C on the basis of an inscription. This inscription was left by the master of the La'aban spring. It says: [...] which was built [by] Netir'el son of Zayd'el, Master of the spring of La'ban, for the life of Haretat, king of the Nabataeans, who loves his people, and for the life of Haldu, his wife in the year 2 (McKenzie 1988, 82). The last phase, which has complicated architectural elements, started around the first quarter of the second century A.D. The temple was dedicated to the goddess Atargatis (Hammond 1973, 60).

The High Place

The high place is a religious structure located in the area of Zibb Attuf in Petra (fig. 6.12). It is dated to the first century A.D. Its orientation is north-south. It is cut into the rock to a depth of about 0.40m. The area of the High Place is about 14.41 x 6.5m. A main feature of the place is an altar (2.72 x 1.85 x high 0.9m.) which has four steps. There is a basin, circular in shape and 0.68m in diameter, beside the altar. The High Place has a square cistern. The entrance to the structure is at the southern side

of the mountain. There are two obelisks at the same mountain summit, made with great effort by cutting the rocks of the surrounding area (McKenzie 1990, 172).

6.4.2.1.2 Towers:

In Mampsis there is a tower of a late Nabataean period (Building II). The building consists of three storeys and is about 12m high with a stair-case tower. There are three rooms south of the court. A kitchen is located to the north of the court. It has a stone stove oven and a stone table. A small platform was located at the kitchen area with a few steps. It might have been used for unloading purposes. The tower has a cistern under the court, and the tiled roof of the cistern served as a floor to the court. A large tower was also located in Oboda and is dated by an inscription to the year 293/94A.D. (Negev 1986, 52-53).

At Abu Khusheiba, a site located 7.5km south-west of Petra, a tower was located which is called building 1. It is square in shape (6 x 6m). The walls have stucco on the inside. It is located on top of a hill and overlooks the valley (Lindner 1992, 263-4).

6.4.2.1.3 City Walls

The excavation by Parr in Petra revealed that there was a wall around the city which was for defence purposes. It is about 2m wide built directly on the bed rock which was cut and levelled. The masonry of the wall was poor in general. There were some traces of plaster on the walls on the outside. The excavation could not provide a date for the structure (Parr 1960, 133).

Mada'in Salih was a walled city. The wall description and stratigraphy was described in section 2.2.5. The southern part of the wall was built directly on sand and was of mud bricks. It is about 2.35m wide. The wall at the eastern part was of stone at the lower part and the upper part of the wall was of mud.

6.4.2.1.4 Colonnaded Street

The Colonnaded Street at Petra is about 6m wide and is paved with stone slabs (0.25 x 3m on average). The street has pavements on its northern and southern sides, which are reached by two steps. There were columns on the pavements, the bases of twenty-six of which can be seen. The pavement is about 232.5m long. Some of the columns have been restored. The average diameter of the columns is about 0.5m. The

tiles which were used in the street are similar to those of the theatre and the al-Siq. The Colonnaded Street is dated to the period 9B.C.-76A.D. (McKenzie 1990, 132).

6.4.2.1.5 The Monumental Gate

The Monumental Gate (fig. 6.13) was built of ashlar stones of pinkish colour. Its stone courses vary in size between 40-60cm high. The space between the ashlar was filled with rubble and mortar. The gate has a central main opening in the middle and two smaller ones on the sides. The columns have Nabataean capitals (Wright 1961b, 126).

Some decorated elements were recovered around the gate, among which are a frieze with a floral design and a Doric frieze. Moreover, sculpture items were also collected from the gate area, such as the bust of a god, a winged head, a relief bust of Hermes and a winged Tyche holding a palm branch (McKenzie 1990, 133-34).

The excavation in this area by Parr clarified the relation between the gate and the paved street. The gate was of a later date than the street. Stone slabs were removed to install the foundation for the gate, then were restored using smaller stones. It is unsure whether this gate was a triumphal one or a normal one. The kerb behind it and the door sockets suggest that it was a real gate. One of the fillings for the gate foundation was a broken pilaster decorated with stucco which must have been brought from another building (Parr 1960, 132).

6.4.2.1.6 Baths

At Petra, south of the Temenos Gate, the bath is located. It is dated to the first century B.C. The bath consists of a circular room about 5.12m in diameter adjoining another square one. The structure is at underground level. The circular room has eight half columns with an Attic base. The roof is of a dome shape and was built of stone slabs with a circular window at the top. Remains of red stucco and coloured marble were found in the rubble. Connected to the wall of the circular room is a large staircase with stucco of red and yellow paint (McKenzie 1990, 138).

6.4.2.1.7 Market

The covered market of Mampsis is near to the public cistern and the bath. It consists of rows of shops, separated by two lanes. The shops are in three rows on each side of the two lanes. The market building has a door to the west by which the market can be closed (Negev 1986, 65).

6.4.2.1.8 Theatres

The Main Theatre

The main theatre is located in Petra (fig. 6.14) to the east of the Zibb Attuf ridge. It is dated to the first century A.D. and was excavated by Hammond (Hammond, 1965).

The theatre had 55 rows of seats with a capacity of about 7,000-10,000 spectators.

The cavea is of a semi-circular shape with a diameter of about 95m and is about 23.3m high at the level of the top seats. It is divided by horizontal rows into three sections. The lowest part has 11 rows, the middle one has 34 rows and the upper one has 10 rows of seats. Most parts of the cavea were cut in natural rock while some parts were built of stone bricks. There are vertical stairs between the rows which divide the cavea into six parts. However, these steps do not extend to the upper rows of seats.

The theatre orchestra is cut into the rock and has some plaster traces. It has two entrances which were cut into the rock with a vaulted roof of stones and mortar. The theatre has a free-standing stage and scene fronts (McKenzie 1990, 144).

Sabra Theatre

A theatre is located at Sabra, about 7km south of Petra. It is cut out of rock. The theatre has ten rows and 150 remaining stone seats. Its orchestra is almost semi-circular and has a wall 2.2-2.65m high. The theatre has a stage. The seats on the right side of the auditorium are still in good condition and are about 0.56x 0.6x 0.42m in size. The upper row has seats with slightly rounded back edges which make them more comfortable. The theatre capacity is about 500-800 people (Linder 1982, 233-36)

6.4.2.2. Private buildings

Mampsis

At Mampsis (fig. 6.15) there is a large building (building I) with only one entrance to the south. It was called the palace (fig. 6.16; 6.17). Near the entrance there is a guardroom. The entrance leads to a tiled court with many rooms opening onto it. These rooms were identified as a reception, library and storeroom. The hall was partly roofed and had a wooden floor. Its walls are plastered and painted white. On the wall there is a niche to place a lamp. The library room is reached by several steps and has cupboards built into the wall with stone shelves, which suggested the

function of the room. . Since the town was known as a centre for horse breeding, the library may have been an archive for horse records. The servant's room was identified as such due to lack of floor tiles.

There are two rooms in the eastern part of the building. Each room has a roof which rests on a single arch and has a high entrance requiring the use of a ladder. The lowest parts of the walls of these two rooms are cut into natural rock. The rooms were thought to function as food storage places.

The northern part of the building has a roof. The roof is supported by four columns. This part of the building is built of ashlar masonry and the stone pieces are well dressed. It is entered through a plastered vestibulum. To the east of the vestibulum is a small room with a channel leading outside the building to the street through an opening in the wall. This room might have been used as a wash room. The northern part of the building contains three other rooms. One of the rooms might have served as a bedroom, as suggested by the location of a built-in cupboard ornamented by a line of ashlar stones and Nabataean capitals. The walls of the room are plastered and painted white. There is a staircase to the south west of the court. The building has two cisterns at the front side (Negev 1986, 59).

Building XI (fig. 6.18) is located to the southern side of the town of Mampsis. It is about 700m². The western part of the building was damaged by the building of a church. The main entrance is at the north-east of the building. There are four rooms on the ground floor as well as a cistern. The first floor is reached by a staircase of dressed stones consisting of nine steps followed by two short steps.

The entrance to the southern part of the court leads from a stable which was identified by its structure and by comparing it with known examples at other Nabataean sites. It is built of fine ashlar. The stable has a hall with four arches and two aisles. The horses would stand in the aisles. There were troughs for animal feed. To the west of the court there is a small room without a ceiling. It might have served a religious purpose for worshipping (Negev 1986, 59-61).

Building XII (fig. 6.19) is a large building of about 2,000 m² to the east side of the town. The entrance to the building is at the north side through a large vestibulum. Near the entrance, there are two rooms which might have been used for guards. After passing through the entrance, a large court is reached which leads to the residential

part of the building. There is a small unit separated from the building consisting of a court and a large room. This unit might have been used by guests. An inner court is then reached by a small decorated vesibulum. The decoration consists of Nabataean capitals, a human face, a bull's head and an amphora. The residential unit consists of three rooms only one room, which might have been used as a servant's room was not tiled. One of the rooms has a cistern cut in the rock underneath (Negev 1986, 61-62).

Of the various elements on the ground floor, a court is of a special interest. It is plastered, painted and decorated. The decoration consists of geometrical drawings, human figures as well as the remains of a small panel with Greek inscriptions. Parts of arches found in the debris had drawings of nude men and clothed women. One of the artists was Greek according to the signature, Smuel.

A unique room was found on the upper floor. It has a mosaic flooring, which is not common in Nabataean architecture. There are two different staircase towers leading to the first floor. To the east side of the house is a large stable which can accommodate 24 horses. Another unique feature of this house is a bathroom. From the vestibulum, a large arch leads to the bathroom. The distinguishing feature of the bathroom is a device similar to a water- closet. There is a small stone wall with a hole in the centre. There might have been a stool fit over it. Behind the stool on the outside wall there is a tank which is connected by a small pipe to a jar set in the floor. The jar must have been cleaned out by running water coming from the tank hanging over the outside wall. This house can be dated to the period of the late part of the first century or the early part of the second century A.D. (Negev 1986, 63-64).

Petra

A private building was excavated in Jabal al Khubta in the eastern part of Petra. The building is rectangular in shape (2.8 x 2.6m) and small in size 7.3m². It was built of undressed valley stones of medium size without mortar (dry stone technique). The southern wall consists of eight courses, while the western wall has four preserved courses only. At the south-east corner there is a gap in the wall where the door might have been. The building was constructed on a bed rock fissure which was levelled by debris. There were no traces of either stucco or plaster found in the excavations. The most interesting element of the building is a clay oven circular in shape, about 0.8m in diameter, with a preserved height of 8cm. The oven structure rests on slabs of stone. Another feature of the building is a bread oven (taboon). It is full of ash.

Outside the building is a staircase of seven steps, carved in rock, and a cistern. Their relation with the building was not investigated. As far as findings were concerned, a pot was found full of sheep and goat bones and the tibia of a very young baby. A large amount of pottery was recovered from different periods (Roman ware, Hellenistic and Nabataean). The fairly small size of the building can be explained on the premise that many activities that the inhabitants were engaged in took place in the open air outside. The building was dated, according to the findings to the first century B.C. (Zeitler 1990 385-420).

In the Beidha area in Petra there is a house which is known as the Painted House (849). It is dated to the first half of the first century A.D. The house is carved in the mountain without a decorated façade. It has a square room (about 6.2m) with a bedrock floor. The house is entered by stairs, at the top of which is a water basin. It also has a drainage channel. On the back wall of the room there is a recess with a vaulted ceiling. The ceiling has a painted decoration of floral and bird motifs (McKenzie 1990, 152 Pl. 113)

In Petra, an area near the town wall which is known locally as el-Katute was excavated by Parr. Traces which were first thought to be part of the city wall appear to be part of a building complex to the north. It consists of various rooms about 18m in length and 5m wide. The excavated area seems to be an annex to the building. Its walls are different from the main building walls because they are a different colour of limestone (yellow). Inside the building there are partition walls which divide the rooms into roughly 4m square shape. In the middle of the walls, the courses extend for a few centimetres, forming a buttress. The buttress might have been used to support the roof slabs. The inner and the outside walls are built of soft sandstone, 0.5m wide on average. The main wall is at a still preserved height of 3m. It was well built with ashlar masonry outside. Vertical slots were located in the wall with spaces between them ranging from 1.5-2m. It was suggested that they might have been used to support timber. There were traces of plaster and paint which were used to cover the inside walls. In the courtyard area, the wall was of poorer quality, and had become curved. As far as the date is concerned, various Nabataean coins were found in the building dating to the first century A.D. Other artefacts, although not yet fully studied, belong mostly to a period not much later than the second century A.D. (Parr 1960, 127-30).

Khirbat adh-Dharih

At Khirbat adh-Dharih, a building of a square shape (35x35m) was located. It served as a residential unit. A small room of the building (5x5.5m) was excavated. The walls were of semidressed stones and were plastered on the inside. The floor of the room was not flat and was covered with a layer of plaster. There were arches of fine stones on which the ceiling might have rested (Al-Muheisen and Villeneuve 1990, 10).

Mada'in Salih

The excavation at Mada'in Salih revealed a residential unit which was described in detail in section (2.2.2). It has an almost north south orientation. Its entrance was at the north wall. It consists of a large open court (11x 6m) almost in the centre. To the south of this open court there are five rooms and to the north only one large room (11 x 7m). The total area of the unit is about 240m². The walls are of poor quality semi-dressed sandstone.

Qurayyah

At Qurayyah which is located 70km north-west of Tabuk and has many archaeological ruins of different periods, two Nabataean buildings are located (Parr *et al.* 1968/69, 226). One building is not of clear design. It has large rooms in general. As can be seen from Parr's plan (fig. 6.20), the entrance might have been on the western wall, followed by a large court (14 x 15m) with a small room (5 x 3.5m) in its north-east corner. To the right of the entrance there is a small room (3 x 4m) outside the building suitable for use as a guardroom. To the north of the court there is a rectangular room (7.5 x 14m). The connection between this room and the court is not clear since there is no clear entrance between them. To the east of this room is another room similar in size and divided into two rooms by a partition almost in the centre. The connection between them is not clear either. The last room is located in the north-east corner and might have been divided by a partition into 3 rooms: a large one to the north and two small ones to the south. The connection between this part and the other units of the structure is not clear either.

The walls of the building are ashlar masonry with yellowish sandstone bricks set in mud mortar. The stone courses are not very straight. There were vertical slots in the outside walls which might have been for positioning timber beams. The building was

attributed to the Nabataean period because of a Nabataean capital, a column base and four drums with diagonal marks of the typical Nabataean type. The building was described as the residence of an important person, such as a military or government officer (Parr *et al.* 1968/69, 228).

Building II is of a contemporary period and has the same style. Its plan is also not clear (fig. 6.21). However the building in general is large in size. It has a large court in the centre surrounded by three rooms to the north and four rooms on the southern side. There are some walls connected to the building from the outside on the eastern side, but the connection is not clear. The entrance to the unit might have been on the western outside wall. It was explained as a military or administrative building (Parr *et al.* 1968/69, 229).

Wadi Shiqri

Wadi Shiqri is located north of Rawwafah in north-west Saudi Arabia. It has many ruins of different structure. One of the structures is about 7 square metres. The remaining walls are 2 courses high and are about 0.75m wide. The walls were built with two faces of square sandstone with rubble core in between. The same style of building was found at Petra. There were traces of plaster on the outside face of the walls. A few sherds were collected from the site and are attributed to the Roman Nabataean period (1st –2nd century A.D.) (Parr *et al.* 1968/69, 27-28).

Dibon

In Dibon, the excavation conducted by Tushingham (1954), part of which was at the so-called Nabataean building, provided some information regarding building techniques. The building is rectangular in shape (17.5 x 14.5m). The foundations of the building are of solid medium size stones. They were dug deep directly on the bedrock with large stones bearing hammer-dressed marks. The outside walls vary in width between 1.10-1.50m. The empty spaces between the large stones were filled with small stones and mud mortar. Special attention was given to the building's corners which were built of large stones, accurately finished to provide a right angle. The mason followed the technique of stretcher and header in some walls. The outer face of the walls were of ashlar stones with traditional Nabataean diagonal combing (Tushingham 1954, 7).

6.4.3. Technology

Nabataean architecture comprised various elements which indicates awareness by the local engineers of the different practical problems and the solutions they created to overcome them. Some methods they used represent ideal solutions for their environment to make the building more appropriate for use, such as an area of insulation which is extremely necessary in such a hot climate. The following examples give an idea of the creative ideas of Nabataean engineers as regards architectural technology.

Metal fixture objects

At the main Theatre in Petra, copper fixtures with a high percentage of purity, were located which indicates that the Nabataeans reached a high standard in this field. Metal objects from the Temple of the Winged Lions as well as the large number of nails may indicate that metal was mined at the site (Hammond 1995, 216).

Columns

Another area of Nabataean architectural technology to be found is the column drums on which appear numbers relating to assemblage at the site. Also, the use of a round arch without a keystone might be considered as a Nabataean discovery (Hammond 1995, 217).

Plaster

The Nabataeans used metal nails to hold plaster to the rough walls of undressed stones. The final coat of plaster was fixed with copper tacks.

On tomb 825 in Petra, traces of plaster were found on the façade of the tombs. This suggests that some tombs might have been plastered from top to bottom or even just part of them (Shaer and Aslan 1997, 229).

Earthquake protection

Since the area of the Nabataean kingdom is prone to earthquakes, the Nabataean engineers tried to protect the buildings against earthquake by using wooden beams inside the walls. Such a technique was used in the west wall of Qaser al-Bint (Hammond 1995, 219).

The same technique was found at the temple of Wadi Ramm. In the walls of the cella, wooden beams were inserted in between the stone courses to provide protection against earthquake (Hammond 1973, 63).

Quarries

Quarrying is an important aspect of Nabataean architecture. Most of the important buildings are made of stones. Masons tried to obtain this important solid material by the easiest and fastest ways possible. In Oboda, in order to level the rock area to erect the temple, holes were dug to about 10-15cm deep. After that, pieces of wood were driven into the holes. Then, the wood was soaked with water and as it expanded, it created a crack. If the wood pieces were set in a line, then the whole line would crack. The rest of the work of cutting the stone is then done by hand with a chisel and hammer.

The stones which were used to build the temple of Oboda were cut from a quarry about 1km from the site. At the quarry site, there were natural layers of stones about 80-100cm high, similar to the course height of the temple. Stones were cut according to a frame. This was noted on one of the stones which bore a rectangular mark made by a sharp tool to guide the mason. The stone was left on site and not used in the construction due to a crack at its corner. The size of stones varies from one area or building to another. In Mampsis, at the foundation of the tower, large stones about 2-4 m long were found (Negev 1986, 49-50).

In Petra the main quarry is in Wadi as-Siyyagh where the mountains are of solid sandstone. It seems that the desired working area was firstly cut to make a smooth vertical elevation. Then, steps were cut in the vertical elevation which made it easier to reach the top of the mountain. There are holes towards the top where the steps end probably to provide hand holds for greater security. Stones were cut in the form of slabs and then wooden wedges were used to separate them from the rock. The wood was moistened with water until it expanded and created cracks. The rest of the work was probably finished by chisel and hammer. It was noted that the mason used the natural stone layers to make the cutting easier (Shaer and Aslan 1997, 219-20).

On the al-Kuubtha mountain there is a drawing of an axe incised on the mountain, a tool which might have been used in stone work. The Nabataean masons used chisels and hammers for their stone work. They smoothed the rock face by creating parallel lines of 15-30°. Spaces between these lines vary between 6mm and 1 cm according to the space of the working area. The spaces are usually larger on big areas (Shaer and Aslan 1997, 225).

Fine cut stones with diagonal chisel marks were found at various Nabataean sites. At building 2 in Abu Khusheiba, whose function has not been identified, fine ashlar stones were found with diagonal chisel marks as well as fallen drum columns and cornice pieces (Lindner 1992, 264).

In the corridor of the Temple of the Winged Lions, which was used as a stone store, various stones were located. They bear Nabataean letters which enabled the masons to fix them according to the required place (Hammond 1987, 137).

At Mada'in Salih a stone quarry was also found in the western part of the site in Jebel al-Khreimat.

Engineers' drawings

It seems that the work of tomb carving and the construction of other buildings was sometimes carried out according to an engineer's plans. The plan might be of the final shape of the building, to be followed by the mason or a site supervisor. The drawing might have been an accurate one with all required measurements or just a sketch to serve as a guideline. At tomb 825 in Petra, on the rock to the right of the tomb, there is a sketch drawing of some elements of the façade. This sketch might have been used as a guide for the mason who executed the tomb, to prevent him from making mistakes. The sketch is for the classical cornice which is similar to the one on the façade. There is also an incised block stele which might represent the deity Dushare. In the same area, two other sketches were found representing some architectural elements on the façade (Shaer and Aslan 1997, 226-27).

Stone insets

Stone insets were used by the Nabataeans as a solution to overcome eroded areas. At tomb 825 in Petra, due to the bad state of the stone of the tomb, and the various cracks in the elevation, a new method was adopted to overcome the problem. Some parts of the decoration were moulded separately outside and inserted into place. This can be clearly seen in the plaster on the left side of the tomb façade. The cavito cornice was carved in natural rock. However, on the left side of the cornice there is a missing part which was filled by a stone inset (Shaer and Aslan 1997, 223).

Insulation

Special attention was paid to insulation as an important factor to provide a more comfortable atmosphere inside the buildings in such a very hot climate in summer

and cold in winter. In order to provide insulation for buildings, some walls at Oboda were made of three layers. The first one, to the outside of the building, was made of fine ashlar stones without mortar (the dry method) which helps to prevent moisture in the building. This ashlar wall was followed by a fill of smaller stones and mud. The third layer, which faces the inside of the room was of undressed sandstone. Moreover, the interior walls were plastered with a layer of mud which fills the spaces between the stones. This, was followed by another layer of mortar plaster. A final layer of white plaster was added to allow the fresco painting to be done. Window size was also taken into consideration. Windows were smaller to the outside and larger on the inside, and located at the top of the wall to allow light in but prevent sand from entering through the aperture. The positioning of the doors allowed more sun to enter in winter and a cool sea breeze in summer (Negev 1986, 51-52).

Maintenance workshops

Maintenance work helps to keep buildings in good shape. Proper maintenance work helps to extend the life of the building. Maintenance also carries financial benefits, as spending small amounts of money on small jobs saves greater expense and more effort to remedy problems that will worsen in the future.

At the Temple of the Winged Lions in Petra three workshops were located in the eastern part of the temple. They catered for paint, marble and metal work. At the paint workshop, which is located in the basement, various pottery vessels were found. They contain different quantities of different colour paints. Some vessels have plaster traces, with or without colour. Blue pigment balls were also located beside gypsum and marble pieces. There were some pots mostly of a small size containing small amounts of materials, which were most probably used for small maintenance work. Paint colours were also found in the containers, of the same colour of plaster decoration as the cella, which might have been maintained regularly. It seems that there were no special pottery vessels for paint purposes since most of the recovered vessels were of the cooking vessel or cup type.

The second workshop was for marble. More than 1,000 small marble pieces were found. Some of the pieces bear inscriptions. One of the pieces had a fragment of an inscription dated to the thirty-eighth year of Aretas IV, 27/28A.D. The various marble pieces located were at various stages of manufacture. They throw some light on Nabataean marble manufacturing techniques. It seems that pieces were cut to the

required length and thickness according to red line marks. These marks were found on one of the marble pieces. After that, they were polished, probably by a stone grinder or by sanding with water and sand. A basalt polisher was recovered, as well as a water jug, which might have served as working tools. The third workshop in the temple area was for metal work, and was probably only for maintenance work. This conclusion was drawn on the basis of a lack of furnaces, crucibles and moulds, which were essential tools for metal manufacturing. Of the interesting findings is a metal winged figurine whose base had not been welded, as well as a lamp, a handle, a seal and other metal items (Hammond 1987, 129-141).

6.5. The Main features of urbanism

The main features of Nabataean urbanism in different towns and stations are represented in table 6.1. Tombs were found at Petra, Mada'in Salih and on a small scale in Al-Bida. Hydraulic engineering played a considerable role in the development of Nabataean urbanism. It gave the Nabataeans the ability to choose settlement locations by building cisterns and using them to store sufficient amounts of water. Cisterns were found in Humayma, Petra, Abu-Khushibah and Rawwafah. Aqueducts were found in Humayma, Petra and Khirbat Adh-Dharih. Wells were the main water source in Mada'in Salih and were found in Al-Yaduda. There were other hydraulic features such as wall barriers, which were found in An-nagab, and dams which were found in Humayma, Petra, Mampsis and Sabra.

Public buildings appeared more frequently than private buildings on Nabataean sites. Temples were at the top of the public building list. They were found in Petra, Khirbat Adh-Dharih, Rawaffah, Wadi Ramm, Qaser Rabbah, Oboda and Khirbat At-Tannur, while high places were located at Petra only. City walls were found at Petra and Mada'in Salih, while towers were found at Mampsis, Oboda and Abu-Khushibah as defensive structures.

Private houses were less represented than public buildings. They were found in Petra, Mampsis, Khirbat Adh-Dharih, Mada'in Salih, Qurayyah and Wadi Shigri. Baths were found in Petra and Mampsis. Theatres were found in Petra and Sabra. Nabataean architecture provides examples of various techniques to overcome different problems such as insulation and protection against earthquakes. Other

features of Nabataean development are characterised by the many other skills including mining, sculptures, weaving, pottery making and food processing.

Table 6.1: Sites and Urban Features

	Tombs	Cisterns	Aqueducts	Wells	Wall Barriers	Dams	Water Control	Temples	High Places	Towers	City Walls	Baths	Markets	Theatres	Houses
Humayma	X	X	X	X	X										
Petra	X	X	X		X			X	X	X			X	X	
Mampsis		X			X					X					
Abu-khushibah		X													
Rawaffah		X				X									
Khirbat Adh-Dharib			X			X								X	
Mada'in Salih	X			X							X			X	
Al-Yaduda				X											
An-Nagab					X										
Sabra						X						X			
Wadi Ramm															
Qaser Rabah															
Oboda										X					
Khirbat At-Tannur											X				
Abu-Khushibah															
Al-Bada		X											X		
Qurayyah													X		
Wadi Shiqri															

7.Discussion

The aim of this chapter is to bring together all available information about the site of Mada'in Salih. This includes references to the site in the historical sources and in the inscriptions on the tombs and around the site, as well as data derived from the excavation, all of which helps to draw the outline picture of the town. The excavation at Mada'in Salih provided information about architectural aspects and also revealed various finds, including pottery, coins and small finds. The combined information leads to a clearer picture of the site and the daily life of its inhabitants. An attempt will be made to determine how the society of Mada'in Salih functioned, how the people built their houses and their living conditions. It is also possible to determine whether the people were familiar with production techniques and manufacturing, whether they were driven by necessity or whether they enjoyed any degree of luxury and to draw comparisons with other known sites

7.1. Background

Mada'in Salih is located in what is now north west Arabia, about 20km north of al-Ula town (Map 1.2). Mada'in Salih was the largest Nabataean settlement to the south of the Nabataean kingdom's boundaries and perhaps the last one in the south west.

There are several factors which determined the establishment of the site. First, the area is located on the main trade route which linked Southern Arabia and India with Mediterranean countries. This route was used to transport goods especially frankincense and myrrh (Groom 1981, 229). Secondly, the site is located at the meeting point of several valleys which made it a natural basin for water catchment. Thirdly, the site is located at the southern boundaries of the Nabataean kingdom, which gave it importance as a strategic defence point from which to counter an invasion to the north part of the kingdom. Fourthly, the site is located about 150 km from the Red Sea. Goods transported by sea were carried by the inland route from Mada'in Salih to the north. Finally, the area is surrounded by sandstone mountains similar to those around Petra, in which the Nabataeans practised their custom of carving stone tombs.

The settlement area is a wide sandy plain surrounded by Quwerin Sandstone mountains and is located almost at the centre of the site (Al-Talhi 1988, 47) (Map 3.1). The famous Nabataean tombs were carved in these sandstone mountains (see 1.3.4). Ithlib mountain is part of the mountain range and is considered as a religious area in the site. It has a Diwan, which is an open room carved in the bedrock for performing rituals (Photo. 1.2). The area has several icons of deities carved in the niches.

The climate in Mada'in Salih is dry, similar to other parts of the Nabataean kingdom. The average temperature in the area is about 28 °. The coldest month is January whose lowest temperature varies between 10-24 °, and the hottest is July with maximum temperatures varying between 34-40 °. The average humidity is 37%, varying between 17% in July and 80% in January. The average rainfall is 56 millimetres, most of the rain falling during winter and spring, between November and April (Ministry of Agriculture 1994, 15).

The valleys of Mada'in Salih work as a basin serving to catch water. The two main valleys for water catchment are called Al-Mazaz and Al-Hamda (Map 1.3). During the archaeological survey 27 wells were recorded at the site (Map 3.1). Well water was the major source of water for the town. Mada'in Salih did not benefit from the different hydraulic methods familiar to Nabataean engineers in different parts of the kingdom. Cisterns were ideal for water storage and were found in different parts of the kingdom but not in Mada'in Salih.

Mada'in Salih is not far from the Red Sea, Al-Wajh port being about 150km to the west. It was probably the location of the old port which was known as Luke Kome (Map 2.1) as mentioned by Strabo: “Now the loads of aromatics are conveyed from Luke Kome to Petra...” (*Geography* 16.4.24). The location of the port is not certain. However it was probably near the outlet of the Wadi Hams, which discharges into the Red Sea, and where the remains of a Nabataean temple were found (Negev 1977, 563).

7.2.Important nearby sites

Dedan

Dedan is known as al-Ula. It is located about 20 km south of Mada'in Salih. It was an important station on the main caravan route from South Arabia to North Arabia, and flourished during the sixth century B.C., as suggested by the pottery which was collected from the site and examined by Parr (Parr *et al* 1968/69, 213). The site is famous for its burial tombs carved in the sandy hills. These tombs have Lihyanite, Minaean and Dedanite inscriptions. Some of the tombs have lion figures but they are not well executed. It is surprising that there is only one inscription which bears the name of a Dedanite king, Kabir'il (JS 138L) and another which indicates a governor's name (JS 349 I) (Al-Fasi 1993, 72).

The Dedanite settlement in al-Ula may have been followed by a Lihyanite rule which lasted from the Hellenistic era to the second century B.C. (Al-Ansari *et al.* 1984, 11). Human figures with Lihyanite inscriptions depicted on their bases which may date from the third to the first century B.C. were located at the site (An introduction to Saudi Arabian Antiquities 1975, 58-68). The lack of Nabataean pottery at al-Ula suggests that Mada'in Salih developed as a commercial centre and the Lihyanite era came to its end in the second century B.C., perhaps as a result of the revolutionary activities of Masudu who was mentioned in the inscriptions (see 6.2.1).

Tayma

Tayma is located about 220km north east of Tabuk and 150 km north west of Mada'in Salih. The most prominent archaeological features of the city are the city wall, The Qasr al-Hamra, Qasr Radum and Qasr al-Ablaq, as well as inscriptions and the old canals. The density of the archaeological mounds and remains suggest that the city had witnessed an extensive settlement in the past (Bawden *et al* 1980, 70). Tayma was mentioned as having paid tribute to the Assyrian King Tiglath Pileser II. The last king of the Neo-Babylonian Empire, Nabonidus, stayed for about ten years in the city (555-539 B.C.). The site was partly excavated as part of a thesis presented by Abu-Duruk at the University of Leeds (Abu-Duruk 1986, 6).

Jawf

The Jawf region is located in north west Arabia, about 400 km north east of Mada'in Salih. It was mentioned in the Assyrian annals, several attacks on the site having

been launched at that time, one of which by king Sennacherib. There were no archaeological finds in the region which can be dated to the Assyrian period. The Nabataean presence at Jawf is evidenced by Nabataean pottery, which was found in the lowest strata inside the Marid castle. Nabataean inscriptions were located in the area, one of which belongs to the reign of King Malichus II (40-70 A.D.), a dedication inscription. The archaeological evidence indicates that the area witnessed its peak during the Nabataean period in the first century A.D. Its most important role was as a station on the old trade route (Al-Muaikel 1988, 317-320).

Petra

Petra was the capital of the Nabataean kingdom. It is located in Jordan at long. 35°26' east, lat. 30°19' north. It was a junction point for the old trade routes. Excavations were begun at the site in 1939 by Horsfield (1939) and were continued later by scholars such as Parr (1957, 1960), Hammond (1965), Zayadine (1982) and others. These excavations provide valuable information on Nabataean culture, history and archaeology.

The site contains archaeological evidence from the upper Palaeolithic. However, the settlement evidence dates back to 1200 B.C. (Hammond 1973, 42). It is known that the Nabataeans settled in the area before the attack of Antigonus in 312 B.C. Petra is famous for its burial tombs which have been classified (Brunnow and Von Domaszewski 1904-1909) into various types according to facade shapes (Fig. 3.1):

- 1- Pylon with one or two rows of crenellations.
- 2- Stepped tombs.
- 3- Porto Heger tombs.
- 4- Heger tombs.
- 5- Arched tombs.
- 6- Roman temple tombs.

The city has religious monuments such as the high-place, temples and altars, and public places such as the theatre, which consists of 33 rows. Beside the Nabataean remains, there are other monuments which belong to the Roman period, like the Roman street, with its colonnade and triumphal gate. The Emperor Hadrian visited the area, and in memory of his tour issued a coin on which was inscribed "Petra of Hadrian" (Hammond 1973, 56).

Jabel Et-Tannur

This is an important Nabataean site in Jordan. Nelson Glueck had excavated a large Nabataean temple attributed to Atargatis in 1937. The temple is on top of a mountain and is considered as one of the largest known Nabataean temples. The temple provides valuable information about Nabataean religion and cultic architecture (Glueck 1965).

Rawwafah

Rawwafah is located in Saudi Arabia about 75km south east of Tabuk. The site was visited by Musil in 1910 and Philby in 1952. In 1968, a preliminary survey was conducted in North West Arabia by Parr, Harding and Dayton, which included the site of Rawwafah. The survey revealed a Nabataean temple, rectangular in shape, 13.2m by 11.2m, with a bilingual Greco-Nabataean dedicatory inscription dated 166-169 A.D. Beside the temple, there is the remains of a cistern. There is neither settlement evidence near the temple nor surface sherds. Why such a religious building is located in an isolated place is an open question. Parr suggested the area was a resting place on an ancient trade route. He attributed the building to the Nabataean period without any doubt (Parr *et al.* 1968/69, 219).

Qurayyah

Qurayyah is located in Saudi Arabia, about 70 km north west of Tabuk. The site had been visited and described by Philby (Philby 1957). The site was also visited by Parr, Harding and Dayton in 1968 (Parr *et al.* 1968/69, 219-241). The expedition examined the site, which consisted of building ruins and a tower beside an ancient settlement area. There are signs of water channels (qanat), probably among the oldest canals in northern Arabia.

There are two buildings on the site which belong to the Nabataean period. Their plan, the pottery sherds and column capitals are identical to the typical Nabataean style. The site of Qurayyah contained a large amount of pottery, some of which belongs to the Nabataean period. There is a distinctive type of pottery which Parr called Midianite pottery (Parr *et al.* 1968/69, 240), which has painted decorations in black, brown, red, and yellow, with naturalistic and geometric motifs and animal figures.

Al-Bida

Al-Bida is located in northwest Saudi Arabia. It is an important Nabataean site. The site has been visited by Musil, Philby, Parr, Harding and Dayton. The site has simple monumental tombs with ancient graffiti inside. There are settlement remains and walls. Most of the pottery collected and examined by Parr during his visit to the region is Nabataean and Roman. Painted pottery was also found, which can be dated between the 1st century B.C and the first century A.D. The expedition also found Nabataean lamps, pottery sherds from the first century to the second century A.D., and some sherds from a later period similar to those found in Al-Mabiyat (an Islamic site from the eighth century A.D.) (Parr *et al.* 1971, 30-35).

7.3. *Synthesis of archaeological research in Mada'in Salih*

Some historical references as well as some archaeological remains suggest that there was a settlement prior to the Nabataeans (6.2.1). There are two phases of settlement one after the other in the area and will be discussed separately.

The excavation was conducted in the settlement area where there are various mounds with surface collections of pottery sherds, coins and wall remains. One mound with a large amount of pottery and walls was selected for excavation.

7.3.1. *Earliest historical and archaeological information*

The first clear mention of the Nabataeans in a historical reference dates back to 312 B.C., when Diodorus described Petra and its people during Antigonus's attack on the town (Diodorus XIX. 94-97). It was almost three hundred years later that Mada'in Salih was first mentioned by Strabo, who described Gallus's attack on Arabia in 24 B.C (Strabo. *Geography* 16.4.24). That means that the town was established in the last quarter of the first century B.C.

However, scholars suggest that the town might have been founded before the Nabataean settlement, in the early part of the first millennium B.C., by the Dedanites (Healey 1993, 25). Dedan is known as Al-Ula. It was an important station on the main caravan route from South Arabia to North Arabia and flourished during the sixth century B.C.

Winnett believes that the Minaean inscriptions in Mada'in Salih (JS1-5, 33,34) and the 29 Lihyanite inscriptions are strong evidence that the site had witnessed a Minaean Lihyanite occupation prior to the Nabataeans (Winnet and Reed 1970,130).

