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The Qalhât Project

Ministry of Heritage and Culture
General Directorate of Archaeology and Museums
Department of Excavations and Archaeological Studies
Sultanate of Oman

Preliminary report on the fifth season
(30/10 –6/12/2012)



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Thomas Creissen (Eveha/Tours University), H  l  ne Renel (Cnrs –Umr8167)

Apolline Vernet, Sterenn Le Maguer



Sultanate of Oman
Ministry of Heritage & Culture



س  طنته بـعـمـان
و  ارة الـبـنـاء و  الثـقـافـة



Introduction

The fifth season of the Qalhât Project took place from October 30th to December 6th 2012. The expedition was held under the authority of the Ministry of Heritage and Culture of the Sultanate of Oman, with the joint financial support of the MHC on the Omani side and of the National Centre for Scientific Research (CNRS – UMR8167 Orient and the Mediterranean), and the Archaeological Committee of the Ministry of Foreign Affairs on the French side.

Members of the team were:

Dr Axelle Rougeulle (CNRS, UMR8167, Paris), archaeologist, director of the Project

Dr Thomas Creissen (University of Tours / Eveha, Limoges), archaeologist

Ms Sterenn Le Maguer, archaeologist

Ms Apolline Vernet, assistant archaeologist, infographer

Mrs H  l  ne Renel (CNRS, UMR8167, Paris), ceramologist, registration and study of the material

Our deepest thanks are due to the Ministry of Heritage and Culture of the Sultanate of Oman and especially to Mr Hassan Mohammad Ali al-Lawati, Director General for Archaeology and Museums, for their strong involvement in the Qalh  t Project. And also to the Department of Excavations and Archaeological Studies, its Director Mr Sultan Saif Nasser al-Bakri and all the staff, and especially Mr Khamis Nasser al-‘Amri in the Sur region, for their very efficient and friendly help and support all along the expedition.

As in previous years, the mission could not have been so successful without the support of the French National Centre for Scientific Research (research lab *Orient & the Mediterranean*), which sent, besides the Director of the mission, Ms H  l  ne Renel as a specialist for the registration and study of the archaeological material, and Ms Apolline Vernet for the digitalization (CAD) of archaeological field drawings for publication. Thanks to the Archaeological Committee of the French Ministry of Foreign Affairs a scholarship was also found for the participation of Ms Sterenn Le Maguer to the expedition.

The French archaeological consulting agency Eveha, which is part of the Qalh  t Project since the first year, kindly put again at the disposal of the mission one of its members Dr Thomas Creissen, also professor at the University of Tours. Furthermore, an extra sponsorship fund was again granted this year by the Total Group to continue the cartographical study of the ancient city of Qalh  t.

After four years of excavations, the 2012 season was a special mission of study devoted to complete all necessary data necessary for the publication of the first phase of the Qalh  t Project (QP, 2008-2012), before the opening of the new five-year Qalh  t Development Project (QDP) which is expected to begin in January 2013. The main objects of the 2012 season were therefore as follows:

- I. Excavations and clearing of a funerary terrace in the funerary area, a type of structure which was not yet studied in 2008-2012.
- II. Detailed surface study of all other funerary structures and funerary areas
- III. Detailed surface study of all structures connected with the defence system of the city
- IV. Completion of the study of the excavated material, and especially the ceramics, to complete the chronology of the Qalh  t local productions and imports
- V. Starting of the final publication of the 2008-2012 Qalh  t Project, writing, field checking of several points still missing or unclear, preparation of illustration, CAD of all documents.

I. Excavations at the funerary terrace B67

(Sterenn Le Maguer & Apolline Vernet)

Funerary terraces were among the most characteristic features of the medieval city of Qalhât, and many such structures are found in the funerary areas at the site. These are raised surfaces, covered with small pebbles and/or gravels and most often of a whitish colour, lined with stone blocks. They may have different shapes, rectangular or roughly circular, different heights, from 30cm to ca 1.5m, and different sizes although they are larger than an isolated grave (see *infra* ch. II). They may be isolated or associated in groups, and some are included in wide buildings. These structures seemingly played an important part in the religious and social life at Qalhât and deserved a detailed study.

