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Jutta Häser – the new director of the German Protestant Institute in Amman

By: Dieter Vieweger, BAI, Wuppertal (Germany)

On the 1st of April 2004, Dr. Jutta Häser started her new job as director of the German Protestant Institute of Archaeology in Amman. She is an internationally respected scientist with a lot of experience in archaeological projects in the Arab world. Her reputation in the scientific world was acquired by a lot of successful excavations and surveys in Sudan, Syria, the United Arab Emirates, Oman and Jordan as well as in Germany and Italy.

Dr. Jutta Häser was born in 1961. She studied Near Eastern archaeology, prehistory and cuneiform studies in Göttingen, Aarhus and Berlin. Her MA-thesis was about stone artefacts of the second millennium B.C. in the Gulf region. Her Ph.D.-research was entitled: „Archaeology of Settlement Patterns in the Jebel Marra Region in Darfur (Sudan)". This work was based on remote sensing data in the Sahel region. Both investigations were carried out at the Free University Berlin and supervised by two distinguished prehistorian archaeologists: Prof. H.-J. Nissen and Prof. B. Hänsel.

During the last six years, Dr. Jutta Häser was employed by the Department of Orient-Archaeology in the German Archaeological Institute in Berlin. She was especially engaged in the publishing of journals and books of the German Archaeological Institute Berlin.

During this time her scientific interest was directed to Oman. She is the head of the archaeological team of an interdisciplinary research group focused on the exploration of the transformation processes in oasis settlements in Oman. This project is financed by the German Research Foundation, the German Archaeological Institute and the University of Muscat. It will continue until 2006.

A second special interest of Dr. Häser is the water management in arid and semi-arid regions of the Near East. She worked especially on irrigation and tunnel systems in Oman and Jordan.

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Syrian-French-German Co-operation in Training for the Preservation of the Cultural Heritage

New Missions in the National Museum of Damascus and in South Syria

By: Felicia Meynersen, German Archaeological Institute, Orient Section, Damascus

Syria possesses one of the richest archaeological and monumental heritages in the world. This cultural heritage has been subject for studies and research work since the beginning of the 20th century.

Today, many sites and findings need conservation, documentation and protection. In line with these considerations, the establishment of different types of training programmes for Syrian experts is a priority for the preservation of Syria's cultural heritage, cultural communication and exchange. Therefore, the European Commission is financing the „Preservation of Cultural Heritage Training Programme" which is built into the overall framework of the European-Mediterranean Partnership and deals with an aspect that is fundamental in achieving long-term sustainability: the capacity of Syria to preserve its archaeological and monumental heritage. This programme that started in 2001, supports the Directorate of General and Museums (DGAM) in carrying out sixteen missions of experts from different scientific fields, e.g. archaeology, restoration, history etc in training about eighty Syrian specialists, selected by the DGAM.

Campaigns of the Syrian-French-German Co-operation Projects

Two of the sixteen training projects are realising a bilateral co-operation in a double meaning: Those Syrian-European projects in south Syria includes both a co-operation between Europe and Syria as well as an „inter-European" co-operation between French and German. The European members are the German Institute of Archaeology, Orient Department (= DAI) and the Institut Français du Proche-Orient (IFPO). Those two partners were selected and appointed by the DGAM due to their proven expertise and high profile in the scientific areas tackled by the programme. The project work was realised as a co-operation „hand in hand".

From August 20th to October 14th of 2003, the first Syrian-European project mission (No 4) carried out a training programme for architects in connection with a field research about 85 km South of Damascus where the moonlike-landscape is shaped by extinct volcanos. Work concentrated on the so-called Serail in Qanawat, an official cult building, and on a house complex in Sweida, a typical example of private domestic houses (fig. 1). The training programme included the work on different documentation methods depending on the technical equipment and the special kind of building. It was emphasised that drawings cannot be the result of scientific research and documentation. But the description and the photo documentation of buildings are essential to understand ancient building periods and to document their damages for further preservation activities.

From September the 14th to December the 7th, German, French and Syrian archaeologists working on the second project (No 10), performed archaeological documentation and preservation work in the National Museum of Damascus, the heart of the Syrian museological landscape. Here, the mission initiated a scientific inventory of artefacts, and preparation of a database. Qualified Syrian archaeologists of the museum were trained in computerised inventory catalogue and its maintenance.

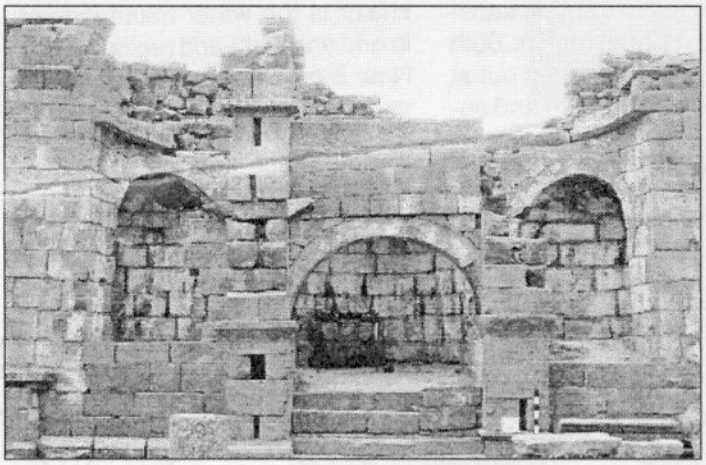

Fig. 1: Private domestic house in Sweida.

The objects presented in the so-called Palmyra Collection set an interesting example for teaching description techniques according to scientific standards in archaeology (fig. 2). The Palmyrenean art, cut in the soft creme-coloured limestone, depicts a great wealth of antiquarian details compelling one to look carefully and formulate exactly (fig. 3).

Results and Outlook

Syrian, French and German experts have in all matters co-operated successfully. The outcome of the projects No 4 and No 10 can be measured by a great number of visible structures: By documentation and research work as well as by giving several interviews on TV, newspaper and radio, where the members of the projects presented aims, methods and first results of their missions.

Furthermore, the outcome of the two projects should also be measured by nonvisible indicators: capacity building, transfer of know-how, passion, ambitions and willingness are also part of the results of those co-operation.

As an investment into Syria's future human capital, these young archaeologists and architects will help to support the preservation of their cultural heritage in Syria.

Fig. 2: Sculpture in the so-called Palmyra Collection

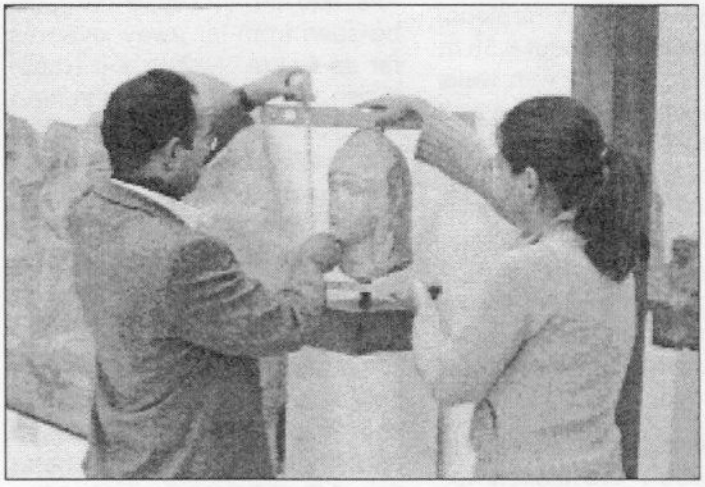

Fig. 3: Stefanie Hoss and Nidal Debel, measuring a marble head.

Ras Batahi: A caravan stop halfway between Petra and Sabra

By: Ulrich Hübner (University of Kiel, Germany)

Ras Batahi is situated just 3.5 km south of Petra and about 3 km north of Sabra, in the place where the plateau south of Petra falls straight down into the wide valley of Sabra (fig. 1). Situated halfway between Petra and Sabra, it forms a small caravan stop on the way into the Araba. From here, about 990-1010 m above sea level, runs a well built ancient road which lead through the wadi of the same name, Wadi Batahi, and after 2 km through the middle of the Wadi Sabra down to the small Nabataean town Sabra (about 800 m above sea level). The ancient place name is unknown. The town, which Léon de Laborde (1807-1869) and Louis Maurice A. Linant de Bellefonds (1799-1883) came to in 1828 on their way to Sabra, was visited several times afterwards, but never received further atten-tion or was referred to by name. Much later Manfred Lindner (Naturhistorische Gesellschaft Nürn-berg) occupied himself in 1983, 1984 and 1990 with the place. It was explored in more detail by Ulrich Hübner (University of Kiel) in 2002 and 2003.

As the pottery proves, the place was first built on in Nabataean time (1st century B.C.) and used as a caravan stop at least into the 2nd century A.D. Later, because of

its convenient location, the place was used as a transit station up to the present, without being changed by new buildings or being used to live in.

The area with ruins stretches mainly across the terraced slope south of the edge of the plateau. There were contemporaneous buildings on the plateau, too, but they are almost completely destroyed by the intensive farming on the adjoining fields. Apart from the little pottery found there, only one rectangular building, about 70 m north of the buildings on the slope, was preserved. It is about 6.50 m long and 5.40 m wide with walls that are about 0.45 m strong and was probably orientated to the west with its entrance in the east. In size and orientation it is reminiscent of a small Nabataean temple on Ras Hamra near Petra. The size of the built-on area on the plateau is unknown, it was obviously populated only thinly and with scattered buildings.