Musil believes that the Nabataeans were initially under Lihyanite rule (Musil 1926, 107). Al-Ansari believes that the Minaean inscriptions which are located at various places in al-Ula and Mada'in Salih indicate trade relations between the two towns and not Minaean rule. Minaeans were temporary residents in Al-Ula, just as they were in other places, like Greece (Al-Ansari *et al.* 1984, 11). Pliny mentioned that Hegra was the Lihyanite capital, while Musil believed that Mada'in Salih was the capital of the Lihyanites before the Nabataeans (Musil 1926, 107). There are three Nabataean inscriptions located on the road between Tayma and Mada'in Salih which translate as saying that Masudu called himself the King of the Lihyanites. Those inscriptions are dated to the second century B.C. (Winnett and Reed 1970, 120). As the inscriptions are engraved in Nabataean, it may be suggested that perhaps Masudu was a Nabataean. There seems to be no apparent reason for a Lihyanite to write in Nabataean script. Also Masudu is not listed among the known Nabataean Kings, so perhaps he was a revolutionary who took over power from the Lihyanites for some time. Subsequently, Mada'in Salih took the place of Al-Ula as a trade centre.

Reference should also be made to the numerous Thamudian inscriptions located in the area. Muslim historians wrote that al-Hijr was the land of the Thamudians (Al-Istakhari, 24; Al-Hamawi, 2.220 –221), Thamud being an old Arabian tribe. There are a large number of so-called Thamudian inscriptions located all over Arabia, which are usually short, and mention the name of the inscriber, or the tribe or the deities. Some inscriptions contain the name SLM (Salam), a deity of Tayma attributed to the 6th century B.C. There is a general view among scholars that the Thamudians had no permanent land or settlement and that they never established a Kingdom. It is likely that “Thamud” was the name of a group of several tribes and that the Nabataeans were a civilized branch of one of these tribes (Al-Talhi *et al.* 1988, 48)

However, there is no archaeological evidence from the excavation which can be attributed to an early settlement prior to the Nabataeans. The archaeological surveys conducted by Winnett and Reed (1970), by Parr, Harding and Dayton (1971) and the current work do not provide any archaeological material from earlier settlements.

7.3.2. Earlier period of occupation

There is no clear plan for this early period of settlement, as most of the walls had fallen or were re-used as foundations in the later period. The only remaining clear

feature is a rectangular room 4X6m (fig 3.4). The walls of this period were mostly built of mud. One such interesting wall forms an arc (W2 E20) (fig 3.2). The mud bricks were laid alternately as one stretcher and one header. There is one wall of unusual design, built with one stretcher and one header to the middle of the wall then the opposite (one header and one stretcher) (W2 E20). Mud was used in two forms, either as mud bricks or in the form of bulk mud. An interesting feature of this phase is the remains of stone stairs (Photo 3.16). Another interesting feature of the building is a stone channel carved in a U shape with chisel marks inside (Photo 3.17). A similar channel was found in a small room in building I in Mampsis. The channel leads outside to the street (Negev 1986, 59).

As far as the finds are concerned, little pottery was found from this phase. There were some coins (3, 8, 27, 31) which unfortunately were badly eroded and could not be identified. In general, Phase I can be dated to a period prior to Phase II. It is possible to speculate that this period came to an end some time around the last quarter of the first century B.C. It is difficult to give a date for the start of this period according to the coins. There were some pottery sherds, mostly of distinctive Nabataean thin, painted pottery. This early type of pottery appeared during the first century B.C. (Schmitt-Korte 1979, 19).

7.3.3. Main period of occupation

7.3.3.1. Town Walls

The excavation revealed that the town was surrounded by a wall which was built using different techniques (fig. 3.6, 3.7). On the southern side, the wall was mostly built with mud directly on sand without stone foundations, except at some parts where some stones in the lower part were located, which might have been used as a foundation. The other excavated part of the wall was on the eastern side. In this part, one side of the wall was built with two courses of well-dressed large stones, with mud mortar resting directly on the sand, while on the other side of the wall there were only courses of mud bricks. The wall is about two metres wide. There was a group of stones forming a circle connected to the wall, which might have served as a watchtower.

If we compare the outer wall of Mada'in Salih to those of other nearby towns such as Tayma, there is a big difference between them. At Tayma the wall runs around three sides of an area of trapezium shape. The average length of each side is about 2.5 km,

and the height varies between 1-3m. The total length of the wall is about 8km. At Mada'in Salih, the total length of the wall is not as clear as the wall of Tayma. At Mada'in Salih the only visible part is on the southern side, where about nine metres is still traceable. The calculation for the full length of the wall (section 2.1.5) only represents a suggested course without any solid archaeological evidence. The expected total length of the wall is about 3.5-4km. So, it is clear that the wall of Tayma is longer than that of Mada'in Salih.

At Tayma, various techniques were used in building the wall. The area near the al-Hamra palace is built with two faces of large stones, with smaller stone fill in-between. The courses of the wall were not laid straight. The maximum height of the wall in this area reached 5m. The wall has steps at some points probably to allow for inspection. The wall has many small openings, probably used for firing arrows. At some parts of the wall mud bricks were used above the stone courses, the outside part of the wall being built of mud bricks while the inside was made of stones. The main building material at Mada'in Salih was mud, whereas in Tayma it was stone. In Tayma, some parts of the wall reached about 3-3.5m in width, while at Mada'in Salih the average width of the wall was about two metres. At Tayma the wall was built of separate sections, each of which was between 1-4m long. The wall dates to the sixth century B.C. (Abu-Duruk 1986 16-24). At Tayma there are remains of wall about 5m. high, while in Mada'in Salih there is no visible height to the wall, which remains almost at surface level. This indicates that the wall in Tayma was strongly built, as some parts are still preserved. It is clear that the wall of Mada'in Salih was not as strong as the one in Tayma. The style of the wall does not suggest that it was a strong defensive wall. There may also have been an observation point in the surrounding mountains. The wall may also have been a sort of enclosure to the exterior of the settlement area. The wall might have had gates, which could be opened for entry and closed at night or at times of danger.

7.3.3.2. Main building

The main building revealed by the excavation in the settlement area in Mada'in Salih consists of six rooms and a court, occupying a total area of 240 m². The house has a north-south orientation with a slight rotation to the east (fig. 3.3). The design of the house is simple. The entrance is on the north side. Five of the rooms are on the southern wall of the unit in a row. The court or the open area of the house is roughly

in the centre. The seventh room is on the north side of the house and is the largest one.

There were different sizes of private buildings in the Nabataean world. One Mampsis building (XII) was about 2,000 m², and building XI was also large-about 700 m² (Negev 1986, 59-62). At Khirbat adh-Dharih, the size of the private building was 1225 m² (Al-Muheisen and Villeneuve 1990, 10). At Qurayyah two private Nabataean buildings were located. Building I was about 805 m² while building II was 800 m² (Parr *et al.* 1968/69, 226). At Dibon the area of the private Nabataean building was 253 m² (Tushingham 1954, 7). In general, Nabataean houses are relatively large, as has previously been noted.

Another common point noted in private Nabataean buildings regarding the design is the open court with many rooms giving onto it. This was noted in Mada'in Salih as well as in Mampsis (building I) where there is a tiled court at the southern entrance (Negev 1986, 59). The same style was noted in Qurayyah, building I, where there is a large court (14 X 15m) (Parr *et al.* 1968/69, 226)(Fig. 6.20).

The known private houses in Petra and other Nabataean sites are limited in number, which gave Negev to wonder where the population of Petra lived. He believed that Petra was not a residential city, but was a religious centre with many public buildings such as theatres, baths and tombs. He believed that most of the people lived in tents, because living in the city was not very pleasant, with the lack of freedom, narrow streets and bad sanitary system. Living in tents was much more comfortable, with the camels and sheep in sight. The tent could be easily shifted in summer and winter to the direction from which the wind was blowing (Negev 1986, 36; 40; 46-48).

We believe that the same situation might apply to the residential area in Mada'in Salih. Compared to the large area of the archaeological site, the settlement area is relatively small (about 14% of the total archaeological area). This gives an impression that many people might have lived outside the city walls and might have come to the city occasionally to work or to bring goods and animals for exchange. Further archaeological surveys outside the town walls would help to ascertain this view.

Nabataean private houses were not in fact of the same high architectural standards as the tombs or the public buildings. That was clearly noted by Browning, who wrote: It

is amazing that a race so expert in rock excavation should have been so unskilled in building. Nabataean buildings erected before the annexation are astonishingly poorly built (Browning 1974, 49-51).

Function

We believe that the main building was used as a residential unit. The pottery finds were of the type mostly used in daily life. Most of the pots were cooking vessels, representing about 38% of the total assemblage, as well as bowls, which represent about 30%. The other pottery finds were mostly for similar purposes, such as pitchers, plates and basins. Personal adornment material was found in large proportion in the small finds, especially beads, bracelets, pins, rings and necklaces, all items expected to be found in a residential unit.

The distribution of items, whether pottery or other small finds in the rooms, does not point to any special relation between adjacent items. There is insufficient concentration of items in one place to specify an idea for the use for any particular room or location. The distribution was quite random.

Date

Our major source for dating the site before the excavation was the dated tomb inscriptions, which fall in the period between 1 B.C and 75 A.D (Healey 1993,6). However the excavation sheds more light regarding the date, particularly coins finds. The coins were of two types, Nabataean and Roman. Most of the discovered Nabataean coins throughout the kingdom were struck during the reign of Aretas IV (9 B.C- 40 A.D.). Almost 80% of the Nabataean coins discovered date to his reign. One of his issues bears Mada'in Salih's name (ME 87). Meshorer believes that the coin was struck to commemorate the foundation of the city of Hagra, the old name of Mada'in Salih (Meshorer 1975, 53-55).

Ten Nabataean coins from the excavation were from Aretas IV, while two others were from Rabel II's reign. The coins of this Phase belong to the period 9 B.C-110 A.D., but the dates on the coins from the first Phase were not readable. In addition, nine Roman coins were discovered. The last Roman coins date to the fourth century A.D.

The coin evidence therefore suggests that the residential unit dates from the last quarter of the first century B.C. to the first quarter of the second century A.D.,

although, according to the coins, and particularly from surface collections, the site was still in use until the fourth century A.D.

As far as pottery is concerned, there were some types which were more common in the later Nabataean period. At Mada'in Salih no piece of the type called unguentaria was found. This type dates to the period from the beginning of the first century A.D. to the last half of the third century A.D. (Johnson 1990, 235).

7.3.3.3. Construction techniques

House walls are represented by the discovered residential unit, which consists of six rooms and a courtyard. The techniques used in the building were not of a high standard compared to private houses in Mampsis. The walls in most cases were not straight, and the stones were not well dressed. Well dressed stones were seldom used, and semidressed stones were preferred. Small stones were used to fill the gaps between the courses.

At the southern side of the unit the foundations were mostly poor, while on the northern side they were of better quality. The foundations were mostly laid on the previous mud foundations. There were some differences in the dimensions of the rooms' walls. The outside walls of the unit were of sandstone. Sometimes the wall bends to the inner side at right angles to form a buttress (Photo 3.6). The same technique was found in Petra in a private building near the city wall, in an area known locally as El-Katute. In the middle of the walls of the building, the courses extend for a few centimetres, forming a buttress which might have been used to support the roof (Parr 1960, 127). Stones in some walls were laid alternately one header and one stretcher. The same technique was found in Dibon at the so-called Nabataean building (Tushingham 1954, 7). There was no significant difference in building technique between the outside and inside walls. Mud mortar was used mostly between the sand stone courses. There were some walls where some parts were made of sandstone bricks and the rest of the wall was of mud (W2 I 22, W1 I20) (Figure 3.3). Some walls were made of sandstone only at the corners and the space between them was full of mud (W1 F 19) (Figure 3.2). The best example of wall building technique is (W3 I 21) (Figure 3.2) where ten courses of semidressed sandstone were located. Some walls were built completely of mud bricks, sometimes alternating stretchers and headers (W1 E 20, W3 E20) (Figure 3.2).

Ashlar masonry, in the form either two walls with a core filling in between or a single ashlar wall, was not used in Mada'in Salih. The technique was known in places such as in the Qaser el Bint temple (McKenzie 1990, 136-138), and the Monumental Gate at Petra (Wright 1961b, 126). The outside walls of Rawwafah temple were of ashlar stones, while the inner walls were of smaller stones with a core in the middle of smaller stones and mortar (Parr *et al.* 1968/69, 215-18). At the temple of the Winged Lions, only the outside walls were of ashlar masonry in a header-stretcher design (Hammond 1982, 233). These advanced skills in wall building were not represented at Mada'in Salih.

As regards sandstone, a similar size of block was found in Mada'in Salih and in a private building in Petra, known as Jabal Khubta. However, the building technique is different, as there was no mortar between the courses (dry stone technique) (Zeitler 1990, 385-420). At Qurayyah, the outside walls of (building I) were ashlar, but they were not straight (Parr *et al.* 1968/69, 228). This style of non-straight course is more common at Mada'in Salih.

The most commonly used building material was stone. Well dressed sandstone was rare at the site. Most of the walls were of semidressed sandstone with chisel marks. Small stones and mud mortar were used especially to fill the gaps between the courses. There was no typical size of stone blocks. Different sized sandstone bricks were observed, the most used stone colour being white, then red and yellow. Mud was occasionally used in its two forms (bulk and bricks), but not as widely used in this phase as in Phase I.

The Nabataeans used different building methods and techniques for different building types as regards walls and materials. They also used certain building methods which helped them to produce the work in the most accurate and fastest way. In Petra, column pieces were numbered at the workshop and fixed at the site according to these numbers after moving. Copper tacks were used to hold the plaster to the wall. Wooden beams were inserted inside the walls to protect against earthquakes, as in Qaser al-Bint and the Temple of the Winged Lions. No parallel example was found at Mada'in Salih. Insulation in buildings was not found at Mada'in Salih. This would have been achieved by constructing two faces to the outside walls, the outer one of ashlar blocks and the inside one of less fine stones. The space between the two walls was filled with small stones and mud mortar.

Moreover, the inside walls had various layers of plaster and the locations of the doors and windows were selected carefully to provide more insulation to the building.

7.4. Activity at the site

7.4.1. Artisanal activity

Pottery may have been manufactured at the site. Although no pottery kiln was found during the excavation, the large amount of pottery sherds, especially on the surface (most of which were of medium to coarse texture, and, as suggested from the various forms related to daily activities such as cooking), suggests that some of the pottery was produced locally. Most of the discovered forms were for common daily use. Fine textured pottery represents a very low percentage of the total finds. Iron-smiths, weavers, physicians, masons and palm tree cutters also practised artisanal activities at the site (see 4.3.3).

7.4.2. Agriculture

The archaeological work did not provide much information regarding agriculture. An inscription (55, CIS 294) from the area around Mada'in Salih mentions a profession with a connection to agriculture, namely cutting the dates from palm trees (Al-Theeb 1998, 87). The Mada'in Salih area is still famous today for its palm trees and gardens. The Nabataeans took an interest in agriculture especially at a later period in their history, during King Aretas IV's reign. Clues to these activities are water barriers, dams and other hydraulic devices which were sources of water for agriculture. Grain symbols on Et-Tannur reliefs and vine drawings on the thin pottery provide evidence that the Nabataeans were familiar with such produce. It seems that the Nabataeans were familiar not only with agricultural activities but also with food production. This is evident from the oil factory which was found at Khirbet Edh-Dharih (Villeneuve 1990, 367-9).

7.4.3. Society

Women had attained high status in the Nabataean community, and had the right to ownership, with about 23% of the inscribed tombs belonging to women. This status is also evidenced by the appearance of the queen beside the king on coins. Queen Shuqailat acted as a regent for her young son king Rabell II (70-106A.D.). One of king Rabell II's coins has an inscription which reads: Shuqailat his mother, the queen

of the Nabataeans (Meshorer 1975, 72). Moreover, some people claimed descent through the mother's line (H12, H16).

There were different foreign elements in the Nabataean community in Mada'in Salih. There were some people from Tayma who lived at the site and were buried there (H1, H12). There is also a tomb belonging to a Jew (H4), which stands as evidence for the freedom of religious beliefs and for foreign elements in the community.

Personal names give a clue that there were foreign elements at the site, such as Arus (H7) and Alkasi (H8) which were probably of Greek origin (or that Greek influence was strong enough to make local people use Greek names).

There were different classes in the community at Mada'in Salih besides the artisans described in 7.4.1. There were people of high political status such as governors (H6) and prefects (H7, H17). There were army leaders (H31).

7.4.4. Religion

Dushara was the main deity in Mada'in Salih as well as in other parts of the Nabataean kingdom. He is mentioned in twelve inscriptions in Mada'in Salih. He is generally represented in the form of solid stone. Other deities are mentioned in the inscriptions, such as Manotu, Allat, Al-Kutbay, Shai' al-Qaum and others. The inscriptions tell us about places of worship, priests and their authority in controlling temple revenues.

Religious activities were practised in the Ithlib mountain area, which is full of niches and symbols of deities. The Diwan itself is a *triclinium* for religious ceremonies. One temple which was mentioned in the inscriptions unfortunately could not be located either by the survey or by the excavation.

The Nabataeans paid great attention to their dead. They buried them in monumental tombs carved in the bedrock. In one of the tombs at Mada'in Salih a body was discovered laid on its back with the out stretch arms and legs wrapped in a cloth (Photo 5.1). This shows how the Nabataeans buried their dead. Sometimes dead bodies were buried in graves dug into the ground, or built with stone slabs. The Nabataeans were also familiar with second burials where the bones were lifted from one location to a new place.

7.4.5.Finance and Law

There are some indications about the economic situation of the site. Some tombs were of high status and were built at cost. This type might have been for wealthy people or officials, such as governors or military leaders, but they do not represent the economic situation of the whole town.

In the residential unit as in the town wall, the building technique was simple, that is not representing affluent status. The walls were not straight most of the time. Stones were not well dressed. No ashlar masonry was noted. Mud was used more often in the form of bricks or mortar. Building materials, style and technique do not suggest wealthy status.

There were relatively large amounts of coins, especially in the surface collection. These coins do not necessarily reflect a strong economy, as it has been noted that the amount of silver decreased towards the end of the Nabataean period. Pottery forms and fabrics were normal and do not represent significant types. Decorations were simple in most cases. Small finds in most cases were also simple and do not represent significant items, apart from a few special pieces, such as items made from ivory. Ivory items, especially a small container for jewellery (No 1431), are not normally for ordinary use. Ivory was for sure not a local material. It must have been imported from outside, whether from India or from Africa as a raw material then manufactured in the town. Material like ivory represents luxury status. It is not for daily needs.

The overall gathered information, either from tomb styles, building techniques, pottery and small finds does not suggest a high economic status or a rich town. Financial aspects played an important part in the people's thinking, as the inscriptions refer to fines, with amounts stated, and to whom they should be paid.

The Nabataeans were well aware of written legal documents and using accurate definitions, especially with regard to violation of tombs. They were also accurate in apportioning shared property. This advanced legal practice is supported by Athenodorus' comments from his experience of living in Petra: "He found both many Romans and many other foreigners sojourning there, and ... saw the foreigners often engaged in lawsuits, both with one another and with the natives..." (Geography 16.4.21).

7.5. Interpretation of the site

The main archaeological feature of the site is the tombs, which are scattered around the site in a roughly rectangular shape. The total area inside this hypothetical rectangle is about 3,630,000 square metres (363 hectares). The tomb concentration is greater on the west side than on the east, followed by the south and then the north (for detailed description see 1.3.4). The Ithlib mountain area is considered as the religious area of the site since it contains the Diwan, a large religious room (*triclinium*) for performing rituals. It is carved in the rocks with a completely open front, with several water reservoirs nearby on the top of the mountain (Healey 1993, 11).

The settlement area is relatively small in size compared to the total archaeological area. It is about 490,000 square metres (49 hectares) which is almost 14% of the total archaeological area. It is almost at the centre of the site, surrounded by the tombs.

The settlement area was surrounded by a wall which was described in section (2.2.5). The small size of the settlement area suggests that there were some people living outside the town. The high number of tombs belonging to high status officials like governors or military officers suggests that the town played a role as an administration centre. It is possible that the settlement area was only used by the officials who ran the town. Those were the governors and the administrators who were responsible for taxation, transport, rest houses and caravan supplies. The military leaders were responsible for protecting the caravans and organising military protection at the site. Some other professions mentioned previously were also represented at the site, and might have lived inside the settlement area. Mada'in Salih would also have served as a transhipment area, with warehouses and logistical services to the caravans, as well as being an entrepot due to its location near the ancient port of *Luke Kome*.

It is difficult to discuss the urban layout of Mada'in Salih, as the archaeological work in the settlement area has only just begun. The excavated area is about 240 m², while the expected total area of the settlement quarter is about 490,000 m². That means the excavated area only accounts for just under 0.05 %.

The town was surrounded by a wall. There must have been gates along this wall at different parts. Streets probably lead from the gates to the inner part of the town.

The excavation revealed a residential unit in one part of the town and there must have been other houses with streets between them. If there were some public buildings in the town as we expect, they must have been located along one of the main streets of the town probably coming from the main gate. We know from the inscriptions that there was a temple in the town, the temple of Qaysha (inscription H36). So, we assume that there was a sort of plan to the town, but at this early stage it is difficult to determine.

Mada'in Salih has common features with other Nabataean towns. The main feature of the two largest Nabataean towns, Petra and Mada'in Salih, is the tombs which are similar in design, and many types were found at each site. The exception is the classical one which is represented at Petra but not at Mada'in Salih. However, if it is said that large-scale tomb grouping is a characteristic of the large cities, there is an exception. At Magha'ir Shu'ayb (The Caves of Jethro), which is located near to the east side of the Agaba Gulf in North West Arabia, there is a group of only about 10 Nabataean tombs which are simple. Some of them are of the Pylon type.

Temples were found at various cities and towns of the Nabataean kingdom. In some places, the temple was the only structure in the centre, such as at Khirbat et-Tannur and Rawwafah. At Petra, there are two temples, the Winged Lions and Qaser el-Bint, as well as a high place which is considered as an open temple at the top of the mountain. Other temples were also found at Khirbat Adh-Dharih, Wadi Ramm, Qaser Rabbah and Oboda but not in Mada'in Salih, although the inscriptions indicate that there was at least one.

It seems that city walls were a special feature of large towns. Both of the two largest towns, Petra and Mada'in Salih, were surrounded by walls. Defence architecture is exemplified by city walls in the largest Nabataean cities, Petra and Mada'in Salih. Towers were also found at Mampsis and Abu Khusheiba. At Oboda, there is a Nabataean tower, but it is of a later period (293/94 A.D.).

Mada'in Salih did not provide examples of advanced hydraulic skills in particular cisterns such as at Humayma and Petra.

Towards the peak of developed Nabataean urbanism we find examples of cultural and prestigious structures. At Petra there is the Colonnaded Street with the

Monumental Gate, the main theatre which accommodated about 7,000-10,000 spectators and the baths, but similar structures were not found in Mada'in Salih.

7.5.1. The development of the site

The main settlement in Mada'in Salih was by the Nabataeans. This can be clearly seen from their archaeological remains. The archaeological evidence includes some surface collections examined on the site by Winnett and Reed, particularly the type of pottery known as "egg shell", some of which is painted and possibly attributable to the period between the first century B.C. and the first century A.D. (Winnett and Reed 1970, 178). The preliminary survey conducted by Parr, Harding and Dayton in 1968 located surface sherds, most of which were Nabataean and Roman, which they attributed to the first century A.D. In addition they also located a few painted sherds which are dated to the first century B.C. (Parr *et al.* 1971, 23). In addition, none of the archaeological evidence revealed by the excavation, including the building style, pottery, coins or small finds, suggests any other source than Nabataean.

The pottery assemblage of Mada'in Salih revealed by the excavation was typical of assemblages from other Nabataean sites and is not considered as a special collection. The pottery was used mainly for daily use such as for cooking food, storing it and other ordinary uses. Decoration was not significant and the potters did not use highly technical methods. The most common technique was incision in straight, wavy or zigzag lines. Open triangular or oblique lines were also represented in this style. Applied decoration as well as painted decoration were noted in the assemblage. A similar style of incised decoration was found in the Jawf region (Al-Muaikel, 1988). The excavation conducted in the region revealed Nabataean materials which dated from the first century B.C. to the first century A.D. A vessel body fragment (TS 179) has a band of incised horizontal lines, similar to piece 80 at Mada'in Salih. Piece TS 171 has a wavy lines bordered with multi horizontal lines, the same as piece 82. Pieces TS 146 and 34 are similar, since both have added decoration in a comb pattern. It is worth noting that oblique incised decorations were found at Mada'in Salih (No23), Jawf (TS 40) and Oboda (No 510). Another common decoration is the two thick criss-cross red lines inside the vessel from piece 408 in Oboda. Both lines were of reddish colour. As far as the shape of cooking vessels is concerned, type 6b, No 41 has a parallel example No 790 from Oboda and piece no 42 is similar to No 792 from Oboda.

As far as form is concerned, nothing significant was found, and there were no unique forms but there were parallel examples from other Nabataean sites. Piece TS 35 is similar to No 26. Both are small vessels with a large mouth and excurved rim. TS 40 has a parallel example at Mada'in Salih (No 23). Both are large mouthed vessels, with excurved rim. D1 66, a shallow plate with flaring wall, is similar in shape to No 20. Other parallel examples come from Oboda. Piece 585 (as observed by Negev 1986) is a parallel example to that in plate No 20 and piece 626 is similar to plate 21. Parallel examples from Jawf and Oboda suggest that there was a sort of connection or influence between these Nabataean centres. Moreover, the relation might have extended to further places, as suggested by small find items. The hairpin (no 1440), is worth noting. It is similar to item no. 177 from the Colchester excavation (Crummy 1983, 21). It is similar in shape function and manner of manufacture. The item was probably imported or a copy was made locally. In either case, there is a relation which is worth noting.

It is worth noting that the Mada'in Salih pottery assemblage did not contain any piece of the type so-called unguentaria used in a later Nabataean period the first century A.D. to the last half of the third century A.D. (Johnson 1990, 235).

The main period focus for occupation at Mada'in Salih was the last quarter of the first century B.C. to the first quarter of the second century A.D. This period witnessed the building of the tombs and the residential unit of the excavation. This fact is supported by the coins from the excavation (Phase II dated from the last quarter of the first century B.C. to the first quarter of the second century A.D.).

The Nabataean kingdom was annexed to the Roman Empire in 106A.D. and Mada'in Salih was part of this kingdom. However, there is no clear evidence that Mada'in Salih was affected by Roman conquest. We do not find colonnaded streets or monumental gates or the so-called Roman Temple Tomb style.

With reference to the three stages set by Parr (mentioned in 6.1) for the development of Nabataean architecture in Petra, the site of Mada'in Salih can be said to correspond to the second of these stages in architectural terms. At this stage, Petra witnessed the foundation of famous monumental buildings and the production of fine Nabataean pottery (Parr 1970). The settlement pattern of Mada'in Salih is also parallel to the second period of development set by Negev (mentioned in 6.1) which

he calls the middle period, dating from the last part of the first century B.C. to the middle of the first century A.D. During this period the Nabataeans had a strong army to protect their trade routes, established stations along the road to provide facilities for the caravans and built the monumental tombs in Petra and Mada'in Salih, as well as temples in different parts of the kingdom. The fine Nabataean pottery was produced during this period (Negev 1977).

It is believed that Mada'in Salih gradually declined, along with other Nabataean towns, when the trade route was shifted from land to sea by the Romans around the middle of the first century A.D. Later on, the Nabataean kingdom was annexed to the Roman empire (in 106 A.D.) and it seems that this occurred peacefully, as there was no mention of a battle. There is only one short text which mentions that Cornelius Palma, the governor of Syria, made Arabia subject to Rome (Bowersock 1983, 78-84).

Life continued in the Nabataean centres after annexation, as evidenced by one of Petra's tombs built in 127 A.D., twenty-one years after the annexation. The Roman presence this far south is attested by various inscriptions. The inscriptions in Rawwafah temple can be accurately dated to the period 166-169 A.D., according to a Greco-Nabataean bilingual dedicative inscription from the Thamudean federation of people (Parr *et al.* 1968/69, 215-18). Another inscription was found in Azraq castle in Jordan, which indicates a sanctuary in Jawf, which dates to the fourth century A.D. (Al-Muaikel 1988, 21). Roman coins were found at Mada'in Salih as surface collection as late as the fourth century A.D.

The last phase of Petra's history according to Parr extends from the end of the first century A.D. to the fourth century A.D. In this period, the level of architecture declined as well as the production of pottery. The archaeological finds, particularly the coins in Mada'in Salih, suggest that the fourth century A.D. is also the time when the city started to be completely abandoned.

8. Summary and conclusions

Several questions were raised in the introduction, answers to which will help for better understanding of the site in particular and the Nabataeans' development in general. However, it should be remembered that the archaeological work at the site is only at the beginning, as less than 0.05% of the settlement area has been excavated.

One of the most important questions raised is with regard to the date of the first settlement at the site and whether it was by the Nabataeans or another group. It was suggested that Mada'in Salih might have been founded in the early part of the first millennium B.C. by the Dedanites (Healey 1993, 25). A Minaean and Lihyanite occupation was suggested to have taken place at the site before the Nabataeans (Winnett and Reed 1970, 130; Musil 1926, 107). Some ancient sources mention that Hegra (the old name for Mada'in Salih) was the capital of the Lihyanite (Pliny). A Thamudian role was suggested by some old Muslim historians (Al-Istakhrai, 24; Al-Hamawi, 2:220-21). Various Thamudic inscriptions located around the site support this view.

However, the archaeological evidence, which includes the tombs and their inscriptions, and surface pottery collected by several scholars before this work (Winnett and Reed 1970, 178; Parr *et al.* 1971, 23) are all Nabataean, with a few Roman sherds.

The excavation provides archaeological evidence that the settlement was by the Nabataeans. Building design, techniques and materials all have similar aspects to what has been found on other Nabataean sites. The findings, especially the pottery, have parallel examples with other Nabataean pottery assemblages. The majority of the discovered coins were Nabataean and mostly from the king Aretas IV period, a few from king Rabell II and a few Roman coins.

It seems that the main reason for the settlement of Mada'in Salih was its location on the main trade route linking the southern Arabic countries with the Mediterranean. It was also located at the meeting point of several valleys which served as a water source for the wells. Its location near the sea was also an important factor. The site may also have served as a defensive point for the kingdom's southern boundaries.

The study provides various finds which help in reconstructing some aspects of the cultural, economic, religious and social life of the people. There is a large pottery assemblage which is in general similar to other assemblages for other Nabataean sites. The decorations were simple and mostly by incision. The most frequent form type was cooking vessels. Other types were also represented, such as bowls, other kind of vessels, pitchers, plates and basins. The excavation has also provided a large assemblage of small finds of different categories, ranging from personal items, nails and studs, household items, textile items, weights, building items, surgical items and religious items.

One major find category is the coins which are mostly Nabataean dating from king Aretas IV's reign (9B.C.-40A.D.) and king Rabel II (70-106 A.D.). A few Roman coins were found mostly in the surface collection, varying in date between the first century A.D. and the fourth century A.D. The coins help in dating the site, especially the settlement area.

House planning and building techniques were an interesting aspect revealed by the excavation. The design of one house examined consists of a main court surrounded by six rooms; a similar design was found in different parts of the Nabataean kingdom. Building techniques were simple, as many walls were not straight, and there were differences in the dimensions of the rooms' walls. The main building material was stone, with no standard size of blocks. Mud walls were also noted, and mud was used between the courses as a bond.

The excavation results, including the finds, building plan, techniques and materials in general added more information to what is known about the Nabataeans. The various materials allowed comparative studies with excavated sites, mainly in the northern parts of the kingdom.

The archaeological area is large (363 hectares), and is roughly rectangular in shape, with about 130 tombs carved in the sandstone mounds scattered around it. Almost at the centre is the settlement area, which is small in size (49 hectares). The settlement area was surrounded by a wall built mainly of mud. Inside this area houses were located, one of which was excavated in this study. Public buildings and streets are expected to have existed.

A preliminary picture drawn of what life was like at the site during its period of flourishing might be as follows. The society of the town was mainly Nabataean, with foreign elements including people from Tayma, some Jews and other elements probably of Greek origin as is evident from their personal names. Women had attained high status in the society, as they had the right of ownership and some people claimed maternal descent. Moreover, queen Shuqailat acted as a regent. There were different classes in the community, including politicians, army leaders and people of different artisanal professions. There was an awareness of writing, and Aramaic was used in inscriptions. Legal documents were accurately written within a legal system familiar to the population.

It seems that the people of Mada'in Salih were religious, as they paid attention to the dead and built attractive tombs for them. The main deity was Dushara, and there were other deities such as Monatu, Allat and Shai' al-Qaum. Religious activities were practised in the Diwan in the Ithlib mountain area. The inscriptions mention a temple at the site which has not yet been located.

In spite of the evidence of some distinctive highly decorated tombs which were probably for high ranking people, the overall economic status of the town was not very high. This can be clearly seen in the simple building techniques and materials. Most of the finds were commonplace.

The site witnessed its peak during the second phase of settlement, which probably lasted from the last quarter of the first century B.C. to the first quarter of the second century A.D. In 106 A.D. the Nabataean kingdom became part of the Roman empire. The town started to decline gradually when the major trade route was shifted from land to sea by the Romans. Life continued at the site until it was completely abandoned in the fourth century A.D. Some Roman coins from this period found on the site are the last dated archaeological materials.

8.1. Future work

As the archaeological work is still at an early stage, it is recommended that the excavations be expanded in order to reveal more parts of the area and discover more private and public buildings and streets. This will help to better determine the town planning.

It is also recommended to trace the city wall in order to find out the town's exact boundaries, size, gates and location of main streets leading inside the town.

A proper archaeological survey could be conducted outside and around the town walls to find out if there were any settlements outside the town.

A further step could be taken to survey the old trade route to the sea in order to discover the ancient port (Leuce Kome).

Appendix 1: Inscriptions' translations

The source of the translation of the inscriptions is (Healey, J. F. 1993. The Nabataean Tomb Inscriptions of Mada'in Salih, Oxford University Press).

(N.B): Inscriptions' location is according to I.G.N survey on map 3.1

The translations were mentioned in the following pages:

H 1, p68	H 2, p81	H 3, p86	H 4, p95	H 5, p101
H 6, p106	H 7, p110	H 8, p115	H 9, p123	H 10, p128
H 11, p131	H 12, p137	H 13, p144	H 14, p147	H 15, p152
H 16, p154	H 17, p163	H 18, p165	H 19, p166	H 20, p171
H 21, p174	H 22, p176	H 23, p178	H 24, p180	H 25, p185
H 26, p187	H 27, p189	H 28, p193	H 29, p196	H 30, p200
H 31, p206	H 32, p212	H 33, p215	H 34, p219	H 35, p225
H 36, p226	H 37, p232	H 38, p234		

H 1

Tomb IGN 9 — facade

Transliteration

- 1.dnh kpr³ wbss³ wkrk³ dy 'bd hwšbw br
- 2.npyw br 'lkwp tymny³ lnpšh wyldh whbw 'mh
- 3.wrwpw w³ptyw 'hwth wyldhm hrm khlyqt hrm
- 4.nbtw wšlmw l¹lm w¹n dwšr³ k1 mn dy yqbr bkpr³ dnh
- 5.'yr mn dy 'l³ ktyb 'w yzbn 'w yzbn 'w ymškn 'w
- 6.ywgr 'w yhb 'w y³n³ wmn dy y'bd k'yr mh dy 'l³
- 7.ktyb p³ty 'mh ldwšr³ 'lh³ bhrm³ dy 'l³
- 8.l¹dm³ mgmr s¹yn 'l³p hrt³ wlmr³n³ hrtt mlk³ kwt
- 9.byrh šbt šnt 'sr wtlt lhrtt mlk nb³tw rhm
- 10.'mh

Translation

This is the tomb and platform and enclosure which Hawshabu son of Nafiyu son of Alkuf, the Taymanite, made for himself and his children and Habbu, his mother, and Rufu and Aftiyu, his sisters, and their children: inviolable according to the nature of inviolability among the Nabataeans and Salamians for ever. And may Dushara curse anybody who buries in this tomb anyone except those inscribed above, or sells it, or buys it, or gives it in pledge, or leases it, or makes a gift of it, or disposes of it (?). And whoever does other than what is written above shall be liable to the god Dushara regarding the inviolability referred to above, for the full price of a thousand Haretite sela's, and to our lord King Haretat for the same amount. In the month of Shebat, the thirteenth year of Haretat, King of the Nabataeans, lover of his people.

H 2

Tomb

IGN 9 — interior

Transliteration

1. *ʔlh try gwḥy³ dy*
2. *hwšbw br npyw w⁴bd(?)lg³*
3. *wḥbw bnwḥy bny šhm*
4. *pyl⁴n prš lyly³ mn ymm³*
5. *mn dy ynpq ythm 1⁴lm*

Translation

These are the two burial-niches of Hawshabu son of Nafiyu and 'Abdalga and Habbu, his children, Sahmites. And may he who separates night from day curse whoever removes them for ever.