Excavations in 2012 therefore focused on B67, a large construction including several funerary terraces located in the western corner of the intra-muros area, not far from the Bibi Maryam mausoleum.



The 2012 campaign of excavation in Qalhât was held between October the 30th and December the 5th. We focused on the understanding of the Northern funerary complex located close to Bibi Maryam mausoleum, between the Eastern and Northern walls (Figure 1).

Building B67 was chosen as a good example of a complete funerary terrace because of its dimensions (25 x 20.5 meters) and the obvious graves. We aim to get a plan study of this kind of building associated to a dating as precise as possible. To complete this study, three buildings (B66, B69 and B70) have been cleaned and their comprehensive study should follow this first description concerning the funerary complex.

Figure 1: aerial view showing the location of the structures B67, B66, B69 and B70.

I/1. The excavation

The excavation began on November the 5th with the cleaning of the building by removing collapsed stones in order to get more clearly the walls and the overall organisation of the funerary structure (Figure 2). The surface material collected was recorded in UF1550 and consisted of many pottery sherds, glass bangles and a few weakened coins.

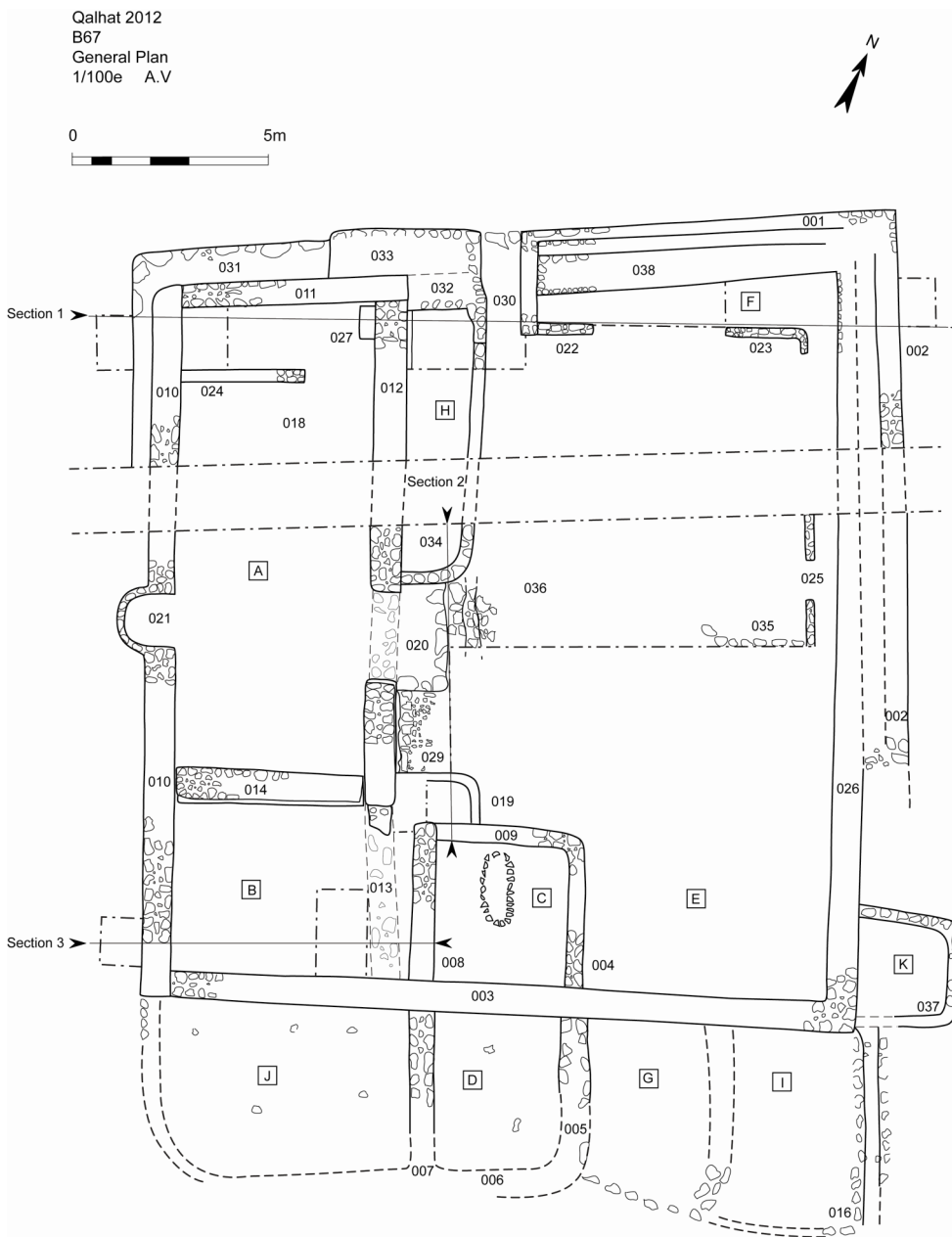
We left a berm of 1.50 m width following an east-west axis to keep re-