The buildings on the slope seem to have stood more closely together. The built-on area extended on both sides of a well-built road, which began at the edge of the plateau. At first it runs over a distance of almost 30 m straight down and then in large, fortified windings down the steep slope towards Sabra. The slope was terraced and seems to have had a few scattered buildings on it. But their floor plans cannot be seen on the surface any more because of the far advanced erosion and apparently stones have also been stolen. Probably the small habitation was no complete village, but rather a sort of checkpoint and customs post for the passenger traffic and transit trade of the passing caravans. It was a prominent marker for the road and the landscape that could be seen from far away, even as far as Sabra. Among the Nabataean remnants of architecture made of reddish sandstone which have lasted through erosion and stealing are e.g. pillar drums, fragments of a pilaster of a public building (or a sandstone fragment, which probably belongs to a sundial.

Remnants of a small necropolis nearby, which stand out because of their prominent and exposed position, indicate a small population of Ras Batahi: Around 120 m southwest of the buildings on the slope, a rock peak of reddish sandstone rises up out of the steep slope of the Wadi Batahi (fig. 2). At its top, to which lead 12 stairs, and at its northeast base are two graves in the rock that have been plundered and are partly filled with sand:

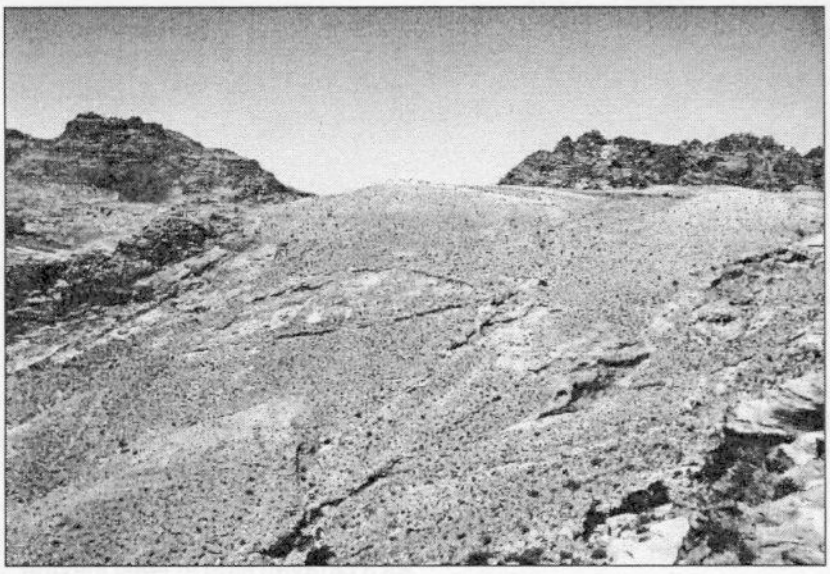

Fig. 1: Ras Batahi from East with the ancient Road (Photo U. Hübner 2003).

Tomb IA on the top of the rock peak is a rectangular grave cut in the rock, 185 cm long and 75 cm wide, and orientated to the southwest (fig. 3). In a depth of circa 40 cm the mummy-shaped contour of a human figure is carved out of the rock, in which a body could be deposited. The rock left to both sides could be used as an abutment, on which stone slabs could rest, which would cover the lower grave in the mummy-shaped hole. The entombment in form of the contour of a human body is the first and so far the only example of such a form in the Nabataean tomb architecture. Only on Sela north of Petra a tomb of the same type and time can be found.

It is not known if this peculiar burial form is a local characteristic, goes back to effects of pre-Nabataean traditions or foreign influences, for example from Egypt. In any case, it certainly proves that the Nabataeans practised the bandaging of the body with special wrapping, as we know it for example from the New Testament for the burial of Jesus (Matthew 27,59; Luke 24,12; Mark 15,46, John 19,39-40; 20, 5-7) in Roman Jerusalem and of Lazarus (John 11,44) in Bethany in the same period. Maybe this practice is recorded epigraphically in Nabataean in a Nabataean inscription in tomb 64A in the Siq opposite the Khazne in Petra (Nabataean *'srt'* „wrapping"). However, the shaft graves of the cemetery of Khirbet Qazone west of Bab edh-Dhra close to the Dead Sea from the 1st-2nd century A.D. show that bandages were not customary everywhere in the Nabataean empire: There the dead were laid into their graves with covers of leather or used clothes.

At the head of Tomb IA, to the northeast, is another double-decked, but much smaller tomb IB, lying at right angles (fig. 3). It is probably a burial place for children of the family circle of the adults buried in Tomb IA.

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Hübner, U., „Die archäologische Expedition 2002 in die Region um Petra", in: Natur und Mensch. Jahresmitteilungen der Naturhistorischen Gesellschaft Nürnberg 2002, 63-66.

Hübner U., „Archäologische Entdeckungen und Forschungen in Südjordanien", in: Christiana Albertina 56 (2003) 22-34.

Fig. 2: The Rock with the tombs south-west of Ras Batahi (Photo U. Hübner 2002).

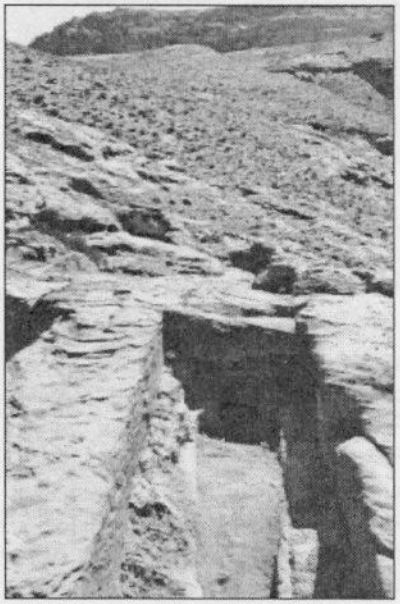

Fig. 3: Grab IA-B from south-west (Photo U. Hübner 2003).

Isis in the East. The Veneration of the Egyptian Deities in the Middle East during the Graeco-Roman Period

By: Veit Vaelske

Tacitus was surprised: „*pars Sueborum et Isidi sacrificat*" (Germania 9, 2). So there in the middle of wild, unexplored Germania the great and exotic goddess from Egypt should have been worshipped? That the historian judged this message as curious but also as believable can be explained by the fame of Isis in the Greco-Roman World. This admiration continues: around the Egyptian deities a specific field of research has been created. Using all archaeological and historical methods, its first subject is the spread of Egyptian cults and cultures in the Mediterranean world. An ending of this work is not visible, but one example of many gaps in our knowledge is the lack of a general work about the Egyptian impact on the Middle East during the Graeco-Roman periods. This topic was chosen by the author as subject of a thesis at the Winckelmann-Institut at Humboldt-University of Berlin.

The most important foundation for this work is all accessible material that is partly known but also very often lies unknown in Near Eastern museums and their storerooms (1). A scholarship generously given by the German Academic Exchange Service (DAAD) enables the author to search for and to study statues, figurines, reliefs, inscriptions etc. first in Jordan, then in Syria from October 2003 onwards.

Soon, during cataloguing the found material and comparing it with objects in European and American collections, questions arose about possible centres of veneration. There are known places like in Petra or Gerasa, but an indication to an architectural context are also three monumental reliefs of basalt from the citadel of Amman (2). At the same time there are objects from Gadara and Pella, whose evidence of the Egyptian cults has to be proven. Some of this material was imported in Antiquity – possibly a quantity of fragmented terracotta-figurines in the museum of Madaba – but other pieces were clearly produced in local workshops, for example terracotta-figurines from Gerasa or the above mentioned reliefs in Amman. The iconographies may rely in foreign (Hellenistic or Egyptian)

prototypes but there are also stylistic features that can only be understood regarding local contexts. The most prominent example for this is the so called *Isis dolente* (3), whose cult picture is represented in many Nabataean and Roman copies and were of greatest importance in Petra at least since the first century BC.

This leads to the question to what extent there were links with local panthea and theologies. Again, in Petra this became evident with a Nabataean votive stela adorned with the *Basileion*, the Isis crown (4). A Roman terracotta from Pella showing a mother goddess nursing her child proves the resemblance between local ideas and the iconography of Isis lactans by depicting the baby with the typical lock of Horus. The search for so called syncretism widens the focus for elder relations between Egypt and the Middle East. Both areas were continuously connected over millennia under changing circumstances, but it would be curious if such a proximity should be totally shaken off. A cultic worship in later times could be accrued from this. It is at least highly unlikely, that in such a wealthy and multifaceted world like the Middle East the knowledge about Isis and her companions was only motivated by Hellenistic and Roman influences.

This work would be impossible to carry out without the support of many persons and institutions. Firstly to be named is the Department of Antiquities of Jordan whose staff cooperated in the most generous and liberal manner. Jordanian colleagues of the Department, of museums and universities were helping everywhere and were giving very helpful advices. The author owes also a great debt to many members of foreign missions who gave access to excavations and their scientific results. The basis for this successful study was the German Protestant Institute at Amman (DEI), that served as home over three months and whose members gave countless advices and encouragements. The author had a great and very successful time in Jordan, because of which he can look optimistically into the future.

Notes

(1) Compare Th. Weber, Gadara decapolitana (2002).

(2) Recently presented by T. M. Atiat, An Egyptianizing Cult at the Citadel (Jabal al-Qal'a) of Amman, Jordan, Levant 35, 2003, 117-122.