H 3

Tomb

IGN 11 — facade

Transliteration

1. *dn̄h kpr³ dy ʕbd ḥšykw br ḥmydw 1npšh*
2. *wlyldh wlqzy³t wšlmw ʔhwth bnt*
3. *ḥmydw w<y>idhm wi³ ršy ʔnwš*
4. *lmktb bkpr³ dn̄h tqp*
5. *klh w1³ 1mqbr bh ʔnwš*
6. *rhq 1hn ʔṣdq b³ṣdq wmn*
7. *[dy ʕb]d k³yr dn̄h pl³ ʔyty lh*
8. *[qy]m byrh ʔyr šnt ʔrb³yn 1hrtt³*
9. *mlk nb̄tw rhm ʕmh rwm³ <w> ʕbd[³bd]t*
10. *ps1[y³]*

Translation

This is the tomb which Husayku son of Humaydu made for himself and for his children and for Guzay'at and Salamu, his sisters, daughters of Humaydu, and for their children. And no-one has the right to write for this tomb any deed of entitlement or to bury in it any non-relative — other than by hereditary title. And whoever does other than this will have no valid portion. In the month of Iyyar, the fortieth year of Haretat, King of the Nabataeans, lover of his people. Ruma and 'Abd'obodat, the masons.

H 4

Tomb

[GN 12 — facade

Transliteration

1.dnh kpr³ dy 'bd š[bytw br] 'ly'w
2.yhw³ lnpšh wlyldh w1'mrt 'ntth dy
3.ytqbrwn bh 'sdq b'sdq w1' ršy 'nwš 'dyy
4.dy ytqbr bh wmn yb³ dy yktb bkpr³ dnh
5.mwhbh 'w ktb k1h mn bny šbytw dy
6.'1³ 'w 's<d>qyhm dy 1³ yhw³ lh bkpr³ dnh
7.hlq wd³ bym hd b'b šnt tlt 1[mnkw m]lk³
8.mlk nb1w 'bd'bd br whb[?lhy...] 'bd

Translation

This is the tomb which Shubaytu son of 'Ali' u, the Jew, made for himself and for his children and for 'Amirat, his wife. They may be buried in it by hereditary title. And no stranger (?) has the right to be buried in it, and if any of the children of Shubaytu mentioned above or their legal heirs seeks to write for this tomb a deed of gift or any document, he will have no share in this tomb. And this was on the first day of Ab, the third year of King Maliku, King of the Nabataeans. 'Abd'obodat son of Wahballahi made (it).

H 5

Tomb

IGN 17 — facade

Transliteration

1.dnh kpr³ dy 'bd hn³w br tps³
2.lh wlyldh bnw³h wbnth wlmn dy ynpq
3.bvdh tqp [m]n yd hn³w dnh dy ytqbr
4.bkpr³ [dnh wd]y l³ ytqbr bkpr³ dnh
5.?nw[š....?w yz]tbn ?w ttrtb bh
6.mwhb³ [?w ?wgrw] ?w tqp klh lhn hn
7.yktb hn³w dnh ?w yqbr mn dy ysb³ hn³w
8.dnh ?w ?sdqh mn b³trh wmn y³bd k³yr dnh
9.p³yty 'mh lmr³n³ s1³yn ?1p hrt³ byrh
10.nysn šnt ?rb³yn lhrtt mlk nb³w rhm 'mh
11. hwrw ps1³ br ?hyw 'bd

Translation

This is the tomb which Hani'u son of Tafsa made for himself and for his children, his sons and his daughters, and for whoever produces in his hand a deed of entitlement from the hand of this Hani'u to the effect that he may be buried in this tomb. And let no stranger (?) be buried in this tomb and let it not be sold nor any deed of gift or lease or deed of entitlement be drawn up, other than if this Hani'u writes it or this Hani'u or his legitimate heir after him buries in it whoever he wishes. And if anyone does other than this, he shall be liable to our lord in the sum of a thousand Haretite sela's. In the month of Nisan, the fortieth year of Haretat, King of the Nabataeans, lover of his people. Huru the mason, son of Uhayu, made it.

H 6

Tomb

IGN 20 — facade

Transliteration

1.dnh kpr³ dy 'bd šly 'srtg³ br 'ydw

2.h[prk³]h

3.w[.....]

4.[..]r[.....šl]y br [‘ydw.....]

5.-8.

9.[.....]kd

10.[.....mnkw m1k³]

11.◊[l]k ◊[btw.....]

Translation

This is the tomb which Sullay the governor, son of 'Aydu the prefect, made (in the year of King Maliku,) King of the Nabataeans

H 7

Tomb

IGN 21 — facade

Transliteration

1.dnh qbr³ dy 'bd 'rws br prwn lnpšh wlprwn 'bwhy

2.hpr³ wlqynw 'ntth wlhtbt whmlt bnthm wyld htbt

3.whmlt 'lh wlkl mn dy ynpq bydh tqp mn 'rws dnh 'w

4.htbt whmlt 'h<w>th bnt prwn hpr³

5.dy yqbr bqbr³ dnh 'w yqbr mn dy ysb³

6.btqp³ dy bydh kdy bktb³ hw 'w 'sda b'sda

7.by<r>h nysn šnt tltyn wšt lhrtt mlk nbtw rhm 'mh

8.'pth br 'bd'bd wwhbw br 'ps³ whwrw br 'hyw psly³

9. 'b<d>w

Translation

This is the tomb which Arus son of Farwan made for himself and for Farwan, his father, the prefect, and for Qaynu, his wife, and for Hatibat and Hamilat, their daughters, and the children of the same Hatibat and Hamilat, and for anyone who produces in his hand a deed of entitlement from this same Arus or Hatibat or Hamilat, his sisters, daughters of Farwan the prefect, to the effect that he may be buried in this tomb or may bury (in it) whoever he wishes by virtue of the deed of entitlement which is in his hand, in accordance with what is in this document or by hereditary title. In the month of Nisan, the thirty-sixth year of Haretat, King of the Nabataeans, lover of his people. Aftah son of 'Abd'obodat and Wahbu son of Afsa and Huru, the masons, made it.

H 8

Tomb

IGN 22 — facade

Transliteration

1. dnh qbr³ dy 'bd 'ydw br kh[y]iw br
2. 'lksy lnpsh wyldh w³hrh w¹m[n dy ynpq by]dh
3. ktb t³p mn yd 'ydw qym lh w¹mn d[y] yntn wyqbr b}h
4. 'ydw bhyw³hy byrh nysn šnt t³[⁴lhrtt] m³lk
5. nb³w rhm 'mh w¹cnw dw³r³ wmnwtw wqyšh
6. k³l mn dy yzbn kpr³ dnh ³w yzbn ³w yrhn ³w yntn ³w
7. ywgr ³w yt³lp 'lwh³ ktb k³h ³w yqbr bh ³nwš
8. lhn lm³n dy 'l³ ktyb wkpr³ wktbh dnh hrm
9. khlyqt hrm nb³w wšlmw l³lm ⁴lmyn

Translation

This is the tomb which 'Aydu son of Kuhaylu son of Alkasi made for himself and his children and his descendants and for who(ever produces in his h)and a deed of entitlement from the hand of 'Aydu, valid for him, and for whoe(ver 'Aydu during his lifetime grants permission to bury in) it. In the month of Nisan, the nin(th year of Haretat), King of the Nabataeans, lover of his people. And may Dushara and Manotu and her Qaysha curse anyone who sells this tomb or buys it or gives it in pledge or makes a gift of it or leases it or draws up for himself any document concerning it or buries in it anyone apart from those inscribed above. And the tomb and this its inscription are inviolable according to the nature of inviolability among the Nabataeans and Salamians for ever and ever.

Transliteration

1.dnh kpr³ dy 'bd 'bd⁴bdt br 'rybs lnpšh
 2.wl¹lt br²th wl¹bny w²lt d³ wbnth wlyldhm dy yqbrwn bqbr³ hw
 3.wl¹ ršyn w²lt wbnyh dy yzbnwn ²w ymšknwn ²w ywgrwn kpr³ dnh
 ²w
 4.yktbw¹n bkpr³ hw ktb klh lkl ²nwš l¹m lhn dy yhw³ kpr³ hw l²lt
 wl¹bnyh
 5.wbnth wlyldhm qym l¹m wqm ²l w²lt wbnyh dy hn yhw³ hwrw ²h
 'bd⁴bdt
 6.dnh bhgr³ wyhw³ bh hlp mwt dy yqbrwn yth bqbr³ dnh lhwdwhy
 7.wl¹ ynpq yth ²nwš wmn dy y²yr wl¹ y²bd kdy ²l ktyb
 8.p²tyt ²mh lmr²n ksp sl¹yn ²lpyn tryn hrt² byrh
 9.tbt šnt ²rb²yn w²rb² lhrtt mlk nb²w rhm ²mh
 10.pth br 'bd⁴bdt ps¹ ²bd

Translation

This is the tomb which 'Abd'obodat son of Aribos made for himself and for Wa'ilat, his daughter, and for the sons of this Wa'ilat and her daughters and their children, that they might be buried in this tomb. And Wa'ilat and her sons will not have the right to sell or give in pledge or lease this tomb or to write for this tomb any document for anyone for ever. But this tomb will be a possession in perpetuity for Wa'ilat and for her sons and her daughters and for their children. And it is incumbent on Wa'ilat and her sons that if Huru, the brother of this 'Abd'obodat, should be in Hegra and the change of death should befall him, they should bury him in this tomb, him alone, and no-one shall remove him. And whoever alters or does not do according to what is written above shall be liable to our lord in the sum of two thousand Haretite sela's. In the month of Tebet, the forty-fourth year of Haretat, King of the Nabataeans, lover of his people. Aftah son of 'Abd'obodat, the mason, made it.

H 10

Tomb

IGN 27 — facade

Transliteration

1. dnh kpr³ dy lb⁴nw br š⁵ydw lnpšh wwldh w⁶hrh
2. w⁷ṣdqh w⁸ ykl⁹ nwš dy yzbn¹⁰ w ywgr kpr³ dnh
3. l¹¹lm bšnt tš¹² lmñkw mlk¹³ mlk nb¹⁴ hn¹⁵w br
4. 'bydt ps¹⁶
5. [.....]n[.....]b[yd]t ps¹⁷

Translation

This is the tomb which belongs to Ba'anu son of Su'aydu, to him and his children and his descendants and his legal heirs. And no one shall be able to sell or lease this tomb for ever. In the ninth year of King Maliku, King of the Nabataeans. Hani'u son of 'Ubaydat, the mason. (Hani'u son of) 'Ubaydat, the mason.

Epigraphic Notes

As noted in JS I, 158, despite erosion of the script there are no serious problems in reading the main text.

2. ykl is not entirely certain, but the context (see Commentary) makes it highly probable.

3. On mnkw/mlkw #4:7 (Epigraphic Notes).

5. Neither JS nor Euting or CIS recorded the fifth line, which is outside the cartouche. It might be suspected that this line, which repeats the name of the mason, was added (copied) later, but against this it may be said that if this were the case, it would be difficult to see why the person who made the addition only selected the name of the mason (— it is not a simple repetition of the fourth line, as might be expected of an illiterate copyist). It is best to regard the fifth line as original in the sense that it was

H 11

Tomb

IGN 29 — interior

Transliteration

1.dnh gwḥ³ dy ‘bd̄t wšwḥ brt
2. . . . bḡrt lnp̄š b̄gw wgr³ dy lh wlb̄n̄th
3.mn dy ytp̄th yth³ w ynp̄q yth
4.mn gwḥ³ hw l̄m³ p̄yty ‘mh lmr³n³
5.h̄rtt ml̄k nb̄tw rh̄m ‘mh s̄l̄c̄ȳn³ l̄p h̄rt̄y
6.wl̄n dwšr³ lh mr̄n³ w̄lhy³ klhm
7.mn dy ynp̄q wšwḥ d³ mn gwḥ³ d̄n̄sh l̄m
8.wšhd bdn̄h l̄nt dwšr³ w̄lhy³ klhm
9.w̄d³ bywm 10 b̄b šnt 43 lh̄r̄tt
10.ml̄k nb̄tw rh̄m ‘mh

Translation

This is the burial-niche which Wushuh daughter of Bagrat made for herself within the rock-tomb belonging to her and her daughters. Whoever opens it for himself or removes her from this burial-niche for ever shall be liable to our lord Haretat, King of the Nabataeans, lover of his people, in the sum of a thousand Haretite sela's. And may Dushara, the god of our lord, and all the gods curse whoever removes this Wushuh from this burial-niche for ever. And may the curse of Dushara and all the gods bear witness to this. And this was on the 10th day of Ab, the 43rd year of Haretat, King of the Nabataeans, lover of his people.

Transliteration

1. dnh kpr^o dy 'bdw wšw^h brt bgrt
2. wqynw wnškwyh bnt^h tymnyt^o ihm klh
3. klh w^lmyrt w^lsr^ont w^ll^lit^o hwtm bnt
4. wš<w>h d^o wlgrh^m klh dy ytqbrwn wšw^h wbnth
5. dy 'l^l wgrhm klh bkpr^o dnh pqym 'l^l
6. wšw^h wbnth 'lh wgrhm klh dkr^o wnqbt^o dy
7. l^l yznwn w^l ymšknwn w^l y^lyrwn mn wgr^o
8. dnh l^lnwš klh w^l[y y]šn^o mn dy 'l^l dy 'l^l
9. p^oyty 'mh l^ldh^o s^lyn m^oh h^lrt^o
10. w^lmr^o h^lrtt m^lk^o kwt byrh^o yr^o šnt
11. 43 ihm^o h^lrtt m^lk nb^l[w] rhm 'mh
12. h^llp^olhy ps^l 'bd

Translation

This is the tomb which Wushuh daughter of Bagrat and Qaynu and Nashkuyah, her daughters, Taymanites, made for themselves, each one, and for 'Amirat and 'Usra'nat and Al'alat, their sisters, daughters of this Wushuh, and for those under their protection, every one, that Wushuh and her daughters mentioned above and all those under their protection might be buried in this tomb. And it is incumbent on Wushuh and these daughters of hers and all those under their protection, male and female, not to sell or give in pledge or alter anything of this rock-tomb for (in favour of ?) anyone. And whoever changes anything of what is on what is above will be liable to Tadhay(?) in the sum of a hundred Haretite sela's and to our lord King Haretat for the same amount. In the month of Iyyar, the 43rd year of Haretat, King of the Nabataeans, lover of his people. Halafallahi, the mason, made it.

H 13

Tomb

IGN 30 — interior

Transliteration

1. *dn̩ gw̩' dy 'bdt hgrw lm̩šlm̩w*

2. *'hwh wlm̩hmyt h̩lth dy l̩ ytpth*

3. *'lyhm l̩'lm̩*

Translation

This is the burial-niche which Hagaru made for Maslamu, her brother, and for Mahmiyyat, her aunt. Let it not be opened over them for ever.

Epigraphic Notes

There is virtually no difficulty in reading any of this inscription (though CIS differs slightly), which is situated above a niche in the south-east corner of tomb B 11, the door of which faces west (see Plate v). For details, with a plan of the tomb, see JS II, 89-90, fig.32, showing the exact location of the inscription. The lettering is regular though inelegant.

Commentary

1. *gw̩' #2:1. 'bdt: 'bd*, 3rd feminine singular perfect.

Hagaru is mentioned also in the exterior inscription, H 14, with the name of her father (or possibly mother), Hafi. Hagaru built the tomb jointly with Mahmiyyat and here provides within it for her brother and her aunt (called Mahmiyyat and presumably, though not necessarily, the same Mahmiyyat). The implication might be that between the building of the tomb and inscribing of the exterior inscription on the one hand and the inscribing of the interior inscription on the other, Mahmiyyat had

H 14

Tomb

IGN 30 — facade

Transliteration

- 1.dnh kpr² dy lhgrw brt hpy wmhmyt brt
- 2.w³ylt lnpshm wwldhm w³hrhm w³npl h⁴lq
- 3.hgrw ymyn⁵ ,myn hm⁶ whlq [mhmyt.....]
- 4.ymyn hm⁶ b⁷nt 18 l⁸[nk⁹ m1k¹⁰ m1k]
- 5.nbtw

Translation

This is the tomb belonging to Hagaru daughter of Hafi and Mahmiyyat daughter of Wa'ilat, for themselves and their children and their descendants. And the share of Hagaru has been allotted to the right five cubits and the share of (Mahmiyyat to the left) five cubits. In the 18th year of King Maliku, (King of) the Nabataeans.

Epigraphic Notes

The inscription is not in a cartouche (see also H 34) but just above and to the left of the tympanum, a most unusual location (see photograph of JS I, fig.152, and General notes below).

There are major differences between JS and CIS. As usual JS gives a much more reliable text and here we ignore the CIS readings.

1. The first line is feint but legible. Two points of hesitation may be noted. The h of mhmyt is in our drawing rather different from that in JS and it is not impossible that the word should be read mtmyt. We are, however, inevitably influenced by the occurrence of mhmyt in H 13. Materially, there *do* seem to be two "ears" on the top of the doubtful letter: this would confirm h.

H 15

Tomb

IGN 37 — facade

Transliteration

1. pth

2. bd

Translation

Aftah made (this).

Transliteration

1.dnh kpr³ dy 'bdw kmkm brt w⁷lt brt hrmw
 2.wklybt brth lnpšhm w⁷hrhm byrh tbt šnt
 3.tš^c lhrtt mlk nbtw rhm 'mh wyl^cn dwšr³
 4.wmwtbh w⁷lt mn 'mn^c wmnwtw wqyšh mn yzbn
 5.kpr³ dnh 'w mn yzbn 'w yrhn 'w yntn yth 'w ynpq
 6.mnh gt 'w šlw 'w mn yqbr bh 'yr kmkm wbrth
 7.w⁷hrhm wmn dy l³ y⁷bd kdy l³ ktyb p⁷yty 'mh
 8.ldwšr³ whblw wlmnw^ctw šmdyn 5 w⁷pk¹ qns
 9.s¹yn 'l³ hryt b¹d mn dy ynpq bydh ktb mn yd
 10.kmkm 'w klybt brth bkpr³ hw pqym ktb³ hw
 11.whb⁷lhy br 'bd^cbdt
 12.'bd

Translation

This is the tomb which Kamkam daughter of Wa'ilat daughter of Haramu and Kulaybat, her daughter, made for themselves and their descendants. In the month of Tebet, the ninth year of Haretat, King of the Nabataeans, lover of his people. And may Dushara and his throne and Allat of 'Amnad and Manotu and her Qaysha curse anyone who sells this tomb or who buys it or gives it in pledge or makes a gift of it or removes from it body or limb or who buries in it anyone other than Kamkam and her daughter and their descendants. And whoever does not act according to what is written above shall be liable to Dushara and Hubalu and to Manotu in the sum of 5 *shamads* and to the exorcist-priest for a fine of a thousand Haretite *sela*'s, except that whoever produces in his hand a document from the hand of Kamkam or Kulaybat, her daughter, regarding

H 17

Tomb IGN 51 — facade

Transliteration

- 1.dnh kpr² l[...]t[...]hprk³
- 2.d[...]mn̄h l[...]h² h̄rt c̄bydw
- 3.[.....]bšnt t̄t lrb²l mlk]
- 4.[nb̄tw]

Translation

This is the tomb for the prefect, 'Ubaydu In the third year of Rabel, King of the Nabataeans.

H 18

Tomb IGN 53 — facade

Transliteration

- 1.[dn̄h kpr².....]
- An uncertain number of lines in the lacuna.
- 2.[...šnt št rb²l mlk nb̄tw....]

Translation

This is the tomb the sixth year of Rabel, King of the Nabataeans

Transliteration

1. dnh qbr³ dy 'bd khln 'sy³ br w⁷ln lnpsh wylhd w⁷hrh
 2. 'sdq b⁷sdq 'd 'lm w⁷yty qbr³ dnh hrm⁷ klyqt hrm³ dy
 3. mh⁷rm l⁷w⁷r³ bnb⁷tw w⁷lmw⁷ 'l k1 'nws⁷ 'sdq wyrt dy l⁷
 4. yzbn qbr³ dnh w⁷ ym⁷skn w⁷ ywgr⁷ w⁷ y⁷l⁷ w⁷ yktb
 5. bqbr³ dnh ktb k1h 'd 'lm⁷ w⁷k1 'nws⁷ dy ynpq byd⁷ ktb mn khln
 6. pqym hw kdy bh w⁷k1 'nws⁷ dy yktb bqbr³ dnh k⁷tb mn k⁷l⁷ dy 'l⁷
 7. p⁷yty 'mh l⁷w⁷r³ ksp s1⁷yn 'l⁷pyn t⁷l⁷ h⁷rt⁷ w⁷l⁷mr⁷n⁷
 8. h⁷rtt mlk⁷ kwt wyl⁷n dw⁷r³ wmnwtw k1 mn dy y⁷yr mn k1
 9. dy 'l⁷ byrh⁷ 'yr⁷ snt t⁷l⁷tn w⁷hm⁷ l⁷h⁷rtt mlk nb⁷tw r⁷hm⁷ 'mh
 10. p⁷th⁷ br 'bd⁷bd⁷ w⁷l⁷p⁷l⁷hy br h⁷mlg⁷ psly⁷ 'bdw

Translation

This is the tomb which Kahlan the physician, son of Wa'lan, made for himself and his children and his descendants by hereditary title for ever. And this tomb is inviolable according to the nature of the inviolability of what is inviolably consecrated to Dushara among the Nabataeans and Salamians. It is incumbent on everyone, legal heir and inheritor, not to sell this tomb or give it in pledge or lease it or lend(?) it or write for this tomb any document for ever. And anyone who produces in his hand a document from Kahlan — it shall be valid in accordance with what is in it. And anyone who writes for this tomb a document carrying out anything of what is above will be liable to Dushara in the sum of three thousand Haretite sela's and to our lord King Haretat for the same amount. And may Dushara and Manotu curse anyone who alters anything of what is above. In the month of Iyyar, the thirty-fifth year of Haretat, King of the Nabataeans, lover of his people. Aftah son of 'Abd'obodat and Halafallahi son of Hamlagu, the masons, made it.

H 20

Tomb

IGN 45 — facade

Transliteration

1.dnh kpr³ dy 'bd 'ydw hprk³ br 'bydw
2.lh wlyldh wl³hrh wdy ytqbrwn bkpr³
3.dnh ?ptyw ?m 'ydw dnh brt hbybw
4.wn³tt ?ntth brt šly wmn dy ynpq
5.bvdh štr mn yd 'ydw dnh wkpr³ dnh
6.'byd byrh ?dr šnt 'sr whdh lm̄kw
7.mlk³ mlk nb̄tw 'bd'bd³ br whb³hy
8.whn³w br 'bydt w³ps³ br hwtw psly³ 'bdw

Translation

This is the tomb which 'Aydu the prefect, son of 'Ubaydu, made for himself and for his children and for his descendants. And Aftiyu, mother of this same 'Aydu, daughter of Habibu, and Na'itat, his wife, daughter of Sullay, and whoever produces in his hand a writ from the hand of this 'Aydu may be buried in this tomb. And this tomb was made in the month of Adar, the eleventh year of King Maliku, King of the Nabataeans. 'Abd'obodat son of Wahballahi and Hani'u son of 'Ubaydat and Afsa son of Huta, the masons, made it.

H 21

Tomb

Ferid / IGN 110 — facade

Transliteration

1.lhyn br kwz³ ?hdh

Translation A

For Hayyan son of Kuza (and) his descendants.

Translation B

Lihyan son of Kuza took possession of it.

H 22

Tomb IGN 111 — facade

Transliteration

- 1.dnh kpr⁹ dy l⁹mgyrw ghry⁹ br
- 2.mgyrw lh w⁹l⁹hrh dy ytqbrwn
- 3.bh l⁹lm ⁹sdq b⁹sdq wd⁹ bywm
- 4.‘srh w⁹sb⁹h bsywn šnt hmš lrb⁹1
- 5.mlk nb⁹w

Translation

This is the tomb belonging to Mugiru from GHR, son of Mugiru, to him and to his descendants. They may be buried in it for ever by hereditary title. And this was on the seventeenth day of Siwan, the fifth year of Rabel, King of the Nabataeans.

H 23

Tomb IGN 121 — facade

Transliteration

- 1.dnh kpr⁹ dy škynt brt mrt mznyt⁹ wlbnhyh wlbnth
- 2.wyldhm ⁹d ⁹lm

Translation

This is the tomb of Sukaynat daughter of Murrat of Mazin and her sons and her daughters and their children for ever.

H 24

Tomb

IGN 128 — facade

Transliteration

1. dnh kpr³ dy 'bdw 'nmw br gzy³t w³rsksh
2. brt tymw ³srtg³ 'l rwm³ wk³lb³
3. ³hyh pl³nmw³ tlt kpr³ wsryh³ dnh
4. w³rsksh tltyn tryn mn kpr³ wsryh³
5. whlqh mn gwhy³ mdnh³ w³gwhy³
6. w³nmw h³lqh mn gwhy³ mdn³h ymyn³
7. w³gwhy³ dy bh lhm wyl³dmh ³sdq b³sdq
8. by³r³h tbt šnt 45 l³hrtt mlk nb³w
9. rhm 'mh ³pth br <³bd³bdt> ps³ 'bd

Translation

This is the tomb which 'Animu son of Guzay'at and Arsaksah daughter of Taymu the governor, made on behalf of Ruma and Kalba, her brothers. And to 'Animu belongs a third of this tomb and burial-chamber and to Arsaksah two thirds of the tomb and burial-chamber. And her share of the burial-niches is the east side and burial-niches and as for 'Animu, his share of the burial-niches is the south-east(?) side and the burial-niches which are in it. They belong to them and their children by hereditary title. In the month of Tebet, the 45th year of Haretat, King of the Nabataeans, lover of his people. Aftah son (of 'Abd'obodat), the mason, made it.

H 25

Tomb

IGN 127 — facade

Transliteration

1. dnh kpr³ w³wn³ dy
2. 'bd mn³t br ³byn lnp³sh
3. wbnwhy wbnth wyl³dmh b³nt
4. 'sry³n w³rb³ l³hrtt mlk
5. nb³w rhm 'mh

Translation

This is the tomb and dwelling which Mun'at son of Abiyyan made for himself and his sons and his daughters and their children. In the twenty-fourth year of Haretat, King of the Nabataeans, lover of his people.

H 26

Tomb

IGN 117 — facade

Transliteration

- 1.dnh kpr³ dy 'bd³ hynt brt whbw ln[pšh
- 2.wlwlhd w³hrh 'd 'lm wl³ ršy 'nwš dy yz[bn
- 3.'w ymškn 'w yktb 'wgrw bkpr³ dnh wmn
- 4.dy y³bd k³yr dnh dy ytwb h³lqh l³sdqh
- 5.bšnt 'šry³ whdh lmnkw mlk³ mlk nb[³w

Translation

This is the tomb which Hinat daughter of Wahbu made for herself and for her children and her descendants for ever. And no-one has the right to sell it or give it in pledge or write for this tomb a lease. And whoever does other than this, his share will revert to his legitimate heir. In the twenty-first year of King Maliku, King of the Nabataeans.

H 27

Tomb

IGN 120 — facade

Transliteration

- 1.dnh kpr³ dy 'bd tym³lhy br
- 2.hmlt ln[pšh wyhb kpr³ dnh l³mh
- 3.'ntth brt glhmw mn zmn štr
- 4.mwhbt³ dy bydh dy t³bd bh kl dy t³sb³
- 5.mn 26 b³b šnt 25 lhrtt mlk nb[³w
- 6.rhm 'mh

Translation

This is the tomb which Taymallahi son of Hamilat made for himself. And he gave this tomb to Amah, his wife, daughter of Gulhumu, from the date of the deed of gift which is in her hand, that she might do with it whatever she wishes. From the 26th of Ab, the 25th year of Haretat, King of the Nabataeans, lover of his people.

H 28

Tomb IGN 109 — facade

Transliteration

- 1.dnh kpr³ dy 'bd šly br rsw³
- 2.lnpšh wyldh w³hrh 'sdq b³sdq
- 3.wdy l³ ytqbr bkpr³ dnh lhn 'sdq³
- 4.b³sdq wdy l³ ytzbn w³ ytrhn kpr³
- 5.dnh wmn dy y³bd k³yr dy 'l³ p³yty
- 6.'mh ldwšr³ 'lh mr³n³ [ksp s1³yn] 'l³p
- 7.hrty byrh nysn šnt 20+[.+.]+1
- 8.lhrtt mlk nb³w rhm 'mh 'p³th³
- 9.psl³ 'bd

Translation

This is the tomb which Sullay son of Radwa made for himself and his children and his descendants by hereditary title. And none shall be buried in this tomb except by hereditary title, nor shall this tomb be sold nor given in pledge. And whoever does other than what is above shall be liable to Dushara, the god of our lord, in the sum of a thousand Haretite (sela's). In the month of Nisan, the 20+1+th year of Haretat, King of the Nabataeans, lover of his people.

Aftah the mason made it.

H 29

Tomb Qasr es-Sane / IGN 102 — facade

Transliteration

- 1.dnh kpr³ dy 'bd mlkywn ptwr³
- 2.'l hnynw hpsstywn klyrk³ 'bwly
- 3.wlnpšh wyldh w³hrh 'sdq b³sdq byrh nysn
- 4.šnt 'sr wšb³ lmr³n³ hrtt mlk
- 5.nb³w rhm 'mh 'bdhrtt psl³
- 6.br 'bd'bdt 'bd

Translation

This is the tomb which Malkion the omen-diviner, made for Hunaynu Hephaestion the commandant, his father, and for himself and his children and his descendants by hereditary title. In the month of Nisan, the seventeenth year of our lord Haretat, King of the Nabataeans, lover of his people. 'Abdharetat, the mason, son of 'Abd'obodat, made it.

Transliteration

1.dnh kpr³ dy 'bdw mn⁴t whgrw bny 'myrt
 2.br whbw lnpšhm wyldhm w⁵hrhm wdy hn
 3.yhw³ b⁶hr mn⁴t dnh 'wyh d⁷y yzb]n [w y]mškn
 4.hlqh mn kpr³ hw p⁸yty h[qh....] h[hr] hgrw]
 5.d⁹ whn yhw³ b⁶hr hgrw d¹⁰ [wy]h kwt p¹¹y[y] hlqh
 6....]g l¹²hr mn⁴t dnh w¹³yt[y 'm] k1 mzbn yth l¹⁴wšr¹⁵
 7.lh¹⁶ ksp s¹⁷yn '1p h[d hr]ty w[1mr¹⁸n] hrtt
 8.kwt ksp s¹⁷yn '1p h[dt]ty w[1...] '1ht¹⁹ [ksp]
 9.s¹⁷yn hmš m²⁰h l[....] mn ym [.....šnt]
 10.'šr wšt l²¹h[r]tt [m1k] nb[1w rhm 'mh

Translation

This is the tomb which Mun'at and Hagaru, the children of 'Amirat son of Wahbu, made for themselves and their children and their descendants. And if there should be among the descendants of this Mun'at one who does him wrong(?) who would sell or give in pledge his share of this tomb, his share will be (forfeit?) to the descendants of this same Hagaru. And if there should be among the descendants of this same Hagaru (one who does him wrong) similarly, his share will be (forfeit?) to the descendants of this same Mun'at. And anyone selling it will be liable to Dushara the god in the sum of one thousand Haretite sela's and to our lord Haretat for the same amount, the sum of one thousand Haretite sela's, and to the goddess in the sum of five hundred sela's From the day in the month of, the sixteenth year of Haretat, King of the Nabataeans, lover of his people.

H 31

Tomb

IGN 64 — facade

Transliteration

1.dnh ^{oo} kpr^o dy 'bd ^{oo} s^od^olhy qntryn^o br zbd^o
2.[lnpsh w1.....w1]yldhm wlmn y^ot^o
3.m[n].....ytq]br bh wlyld hnh
4.i[...] br hrw [...] rsy ^onwš k1h
5.[.....dy yzbn yth w]l^o dy yrhn yth w1^o
6.dy ywgr y^ot^o [wmn dy y]bd k^oyr dy '1^o
7.ktyb p^oty '1why kpl dmy ^otr^o dnh
8.klh w1^ont dwšr^o wmnwtw byrh nysn
9.šni[...] lhrtt mlk nbtw rhm 'mh
10.wk1 mn dy yt^olp bkpr^o dnh ^ow y^oyr mn k1 dy '1^o
11.p^oty 'mh 1dwšr^o s1^oyn ^olp hrt^o ^opth
12. ^obd

Translation

This is the tomb which Sa'dallahi the centurion, son of Zabda, made (for himself and for and for) their children and for whoever comes from (the children of Sa'dallahi and produces in his hand a document to the effect that) he may be buried in it and for the children of Hannah son of Huru ... (And no)body will have the right to sell or buy or give it in pledge or to lease it. (And whoever) does other than what is written above shall be liable for double the price of this whole burial-place and for the curse of Dushara and Manotu. In the month of Nisan, theth year of Haretat, King of the Nabataeans, lover of his people. And anyone who draws up for himself (a document) regarding this tomb or alters anything of what is above will be liable to Dushara in the sum of a thousand Haretite sela's. Aftah made it.

H 32

Tomb IGN 66 — facade

Transliteration

1. dn̄h kpr̄ dy 'bd m̄tyw 'srtḡ
 2. br̄ 'wprns hprk̄ lnp̄sh wyl̄dh w̄w̄l̄w
 3. 'n̄th wbn̄yhm̄ byrh̄ nysn̄ šnt̄ 'rb̄'yn̄
 4. wtm̄wn̄ [l̄hr̄]t̄ ml̄k nb̄tw rh̄m̄
 5. 'mh̄ w̄l̄ [r̄šȳ 'n̄w̄š] d̄y yzbn̄ 'w̄ yrhn̄ 'w̄ ywgr̄
 6. kpr̄ dn̄h
 7. l̄lm̄ [P̄th̄] br̄ 'bd 'bd 'bd

Translation

This is the tomb which Matiyu the governor, son of Euphronios the prefect, made for himself and his children and Wa'ilu, his wife, and their children. In the month of Nisan, the forty-eighth year of Haretat, King of the Nabataeans, lover of his people. And no-one has the right to sell or give in pledge or lease this tomb for ever. Aftah son of 'Abd'obodat made it.

H 33

Tomb IGN 73 — facade

Transliteration

1. [dn̄h qb̄]r̄ dy l̄šbw br̄ mqymw w̄nbyqt̄ br̄t̄
 2. [...w̄ly]l̄dhm̄ w̄'šdq̄hm̄ w̄k̄l̄ mn̄ ynp̄q bydh̄ mn̄
 3. šbw w̄nbyqt̄ kt̄b tqpl̄[.....]n̄[....]
 4. yt̄qbr̄ bh̄ w̄dy ttqbr̄ t̄lm̄ b̄n̄t̄ m̄ly w̄yhp̄š šbw
 5. pl̄ḡ' l̄nb̄y>[q̄l̄t̄ pl̄ḡ' 'h̄rn̄' l̄šbw dy 'l̄t̄ gw̄h̄' d̄y[.]
 6. [bh̄ b̄]l̄[h̄wd b̄]šnt̄ 'r̄b̄'yn̄ wtm̄wn̄ l̄h̄[rt̄]t̄ [m̄]l̄[k nb̄tw]
 7. [rh̄m̄ 'mh̄]

Translation

This is the tomb which belongs to Shabbu son of Muqimu and to Nubayqat daughter of and to their children and their legal heirs and anyone who produces in his hand from Shabbu and Nubayqat a deed of entitlement (that) he might be buried in it. And Tilm daughter of Mali may be buried (in it). And Shabbu will assign(?) half to Nubayqat; the other half is for Shabbu mentioned above (and) the burial-niche which is in it, (for him) alone. In the forty-eighth year of Haretat, King of the Nabataeans, lover of his people.

H 34

Tomb

IGN 87 —facade

Transliteration

- 1.dnh kpr³ dy lh³hynt br³ ³bd³[b]dt lnp³sh
- 2.wyldh w³hrh wlmn dy ynpq bydh mn yd hynt
- 3.d³ ktb ³w tqp dy ytqbr bkpr³ hw dy
- 4.kpr³ dnh hwh l³bd³bd³ ³bw[h] ³q³ ktyb
- 5.1 ywmw³hy ktb bqbrt hynt d³ w³bd³bd³ br
- 6.mlykt ³ht m³nwh ³m ³bd³bd³ ³b hynt d³
- 7.2³h r[s]lym³ mlkw ³srtg³ br rbyb³1 ³srtg³
- 8.w³sdq³h b³tr³ bkpr³ dnh b³sdq³ ³bd³bd³ [dnh]
- 9.w³ yhw³ ³nw³ r³sy dy yzbn kpr³ dnh ³w y³[gr]
- 10.yth ³w yt³lp bkpr³ dnh ktb k³h wmn y³bd
- 11.k³yr dy ³1³ dy ³yty ³lwh³ hty³h
- 12.l³dw³r³ wmnwtw ksp s³lyn ³lp hd h³rt³y
- 13.wlmr³n³ rb³1 mlk nb³w kwt byrh ³yr šnt
- 14.trtyn lrb³1 mlk nb³w

Translation

This is the tomb belonging to Hinat daughter of 'Abd'ododat, for herself and her children and her descendants and for whoever produces in his hand from the hand of this Hinat a document or deed of entitlement to the effect that he may be buried in this tomb, since this tomb had belonged to 'Abd'obodat, her father, mentioned above. During his lifetime he wrote a document concerning the burial of this Hinat and 'Abd'obodat son of Malikat, sister of Ma'nuh, mother of 'Abd'obodat, father of this Hinat, brother of RSYM Maliku the governor, son of Rabibel the governor, and his legal kinsman, in a burial-place in this tomb by the bequest of (this) 'Abd'obodat. And no-one has the right to sell this tomb or to lease it or to draw up for himself any document. And whoever does other than what is above will be liable for a fine to Dushara and Manotu in the sum of one thousand Haretite sela's and to our lord Rabel, King of the Nabataeans, for the same amount. In the month of Iyyar, the second year of Rabel, King of the Nabataeans.