Figure 2: overall view of B67.

mains of the collapse layers of the walls. The cleaning and the excavation carried out in building B67 allow us to describe precisely the organisation of the building (Figure 3).

1/2. The plan of the building



The building measures approximately 25 x 20.5 m. It can be divided in 11 rooms or spaces identified during this campaign.

As the bedrock is irregular, the building was filled with many pottery sherds, mostly Indian wares. These sherds most probably come from the ballast used by the ships when empty and sold to the masons. Tripods and firing waists also indicates this ballast was made from Qalhât kilns.

The main space is the courtyard (E) measuring 19 x 13 m delimited by walls 038, 002, 003 and 010 in its first state. It is associated with the *musalla* (A). The entrance is located in the north, between wall 030 and 032 and it has a threshold (028) built with flat stones and mortar. The courtyard was divided in different spaces. Only F was excavated. It runs along wall 038, and it is delimited by the walls 022 and 023 in the south. Wall 023 seems to turn along wall 026 in the south. The wall is visible again after the berm (025). This could be interpreted as a circulation

space. No particular material or structure was found that could help to understand better its function. Perpendicular to wall 025, there is the wall 035. This wall divided the courtyard in two identical parts in an east-west direction, in front of the *musalla* entrance. It is possible that wall 035 permitted the separation between men and women coming in this complex to pray and to celebrate the memory of the dead. That would explain as well the existence of the two symmetrical structures located along wall 012 that could be interpreted as ablution ponds. Contrary to H, which is still visible, the other structure was destroyed alike the wall 012 to build the room B and the terrace C. Only remains of this structure the wall 019 basement, and the structure has been filled with pottery sherds to level the room as well as terrace C.

In its original shape, the *musalla* measured 6.5 x 18.5 m. The entrance is located in the east, cutting the original wall 012 in its half, opening directly in front of the *mihrab*. The threshold (020) is well built with flat stones and mortar and associated with three steps of stones down from the courtyard to the *musalla* (Figure 4). Wall 010 is the *qibla* wall cut by the *mihrab* (021) in its half (Figure 5). This *mihrab* was covered inside with two layers of plasters. The first one is white, compact and of good quality while the second one is a raw earth plaster. In a later phase, the

east wall (012) is reduced from 17 m length to only 13 m, and the wall 014 was added to separate the *musalla* from the room B. The surface was covered with a soil of mortar (018) that is well preserved on the northern part of the *musalla*, between the walls 011 and 024 where a covering protected this part of the praying room.



Figure 4: the treshold 020.



Figure 5: the mihrab (021).