(3) L. Bricault, Isis dolente, Bulletin de l'Institut français d'archéologie orientale 92, 1992, 37-49; L. el-Khouri, The Nabataean Terracotta Figurines (2002).

(4) M. Lindner, Eine al-Uzza-Isis-Stele und andere neu aufgefundene Zeugnisse der al-Uzza-Verehrung in Petra, Zeitschrift des Deutschen Palästina-Vereins 104, 1988, 84-91.

Archaeological reconnaissance at Izki and the Jebel Akhdar

Transformation processes of oasis settlement in Oman 2004 – third stage. A preliminary report.

By: Jürgen Schreiber, German Archaeological Institute, Orient Department, Berlin

Introduction

An interdisciplinary German-Omani cooperation project „Transformation processes in oasis settlements in Oman" started in 1999. It was conducted by members of the Sultan Qaboos University at al-Khod (Department of Archaeology and Department of Agriculture), the University of Tübingen (Oriental Institute), the University of Stuttgart (Institute for Urban Planning), the University of Kassel (Institute of Crop Sciences) and the German Institute of Archaeology in Berlin (Orient Department).

After three survey campaigns in Wadi Bani 'Awf and in the al-Hamra' region in the years 1999 and 2000 (Häser 2000, 2003) and one campaign for studying the finds in 2001, a second phase of the project started in 2002. The German Research Foundation, the Sultan Qaboos University and the German Institute of Archaeology financed this second project phase, which lasted two years and saw archaeological surveys at Tiwi at the coast (Korn et al. in press, Schreiber / Häser in 2004) across the Eastern al-Hajar mountains to Ibrâ' (Schreiber in prep.) in the interior at the edge of the Wahiba sands.

In December 2003 this project was extended for another two years by generously financial grants of the institutions mentioned above. Archaeological research will concentrate on surveys in Izki in 2004[1] and Nizwa in 2005, and on a minor level, on the Jebel Akhdar and Bahla.

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Work at Izki

The town of Izki is located in the upper part of Wadi Halfayn, directly at the southern end of the Sumail-gap (Fig. 1), which is one of the most important passages through the al-Hajar mountains, connecting the interior of Central-Oman with the coastal areas of the Batinah since prehistoric times.

The spacious oasis of Izki is divided into several quarters or settlement areas. The oldest and most important centres of the oasis are the quarters of al-Yaman and al-Nizar, separated by a c. 200-year-old fort, located between the quarters of the formerly two rival tribes. Situated to the north are the settlements of Seddi, Maghiuth, and Harat al-Raha, and located to the west are the small villages of Wuddai and Harat Bani Husain. To the south, a few small settlements and fields extend in the direction of Zukait.[2]

In every respect, Izki has to be considered as one of the most important places in Omani history. So is Izki the only town in Oman, which is mentioned in sources of the neo-assyrian period. According to an inscription of the so-called „Ishtar-slab" in Nineveh (c. 640 BC), a king named Padê came from his land Qadê after a half a years journey to the royal court of Nineveh, to pay tribute to Ashurbanipal, King of Assyria. The name of Padê´s town can be transcribed as *Is /S / z – ki / qi-e*, which fits strikingly well with the modern name Izki (Potts 1985a, 1985b).

Furthermore, according to local tradition Izki is the oldest town of Oman and one of the places, where the Azd-tribes under Malik bin Fahm settled after their immigration from Yemen (Wilkinson 1977, 1983). And another oral tradition mentions Izki as an important place in pre-Islamic times, where an idol named Jurnan was worshipped in a cave (Wilkinson 1977).[3]

We started our fieldwork in Izki at an area locally known as „Saruj". This area is formed by some low plateaus, which border the southern part of the main oasis to the west for some kilometres. P. Costa already shortly described this part of the Izki oasis in the late 1980ies (Costa 1988).

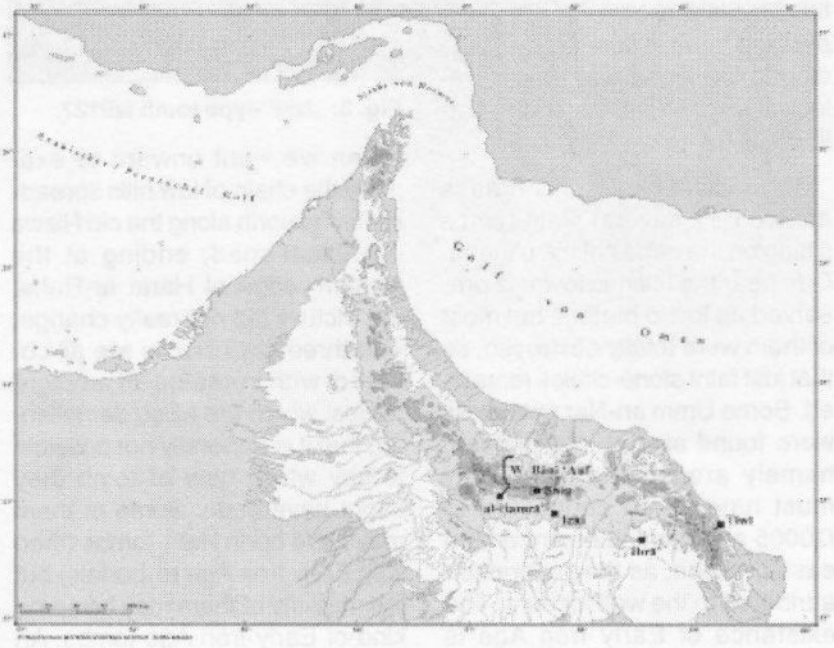

Fig. 1: Map of Southeastern Arabia with areas of research 1999 - 2004.

The main feature at Saruj is a large circular structure (Iz0005) (diam. 20 m), built of very large un-worked boulders, which probably formed the foundation of a platform, incorporating a natural rocky outcrop (Fig. 2). While the northern part of the structure is founded on top of the plateau, its walls run down the eastern slope towards the wadi. This means, that the eastern side of the structure must have been of enormous height to achieve an even level for the platform. There is no doubt that this structure dates to the 3rd millennium BC. This date is confirmed by comparisons to similar buildings (cf. 'Amlah, Firq, Wihi al-Murr etc. [Schreiber 1998]) and Umm an-Nar potsherds, which were found in and around the structure. Generally these structures occur never as single buildings, but are always accompanied by at least a second one, if not more (cf. Bat, Firq, Hili etc.). Unfortunately, no second circular structure was found until now, but it may have been located on the opposite wadi-bank and may have been vanished today beneath the old and modern parts of the quarter of al-Nizar.

South of Iz0005, down the slope several structures (a retaining wall, terraces, house foundations), also build of relatively large boulders were visible, which probably belonged to a 3rd millennium BC settlement. These were re-used during the Early Iron Age (Iz0118). This is shown by the remains of structures build of smaller stones set between the larger Umm an-Nar structures, as well as by a dense scatter of local Iron Age pottery. The actual size of this settlement site is around 1 ha, but may have originally been larger, as the eastern part of the site towards the wadi is heavily eroded today. In our days, this area is also used partly as a cemetery and around two dozen Islamic graves are located there.

Fig. 2: Monumental 3rd millennium BC circular building (Iz0005) seen from the east.

Situated immediately to the west of the circular building Iz0005, are some large rectangular structures, possibly tombs. They consist of a double-faced foundation wall of large undressed rocks. They all appear to be heavily disturbed and normally just the lowest stone layer is preserved. Generally they are oriented NE-SW, but some few examples are oriented N-S also. They do not differ much in size and their average dimensions are 5.00 m x 3.00 m (Fig. 3). These structures are loosely distributed all over the oasis: They are also found at the afore mentioned settlement area (Iz0118), on top of the plateau above the settlement, where they stand alone or in small clusters, on the Islamic cemetery west of Iz0005 and at a small Islamic cemetery (Iz0406) at the western wadi-edge at Harat ar-Raha, as well as at the large main Islamic cemetery east of al-Nizar. There a group of 27 of these tombs has been recorded by a team of the German Mining-Museum at Bochum in 1988, but were not excavated. These tombs cannot be dated for sure, as this type of tomb is unknown on other sites of the Sultanate – therefore the term „Izki-tomb" was introduced (Yule 1994). Because of their NE-SW orientation, they where tentatively dated to the Late Iron Age or Samad-period by P. Yule (2001). Pottery of this period was at least found at the surface of the main cemetery between these tombs as well as at the surface of Iz0406 (among the potsherds were also two fragmented clay camel-figurines). It seems striking that some of the older Islamic cemeteries were founded at sites, where Izki-tombs have already been built – this speaks for a long continuity in use of burial places.

On the southern part of the plateau at Saruj an Islamic tower, a houseruin, a wall running along its eastern edge and a Hafit-tomb seemed to be the only visible structures. However, a closer look showed, that the whole area was full of archaeological remains, but nearly all of them were in a very bad condition. Because of that, just the betterpreserved monuments were mapped. An interpretation of this area is very complicated, but according to the archaeological record it can be roughly outlined as follows:

The earliest use of this area is attested by several Hafit-tombs sitting on the edges of the plateau. One near the Islamic tower is preserved up to 1.5 meters, but most of them were totally destroyed, so that just faint stone-circles remained. Some Umm an-Nar potsherds were found also on the plateau, namely around the wall. They must have been connected to Iz0005 and the settlement on the eastern slope, as they cannot be attributed to the wall for sure. The existence of Early Iron Age is proofed at least by re-use of older Hafit-tombs, as well as some circular crater-like structures with some Early Iron Age pottery, which may be remains of a campsite of this period. It is also possible, that some of the badly disturbed tombs may have been of Early Iron Age origin. A handful of Late Iron Age potsherds as well as some tombs with a stone-set underground chamber, which were partly excavated by grave robbers, can be seen as a hint of Late Iron Age occupation.[4] While no traces of the Early Islamic period were found, the Middle and especially the Late Islamic period is well represented by the watchtower, the house-ruin and probably the wall. Scatters of modern Islamic pottery shows, that the plateau was occupied until recently.