H 35

Tomb

IGN 89 — facade

Transliteration

1. dn̄h kpr̄ dy l̄mt br̄t kmwlt

2. l̄n̄p̄šh w̄l̄w̄ldh w̄h̄rh b̄šnt

3. ^{oo}rb̄c l̄rb̄l ml̄k nb̄tw

Translation

This is the tomb belonging to Amat daughter of Kamulat, to herself and to her children and her descendants. In the fourth year of Rabel, King of the Nabataeans.

H 36

Tomb

IGN 93 — facade

Transliteration

1. dn̄h kpr̄ dy c̄bd h̄lpw br̄ qsn̄tn l̄n̄p̄šh w̄š̄ydw br̄h

2. w̄h̄wh̄y mh̄ dy ytyld l̄h̄lpw dn̄h mn̄ dkrȳn w̄l̄bnyhm w̄h̄rh̄m

3. ^{oo}sd̄q b̄sd̄q c̄d c̄lm w̄dy ytb̄rwn b̄kpr̄ dn̄h w̄ldȳh ^{oo}š̄ydw ^{oo}dn̄h

4. w̄mn̄w̄t w̄š̄nk̄w w̄ryb̄mt w̄myt w̄š̄lymt b̄nt h̄lpw dn̄h w̄l̄ r̄šy

5. ^{oo}n̄w̄š k̄lh mn̄ š̄ydw w̄h̄wh̄y dkrȳn w̄bnyhm w̄h̄rh̄m dy yzbn̄ kpr̄ dn̄h

6. ^{oo}w̄ yktb mwhbh ^{oo}w̄ c̄yrh l̄n̄w̄š k̄lh b̄l̄d hn̄ yktb h̄d mn̄hm l̄ntth

7. ^{oo}w̄ l̄bn̄th ^{oo}w̄ l̄n̄šyb ^{oo}w̄ l̄htn ^{oo}k̄ib l̄mqbr b̄l̄hd w̄mn̄ ȳbd k̄yr dn̄h p̄yty

8. ^{oo}mh̄ qns l̄dw̄šr̄ ^{oo}l̄h m[r̄n̄] ks]p ^{oo}s̄l̄yn hm̄š m̄h h̄rty

9. w̄l̄mr̄n̄ k̄wt kn̄s̄t dn̄h yhyb[b̄b̄]yt qȳš̄ byrh̄ nysn̄ šnt ^{oo}rb̄cyn

10. l̄h̄rtt ml̄k nb̄tw rh̄m ^{oo}mh̄ r̄wm̄ w̄bd̄c b̄dt pslȳ

Translation

This is the tomb which Halafu son of Qosnatan made for himself and for Su'aydu, his son, and his brothers, whatever male children may be born to this Halafu, and for their sons and their descendants by hereditary title for ever. And his children (?) may be buried in this tomb: this Su'aydu and Manu'at and Sanaku and Ribamat and Umayyat and Salimat, daughters of this Halafu. And none at all of Su'aydu and his brothers, males, and their sons and their descendants has the right to sell this tomb or write a deed of gift or anything else for anyone at all, except if one of them writes for his wife or for his daughters or for a father-in-law or for a son-in-law a document for burial only. And anyone who does other than this will be liable for a fine to Dushara the god of our lord in the sum of five hundred Haretite sela's and to our lord for the same amount, according to the copy of this deposited in the temple of Qaysha. In the month of Nisan, the fortieth year of Haretat, King of the Nabataeans, lover of his people. Ruma and 'Abd'obodat, the masons.

H 37

Tomb

IGN 94 — facade

Transliteration

1. dnh kpr³ dy 1⁴bd³ w⁴ly¹ wgdw
2. bny ⁴ptw w¹h²kly ³mhm
3. brt hmyn wlmn ynpq bydh
4. ktb tqp dy ytqbr
5. ¹hm² w¹h²rh³ b²nt ¹7 ²lmik²

Translation

This is the tomb which belongs to 'Abda and 'Ali'el and Gaddu, sons of 'Aftu, and to Ahakli, their mother, daughter of Himyan, and to whoever produces in his hand a deed of entitlement to the effect that he may be buried (in it). For them and for their descendants. In the 17th year of Maliku.

H 38

Tomb

IGN 100 — facade

Transliteration

1. dnh kpr³ dy ⁴bd tr²w hprk³
2. br tymw lnp²sh w¹cydt ³ntth brt
3. ⁴bd³dnwn w¹bd²rb³1 wtymw bnwhy w¹yldhm w¹h²rh[m]
4. w²sdqhm mn [y]w²m² dn[h] ⁴d ⁴lm w[...]m²[.....kpr]³
5. dnh 1[...]?[.....]l² b²nw[hy]
6. yztry [wyz]bn m[.....]m²[k]n[.....]
7. wk¹ ³nw² dy yzbn kpr³ dnh ⁴w ytk²b¹h b²h m²whbh p²yty ⁴mh
8. ¹srtg³ dy h²w² bhgr³ sl²yn ¹p h²ryt w¹mr²n² mnkw m²lk³ kwt
9. ²byrh² tbt² šnt ²šry² w²rb² lmnk² m²lk³ m²lk nb²w

Translation

This is the tomb which Tarsu the prefect, son of Taymu, made for himself and for 'Aydat, his wife, daughter of 'Abd'adnon, and for 'Abdrabel and Taymu, his sons, and for their children and for their descendants and their legitimate heirs from this day for ever. And this tomb his sons and sell give in pledge And anyone who sells this tomb or writes for himself regarding it a deed of gift shall be liable to the governor who is in Hegra in the sum of a thousand Haretite sela's and to our lord King Maliku for the same amount. In the month of Tebet, the twenty-fourth year of King Maliku, King of the Nabataeans.

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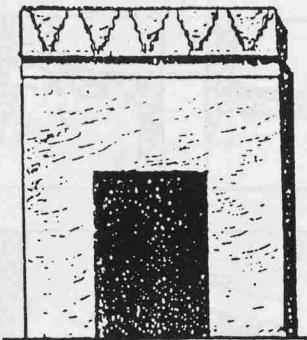
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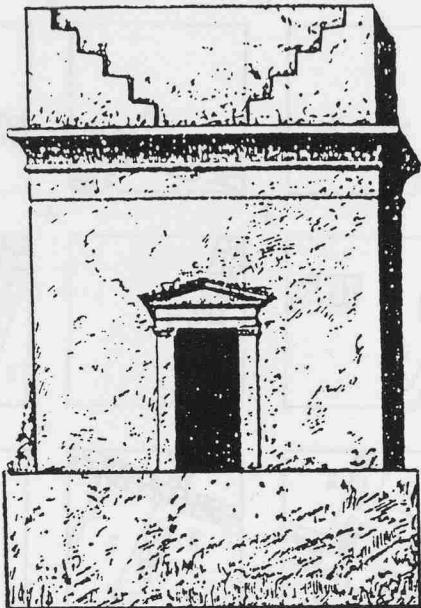
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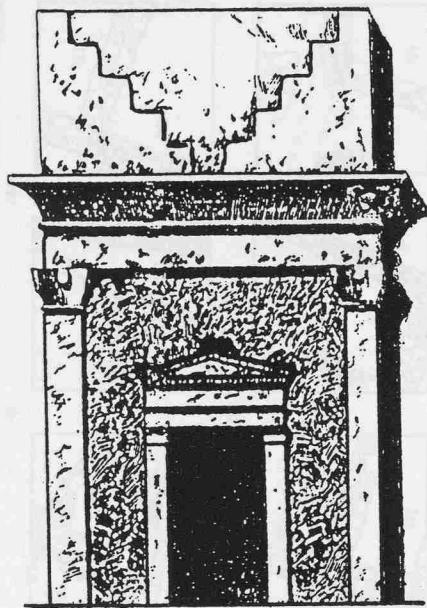
Figures



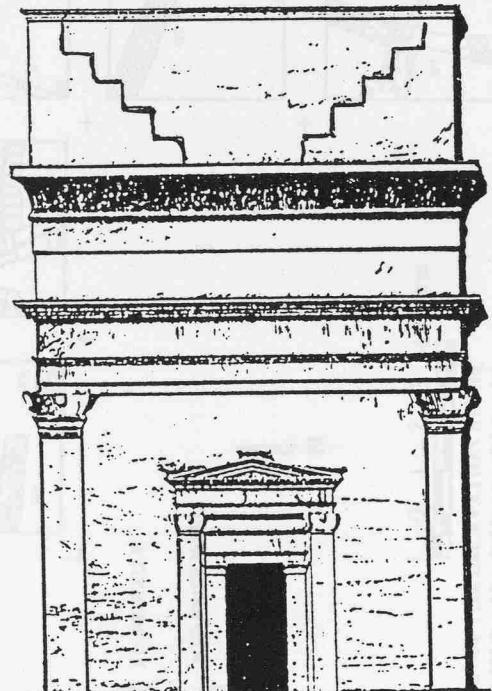
a. Pylon with a single row of crenellations



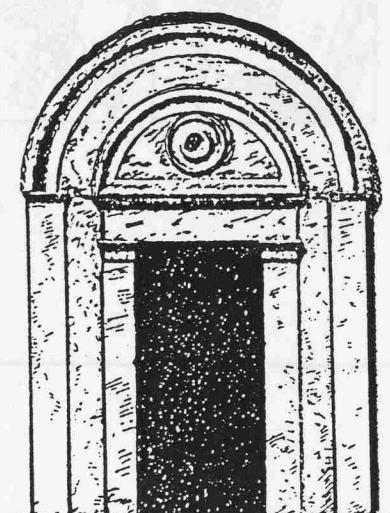
b. Stepped tomb



c. Proto-Heger type

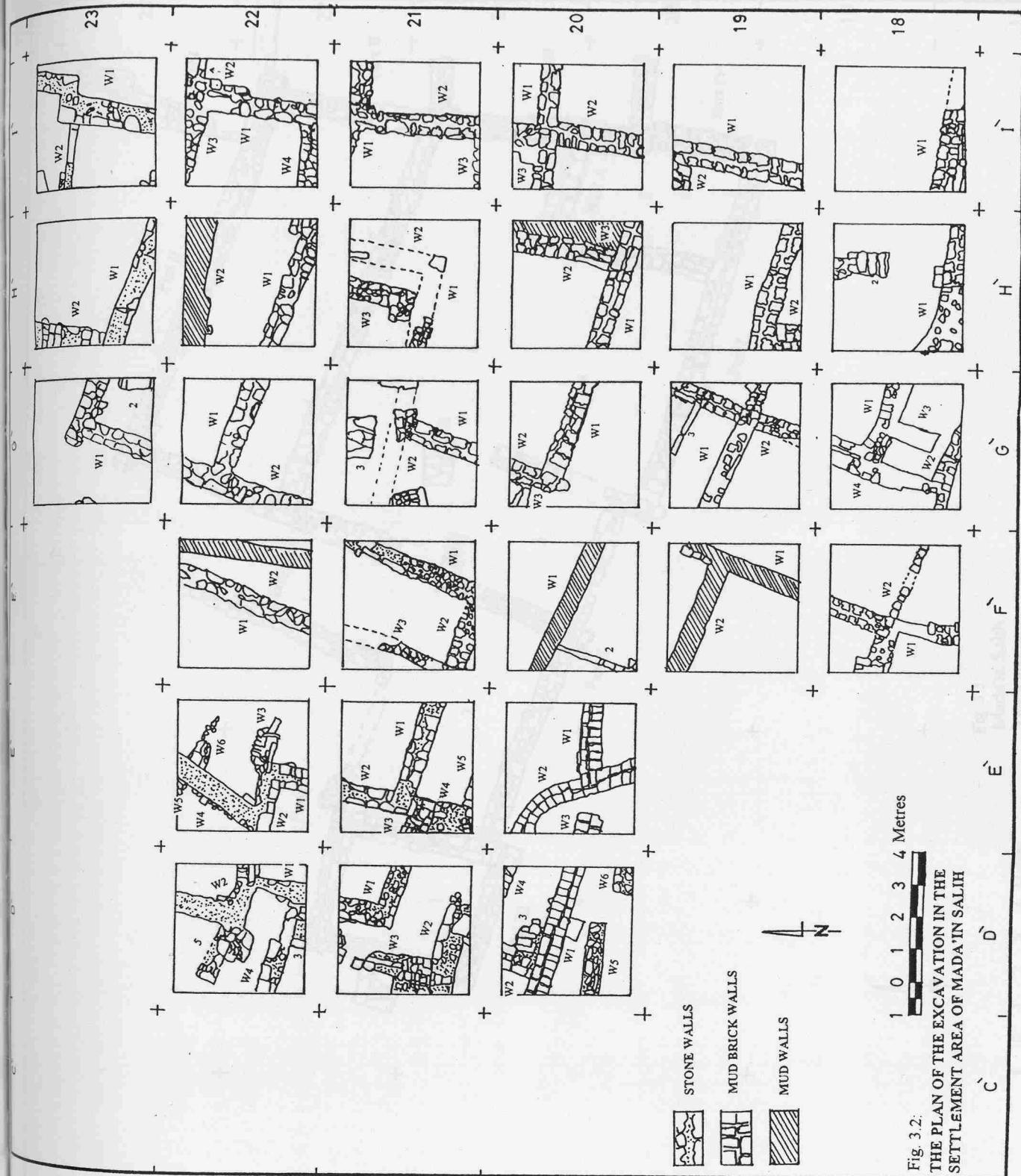


d. Heger type



e. Arched tomb

Fig. 3.1: Types of Nabataean tomb façades (Patrich 1990, 115)



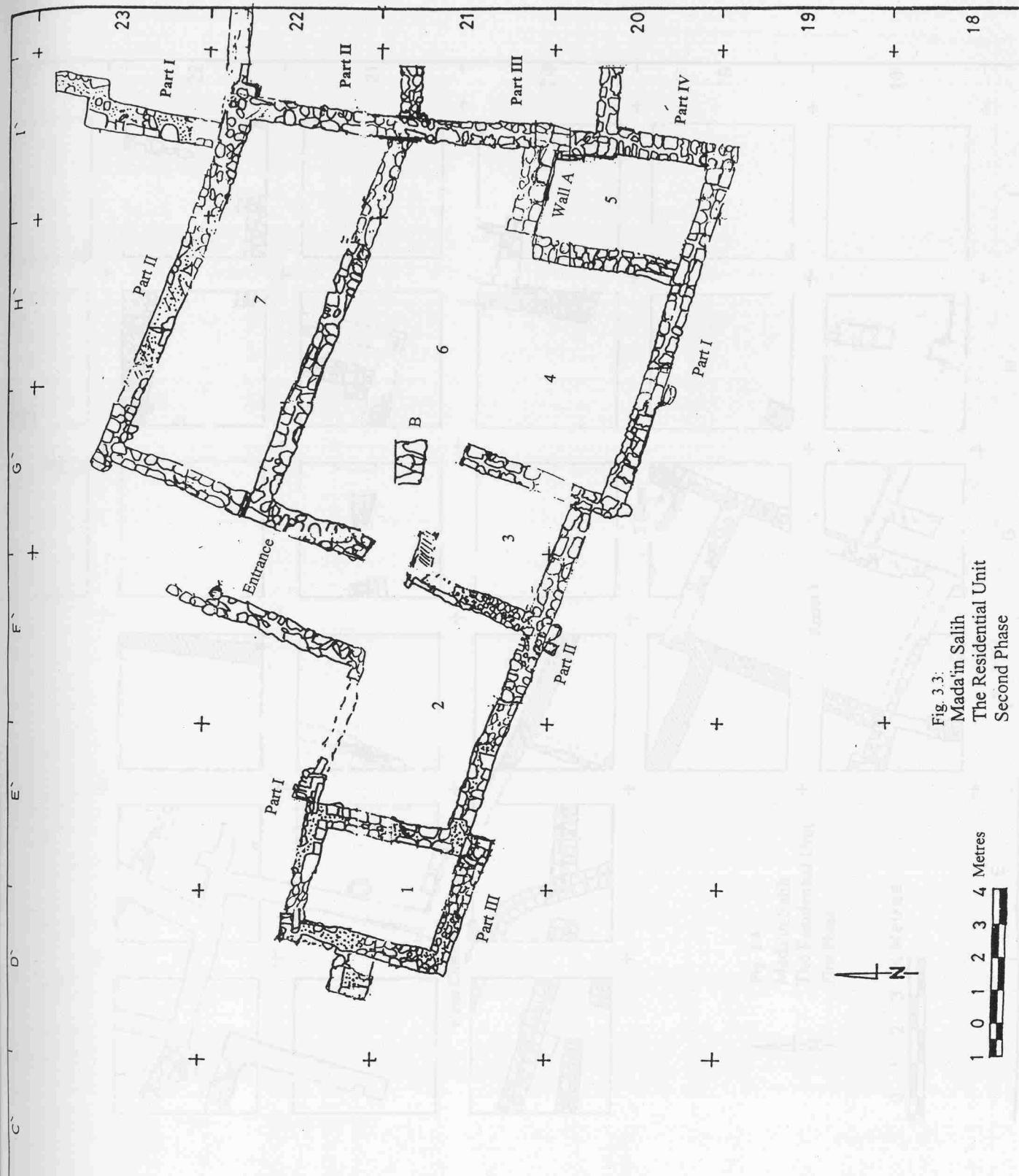


Fig. 3.3:
Mada'in Salih
The Residential Unit
Second Phase

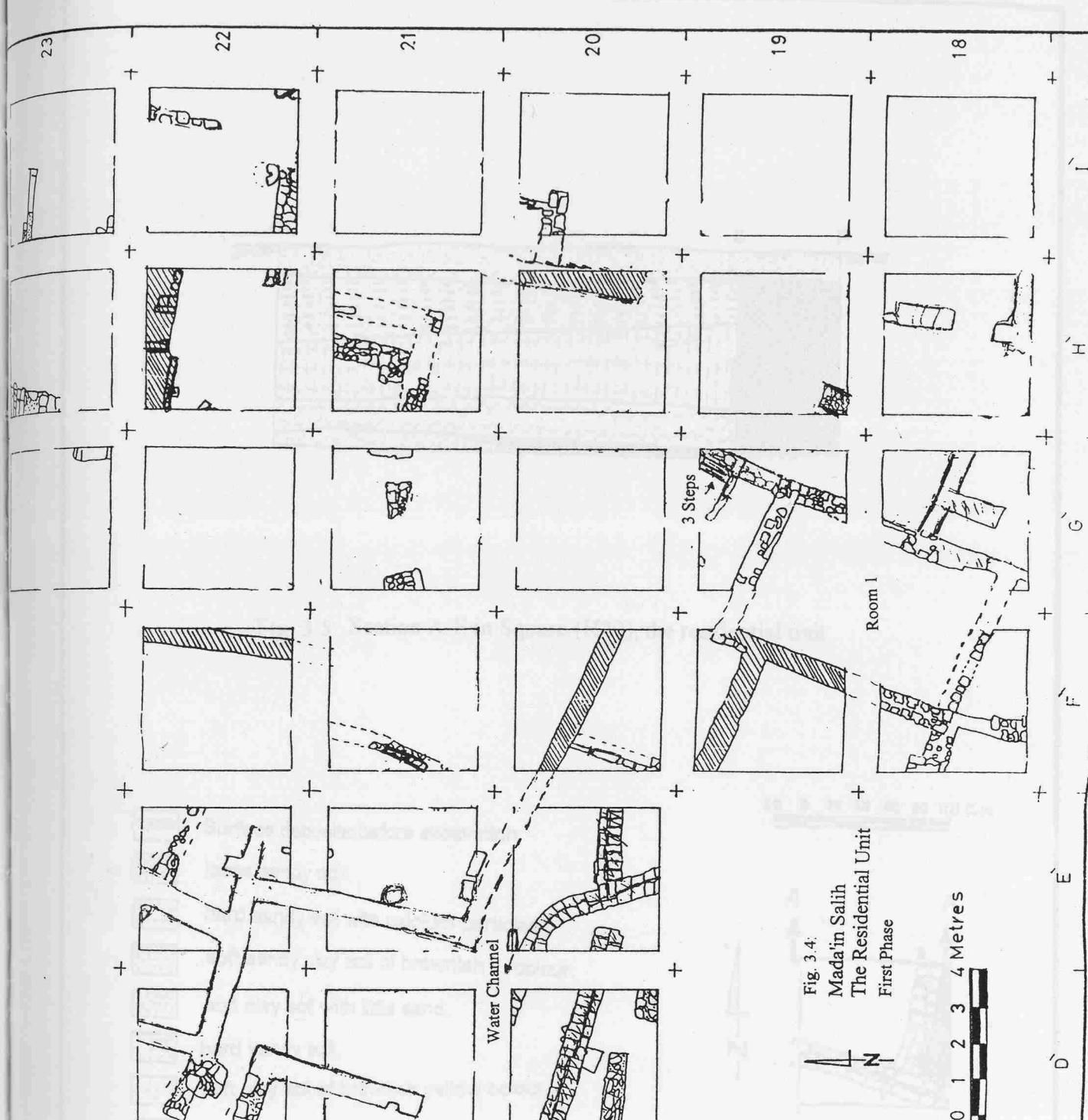
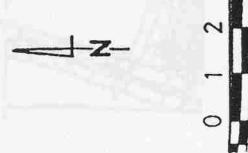


Fig. 3.4.
Madain Salih
The Residential Unit
First Phase



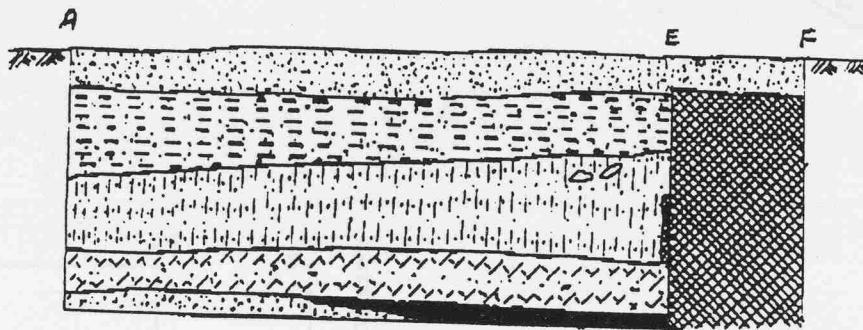
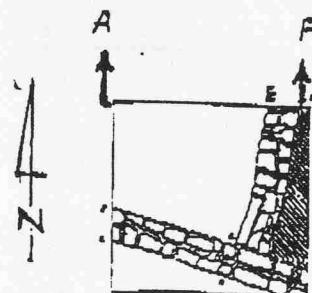


Fig. 3.5: Section A-F in Square (H20), the residential unit

- Surface deposits before excavation
- loose sandy soil
- hard sandy soil with calcium particles.
- soft sandy clay soil of brownish colour.
- soft clay soil with little sand.
- hard sandy soil.
- soft clay soil of brownish yellow colour.
- Section of the site wall
- Stone wall
- Patch of some black deposits

20 0 20 40 60 80 100 C.M.



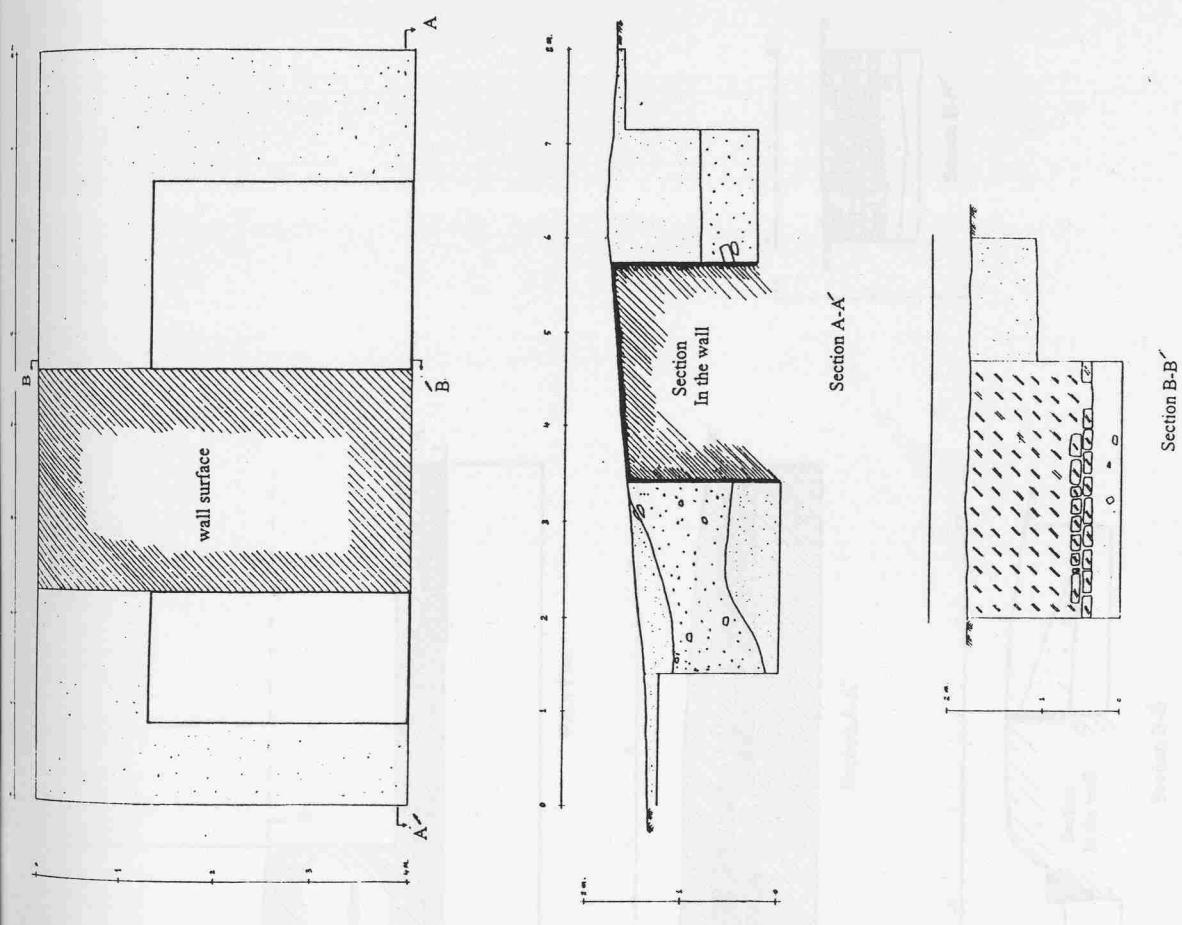
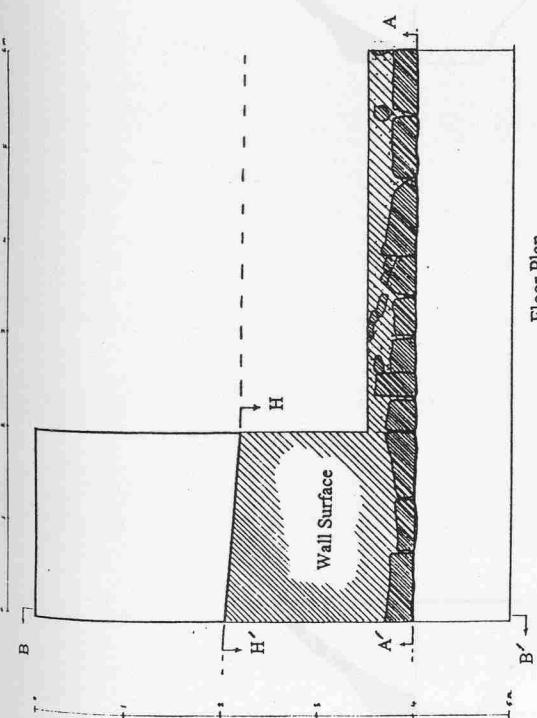


Fig. 3.6: The Old City Wall

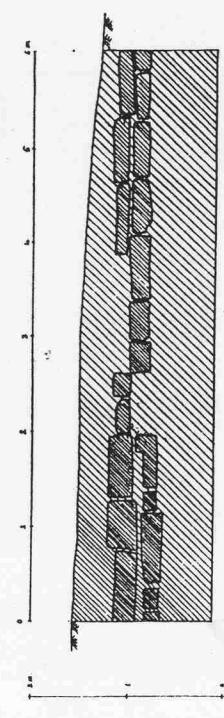
Southern Trench

Section B-B'

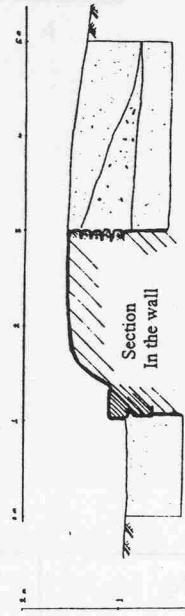
Fig. 3.1. Bowl Type 1



Floor Plan



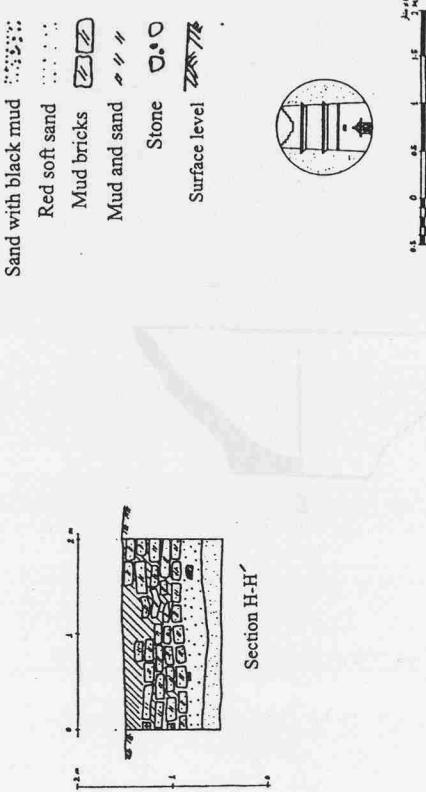
Section A-A'



Section B-B'



Section H-H'



Sand with black mud

Red soft sand

Mud bricks

Mud and sand

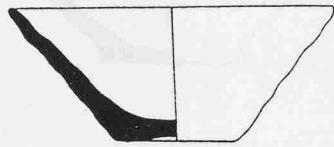
Stone

Surface level

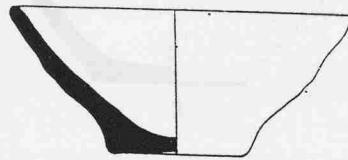
Fig. 3.7. The Old City Wall

Eastern Trench

Bowl Type 1



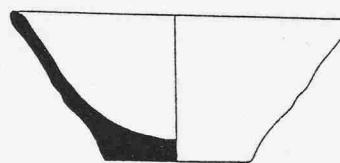
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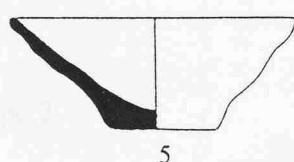


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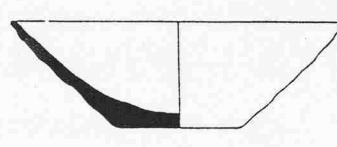


4

Plate Type 1



5



6

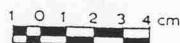
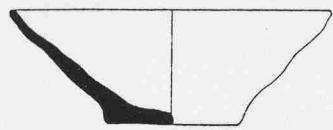


Fig. 4.1

Bowl Type 1



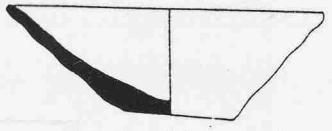
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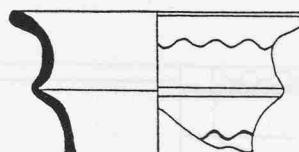


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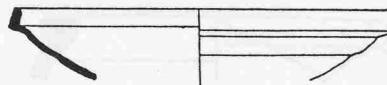
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Bowl Type 2



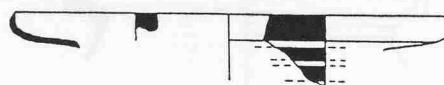
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Plate Type 1



20

Plate Type 2



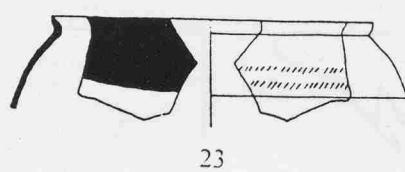
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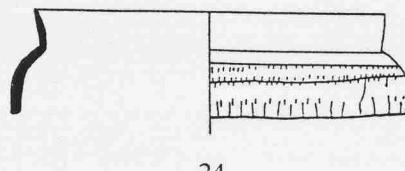
Fig. 4.2

Cooking Vessel Type 1a

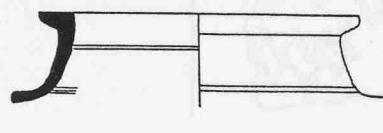
Vessel Type 1



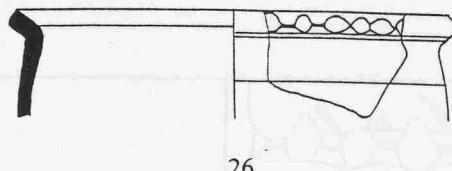
Vessel Type 2



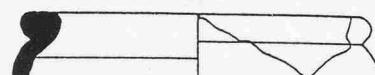
Vessel Type 3



Vessel Type 4a



Vessel Type 4b



Vessel Type 5

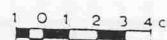
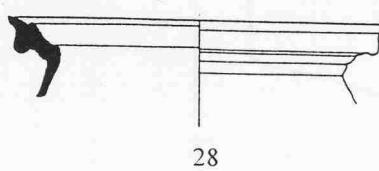
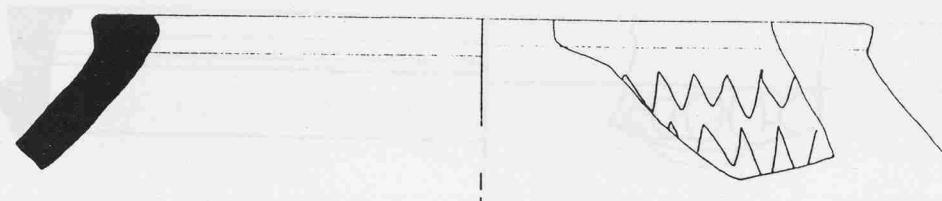


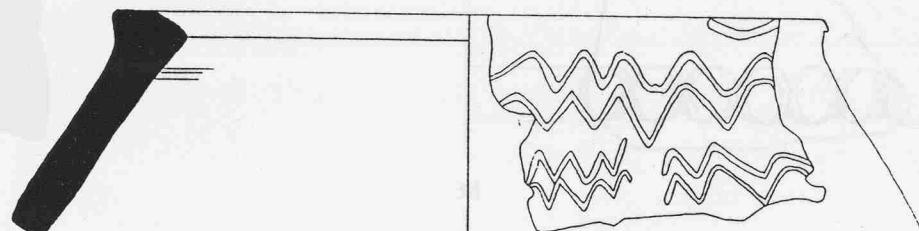
Fig. 4.3

Cooking Vessel Type 1a



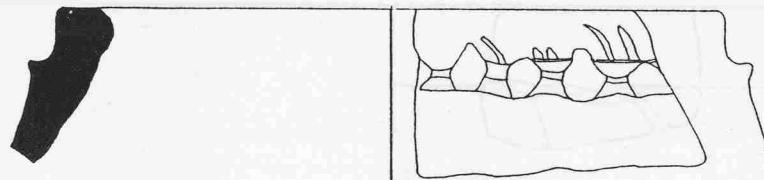
29

Cooking Vessel Type 1b



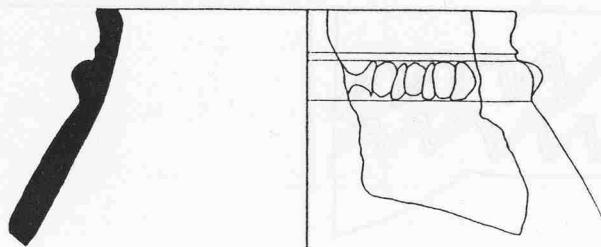
30

Cooking Vessel Type 2a



31

Cooking Vessel Type 2b



32

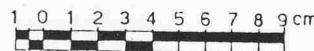
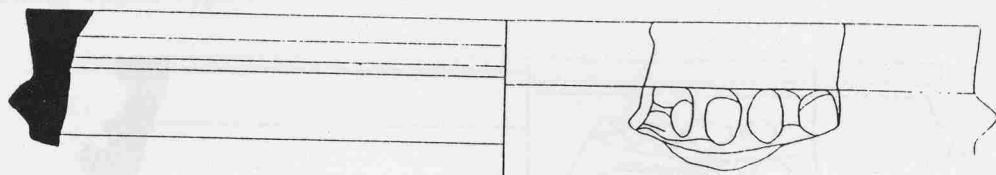