Room B measures 6 x 4.5 m and its located in the southwest corner of B67 in what used to be the *musalla*. It is delimited by wall 003, 010, 008 and 014. The basement of wall 012 is still visible. It was destroyed and instead wall 008 was built to separate this room from the courtyard. Contrary to the *musalla*, no traces of soil have been found but it could have been destroyed as well. Some circular traces of ashes are visible in the collapse level, indicating squatting activity. Against wall 008 leans the terrace C with an obvious oval shaped grave delimited by stones. This terrace is anterior to the wall 008 and covers wall 019 as well as the structure it delimited. The backfill is made of pottery sherds like everywhere in the building. Finally, 5 funerary terraces were built against walls 003 and 026, at the exterior of the main building.

The wall 002 was added to reinforce the exterior wall on the east and to enlarge the building in order to add terraces in the south. The southern terraces are cumulative and the first one, I, is the lowest at Δ 33.35 m while terrace J is at Δ 34 m high. Upper are terrace G, D and J that is the latest and biggest. Terrace I measures 4 x 5 m and the walls are badly preserved. Terrace G measures 4 x 5 m and the wall (015) runs under the wall 005 that defines terrace D. Terrace D and J are built at the same level and the walls are more obvious. D measures 4 x 4 m and J is the largest (7 x 4 m). Raised stones indicate the emplacement of the dead.

Terrace K is located on the east of the building, against wall 026. Wall 002 was destroyed at this location, intentionally or not, and the terrace was built after this and could be the latest terrace of the building.

I/3. The walls

The external walls

A first step consisted to remove the collapse layer that made a slope from the top of the remaining walls to clear their external sides.

Wall 001 (Figure 6)

The collapse level against the northern wall 001 was recorded as UF1551 and removed from the entrance (ST 028) to the eastern corner 0.50 m high from the top of the remaining wall down to the base of the slope finishing 1.50 m to the north of the wall. This layer was made of a loosy light brown earth with stones and corals and mixed with mortar pockets. It revealed a regular face of the wall and the basement lies on a mortar layer and not directly on the bedrock. At the eastern corner there is a nice corner stone, indicating the good quality of the walls construction.

Figure 6: wall 001.



Wall 011

From the other side of entrance 028, the wall 011 was cleared, and the collapse layer removed (UF1553) was made of a light brown earth with stones and corals mixed with an orange mortar. We dig 0.70 m high from the top of the wall in a 2.30 m slope down to the north. We stopped on a basement made of very big stones (031). Actually, this level (UF1553) was mixed with wall 033 built on the top of these big stones and a loose greyish earth level mixed with stones that appears to be an earlier collapse layer. Wall 033 is lying against the external side of wall 011. These two structures (031 and 033) are a later addition to wall 011 (Figure 7) in order to enlarge the wall, and/or to consolidate its basement after a first collapse.



Figure 7: cut showing wall 033 covering the big stones basement (032) and lying on a loose grey layer.

Wall 010 (Figure 8)

The collapse level (UF1562) removed to clear the western wall (010) was made of a loopy light brown earth with stones and corals. As UF1553, this layer is actually a mix of collapse and wall 033 lying on the basement of big stones 031, along wall 010. Basement 031 is obvious on 5 m from north-west corner to the berm. A small sounding was dug to find the bedrock, which appears 15 cm down the wall 031, at Δ 32.61 m. On the other side of the berm, UF1562 was not removed as deeply and 031 is not obvious anymore. A sounding going deep to the bedrock along wall 010 at its southern end revealed that the wall lies on a backfilling of pottery sherds (UF1566) and not directly on the bedrock like in the northwest corner. Indeed the bedrock appears at Δ 34.07, that is to say a difference of 1.34 m with the northern corner. Thus, before building the walls, a large backfill of pottery sherds was set up in order to grade the surface and built the *musalla* at a high level.



Figure 8: wall 010.