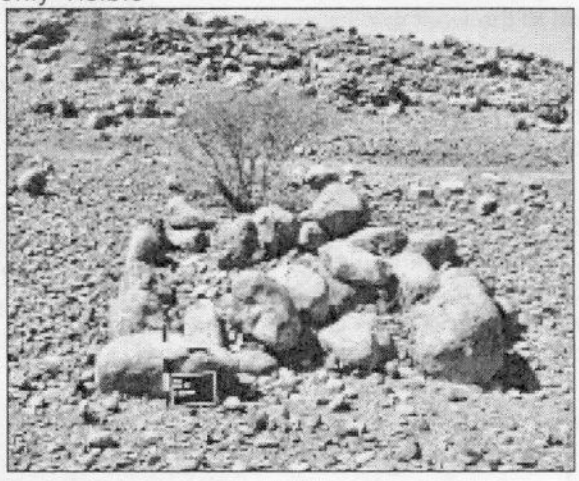

Fig. 3: „Izki"-type tomb Iz0127.

When we went onward to examine the chain of low hills spreading to the north along the old Nizwa – Muscat road, ending at the western edge of Harat ar-Raha, the picture did not really change. The three low hillocks are all covered with remains of ancient tombs, which are all so demolished, that it is generally not possible to say which type of tomb they might have been. Some of them may have been Hafit-tombs (then with Early Iron Age re-burials) but the majority of them may be some kind of Early Iron Age tombs. An interesting feature is a wall, which

runs at least across the two northern most hills toward a Late Islamic/recent mud brick tower, overlooking the now deserted old quarter of Harat ar-Raha. As this wall was built over a row of prehistoric tombs, it should be of Islamic date.

After finishing the work at these eastern hills, we crossed the old main road to examine the other side of the road, which is bordered by relatively high mountains to the west. This is a flat area that was nearly completely bulldozed for building new houses there over the last 20 years. So we just found a few traces of old remains to the north of this area near the new sewage plant. There are some very demolished prehistoric tombs situated in the plain as well as some collapsed shaft-holes of a deserted falaj.

When we looked at the slopes above the modern houses we saw some tombs there and when we climbed up, we found a large number of them. The two upper most were 3rd millennium BC beehive-tombs, while on the ridges below them large (Iron Age) tombs were built of un-worked stones. They consist of one or two concentric ring-walls around an oval chamber, which was covered by large flat stones and were partially preserved to a height up to 1 m. A closer look showed, that the slopes in this area were full of several hundred tombs. The situation is similar to that, we found at the vast Late Iron Age cemetery at the coastal site of Tiwi (Schreiber / Häser 2004). As in Tiwi, tombs were built here using natural features, especially large free-standing rocks. A semicircular wall was built in front of these rocks, incorporating them into the structure (Fig. 4). Other tombs were totally built between large natural rocks, which rolled once down the mountains. They form clusters of different size, depending on the number of demolished graves. All in all we recorded about 350 tombs there, but as we just mapped the better-preserved ones, their number must have been much higher. Unfortunately, finds were very scarce at this site. We just found a handful of potsherds, which are of Late Iron Age date – this also fits with the archaeological record at Tiwi.

Another vast cemetery is located on a flat plateau south of the canyon where the small village of Wuddai is situated inside and some hundred meters to the west of the structure Iz0005. This relatively wide plateau ends near the Sinaw - Nizwa junction. Around 60 large tombs were recorded on this plateau, most of them in very bad condition. Their average diameter is 7 m, but some reach 9 m and the better preserved of them are still standing up to 1.5 m high. The foundations of these tombs were built of large un-worked boulders and form a plinth and concentric ring-walls around a circular or rectangular chamber. Some tombs are divided by cross walls into two or four chambers. According to their location on this flat plateau, their size and elements of construction they should be Hafit- and Umm an-Nar tombs. Some smaller round or oval tombs with a diameter of 2 – 3 m intermingled between the larger ones, should be of a later (probably Iron Age) date. Finds were also scarce here. Just a few potsherds of Iron Age date were found and may derive from reuse of the tombs in this period as well.

The only non-funerary feature on this plateau is a long wall (Iz0712) running from the slope of the western mountains through a small valley up onto the plateau and across the middle of this plateau towards the wall Iz0106, which is located on a hill at the east side of the main road. As the position of the wall in the middle of the plateau does not make any sense as fortification, the wall may represent a kind of tribal boundary.

To conclude the preliminary results of this campaign, we can say that the oasis of Izki was at least occupied with the beginning of the 3rd millennium BC, what is attested by beehive- and Hafit-tombs, but no settlement remains of this period were found. A settlement area with a large circular structure represents the following late 3rd millennium BC, together with the tombs of the vast necropolis described above. While the Wadi Suq period seems totally lacking, the Early Iron Age period sees the reuse of the 3rd millennium BC settlement-area and an extensive reuse of older tombs, but also the construction of new ones. The Late Iron Age is best represented by the vast cemetery at the slopes of the western hills as well as by a settlement area, located directly between the two quarters of al-Yaman and al-Nizar.[5]

Our examination has shown, that the „outskirts" of the oasis were mainly occupied during pre-Islamic times and due to this, Islamic sites are somehow under-repre-

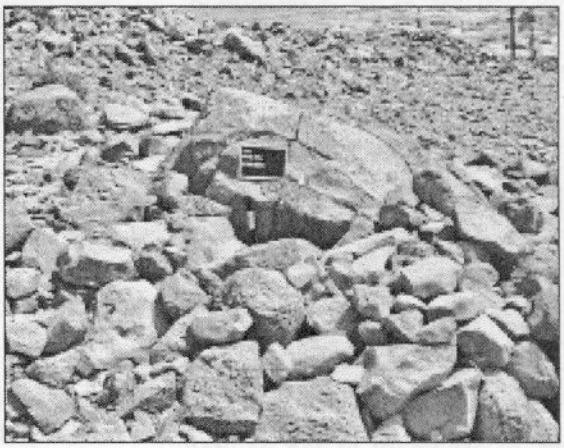

Fig. 4: Late Iron Age tomb Iz0334.

sented until now. Most Islamic remains we recorded during this campaign were some cemeteries, watchtowers and some single ruins in the deserted fields east of Harat ar-Raha – most of these features (except of some of the cemeteries) are of a relatively young date, but this will change, when we turn to the centre of the oasis during the next campaign.

All in all we mapped 744 archaeological sites/features, mostly tombs. At least 1500 potsherds (mainly of Early Iron Age date) were collected. Among the small finds (shells, fragments of soft-stone bowls, some flint-flakes) the most interesting are a bronze arrow-head (Early Iron Age), an iron bracelet (probably Late Iron Age) and the fragments of three clay figurines (one is a painted camel [Fig. 5] like the examples from Rumeilah [Boucharlat / Lombard 1985] in the United Arab Emirates and should therefore be of Early Iron Age date, while the second camel is unpainted; the third one is not a camel, but very similar to a figurine we found at the Late Iron Age settlement I0052 at Ibra in 2003).

Taking in account the results listed above, aims for the autumn campaign 2004 will be to examine the core of the oasis and the Islamic periods more carefully; to have a look what is preserved at the east side of the oasis after pipelines and the new Nizwa-Muscat highway were built there; search for another circular structure(s); extending the survey area further to the south and closer examination of the Izki-tombs, maybe including excavation of one or two of them to clarify their date.

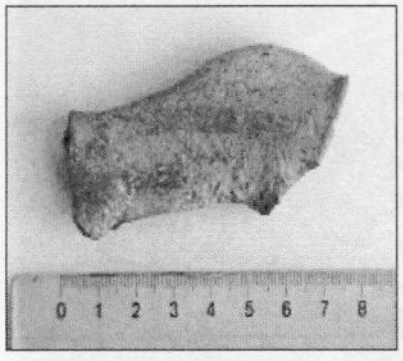

Fig. 5: Fragment of red painted camel-figurine from Izki.

Work at the Jebel Akhdar

Because of its strategic and military importance, access to the enormous area of the Jebel Akhdar massive was prohibited until recently. Due to this, almost no scientific research was done at the „Green Mountain" until now.[6] This and the special climatic conditions, which have led to a completely different cultivation compared to most other areas of Oman, made the agriculturists of our team establish a project there. We accompanied them from March 22nd – 25th for a short visit to get a first impression of archaeological monuments in this area.

The question was: Did the good climatic conditions (annual rainfall 200 mm and more, so no artificial irrigation was necessary) encourage early settlement or was the area so remote, that settlements developed relatively late?

We concentrated our short survey mainly on the Saiq-plateau (2000 m), where today the main settlements of Jebel Akhdar are located. Even in this short time, we were able to map around 70 archaeological remains, mainly tombs. The densest occupation of tombs we found at Saiq itself, where the southern edge above the valley Saiq is located in, was full of remains of Hafit-tombs. We noticed, that generally these Hafit-tombs were placed on flat mountain ridges, flanking small wadis. It was very obvious, that they were always located in such a way, that they were visible for those people, coming up the mountains. So they mark perfectly occupied territory. This also holds for areas away from the Saiq-plateau, as we noticed some Hafit-tombs in similar positions, when we made a short trip to Hail, some 15 km northwest of Saiq. We also found three hut-graves of the Early Iron Age (Fig. 6), which were built with stones of older Hafit-tombs near-by.