Fig. 4.4

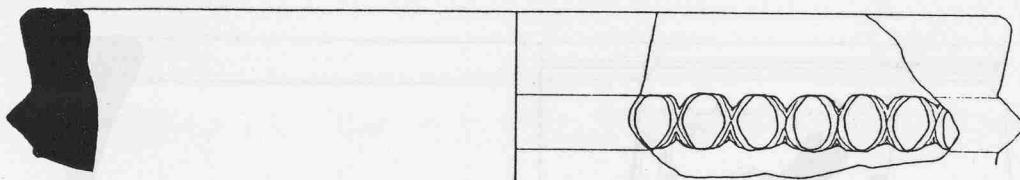
Cooking Vessel Type 2c

Cooking Vessel Type 2c



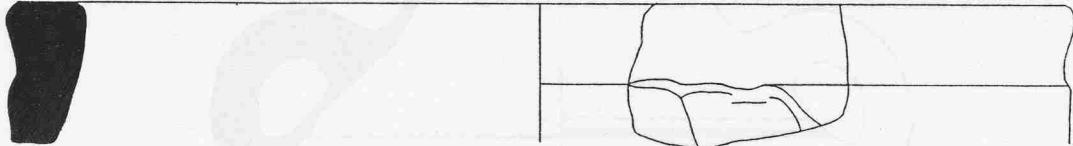
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Cooking Vessel Type 2c



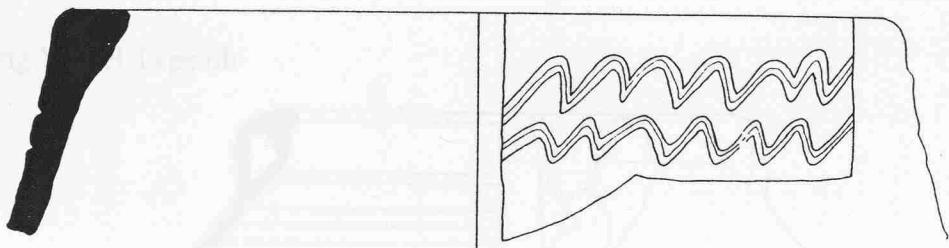
34

Cooking Vessel Type 2c



35

Cooking Vessel Type 3



36

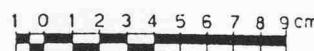
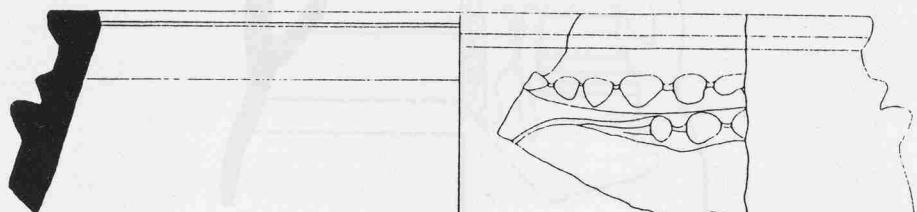


Fig. 4.5

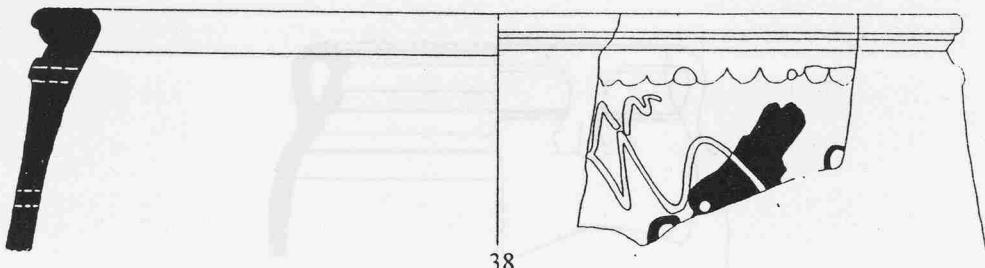
Cooking Vessel Type 6b

Cooking Vessel Type 4



37

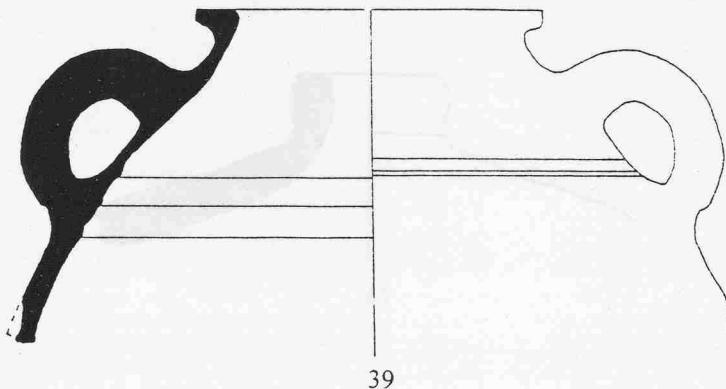
Cooking Vessel Type 5



38

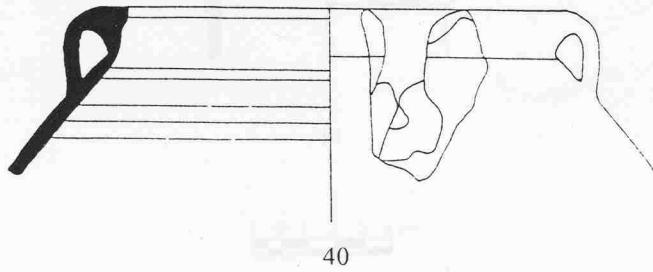
Cooking Vessel Type 6a

Pitcher Type 1b



39

Cooking Vessel Type 6b



40

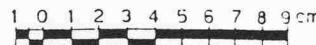
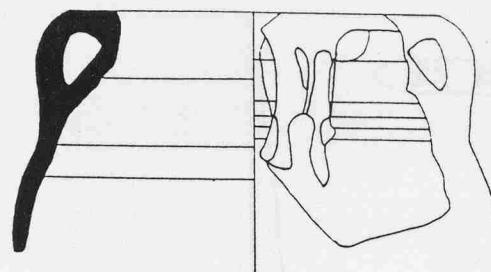
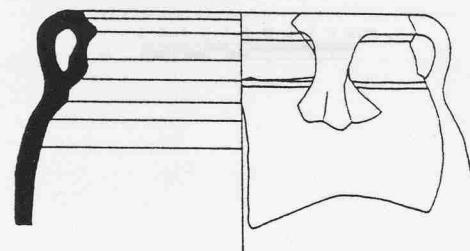


Fig. 4.6

Cooking Vessel Type 6b

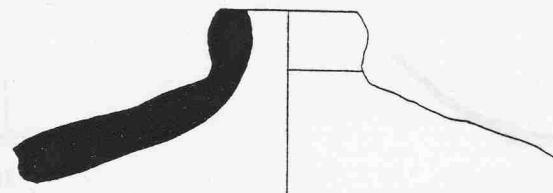


41



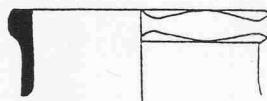
42

Pitcher Type 1a



43

Pitcher Type 1b



44

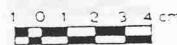


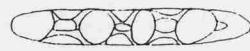
Fig. 4.7

Base Type 1

Base Type 2



45



1 0 1 2 3 4 5 6 7 8 9 cm

Base Type 1



46



47

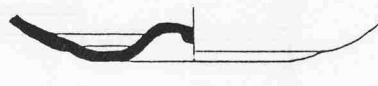


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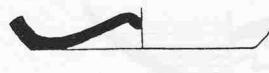


49

Base Type 2



50



51

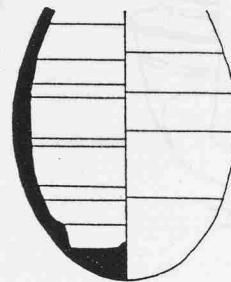
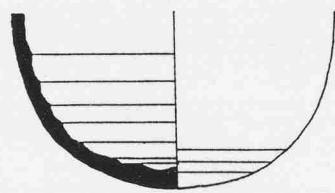
1 0 1 2 3 4 cm

Fig. 4.8

Base Type 3



Base Type 4



Base Type 5

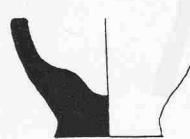
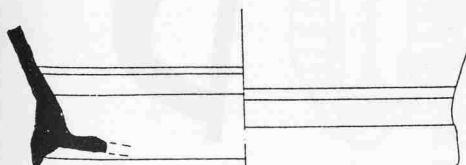
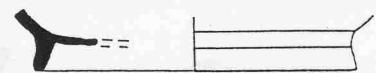
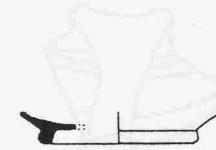
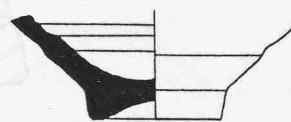
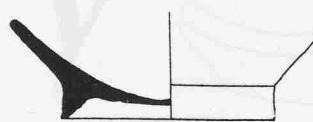


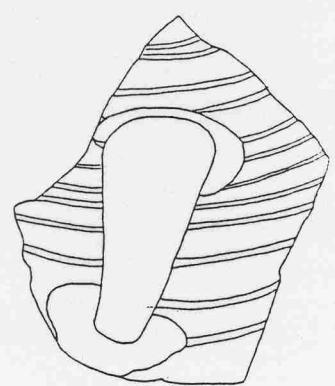
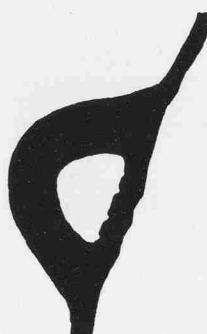
Fig. 4.9

Handle Type 1

Decoration Type 1

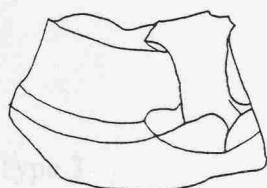


71

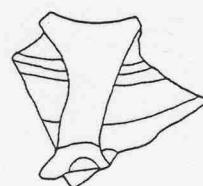


72

Decoration Type 2

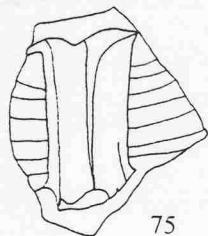


73

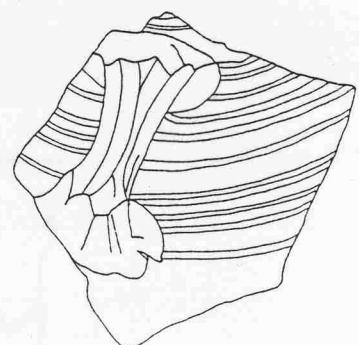


74

Decoration Type 3



75



76

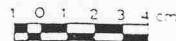
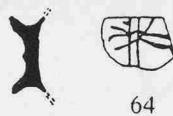


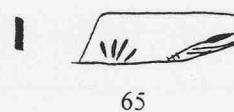
Fig. 4.10

Decoration Type 5

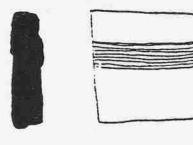
Decoration Type 1



Decoration Type 2



Decoration Type 3



Decoration Type 4

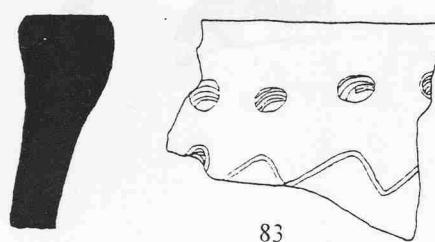
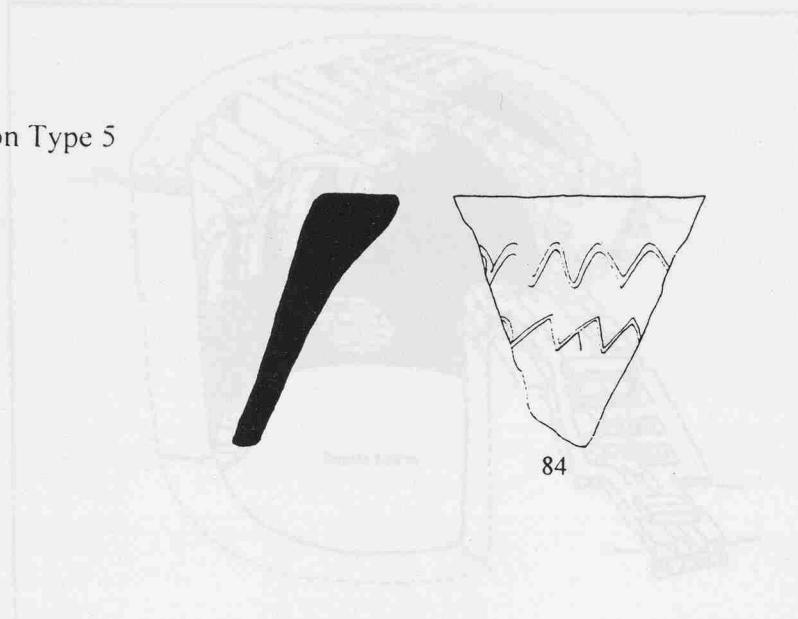


Fig. 4.11

Decoration Type 5



Decoration Type 6



Decoration Type 7

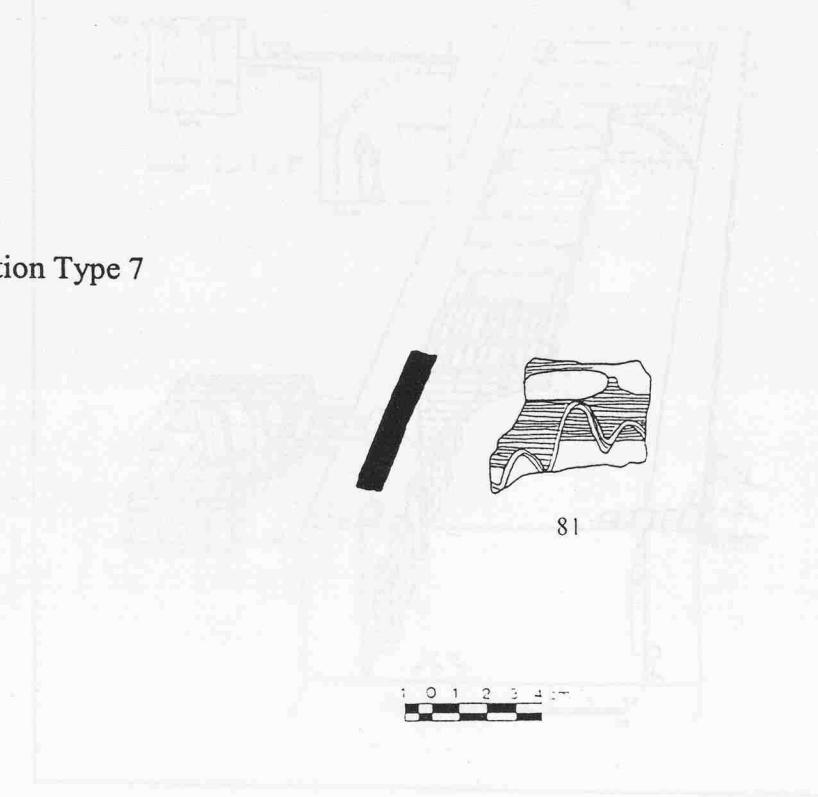


Fig. 4.12. Reconstruction of vessel patterns at Horayma (Olesen 1993, fig. 11).

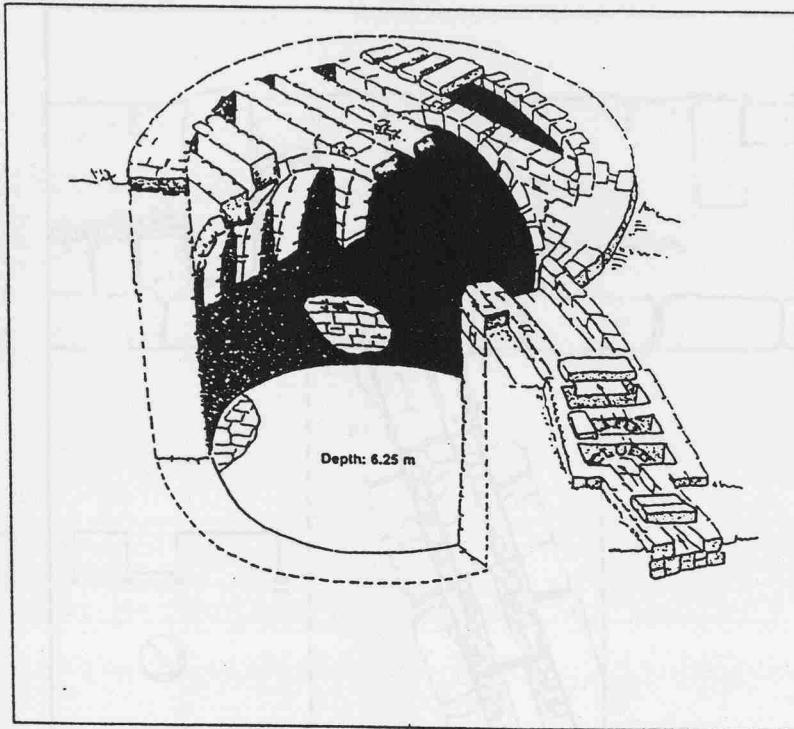


Fig 6.1: Reconstruction of roofed private cistern at Humayma (Oleson 1995, fig 6).

Fig 6.2: Reconstruction of roofed public cistern at Humayma (Oleson 1995, fig 5).

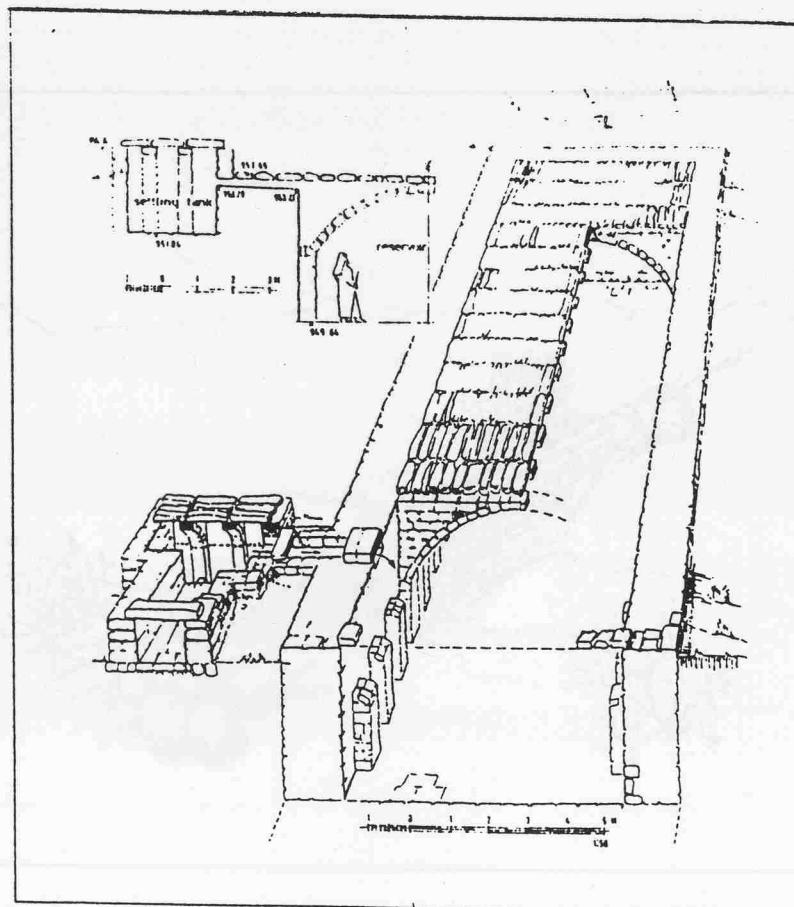


Fig. 6.2: Reconstruction of roofed public cistern at Humayma (Oleson 1995, fig 5).

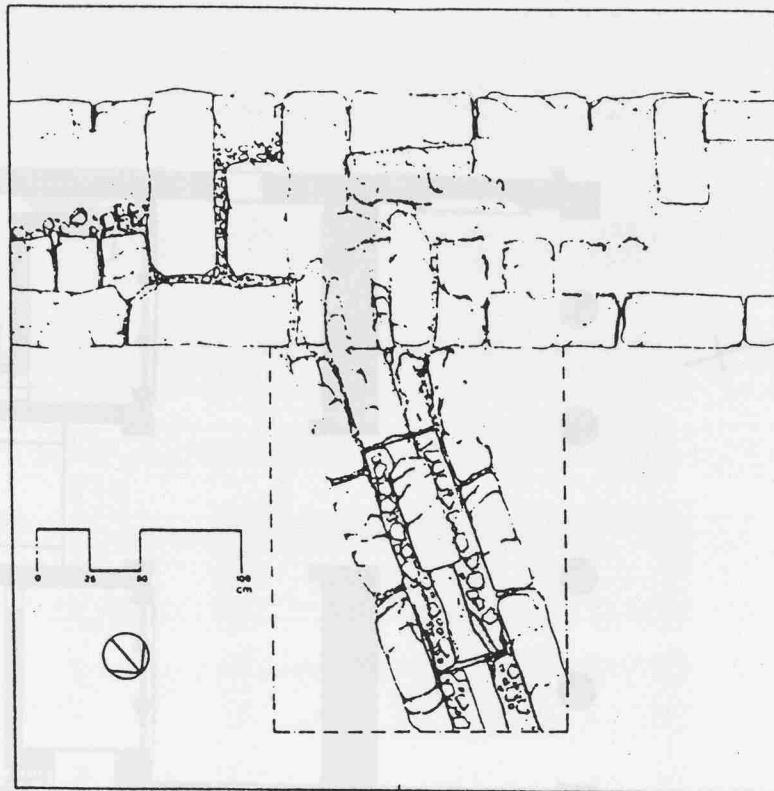


Fig 6.3: Junction of aqueduct and the cistern (Oleson 1995, fig 14).

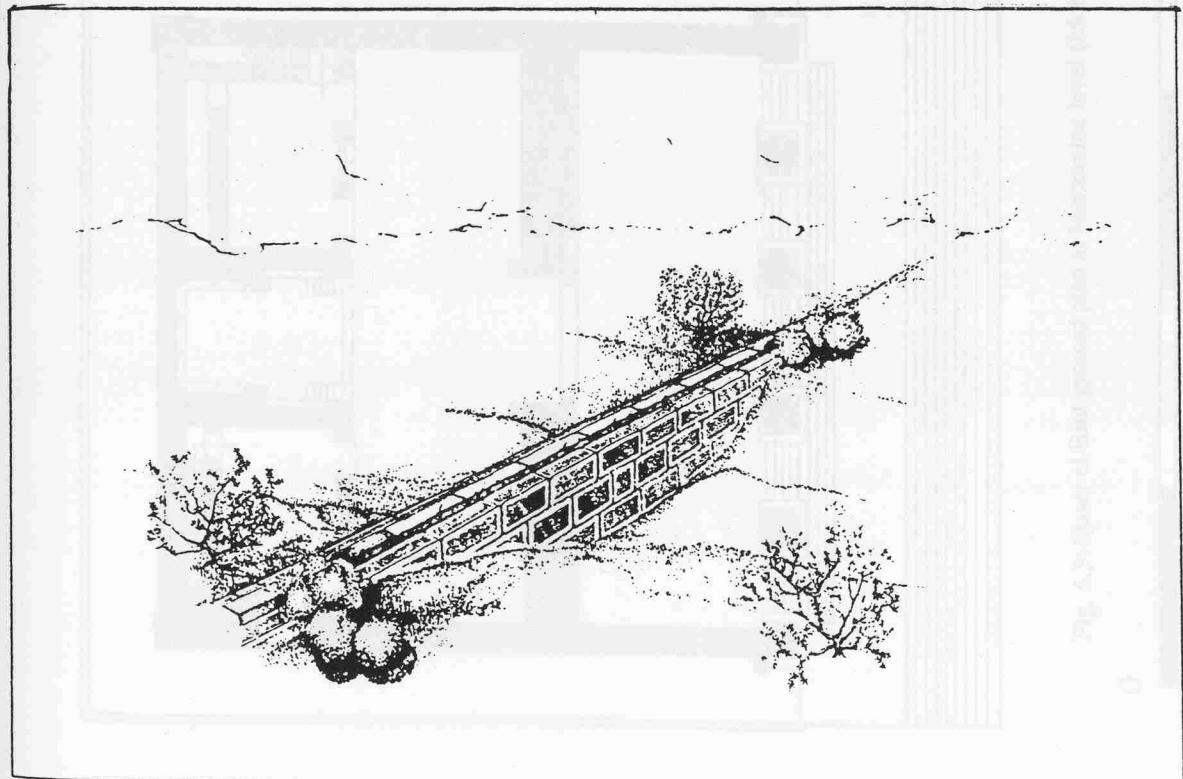


Fig 6.4: Perspective reconstruction of aqueduct on support wall (Oleson 1995, fig 20).

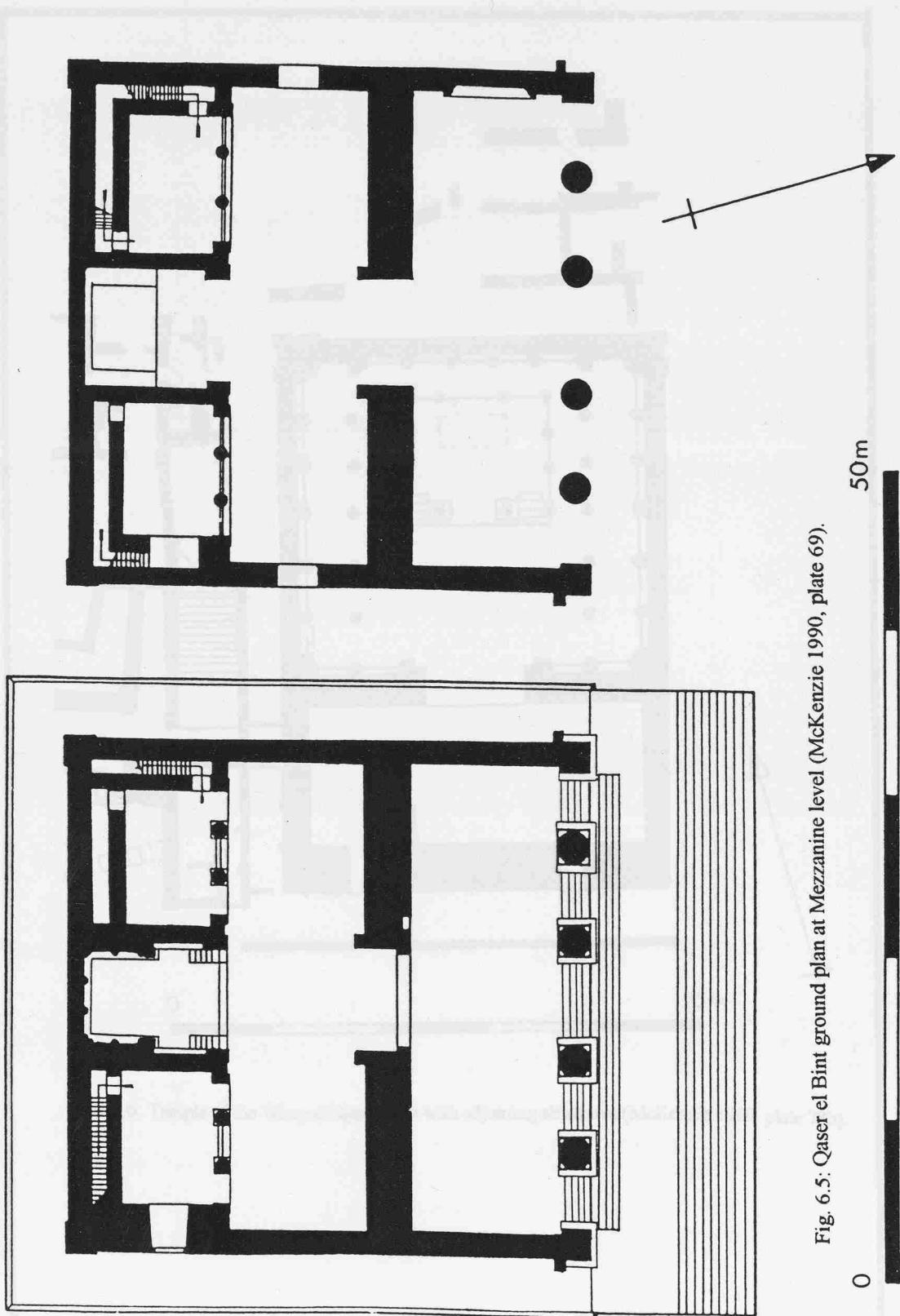


Fig. 6.5: Qaser el Bint ground plan at Mezzanine level (McKenzie 1990, plate 69).

0

50m

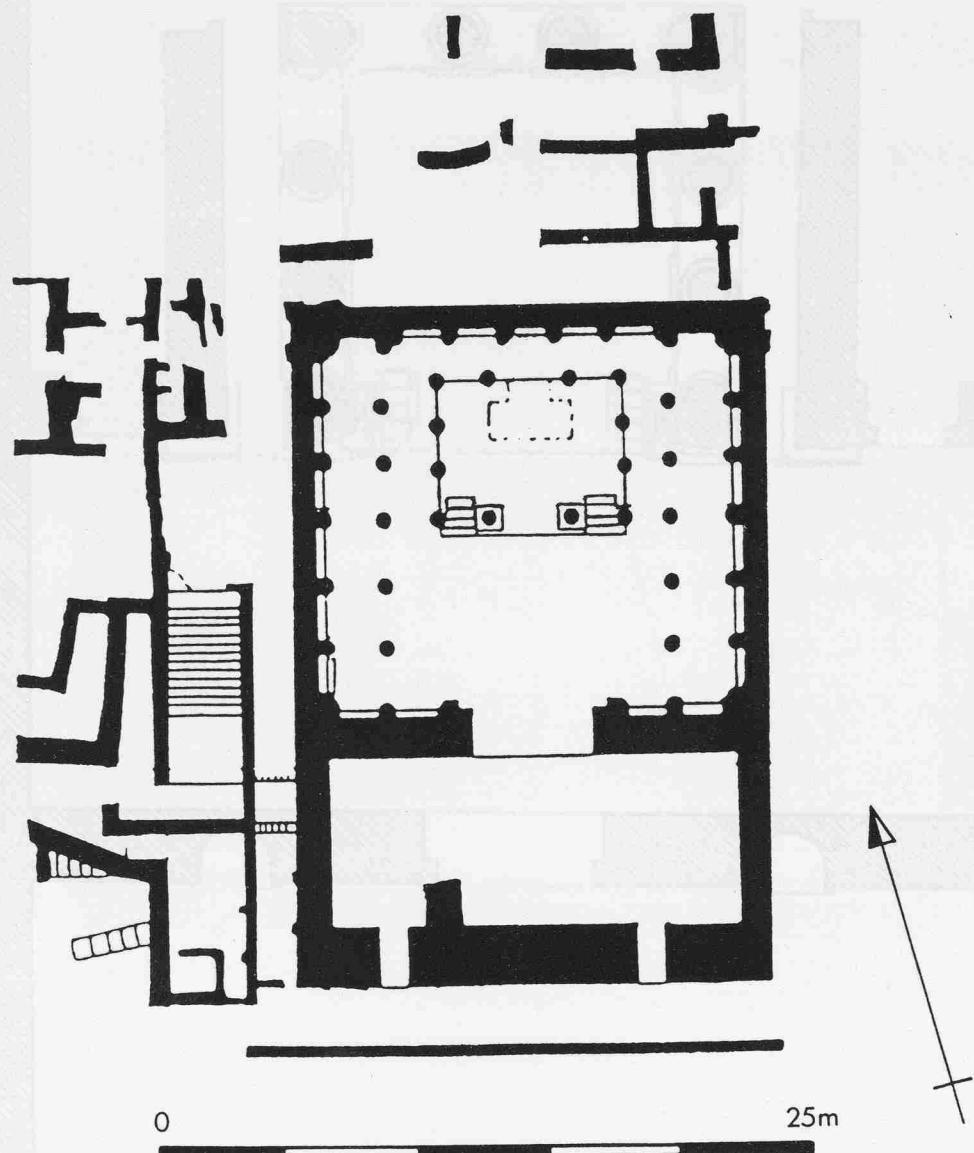


Fig. 6.6: Temple of the Winged Lions, plan with adjoining structures (McKenzie 1990, plate 78b).

Fig. 6.7: Plan of the Khitan-ruined temple complex (McKenzie 1990, fig. 4)

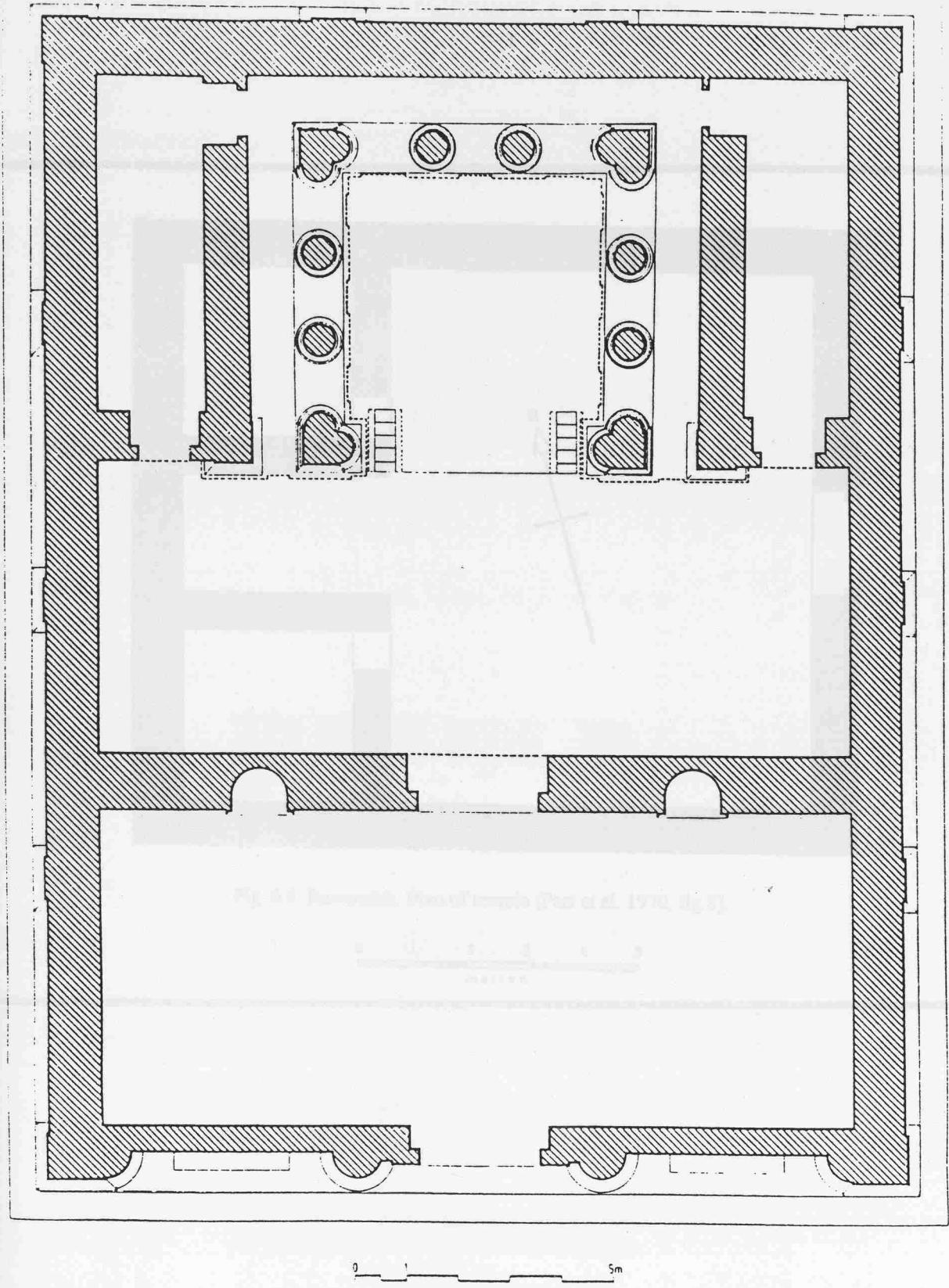


Fig. 6.7: Plan of the Khirbat adh-Dharih temple (al-Muheisen and Villeneuve 1990, fig. 4)

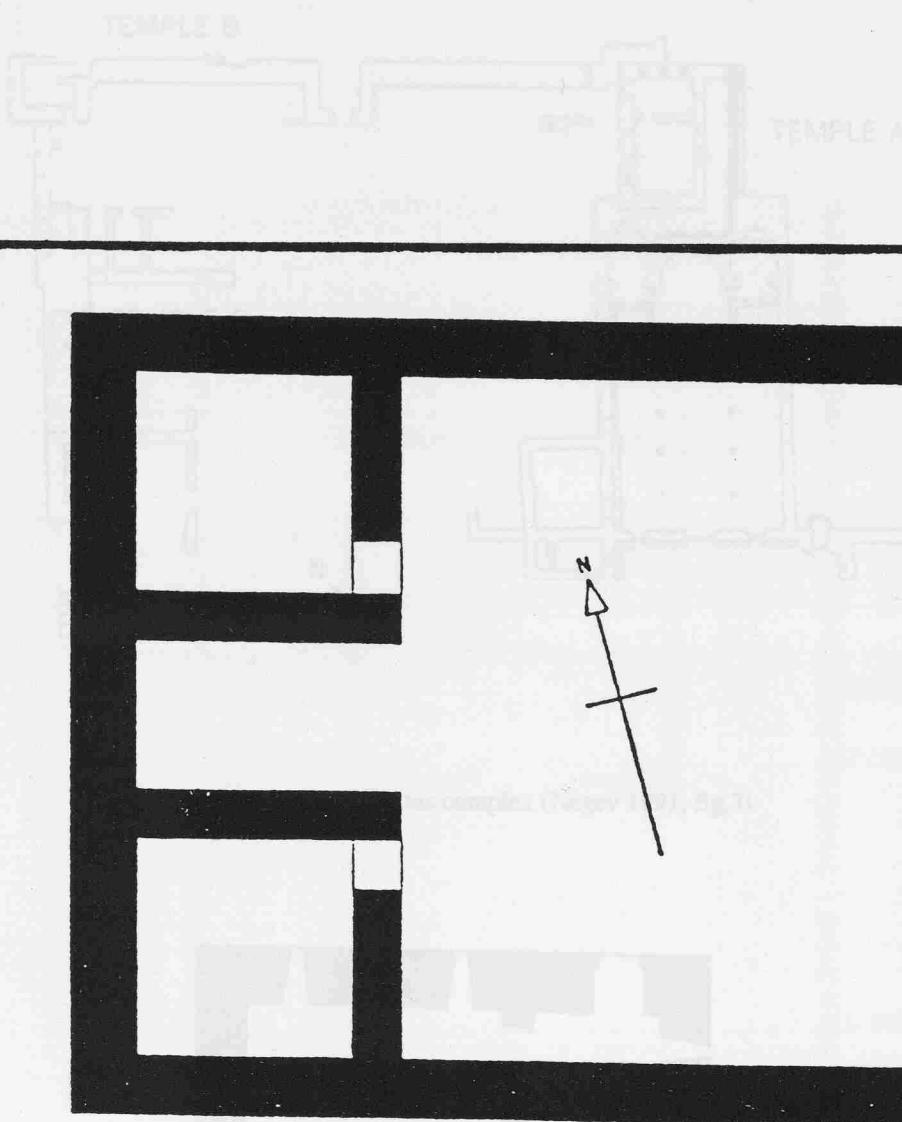
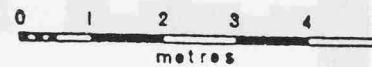


Fig. 6.8: Rawwafah. Plan of temple (Parr et al. 1970, fig. 8).