Fig. 6: Hut-grave JA062 near Saiq (Jebel Akhdar).

To identify prehistoric settlements was much more difficult. Above Saiq we found remains of what once was probably a camp. There were a few foundations of houses as well as some circular structures (probably stables), which were built of stones of near-by ancient tombs. As we found no single potsherd in this area, we are not able to date this site. But as there is also an adjacent small Islamic cemetery, the site should at least be Islamic and of relatively late date. The same picture occurred, when we visited some of the villages there. The paths inside these villages were so clean, that generally no potsherds were found there too, with one exception of an Early Iron Age rimsherd from the village of al-Ain. When we looked at the waste dumps of these villages we generally found potsherds, dating back no more than 50 years. But as the pre-historic settlements may have occupied

the same locations than the modern villages, potsherds from these periods may be found deep down the canyons and gorges, where they were washed down in the course of time.

Coming back to our initial question, the answer is still a preliminary one, but may be as follows:

Taking into account the natural, climatic and topographic conditions with its wells and caves, the Jebel Akhdar area could already have been occupied in Neolithic times, but this would need further exploration. For sure, the area was used as herding-grounds at the turn of the 4th to the 3rd millennium BC, as it is attested by a relatively large number of Hafit-tombs. The next period we can prove is the Early Iron Age. Even if we have just a single potsherd we found some hutgraves. The Late Iron Age is attested by a re-burial inside of one of the disturbed Hafit-tombs above Saiq, where we found a soft-stone spindle-whorl of this period.

The other prehistoric but also older Islamic periods should be found during a more thorough exploration

This shows, that the Jebel Akhdar was not a remote area, but was occupied early in prehistory and was connected with the surrounding areas. This also fits with the information given by local people there, that within the range of a four to five hours walk, it is possible to reach major oases and wadis like Birkat al-Mawz, Nizwa, Tanuf, Rostaq, Wadi Bani Khalid etc.

[1] The first campaign of the third stage of the project took place from March 7th – March 29th 2004. Participants were Jürgen Schreiber as director (archaeologist) and Frank Voigt Student assistant). All in all eight days were spent in the field in Izki, three days at the Jebel Akhdar and another seven days were used to study the finds and work on the documentation.

[2] At Zukait is a vast necropolis of beehive-tombs, which was mentioned already by de Cardi et al. 1976. A short visit showed not only beehive- and Hafit-tombs sitting on the ridges of the mountains, but also tombs built in the plain. All in all there must have been hundreds of them, but we were not able to detect any traces of settlement remains during this short visit.

[3] This cave may be found in the wadi terrace beneath the quarter of al-Nizar, but collapsed rocks block the entrance, so the cave is inaccessible at the moment (Hanna / al-Belushi 1996).

[4] As grave robbers heavily disturbed these tombs, it is difficult to recognize their exact structure. Some of them seem not to be oblong, but semi-circular. Therefore a date in the Wadi Suq-period may not be excluded, but neither potsherds nor other finds from this period were found.

[5] This site (Iz0002) was already discovered by J. Häser and the author in November 2002, but was not visited again this time.

[6] One exception was the „Oman Flora and Fauna Survey", which worked there in 1975 for a short period of time (Harrison 1975).

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Excavations at the 4th millennium site of Tall Hujayrat al-Ghuzlan / Aqaba – New Results 2004

By Lutfi Khalil (Jordan University, Amman) and Klaus Schmidt (DAI Orient-Department, Berlin)

In 1998 the ASEYM project (Archaeological Survey and Excavation at Wadi al-Yutum and Magass area) was created as a cooperation project between the University of Jordan, Department of Archaeology, in Amman, and the German Institute of Archaeology, Oriental Department in Berlin. Since 1998, five seasons of surveys and excavations were occurred at the prehistoric settlement of Tall Hujayrat al-Ghuzlan (fig. 1), which is located about four kilometres north of Aqaba (Brückner et al. 2002; Eichmann – Khalil 1998, 1999; Khalil – Eichmann 1999, 2001; Khalil – Eichmann – Schmidt in press).

The previous expeditions illustrate that the site played an important role in the early history of metallurgy, which can be dated to the first half of the fourth millennium BC. Large architectural structures of undressed stones, mud-brick and pisé walls had been unearthed (fig. 2). In the centre of the settlement a large building made of massive stone walls (preliminary called building A), at the northern part large buildings made of mud-brick walls (preliminary building B and C) had been unearthed.

In the 2004 season several rooms of building B and C had been excavated down to the floors. The walls are preserved with an astonishing height of 2 to nearly 4 meters. The existence of a second floor often is visible by ceilings made of wooden beams bearing a clay floor, found at the faces of the walls. A series of complete vessels had been found on the floors, but the function of the often shaft like rooms is not clear yet. They could have been used as storage rooms, but beside the vessels no stored material could be found.

A probable explanation could be that the small rooms had been used, at least partially, for the storage of cereals. With the background of the large „Silogruben von Büyükkaya" and the „Silokomplex an der Poternenmauer" from Hattusa, the capital of the Hittite Empire, Jürgen Seeher is providing a detailed study about the technical needs for granaries (Seeher 2000). The rooms had not only to prevent the entry of soil water, and to avoid flooding during heavy rain, the roof insulates the grain not only from solar heat. When a room had been completely filled with grain and sealed hermetically, a series of microbiological processes soon produced a de-oxygenation, which had strong effects on stored products pest. The way of hermetic, airtight storage of grain provided the possibility of storage up to 50 years.

But it was very important, to have manageable units. When a silo had been opened once, all the stored grain had to be consumed quickly, as the sealing process won't bear repeating with success. At Büyükkaya the silos are very large, but they had been built for the capital of an Empire. At building B in Tall Hujayrat al-Ghuzlan there is e. g. a complex of 6 rooms each with about 5 cubic meter volume. In one room 3 tons of grain could be stored. As 500 g of grain is the average need for a person per day, one room could provide food for about 100 persons for two month, the group of six rooms for a year. As these rooms are only a part of a much bigger magazin complex, the settlement clearly had the potential of storing food for several hundred people at least for one year.

Fig. 1: Tall Hujayrat al-Ghuzlan, aeri-al view from the south, March 2004.

At the western fringe of the settlement a building (preliminarily called building D) with wall decorations was retrieved in 2003 season. On the façade of its mudbrick walls, finger prints had been impressed in the soft clay depicting capricorns and humans. Several impressions of hands had been added. In 2004 the excavations had been continued and enlarged in this area, but only half of the building could be exposed until now. The ground floor level is not reached yet. The decorations found in 2003 had been placed at the western wall (decorated wall B, fig. 4) of a large rectangular room of building D and in a narrow room following to the east (decorated wall A, fig. 3). After removing a secondary wall, which had been placed opposite of the decoration B, new images, made in a similar technique, had been visible (decorated wall C, fig. 5). From right to left there are a canide, most probably a dog, a human and two capricorns. In a room east of it a isolated impression of a right hand had been found (decorated wall D). The decorations have several parallels in the rock art of northern Arabia and are fitting well into Negev style III of E. Anati (1981).

The outstanding character of building D is obvious not only by its wall decorations. Due to two long curved and concentric walls it seems that the building had an oval shape. Between the two concentric walls rows of rooms had been separated by radially orientated walls. The shape of the building somehow reminds the Early Dynastic Temple Oval at Khafajah. Hopefully further excavations will provide deeper insight in the character of building D.

In a new trench at the southern boarder of the site the large stone wall found in the previous season could be unearthed as expected running east-west through the new area. Directly north of the wall mudbrick architecture could be exposed. The function of the now 30 m long stone wall is not clear yet. It could have been a defensive wall or a protection against the *seyl* of Wadi al-Yitim. As it is curved, it even could have been part of the concentric wall system of building D. If that will be true after future seasons, the oval building D will have a north-south extension of more than 50 m.

A seismological analysis of the destroyed walls (A. Korjenkov) could demonstrate that there had been two earthquakes attacking the settlement. A first earthquake was not entirely destructive. It seems, that its demage had been repaired by the inhabitants. A second event, accompanied by a firestorm, destroyed most of the settlement.

Various shapes of pottery bowls and jars were discovered. They are hand-made and of a coarse ware, finger-impressions and other impressed decorations are furnished on some of the vessels. It could be confirmed that both Chalcolithic and Early Bronze Age IA shapes and fabrics can be distinguished within the find material.

The lithic industry again is characterized by the absence of primary production and a restricted tool inventory without endscrapers and burins. Scrapers, often true fan scrapers made on tabular flint, where numerous. Sickle elements are common. Large and broad blades mainly had been used for these tools, resembling the so called „Cananean blade technology".

Remains of copper metallurgy again were discovered in large amount. They include copper ore, slag, fragmented pottery moulds and crucibles, and copper artifacts. The production of ornaments made of the shells of molluscs again had been found in high quantity. Bone tools and perforated weights made of various stones, bone and pottery sherds are common too. A fragment of a pear shaped mace head made of basalt (fig. 6) resembles both the type known from e.g. the Nahal Mishmar hoard and examples from predynastic Egypt.

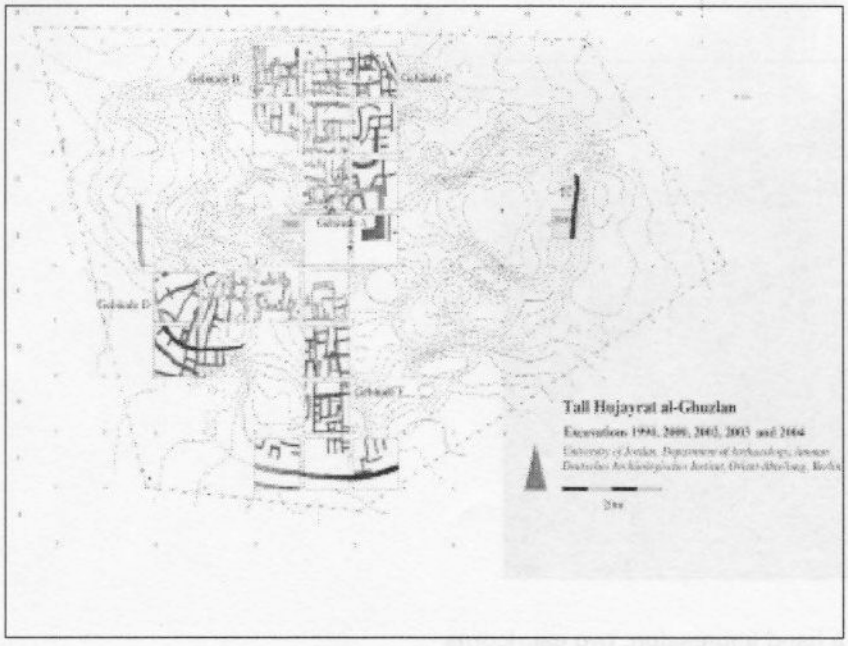

Fig. 2: Tall Hujayrat al-Ghuzlan, map

The preliminary studies of the artefacts again indicates trade relations with Pre-dynastic Egypt, especially with the Lower Egyptian Buto-Maadi culture. A small ovoid jar resembles a shape common in the Buto-Maadi culture. The technique of producing twisted bladelets is similar in Lower Egypt and in Hujayrat al-Ghuzlan. The cortex tools, especially the large fan scrapers, had been exported from places in the southern Levant to Maadi.

The palaeo-zoological (N. Benecke) and botanical analysis (R. Neef) are under progress. Accompanying the excavations a survey documenting the probable Chalcolithic/Early Bronze Age hydrology technology in Wadi al-Yitim had been undertaken. Limestone coatings on stones used for the construction of the channels will solve the question of the date of these installations when c14 analysis is available, as these coatings are directly related with the use of the channels for irrigation. The coating can be produced only by long time running water.

About 200m southeast of the Tall a part of the irrigation system had been excavated. Beside irrigation channels and terrace walls, several cairns are visible in that area. It had been called Hujayrat al-Ghuzlan II. In a test trench in one of the cairns a row of orthostats in an oval arrangement had been unearthed. As traces of domestic life are nearly completely absent in the structure, it is quite probably a (4th millennium) burial monument. However, the burial itself remained uncovered in the not excavated part of the structure.

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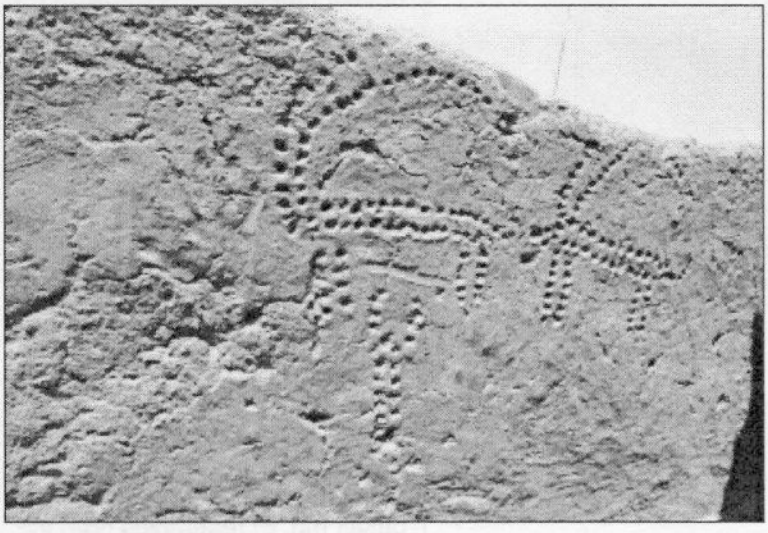

Fig. 3: Building D, decorated wall A, a hand impression, two capricorns and a human

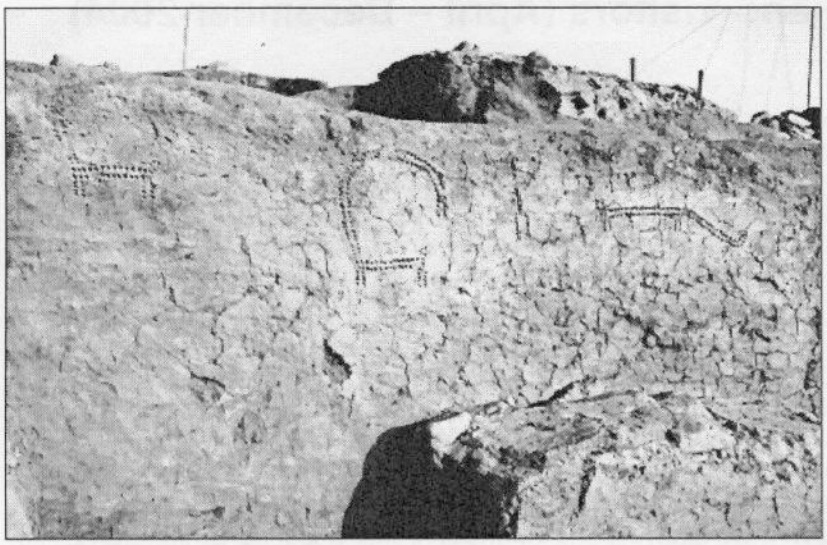

Fig. 4: Building D, northern section of decorated wall B, a capricorn and a human

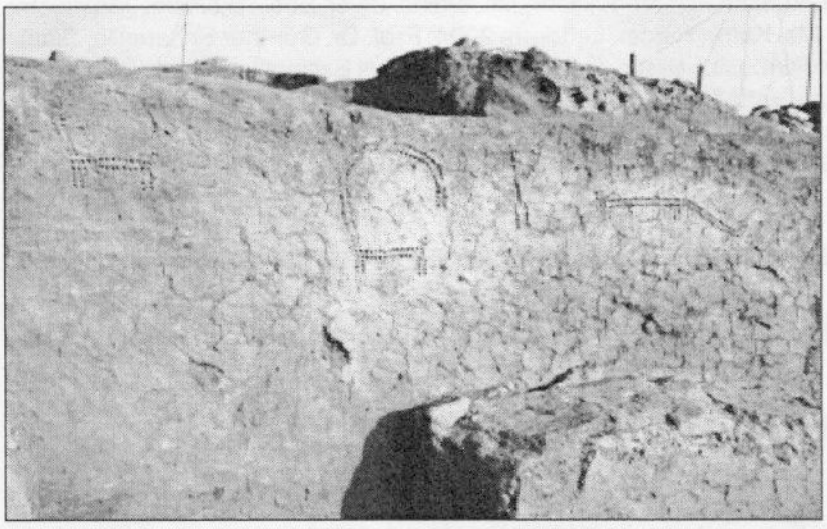

Fig. 5: Building D, decorated wall C, a canide, a human and two capricorns

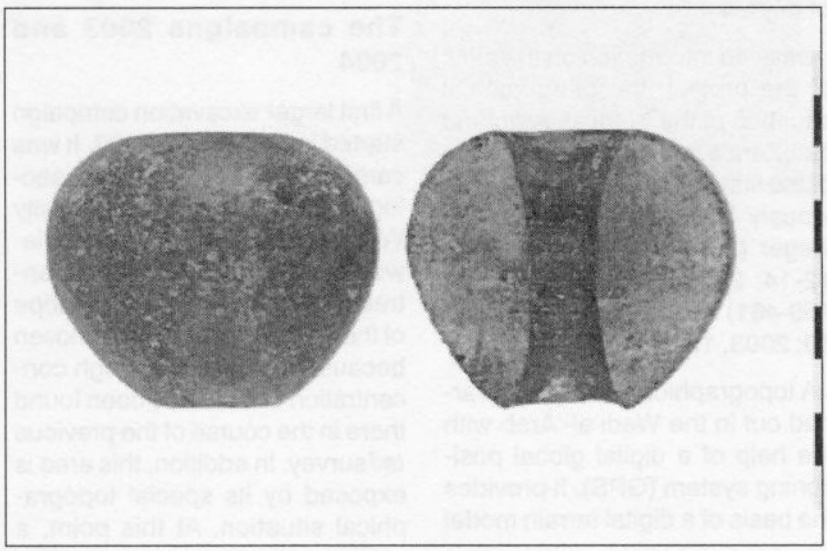

Fig. 6: Pear shaped mace head made of basalt from building B

Fellows in Residence and Visitors (April – December 2004)

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Tall Zera'a in the Wadi al-'Arab, the 2003 and 2004 campaigns

By: Dieter Vieweger (BAI, Wuppertal) and Jutta Häser (DEI, Amman)

Introduction

In 2001 an interdisciplinary research program – called 'Gadara Region Project' – was initiated by the Biblical-Archaeological Institute at the University of Wuppertal (Germany) directed by Prof. Dr. Dr. Dieter Vieweger. This project is focused on the investigation of the Wadi al-'Arab southwest of Gadara/Umm Qeis. The exploration started with a ceramic survey on Tall Zera'a, the most prominent *tall* in the wadi. This study has shown that the *tall* was inhabited from the Early Bronze Age until Ottoman times.