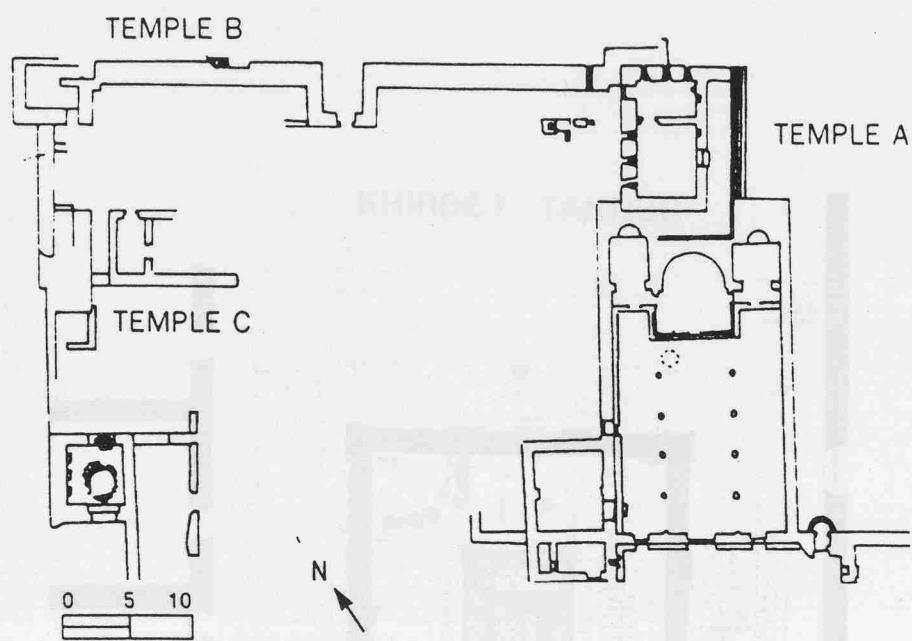


Fig. 6.9: Oboda: the religious complex (Negev 1991, fig.3).

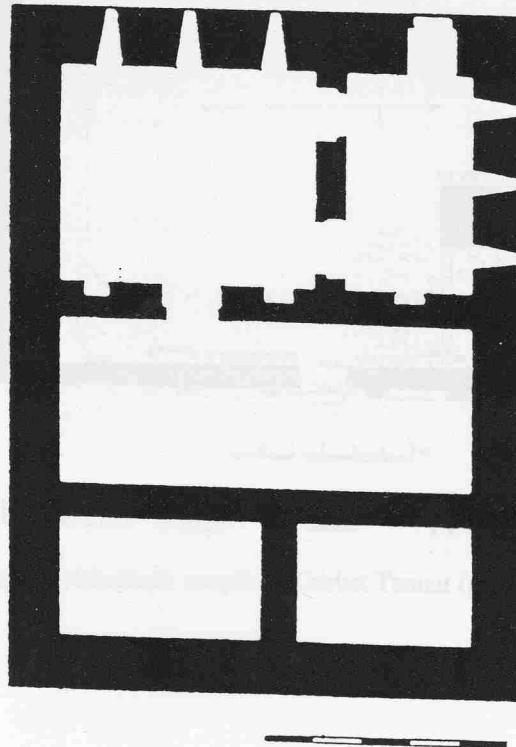


Fig. 6.10: Oboda: plan of temple (Negev 1991, fig.4).

KHIRBET TANNUR

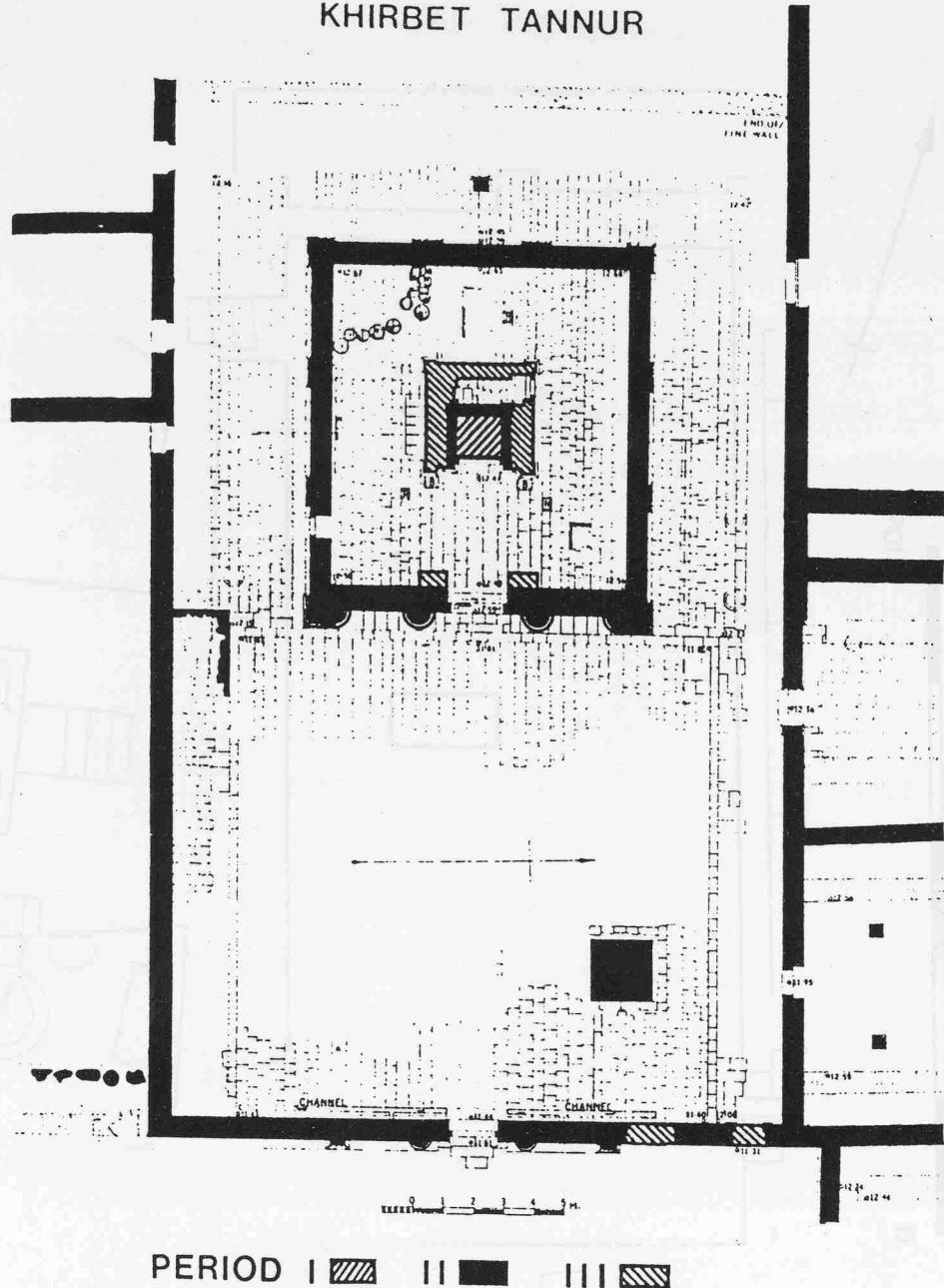


Fig. 6.11: Plan of Nabataean temple at Khirbet Tannur (McKenzie 1988, fig. 1).

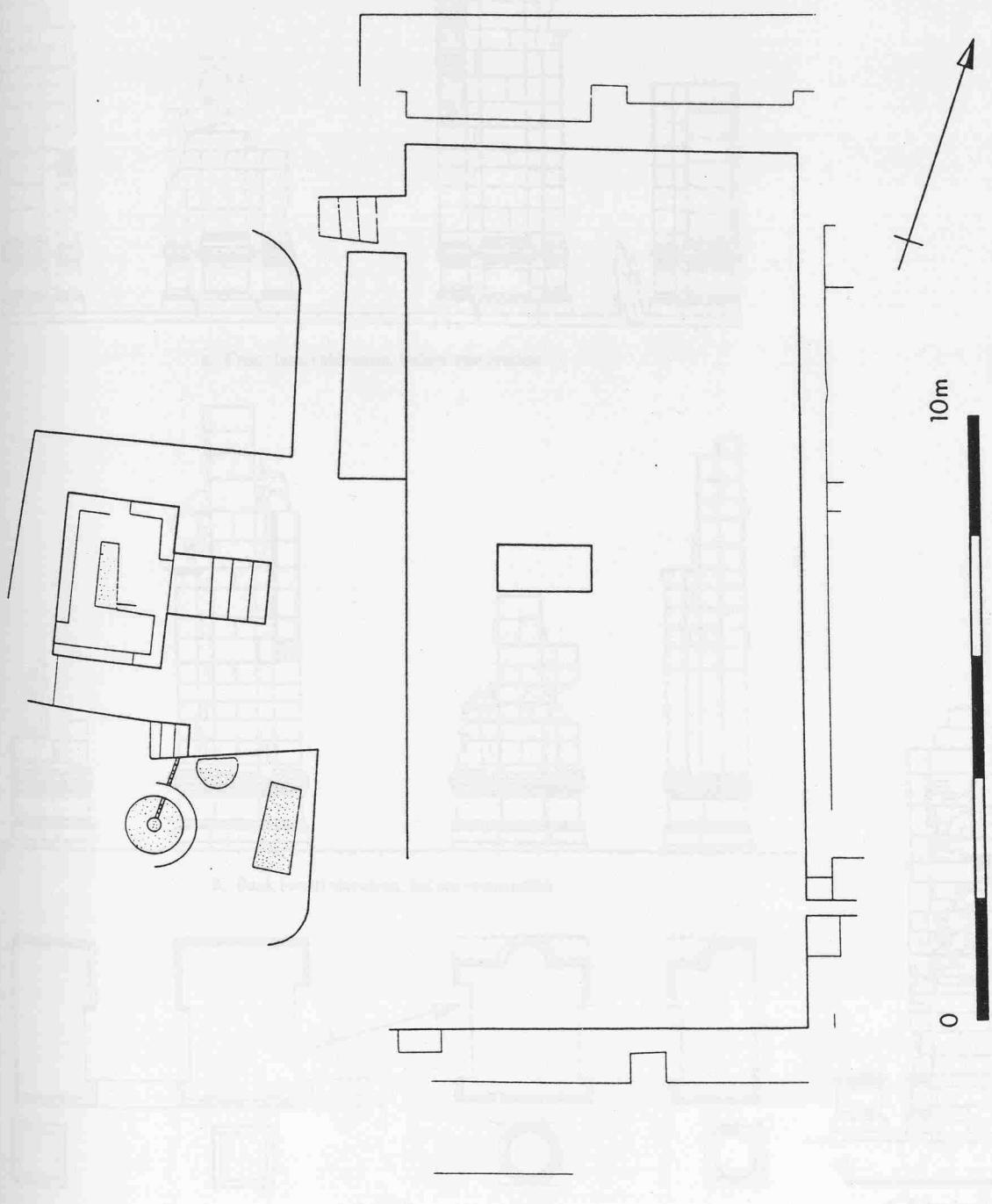
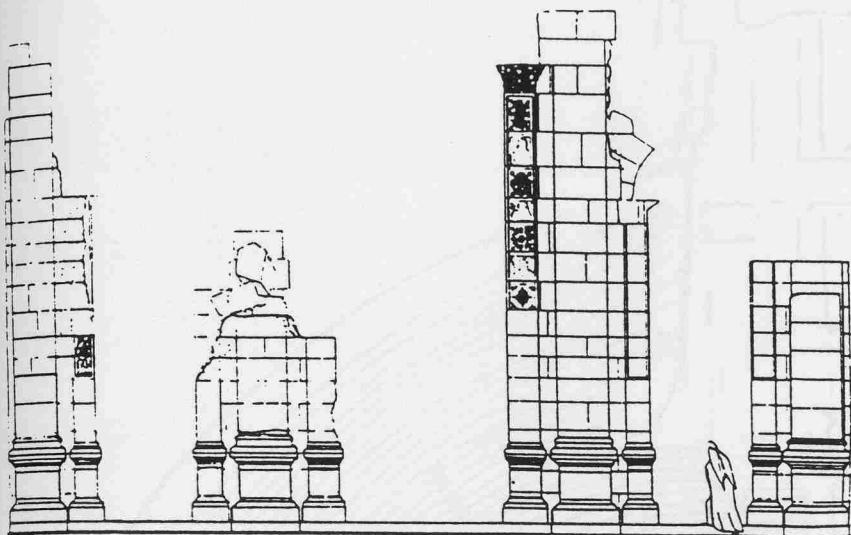
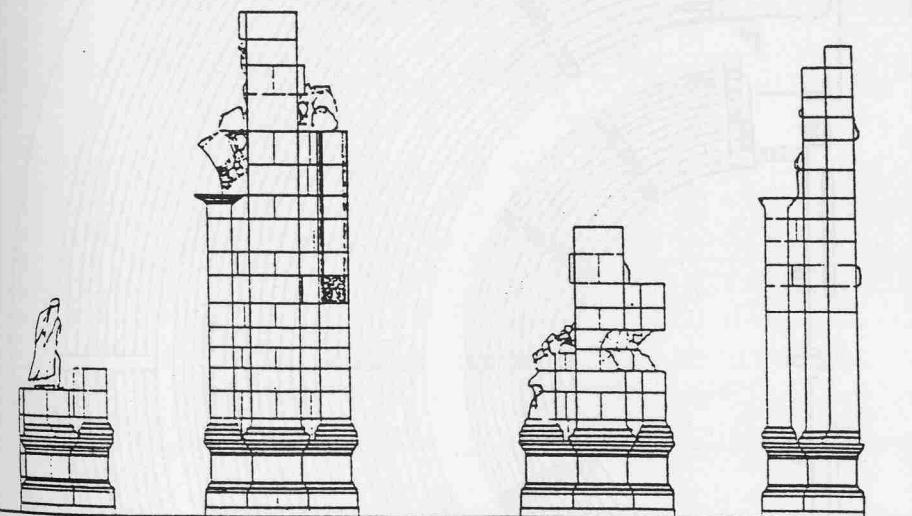


Fig. 6.12: Petra, High Place (McKenzie 1990, plate 170).



a. Front (east) elevation, before restoration



b. Back (west) elevation, before restoration

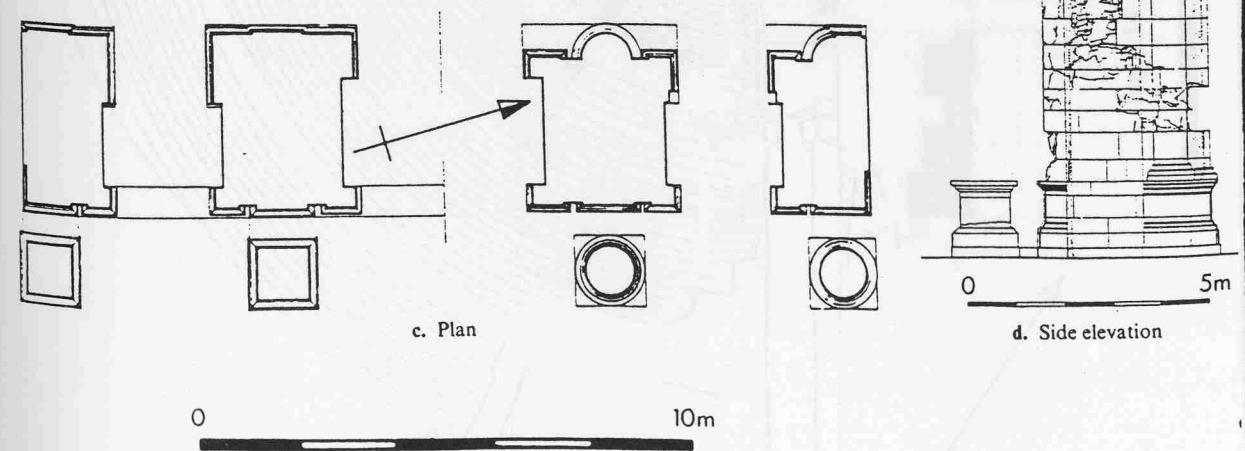


Fig. 6.13: Petra, The Monumental Gate (McKenzie 1990, plate 55).

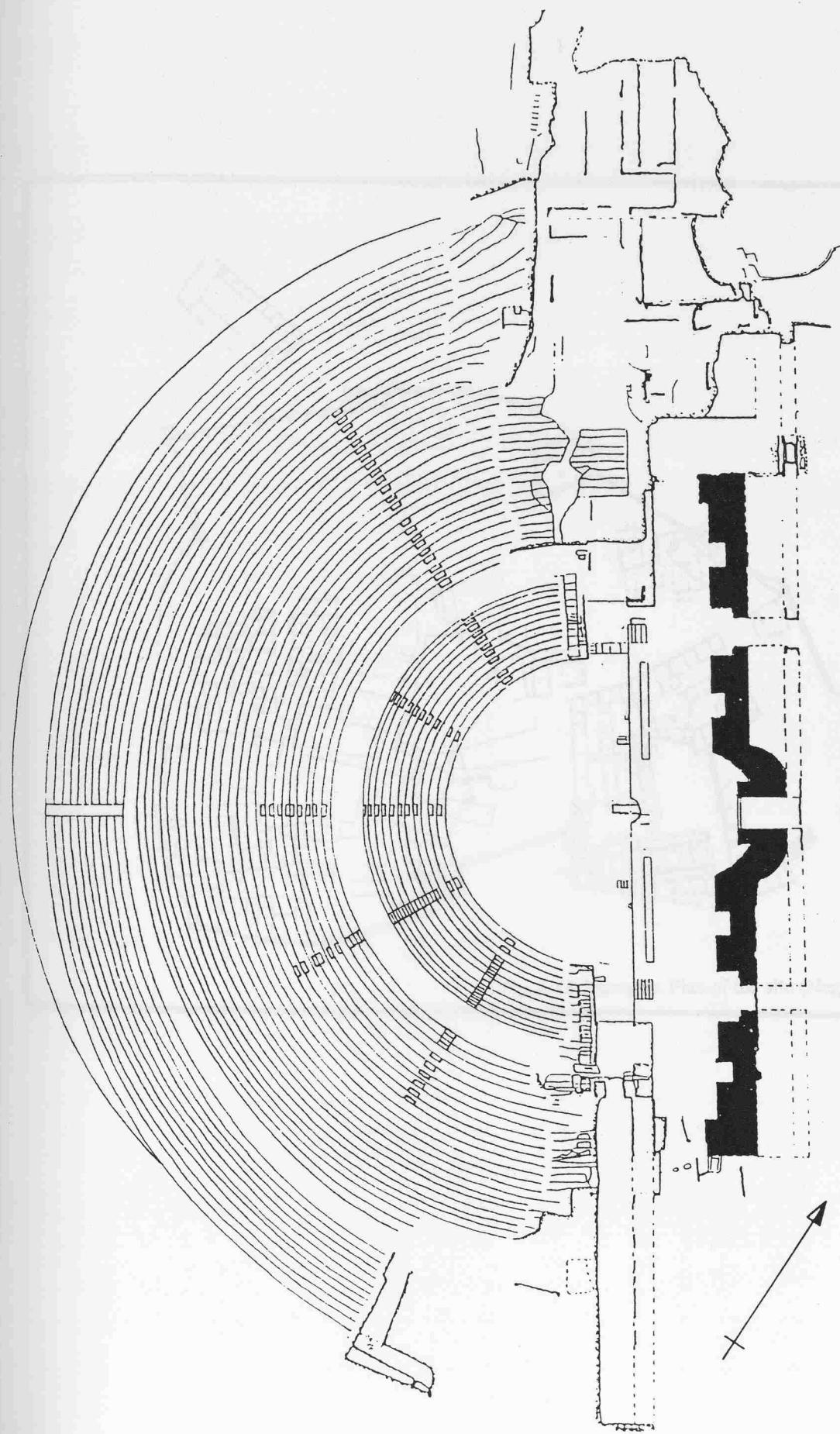


Fig. 6.14: Petra, Main Theatre (McKenzie 1990, plate 90).
0 50m



Fig. 6.15: Mampsis. Plan of the site (Negev 1986, Fig.24).

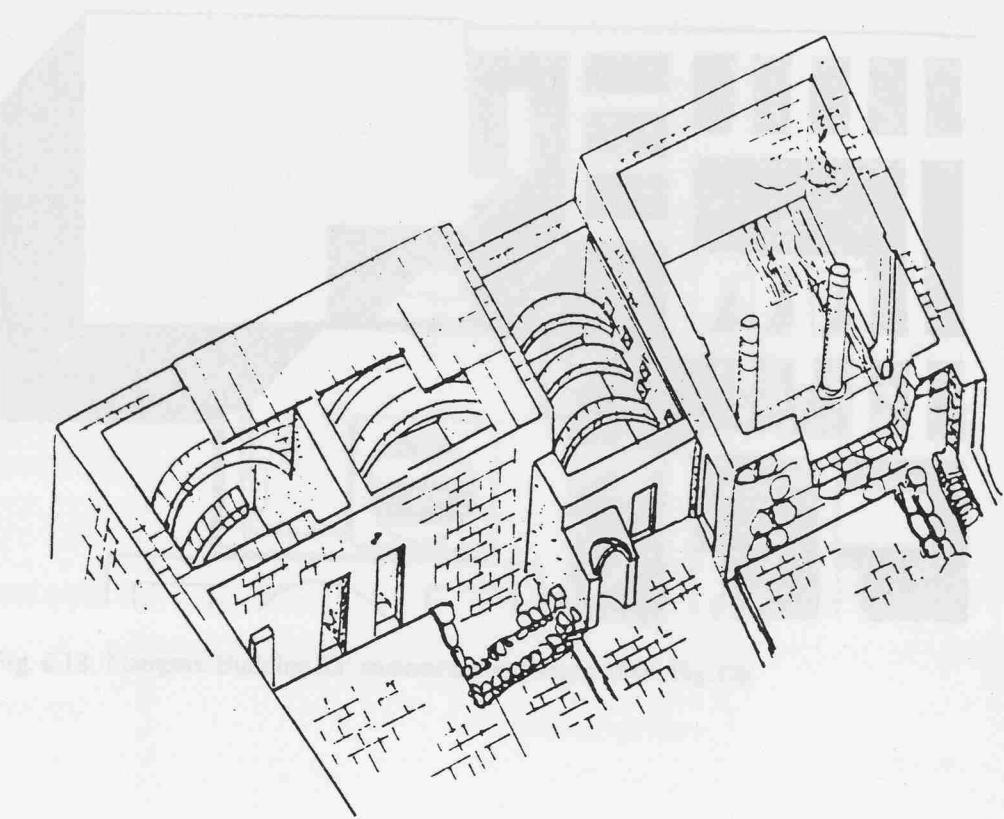


Fig. 6.16: Mampsis. Building I: the east wing (Negev 1986, Fig.30).

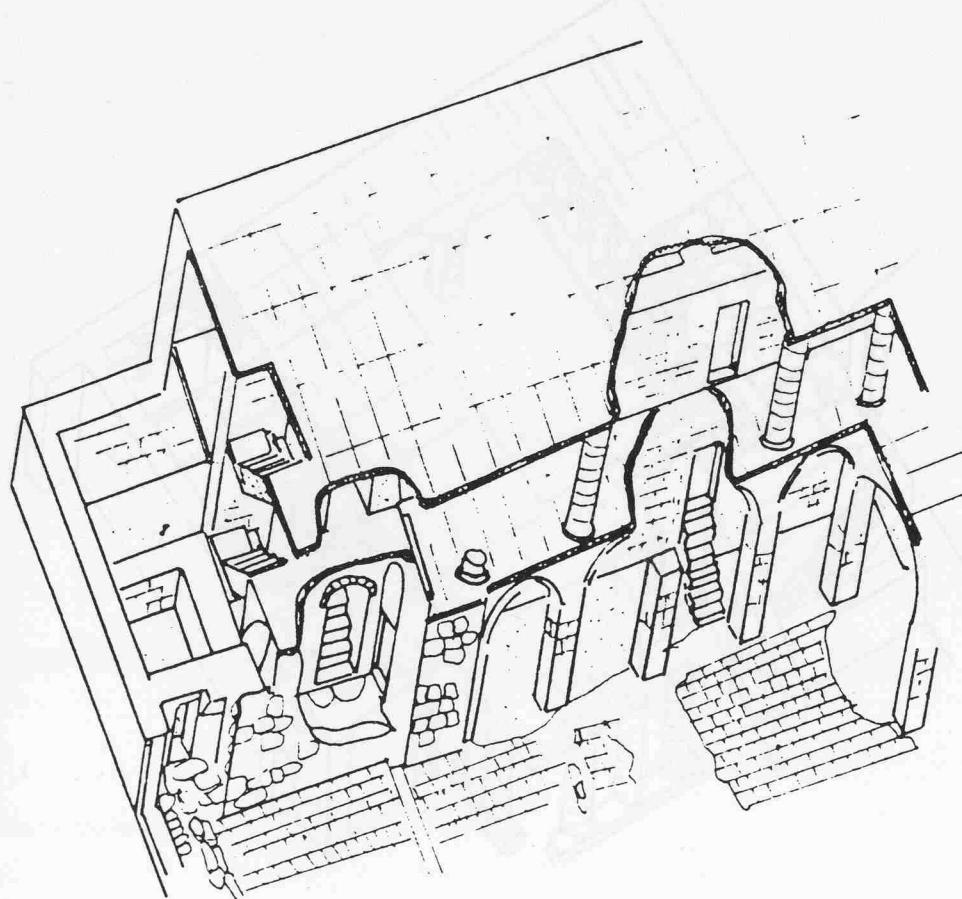


Fig. 6.17: Mampsis. Building I: the west wing (Negev 1986, Fig.31).



Fig. 6.18: Mampsis. Building XI: reconstruction (Negev 1986, Fig.32).

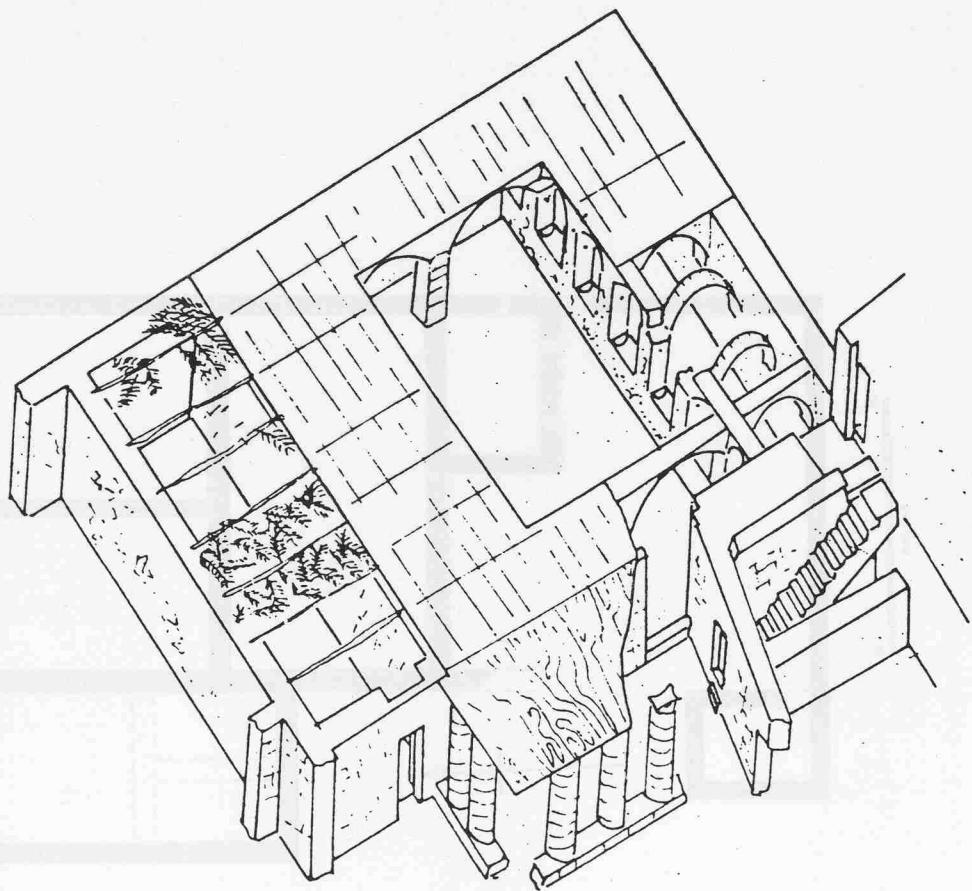


Fig. 6.19: Mampsis Building XII: the stable (Negev 1986, fig. 34)

Fig. 6.21: Qurayyah. Plan of Nabataean Building II (Parr et al. 1970, Fig. 13).

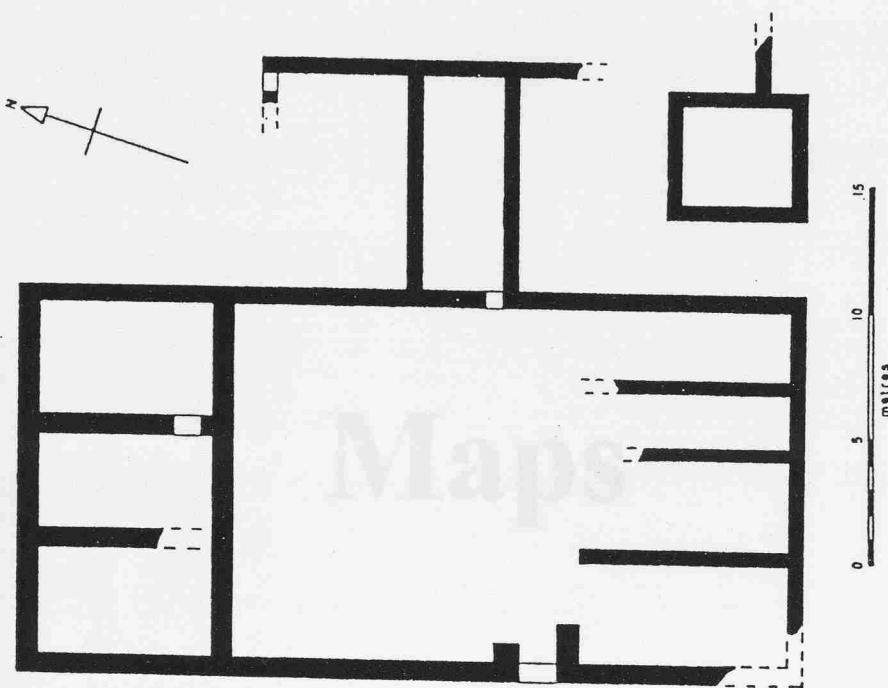
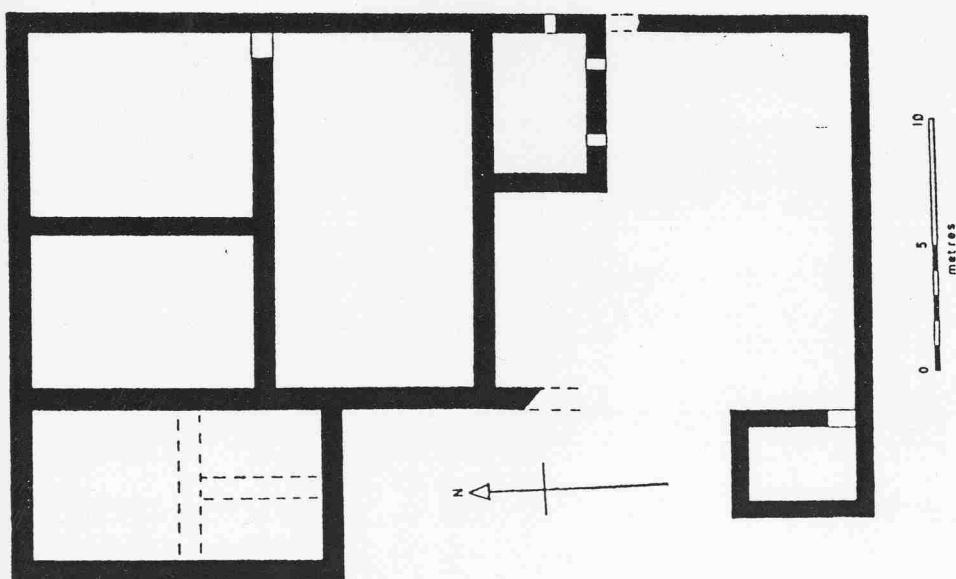
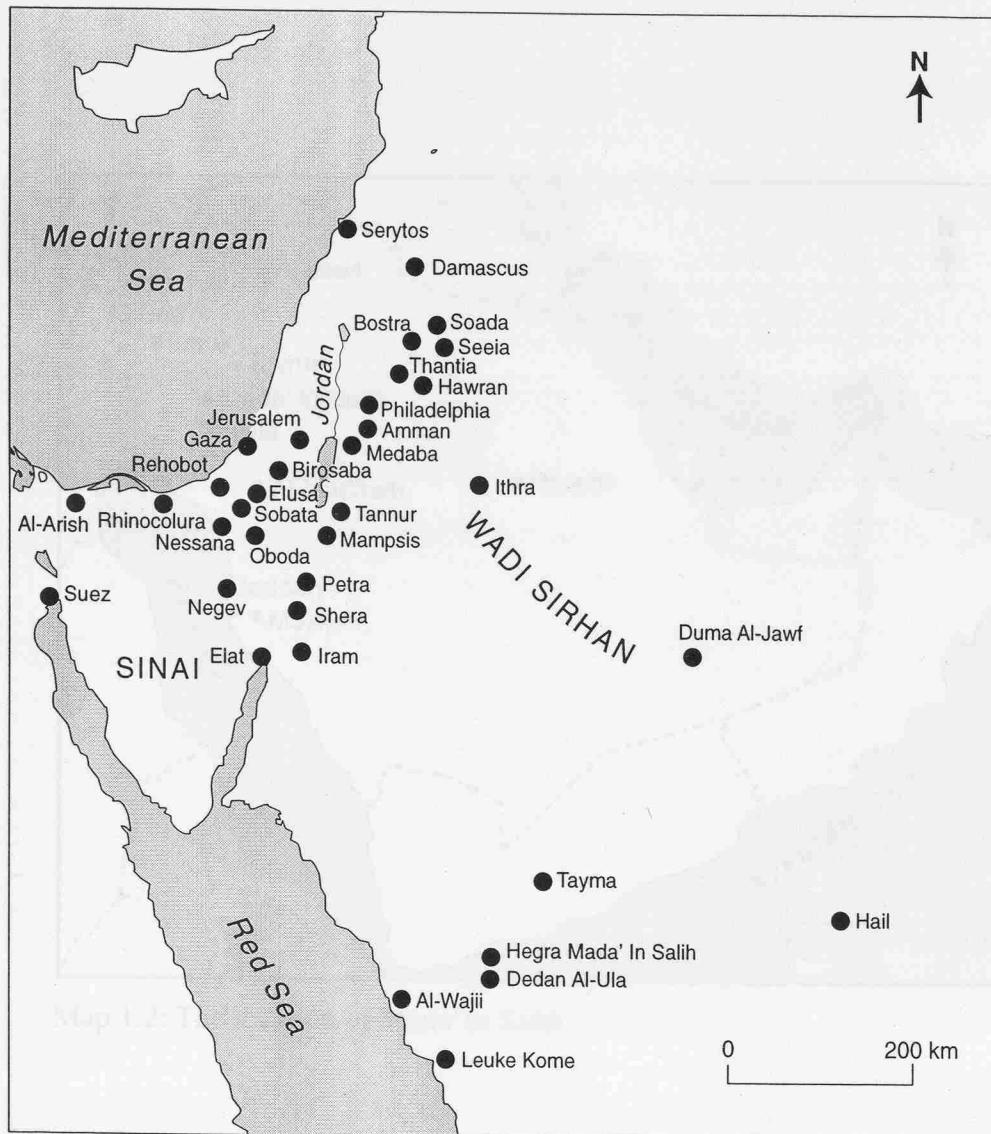


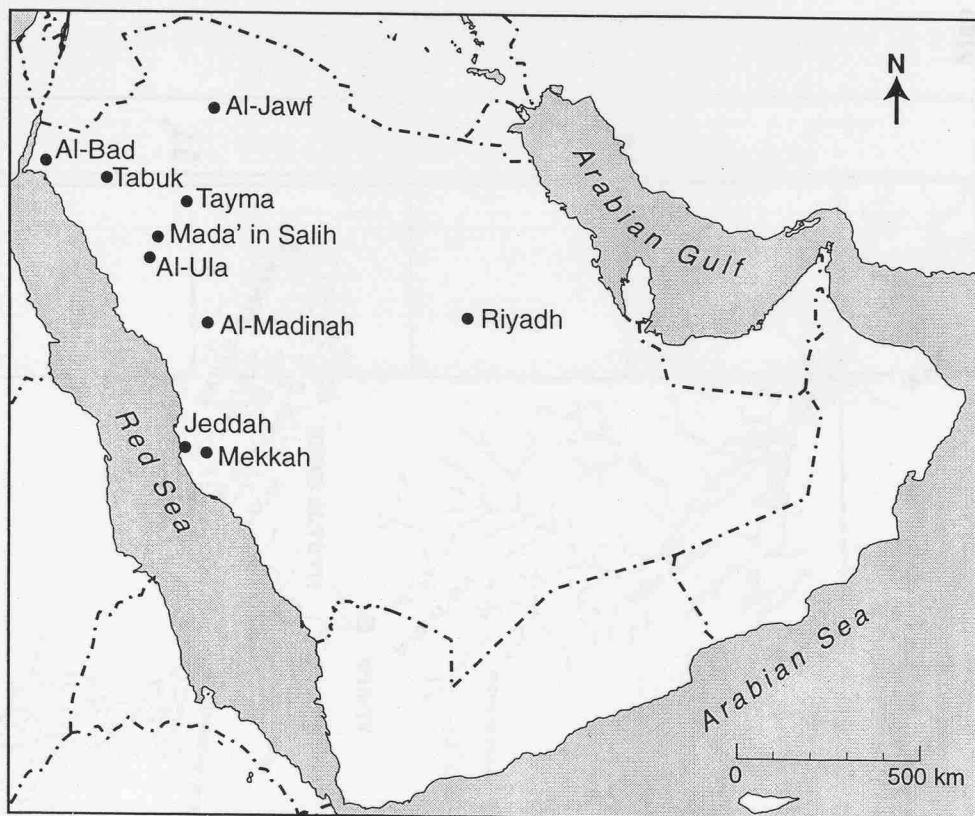
Fig. 6.20: Qurayyah. Plan of Nabataean Building I (Parr et al. 1970, Fig. 12).