Furthermore, various geophysical methods were used for exploration. The results demonstrate that there is a thick cultural layer up to 6 m in height in many areas of the *tall*.

Detailed information on the aims of the project, the geographical situation of the Wadi al-'Arab and Tall Zera'a as well as the results of the first investigations have previously been published by Vieweger (2002a: 157-177; 2002b: 12-14; 2003a: 191-216; 2003b: 459-461) and Vriezen (2002, 18-19; 2003, 13-14).

A topographical survey was carried out in the Wadi al-'Arab with the help of a digital global positioning system (GPS). It provides the basis of a digital terrain model in order to map the different archaeological features in the *wadi*.

The campaigns 2003 and 2004

A first larger excavation campaign started in September 2003. It was carried out by the Biblical Archaeological Institute of the University Wuppertal directed by Prof. Vieweger. The excavation concentrated on the northwestern slope of the *tall*. This area (I) was chosen because a significantly high concentration of finds had been found there in the course of the previous *tall* survey. In addition, this area is exposed by its special topographical situation. At this point, a

defense system could be assumed, since there is no natural protection here by topography unlike on the southeast, east, north, and northwest sides of the *tall*.

Eight squares (measuring 5 m x 5 m each) were opened and explored to a maximal depth of 3.3 m.

A second campaign was conducted in April 2004 as a co-operation project between the Biblical Archaeological Institute and the German Protestant Institute of Archaeology Amman directed by Prof. Vieweger and Dr. Häser. The excavations were continued in the previously opened squares and ten more squares were uncovered.

A further, ten-day campaign was carried out as study course for theologians in July 2004. The work was continued in three of the eastern most squares.

During the excavations in 2003 and 2004 five strata were exposed. They were labeled 1 to 5 from top to bottom. In the upper most stratum (1) the remains of three large houses were uncovered. They are orientated almost exactly northward. The entrance situation is unresolved in this stage of excavation. Two of the houses are joined, a third one is situated east of them separated by a 4 m wide stone-paved road. The walls are built with undressed and some dressed stones. The last ones are *spolia* from a building elsewhere. The walls rest on the butt of walls of the Iron Age II, i.e. stratum 2.

The eastern most house, no. 1, consists of at least six rooms. The rooms have an average dimension of 4 m. In one of the rooms a threshold (AL 118), a column base (Fig. 1) and, adjoining it, a narrow bench (AM 118) were found. The column base points to the fact, that this area was roofed. The area east of the threshold might not be a room but a courtyard.

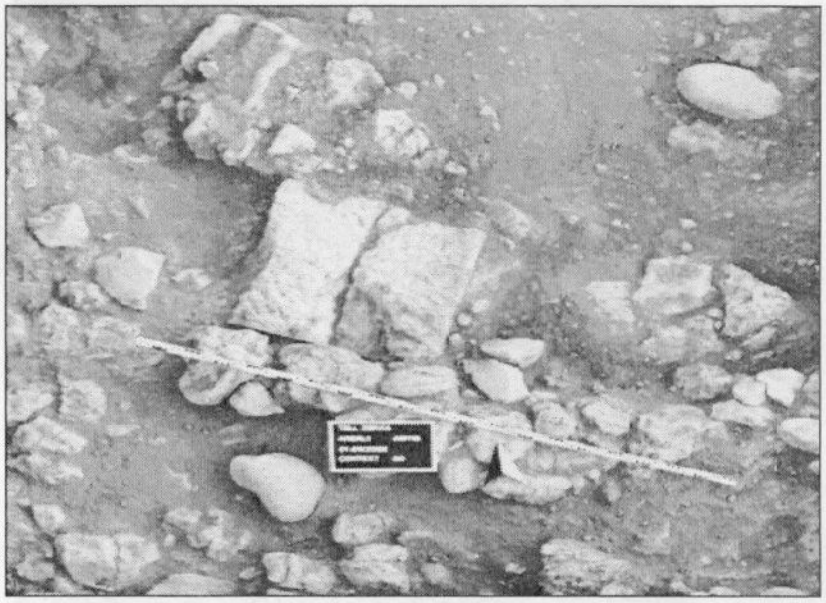

Fig. 1: Roman-Byzantine column base in square AM 118.

House no. 2, to the north of house no. 1, consists at least of two rooms (AO 117-119). The northern limits have not been reached. A stone-lined pit was excavated in the western room (AO 118).

Toward the western part of the slope, the buildings are eroded near the edge of the slope's steep incline.

House no. 3 is represented only by a single wall running from north to south (AM 119).

The pottery found in the houses can be dated to the Roman-Byzantine Period. In addition, fragments of glass vessels and some coins were uncovered. The coins have not been dated yet, since they have to be cleaned before.

A deep pit with a diameter of about 4 m was discovered under the paved road (AN 119). It contained a mass of Roman-Byzantine pottery. This pit was presumably built when this area was not covered with houses.

The two subsequent strata (2 and 3) can be dated to the Iron Age. These strata are disturbed in many parts by large pits of the Roman-Byzantine period. Nevertheless, remains of a settlement wall and some houses could be traced.

The western limit of the built-up area of stratum 2 is marked by a sawtooth-like wall following the curve of the *tall* (AL-AO 117). Due to the balk it is unclear if the wall in the squares AK-AL 116 is the continuation of the aforementioned wall. Both walls are built with field stones and are 1-1.20 m wide. They are constructed on the casemate wall of the Late Bronze Age period.

An area with house remains was discovered east of the defence wall. A room structure can be observed in the center of the area (AM-AO 118). The outer limits of this structure have not been excavated yet. Therefore, the building type cannot be determined as yet. Two building phases can be distinguished. In the first phase, two ovens are cut into the floor level. These were destroyed in the second phase. One of these ovens was partly covered by a wall constructed between two east-west running walls (AN 118) (Fig.

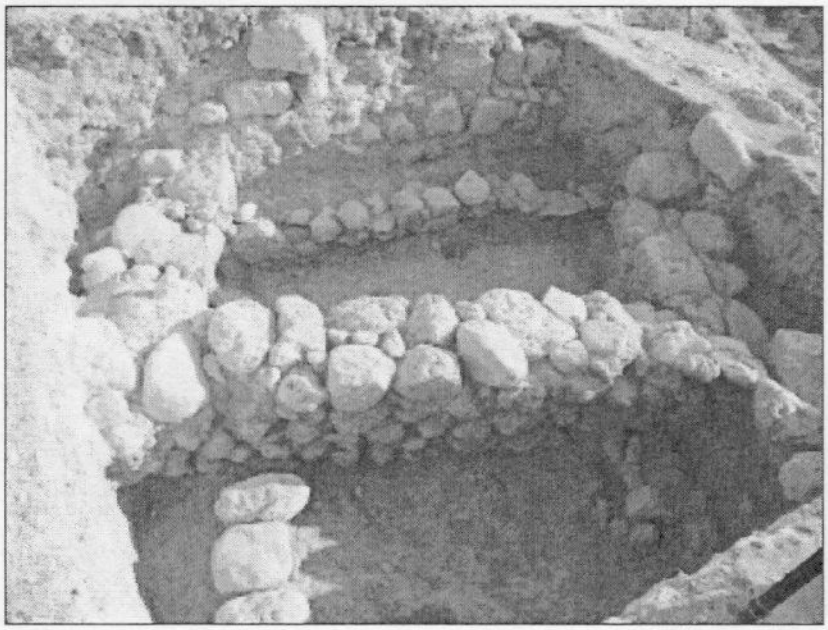

Fig. 2: Iron Age II building in square AN 118.

2). Another wall was built parallel to the west, forming a new room.

A well-prepared working area with a large flat grinding stone was built in the south (AL 117) (Fig. 3). This stone is surrounded by two rows of standing stones like a stone-lined silo. The connection of this working area with the room structure is still undetermined.

The pottery shows that stratum 2 can be dated to the Iron Age II.

The architectural remains of stratum 3 were also disturbed by later construction work. Therefore, a coherent building structure cannot be observed. However, the remains of the walls of this stratum follow a consistent orientation from northwest by west to southeast by east or join them forming a right angle. Most of the walls were excavated in the squares AL-AO 117.

Two tabuns were discovered in AM 117 and AO 117, and a considerably large oven was uncovered in square AM 118.

The walls of stratum 3 are based on the remains of the preceeding Late Bronze Age city wall in many places. These walls were built with field stones and are very thin. The remains of the Late Bronze Age tower were used as foundation for a hearth. In addition, stone-lined pits were dug in the remains of the Late Bronze Age city wall in the squares AM 117 and AO 117.

The pottery of this stratum can be dated to the Iron Age I.

The layers of the Late Bronze Age (stratum 4) could be excavated in the slope terrain of the excavation area. A casemate city wall protected the western slope in this period. It was built above the Early Bronze Age city wall and glacis, separated from it by a one meter thick deposit. A small stone-lined pit was found in one of the rooms of the wall (AM 116) (Fig. 4). To the south, a room paved with stones was uncovered. From this room a passage leads into another stone-paved room, which is surrounded by 2 m thick walls. Presumably, this was the interior of a tower. This might have belonged to a gate or a poterne, which can be expected south of the present excavation area.

A street runs parallel to the casemate wall on its east side. The width of the street cannot be measured in this stage of excavation. The street has a canal which is covered by large stones. This canal collected the water from two sides, draining it in another room or basin (AM 116/117). It can be assumed that the 3 m deep shaft beyond the city wall in square AM 115 was part of the construction. At the foundation of the Early Bronze Age glacis the shaft deviates from the vertical at an angle of about 30°.

Fig. 3: Iron Age working area in square AL 117.

Just as the architecture of the Late Bronze Age is very prestigious, so are the finds. Various bronze objects have been found like remains of a dagger, a needle and a mirror (Fig. 5) as well as imported Mycenaean and Cypriote pottery. Several stone vessels, including an alabaster stand, imported pottery and bronze fragments were discovered in an architectural structure which can probably be reconstructed as a room of a building with several installations.

Fig. 4: Late Bronze Age stone-lined pit and canal in square AM 116.

Stratum 5 is represented by a 3 m high glacis running along the western hill. This glacis and the basis of the city wall can be dated to the Early Bronze Age. It is cut vertically by the shaft mentioned before (AM 115). At the moment only the outer skin of this glacis is visible. The results of the survey suggest, that the levels between the Late Bronze Age and this Early Bronze Age stratum are several meters thick.

The pottery analysis

About 24,000 sherds were found during the survey on Tall Zera'a. Geochemical and mineralogical analyses of 23 unstratified sherds from the survey on Tall Zera'a and two sherds from Gadara provide the following results.

There is a main group of 12 sherds which can be dated to the Late Bronze Age, the Iron Ages and to the Islamic period. This includes a group of three very similar Iron Age sherds. All these pottery sherds stem probably from the surroundings of Tall Zera'a.

Five sherds from Tall Zera'a belong to a subgroup which can also be included in the main group. Three sherds from Tall Zera'a are similar to Gadara-sample 1. One other sherd from Tall Zera'a resembles Gadara-sample 2. Four sherds are so different in composition that they belong neither to the main group nor to the Gadara samples.

Generally, it can be said, that the pottery sherds of the Bronze and Iron Age as well as from the Islamic period come from the surroundings of Tall Zera'a. In Hellenistic and Roman-Byzantine times the pottery sherds show clear similarity with samples from Gadara.

These results have to be scrutinized with stratified samples from the excavation on Tall Zera'a.

About 25,000 sherds were excavated during the excavation campaigns in 2003 and 2004. All of them were determined in respect to ware. The pottery can be divided in c. 100 ware groups, dated from the Early Bronze Age to the Islamic period. The diagnostic sherds (rims, bases, decorated sherds) were also defined in respect to typology.

The aerial survey

Surveying and photogrammetric mapping have made possible new

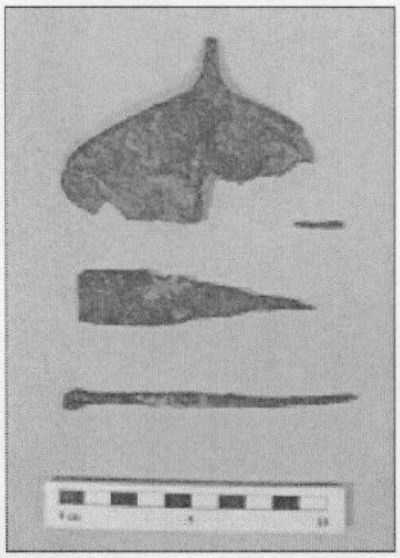

Fig. 5: Late Bronze Age finds.

research methods for archaeology by a combination of modern equipment with digital technologies.

The mapping of features in large-scale surveys has long since been carried out by GPS in an effective and time-saving way. This mapping method was combined with the recording of objects, as has been common in restoration (measuring of façades) for some time: a camera platform, equipped with three-dimensional mobility via remote control, was fastened to a helium-filled balloon (Fig. 6). The balloon was tied up on the ground or directed to the areas to be surveyed with the help of a rope. In order to take photos, the camera had to be positioned almost perpendicularly above the areas to be mapped. This was done with the help of radio telecontrol. The section in the viewfinder was relayed digitally to a ground station (TFT monitor or head-display during strong sun radiation). Photos taken from heights of up to 135 m supplied ground segments of maximally 15,000 m² per picture. On one hand, these photos served as photograms for specific site data supplemented by GPS data. On the other hand, the overall view of

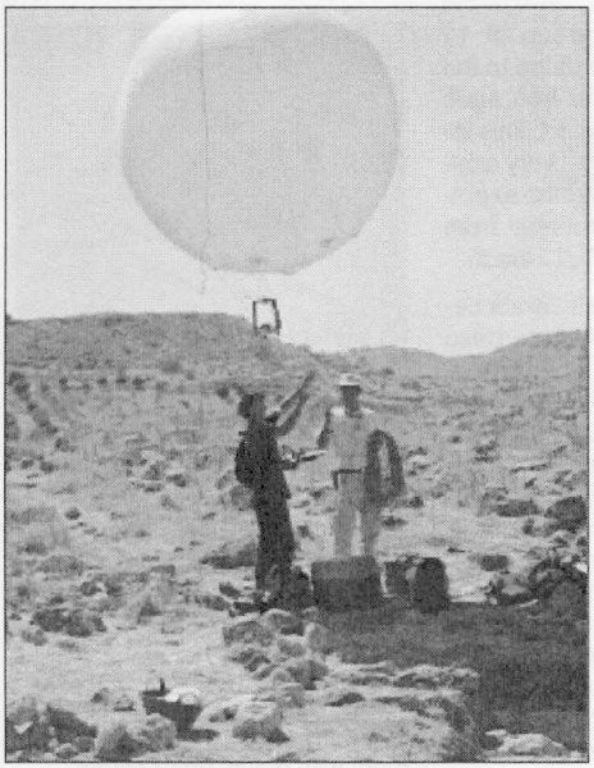

Fig. 6: Helium filled balloon with camera for aerial photographs.

the excavation area and its surroundings could be impressively documented. The pictures were rectified and assembled into a mosaic with the help of control points.

Photogrammetry

Similarly, the excavation squares on Tall Zera'a were documented with the help of modern technological equipment. On a daily basis, nearly perpendicular photos were taken from c. 4 m above the squares. First, the distortion of the lens was corrected. Then the digital photographs were rectified via control points (here the corner points of the squares). In this way, both the progress of the excavation could be documented and site sketches produced with great accuracy.

The evaluation of these photographs should be undertaken jointly by the surveyor and the archaeologist in charge to ensure that the represented data are correctly interpreted. To improve our techniques, we will in future campaigns analyze potential error sources inherent in deeply excavated squares and consider the former's elimination while looking at aspects of practicality and accuracy.

Experimental archaeology

Following the excavation in 2003, a project with a technological-historical background was carried out. Within three weeks, Mustafa Saleh, the son of the last Tabunye still living in Umm Qeis, built a bread-baking oven commissioned by the Biblical-Archaeological Institute (Fig. 7). In particular, we analyzed and documented the following stages of construction: origin, grinding, cleaning, mixing of the clay, origin and use of added materials (e.g., rush and goat hair), manual construction of the oven, special make-up of the oven's base and upper rim, preparation of the pit in which the oven was set, heating it and, of course, the baking of bread.

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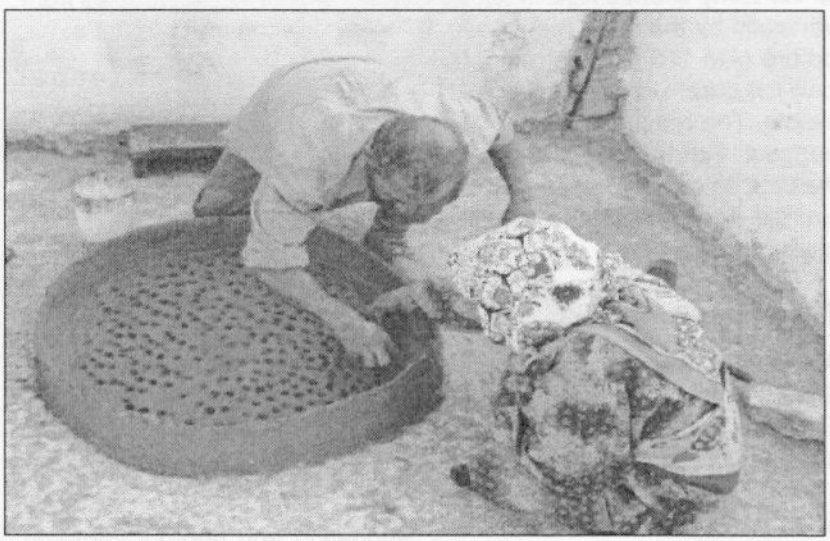

Fig. 7: Building up a traditional tabun.

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Information

The EKD and the directors of the institutes in Amman and Jerusalem decided to publish jointly the „Jahrbuch des Deutschen Evangelischen Instituts für Altertumswissenschaft des Heiligen Landes" from 2006 on. Therefore, Number 9 is the last volume of the newsletter Occident & Orient. We would like to express our gratitude to Susanne Helbig, EKD Hannover, for her great effort in preparing the layout of the newsletter in the last years. We thank also the authors for their interesting articles and the readers for their interest in our work in Jordan. We hope that all of them will be devoted to our publication also in future. Please, fill in the following form, if you would like to receive the first volume of our new „Jahrbuch".