Maps

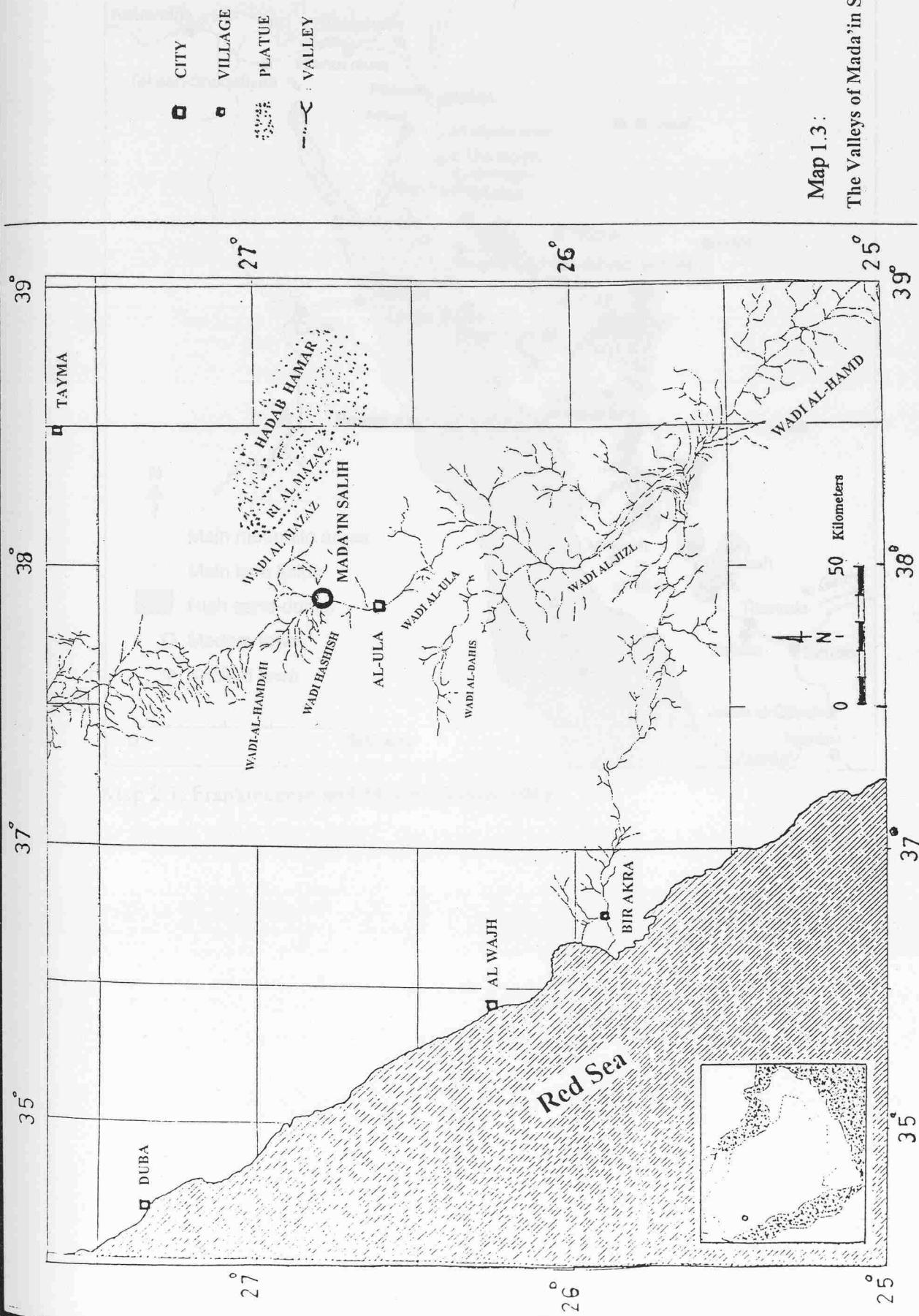


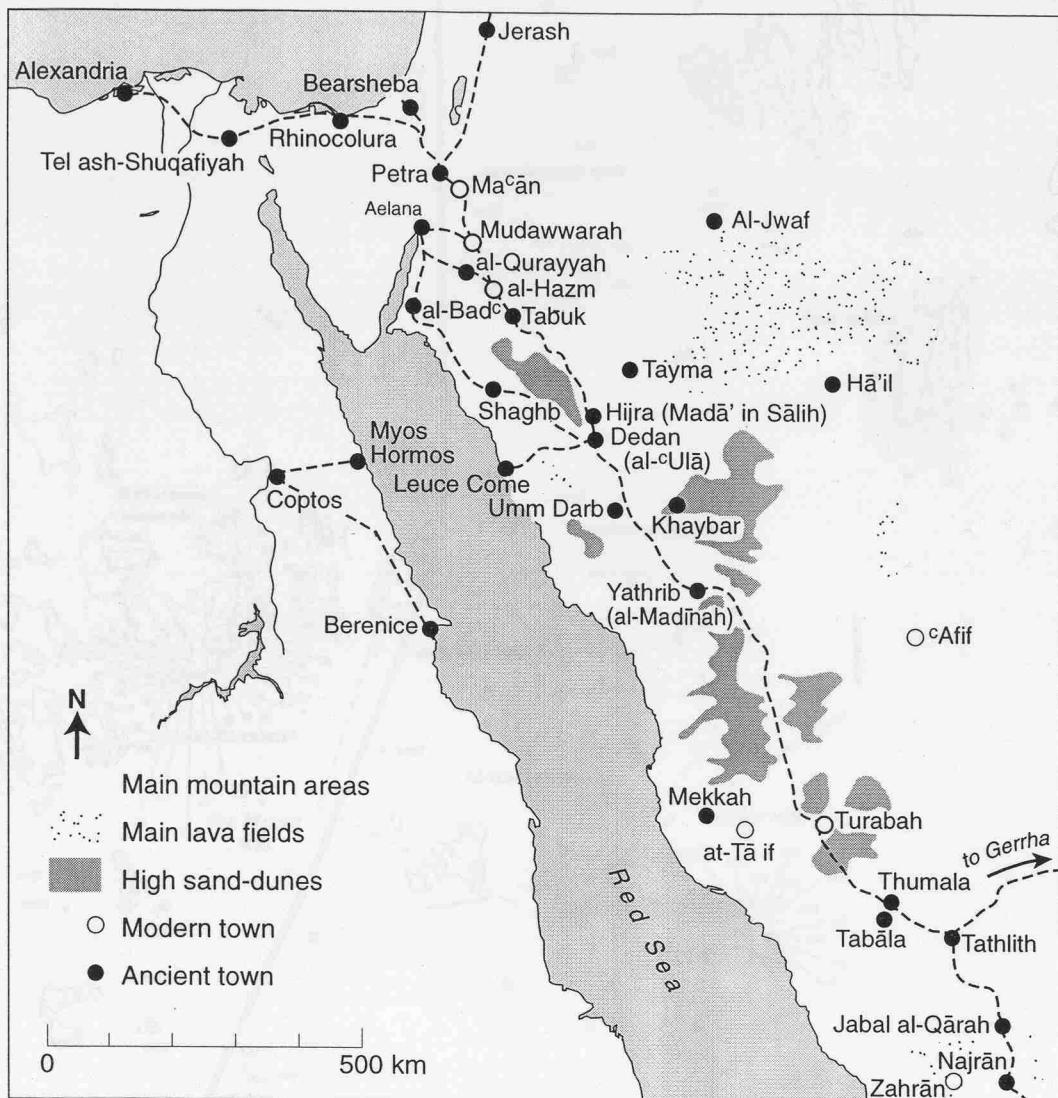
Map 1.1: The Nabataean Kingdom 1st cent. BC/AD (after Schmitt-Korte, 1979)



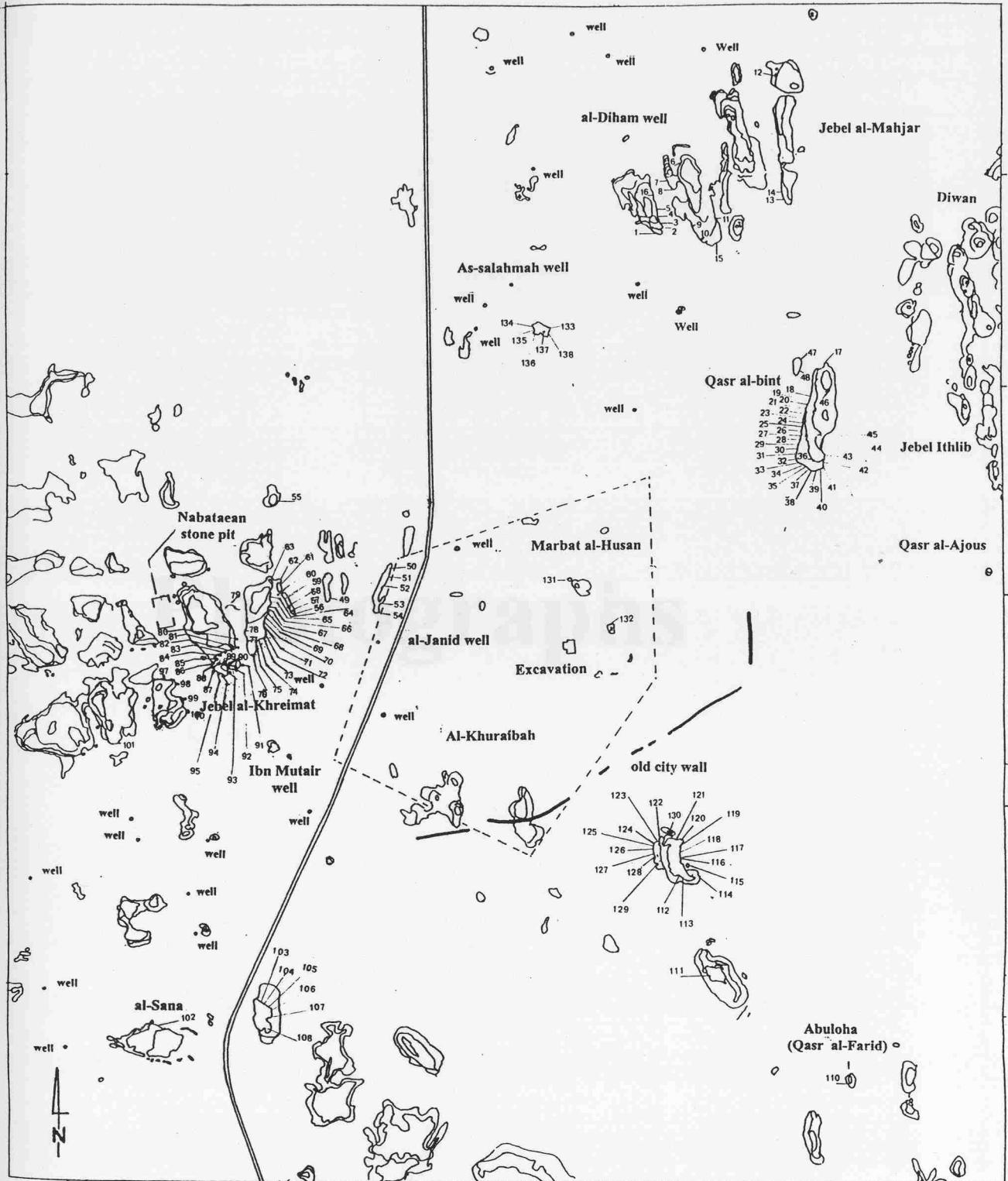
Map 1.2: The location of Mada' in Salih

Map 1.3:
The Valleys of Mada'in Salih





Map 2.1: Frankincense and Myrrh (Groom 1981)



Map 3.1: The Survey Plan of Mada'in Salih

Scale 1:10,000

Photographs

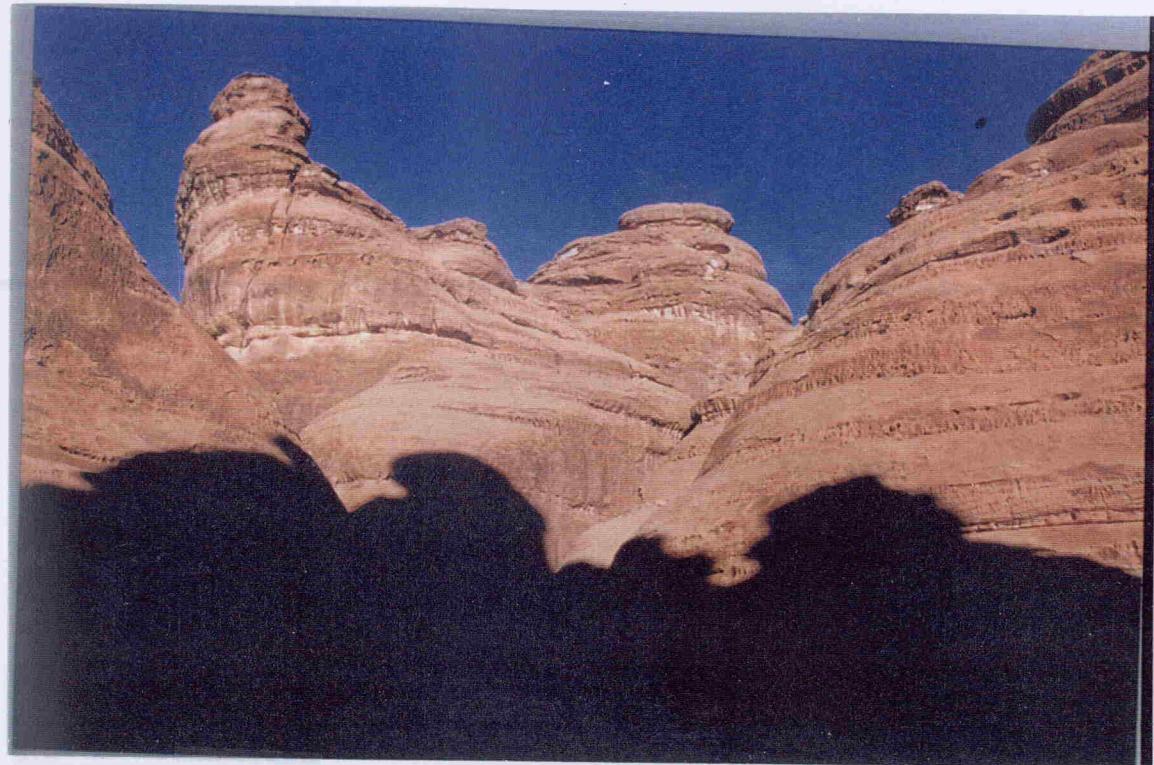


Photo. 1.1: The Ithlib mountains

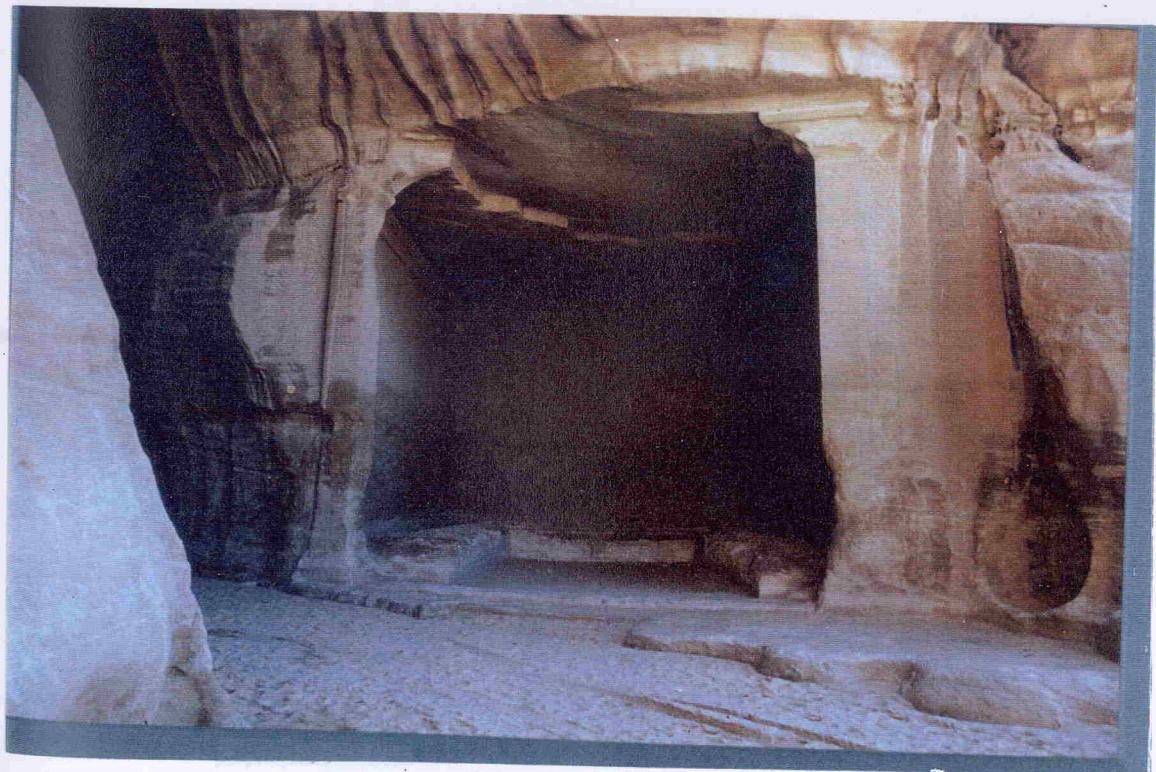


Photo. 1.2: The Dewan



Photo. 1.1: A view of one of the tombs of Hala-

Photo. 1.3: The Ottoman castle



Photo. 3.1: A view of some of the tombs of Mada'in Salih

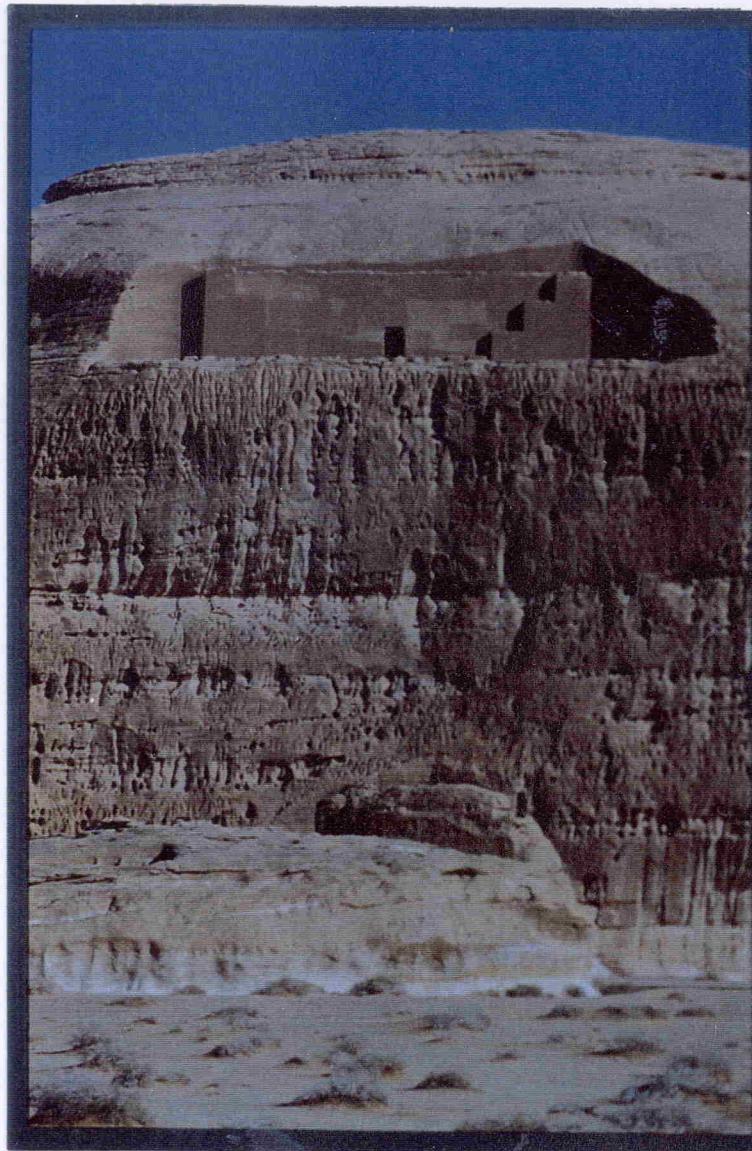


Photo. 3.2: Unfinished tomb in Mada'in Salih

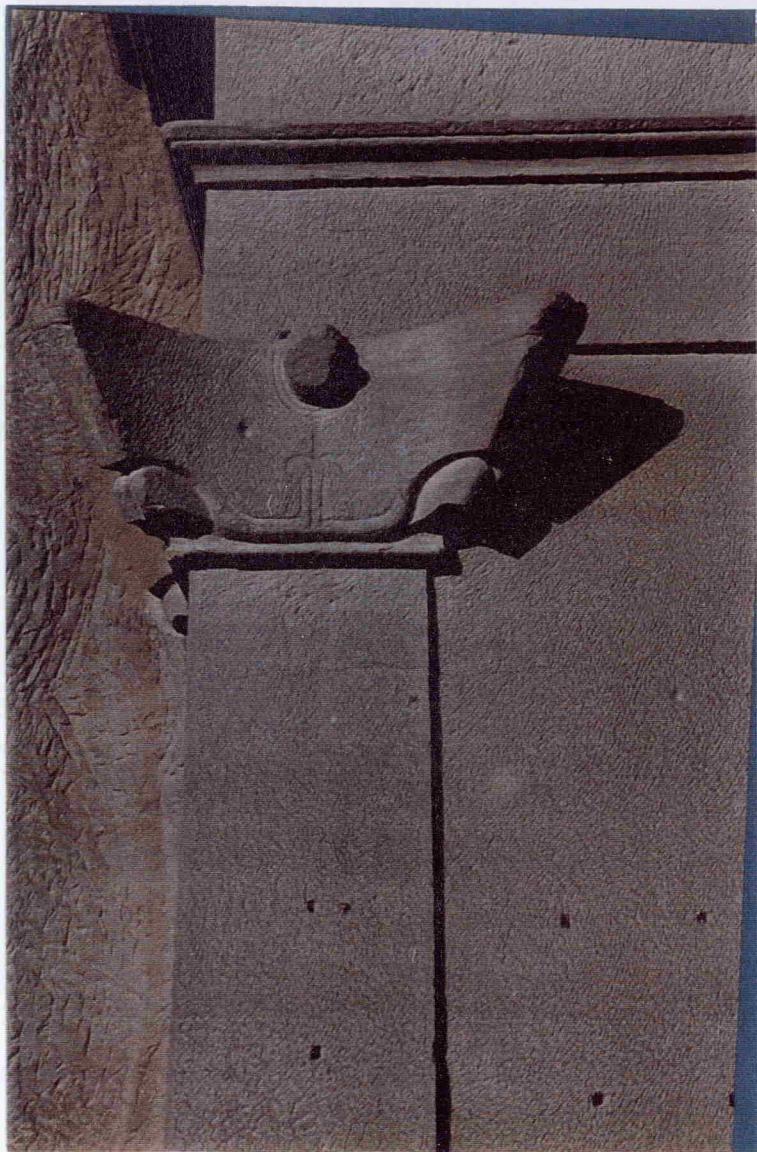


Photo. 3.3: A Nabataean Capital

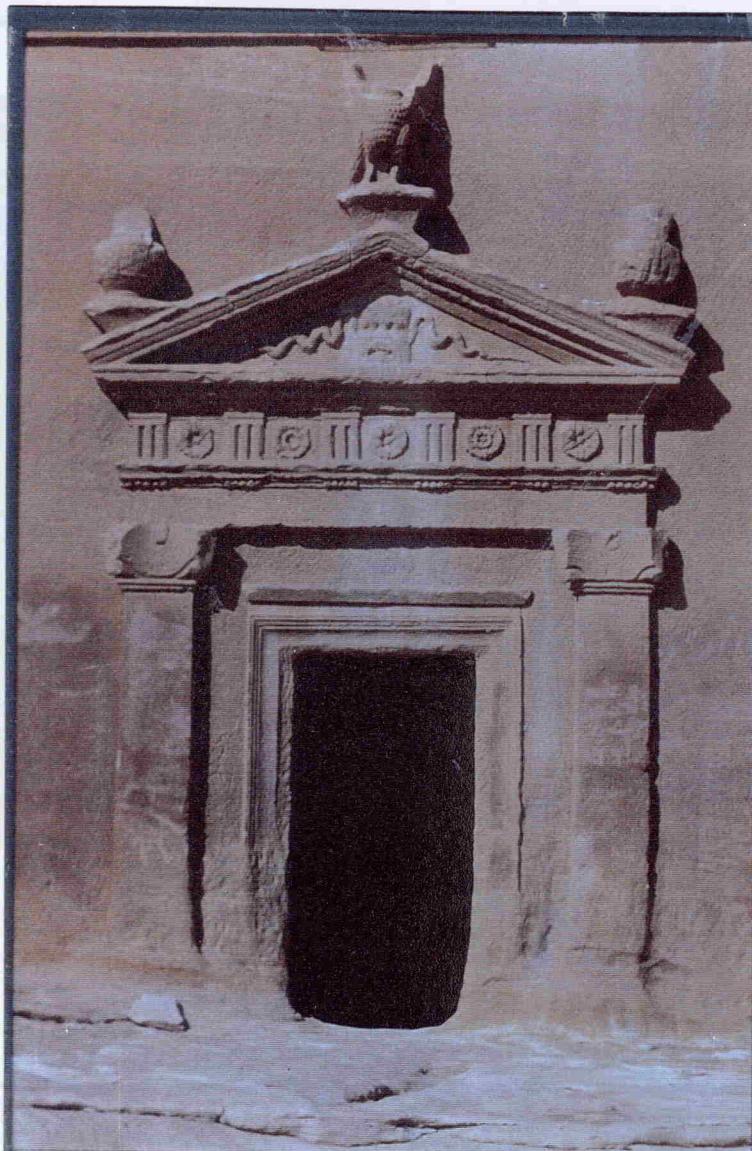


Photo. 3.4: Entrance to a tomb

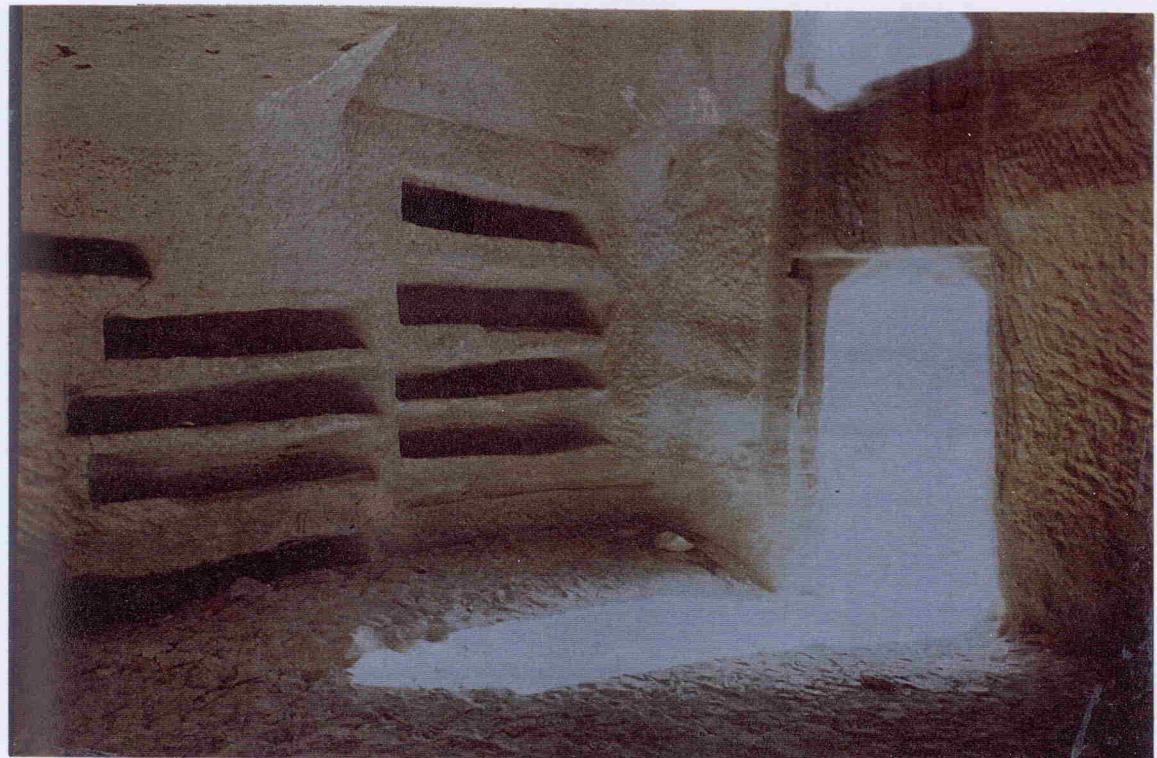


Photo. 3.5: A tomb from inside

Photo. 3.7: Two men walk the southern wall

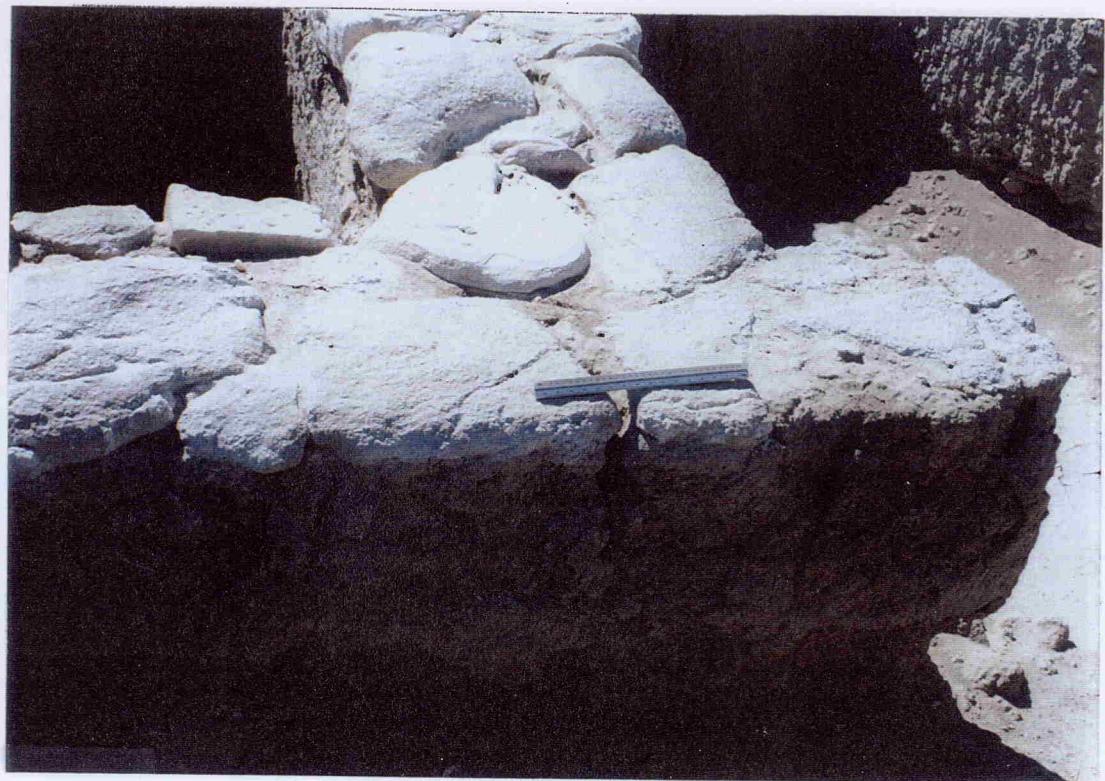


Photo. 3.6: A buttress in the southern wall

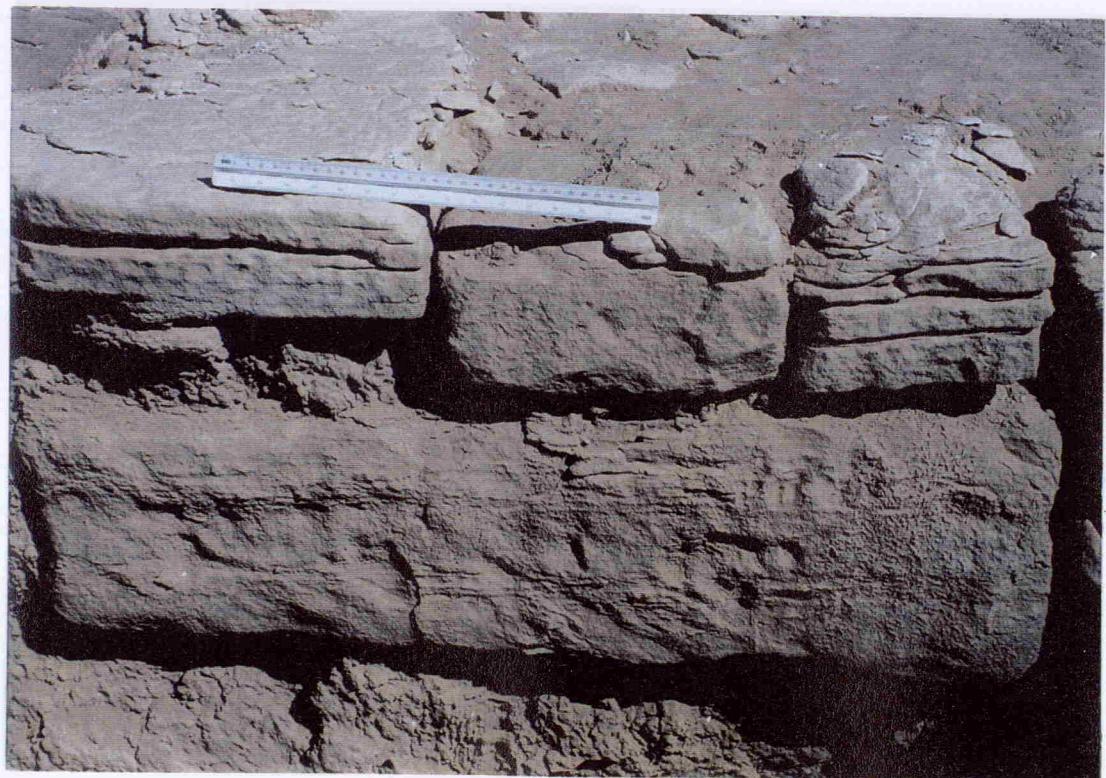


Photo. 3.7: Two course wall in the southern wall



Photo. 3.8: The upper part of the southern wall

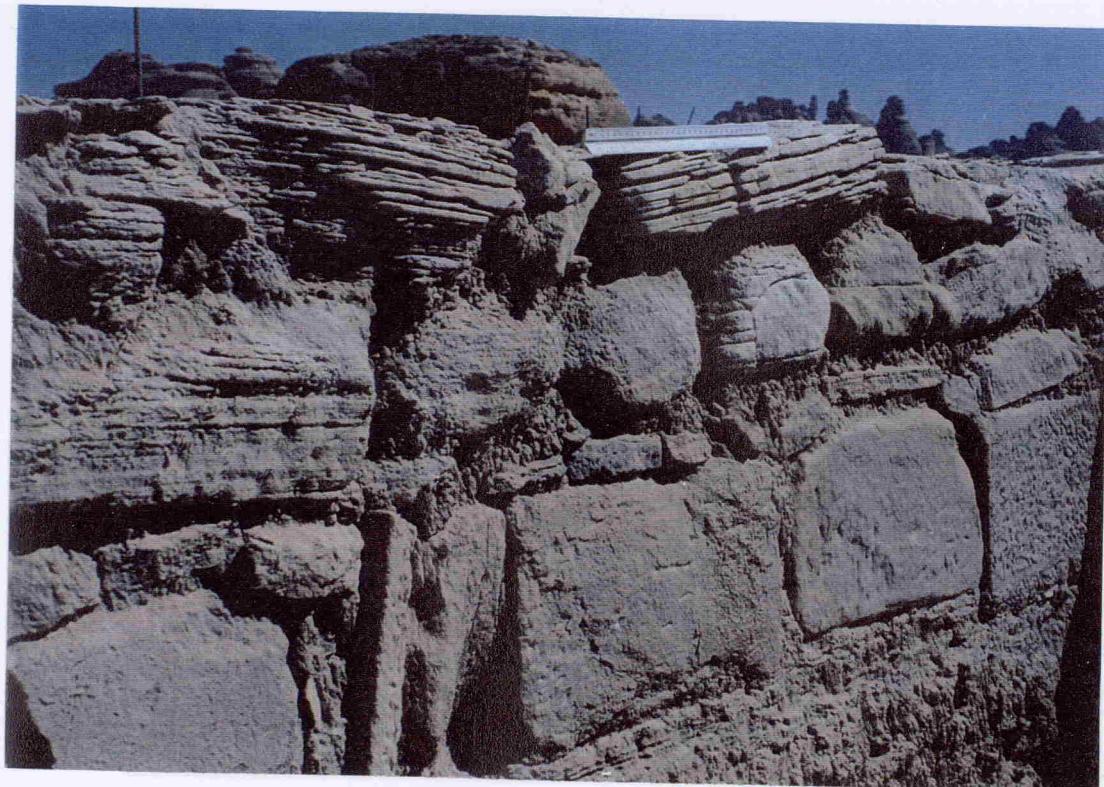


Photo. 3.9: The third part of the southern wall



Photo. 3.10: The third part of the southern wall



Photo. 3.11: A buttress in the western wall

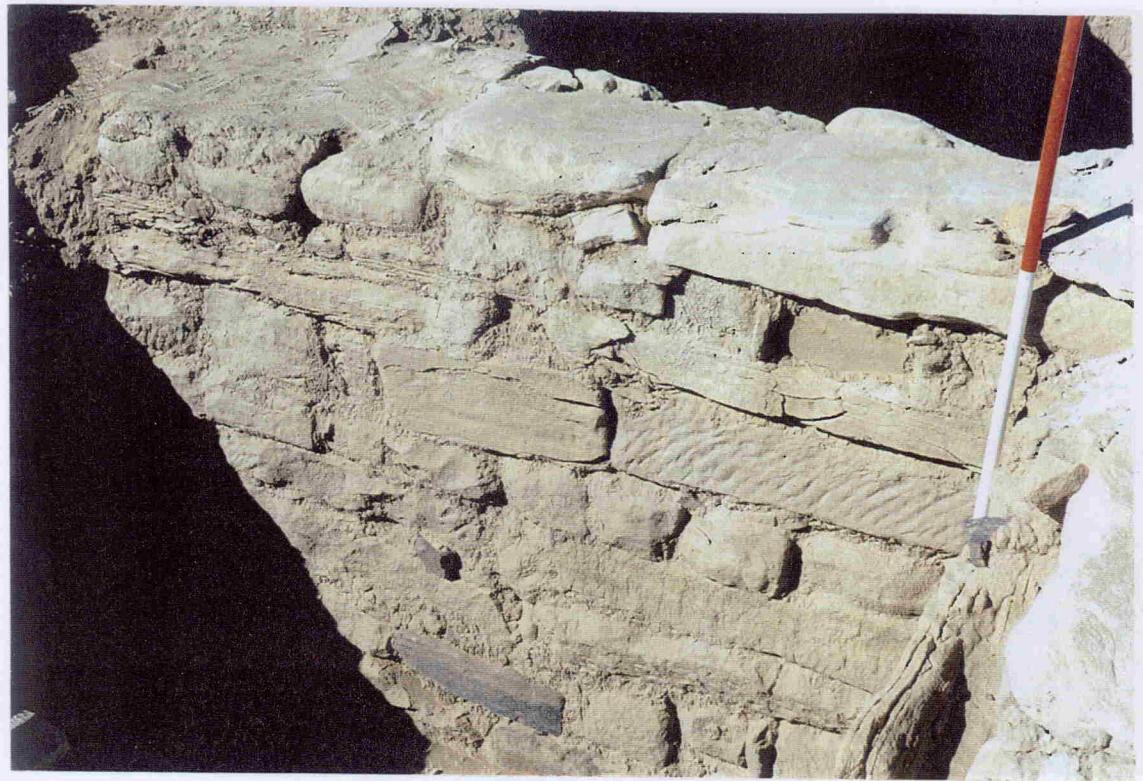


Photo. 3.12: Wall (A) in Room 5



Photo. 3.13: A floor in Room 6



Photo. 3.14: Stone slabs of Phase I



Photo. 3.15: Stone slabs of Phase I



Photo. 3.16: Low stairs with stone sides

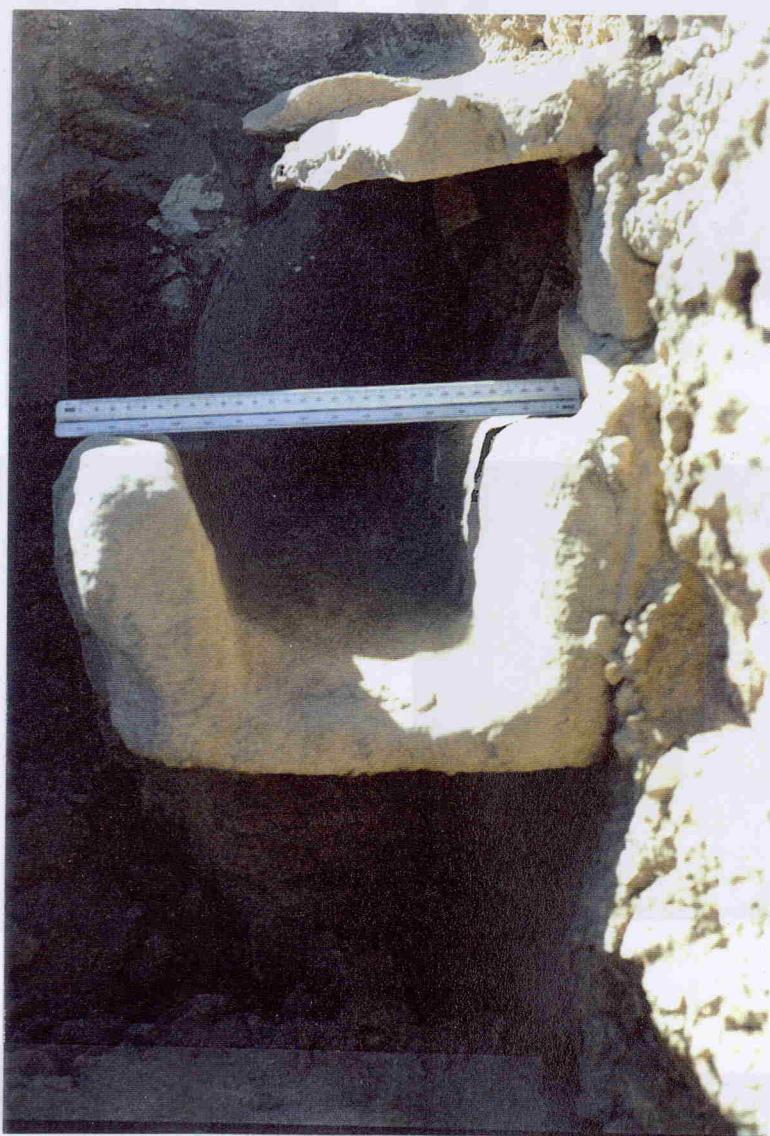


Photo. 3.17: A water channel



1



2



3

4.1: Photo. Showing coins 1-3



4



5



6

4.2: Photo. Showing coins 4-6



7



10



8



9



4.3: Photo. Showing coins 7-9



10



11



12



4.4: Photo. Showing coins 10-12



13



14

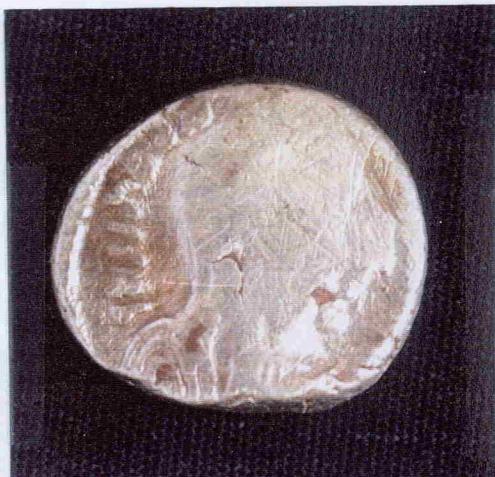


15

4.5: Photo. Showing coins 13-15



16

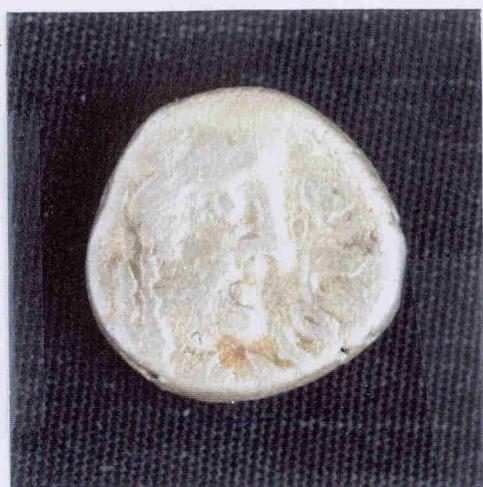


17

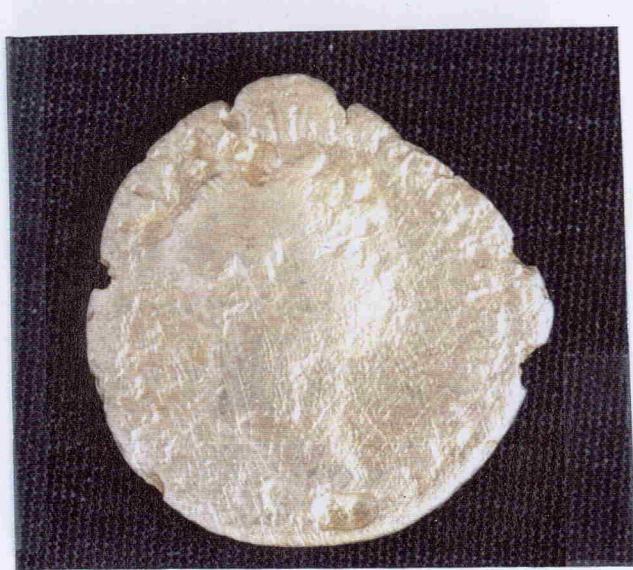


18

4.6: Photo. Showing coins 16-18



19



20



21

4.7: Photo. Showing coins 19-21



22



23



24



4.8: Photo. Showing coins 22-24



25



26



27



4.9: Photo. Showing coins 25-27



28



29



30

4.10: Photo. Showing coins 28-30



31



32



33

4.11: Photo. Showing coins 31-33



35



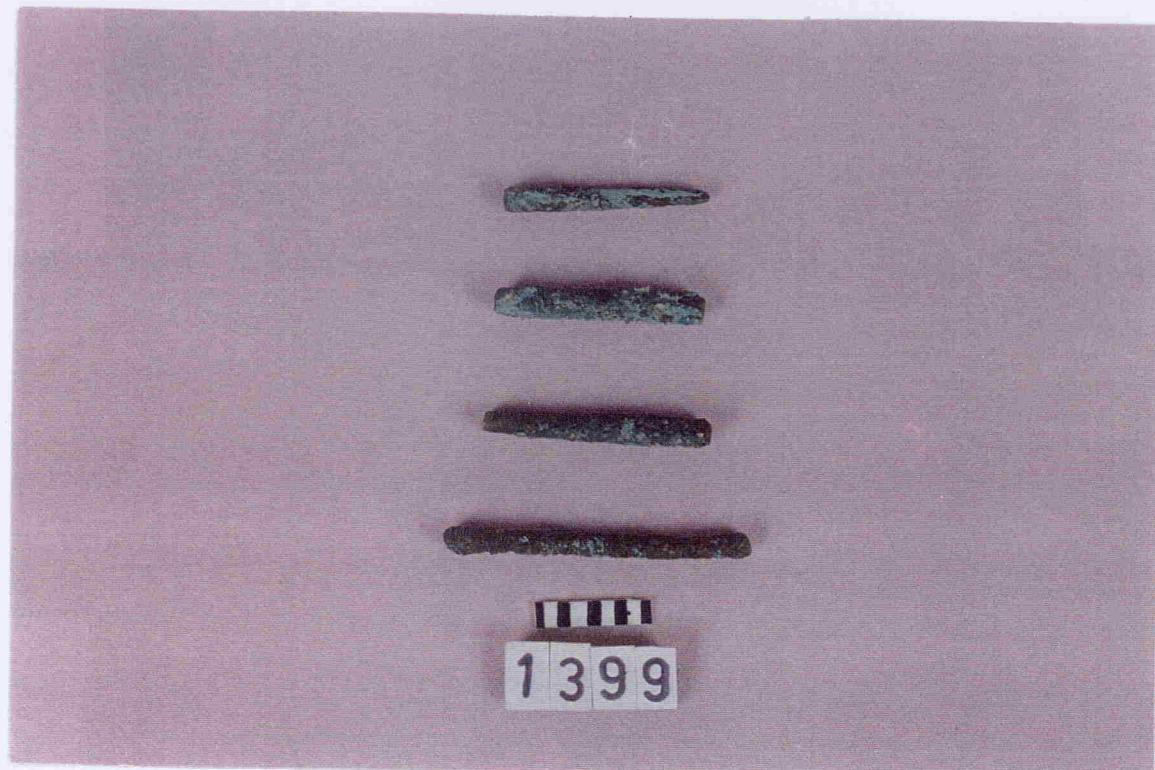
36

4.13: Photo. Showing coins 35-36

4.12: Photo. Showing coins 35-36



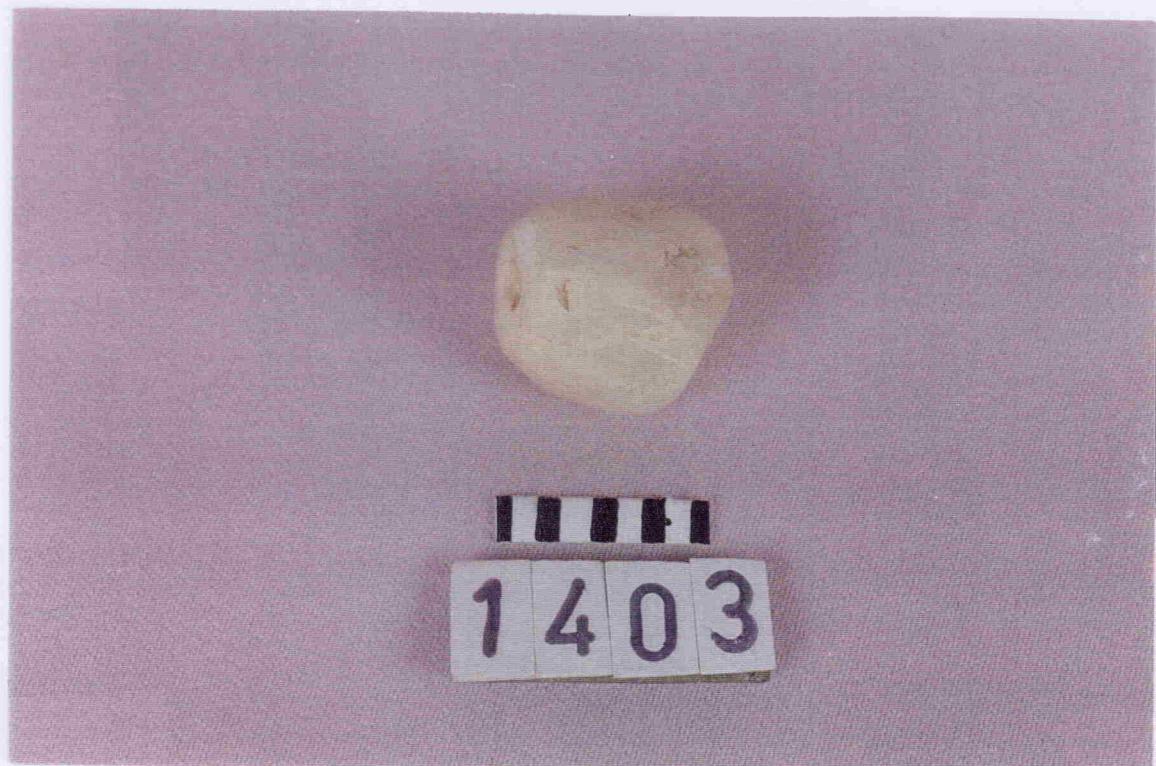
4.13: Photo. Showing small finds Nos. 1397-1398



4.14: Photo. Showing small finds Nos. 1399-1400



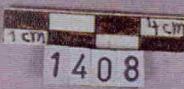
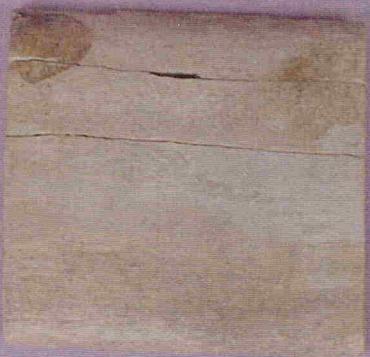
4.15: Photo. Showing small finds Nos. 1401-1402



4.16: Photo. Showing small finds Nos. 1403-1404



4.17: Photo. Showing small finds Nos. 1405-1406



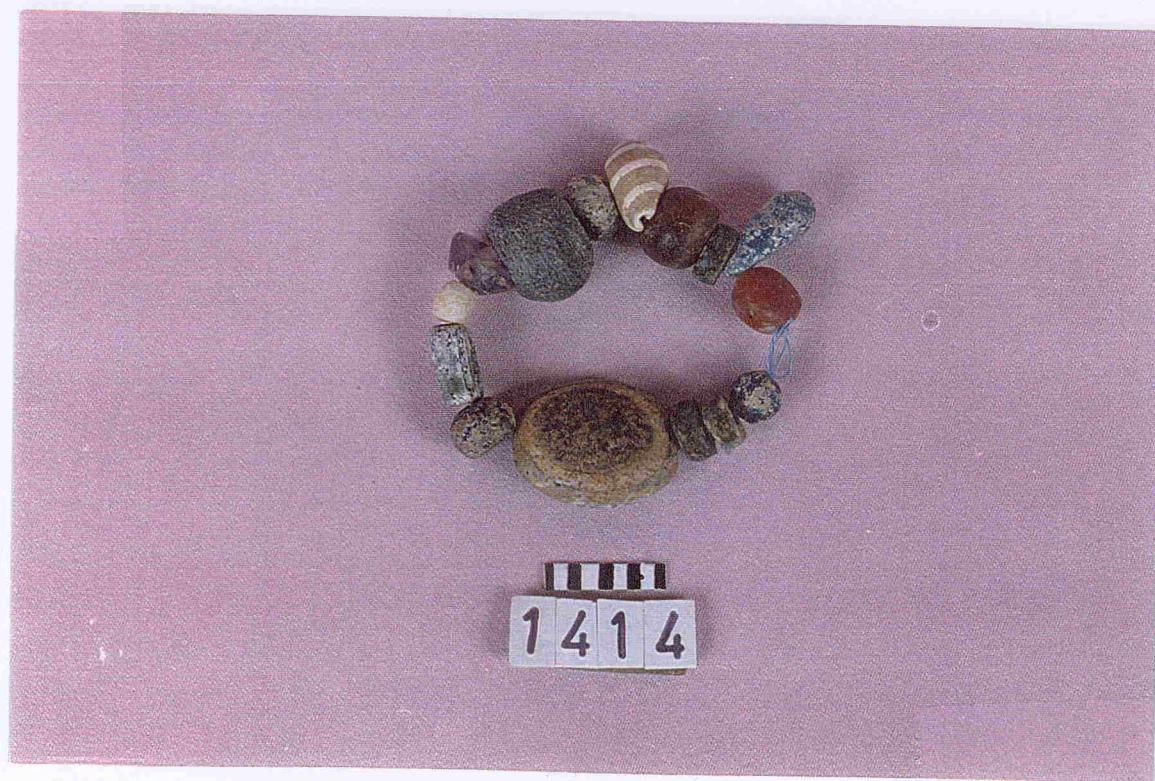
4.18: Photo. Showing small finds Nos. 1407-1408



4.19 Photo. Showing small finds Nos. 1409-1410



4.20: Photo. Showing small finds Nos. 1411-1412



4.21: Photo. Showing small finds Nos. 1413-1414

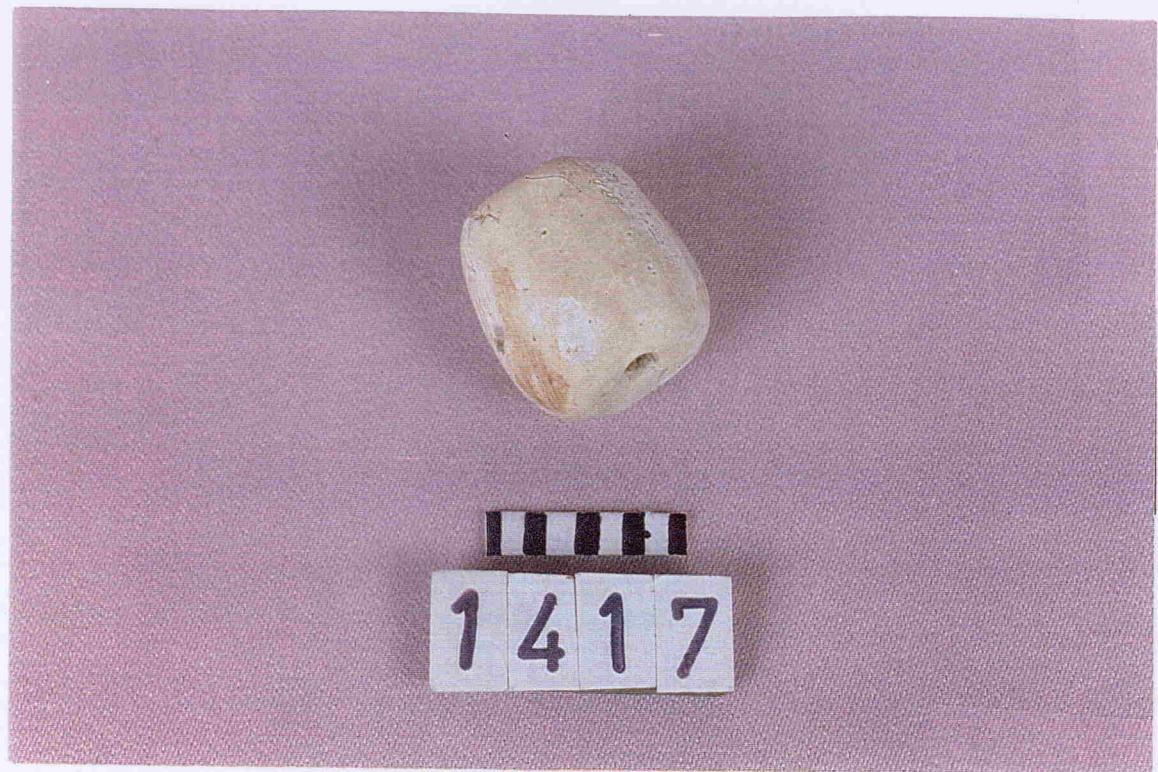


1 cm 4 cm
1415



1 cm 4 cm
1416

4.22: Photo. Showing small finds Nos. 1415-1416



4.23: Photo. Showing small finds Nos. 1417-1418



4.24: Photo. Showing small finds Nos. 1419-1420



4.25: Photo. Showing small finds Nos. 1421-1422



4.26 Photo. Showing small finds Nos. 1423-1424



4.27: Photo. Showing small finds Nos. 1425-1426

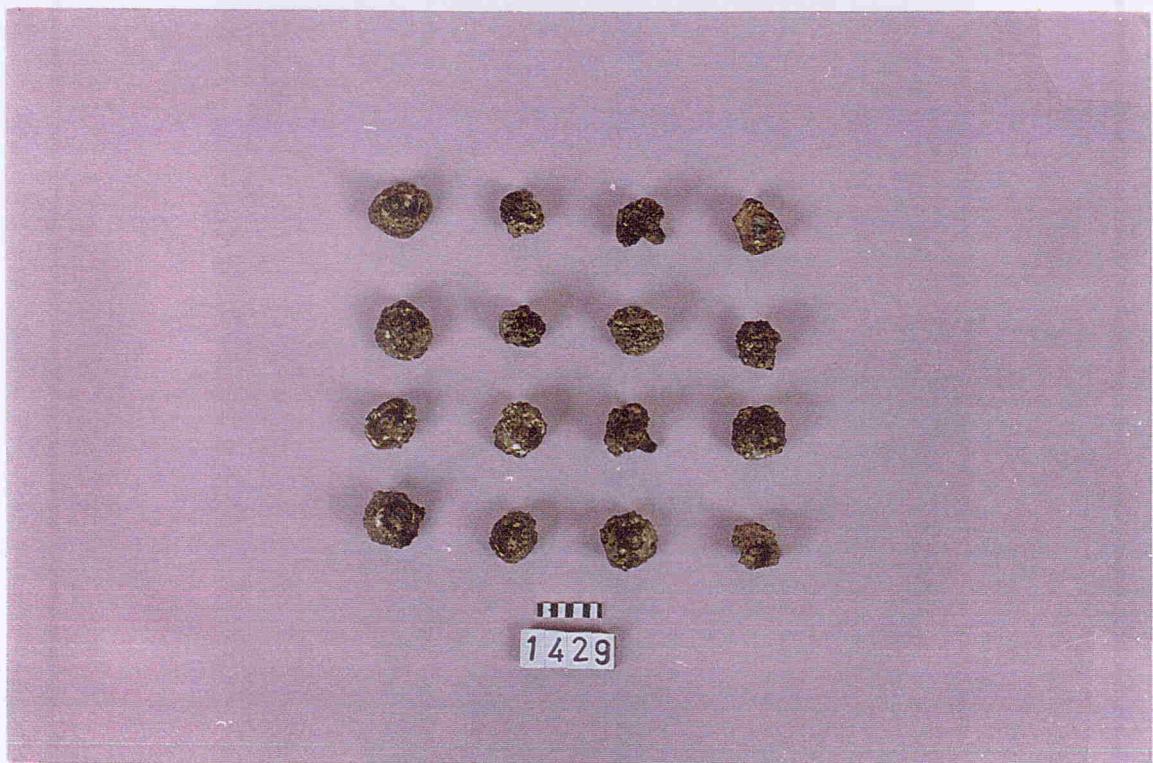


1427



1428

4.28: Photo. Showing small finds Nos. 1427-1428



4.29: Photo. Showing small finds No. 1429



4.30: Photo. Showing small finds No. 1430

4.31 Photo. Showing small finds No. 1431



4.31: Photo. Showing small finds Nos. 1431-1432



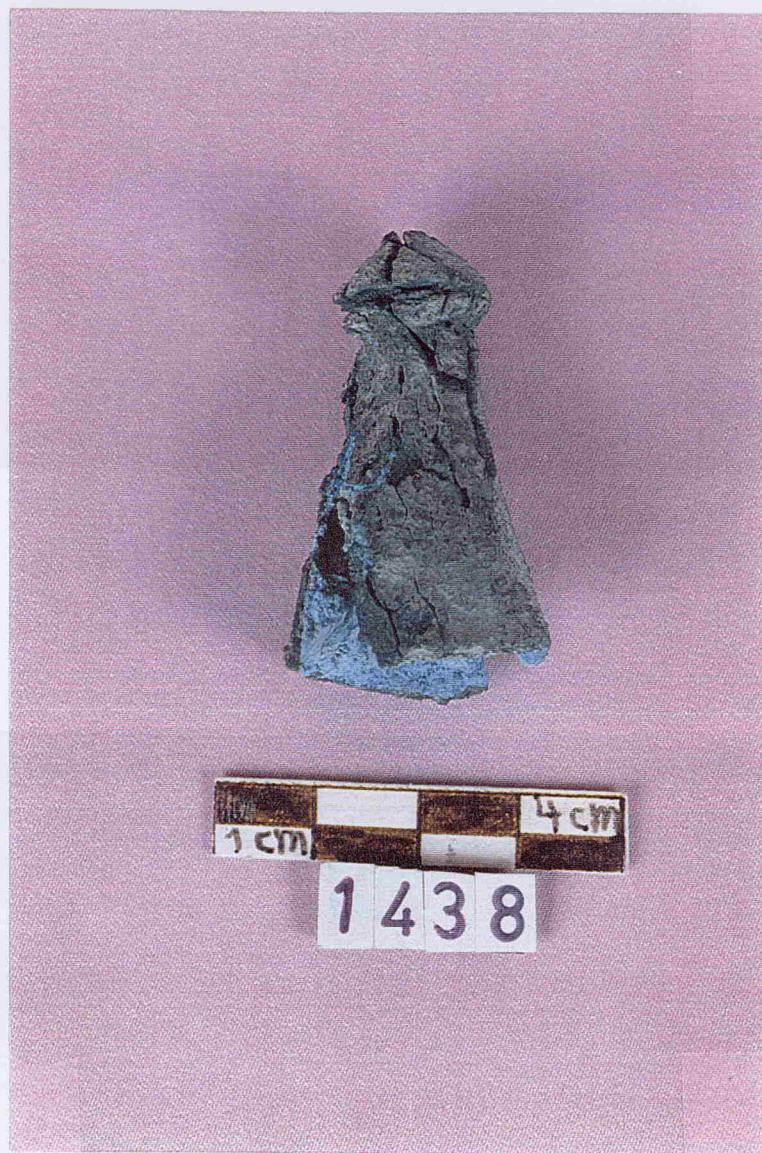
4.32: Photo. Showing small finds Nos. 1433-1434



4.33: Photo. Showing small finds Nos. 1435-1436



4.34: Photo. Showing small finds No. 1437



4.35: Photo. Showing small finds No. 1438



4.36: Photo. Showing small finds Nos. 1439-1440



4.37: Photo. Showing small finds Nos. 1441-1442



4.38: Photo. Showing small finds Nos. 1443-1444



4.39: Photo. Showing small finds Nos. 1445-1446

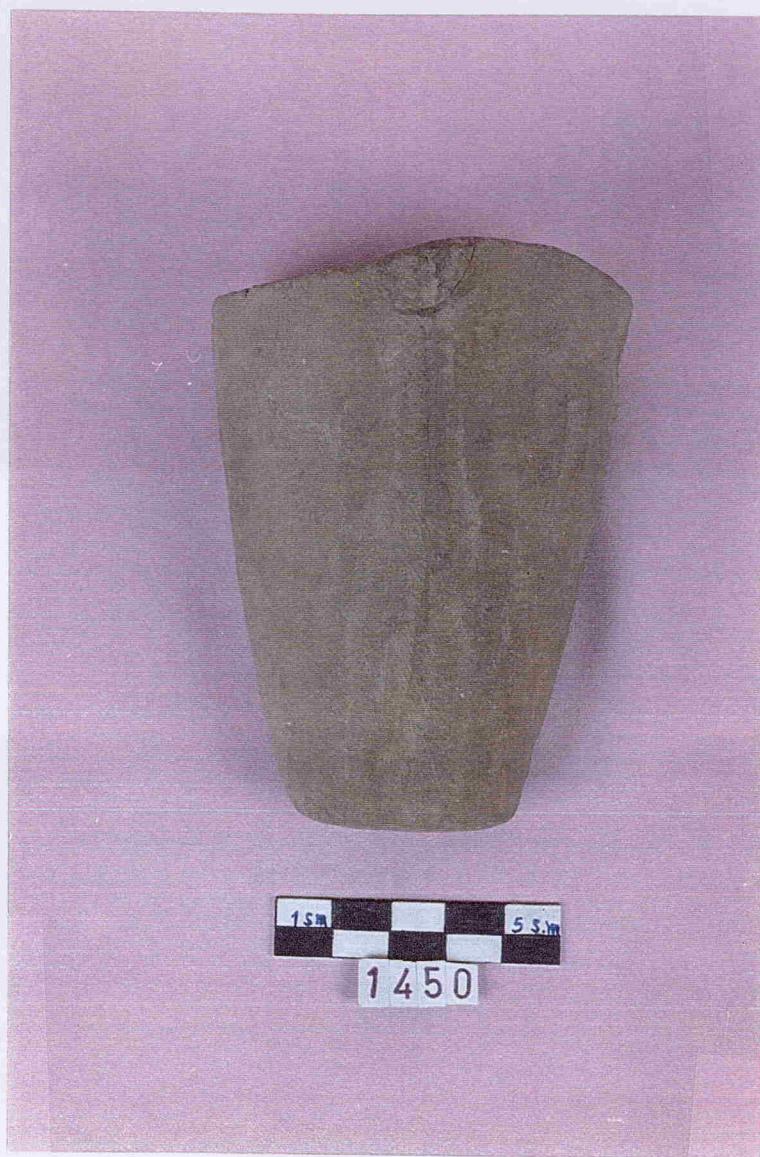


4.40: Photo. Showing small finds Nos. 1447-1448



4.41: Photo. Showing small finds No. 1449

4.42: Photo. Showing small finds No. 1450



4.42: Photo. Showing small finds No. 1450

4.43: Photo. Showing small finds No. 1450



4.43: Photo. Showing small finds Nos. 1451-1452



4.44: Photo. Showing small finds No. 1453



5.1: Photo. Showing a body inside a grave