Wall 002

Finally, the external side of the eastern wall (002) was cleared removing the collapse layer (UF1554) making a slope from 0.60 m high down to 2.80 m east to the wall. After 13.60 m length to the south, wall 002 ends, most probably because it was destroyed in a later phase of building B67 occupation (Figure 9). After this, UF1554 was removed along wall 026 up to the terrace K. In a second time, wall 002 was slightly excavated to find its ending at the south. The layer removed was recorded as UF1579 and made of stones lying on a greyish mortar. This mortar is the remaining of the wall. Lying on it against the wall was a hearth indicating a later squatting after abandonment of the building. The connexion between the courtyard, the terrace and the external wall is unclear.



Figure 9: the destroyed part of wall 002 lying on the grey mortar.

The south terraces

In addition to this, the south terraces were cleaned 10 cm down to clear their walls. It revealed raised stones indicating graves (Figure 10). The terraces are organized according to an accumulation system in which the lowest terrace is the earliest. Thus, four successive terraces are identified there: I, J, D, G (from the earliest to the latest).



Figure 10: terraces J and D with raised stones indicating graves.

The typology of the walls

There are three different types of wall.

- The first ones are the external walls of the courtyard. They are 60 cm thick and made of stones with an orange mortar. They present nice faces and are of good quality.
- The second type is made of big stones and located at the basement. This type is attested on the northwest corner of the building (wall 031), and seems visible at the basement of wall 001.
- The third type of walls delimits the terraces and the circulation spaces inside the courtyard. They are 30 to 50 cm thick and badly preserved on one row of stones.

I/4. The soundings

Considering the large dimensions of the building, it was decided to dig in selected soundings and structures instead of doing an extensive excavation. In order to have as many information as possible, we chose soundings located near the walls to dig up to the bedrock. It allowed us to get the wall connexions, to understand how their were built and thus the different phases of the whole building.

B67F

Room F is located along the wall 038 at the north and delimited by the walls 022 and 023 in the south (Figure 11). The surface level (UF1552) was removed between wall 037 and the berm. It consisted of a loosy layer of earth and gravels on 10 to 15 cm high that yielded pottery sherds, shells and glass bangles. This layer goes down in a slope from the east wall (026) on a layer made of gravels.

Wall 023 appeared to be cut by a hearth (ST017) indicating a later squatting. This earth has been half excavated on an east-west cut. Its stratigraphy indicates that the structure lies on the level of the terrace (UF1558) made of brown earth and gravels. The ashes (UF1556) are on a level of compact sand (UF1559) exposed in which the fire was alight. Beneath UF1559 is a first level of ashes indicating an even earlier squatting at this place. The complete structure (017) is sealed with a thin level (UF1555) made of small gravels and brown pulverulent sediment, more or less equal to the surface level (1552), and covering the walls of the structure.

Also, this cut shows two layers between wall 023 and wall 026. The first one (UF1557) is 20 cm high and made of brown pulverulent sediment with stones and corals. It leans on the internal facing of wall 026 and on the hearth (017) and corresponds to the collapse layer. The second one (UF1558) is a level of gravels, small stones and small pebbles. It has not been completely excavated but corresponds to the last level of backfill of the terrace F.

Then the terrace has not been completely unearthed but only on its western half, between walls 022 and 038. The first layer removed (UF1560) corresponds to UF1558, that is to say a layer made of loosy brown earth with gravels, small stones and pebbles. This layer is 10 to 15 cm high and corresponds to the last level of backfill in the terrace F. Beneath was the main backfill of the terrace removed on 40 to 50 cm, made of loosy brown earth and pottery sherds lying on a mortar layer (UF1568). The bedrock is located just under this layer of mortar, at Δ 32.54 m. The basement of wall 038 lies directly on the bedrock. However, the mortar layer is cut along the wall and a trench is obvious on approximately 3 m length. The filling inside (UF1565) was a loosy brown earth with a few pottery sherds and rootlets. First interpreted as a foundation trench, it has no connexion with the wall (that lies directly on the bedrock), and is not visible on the bedrock as well. Only traces of ashes were found underneath this trench, on the bedrock. This could be the remains of an earlier occupation, but no structure was associated with it,



Figure 11: the room F.

as it is a different level of mortar that the one located just beneath wall 023 (Figure 12, section 1)

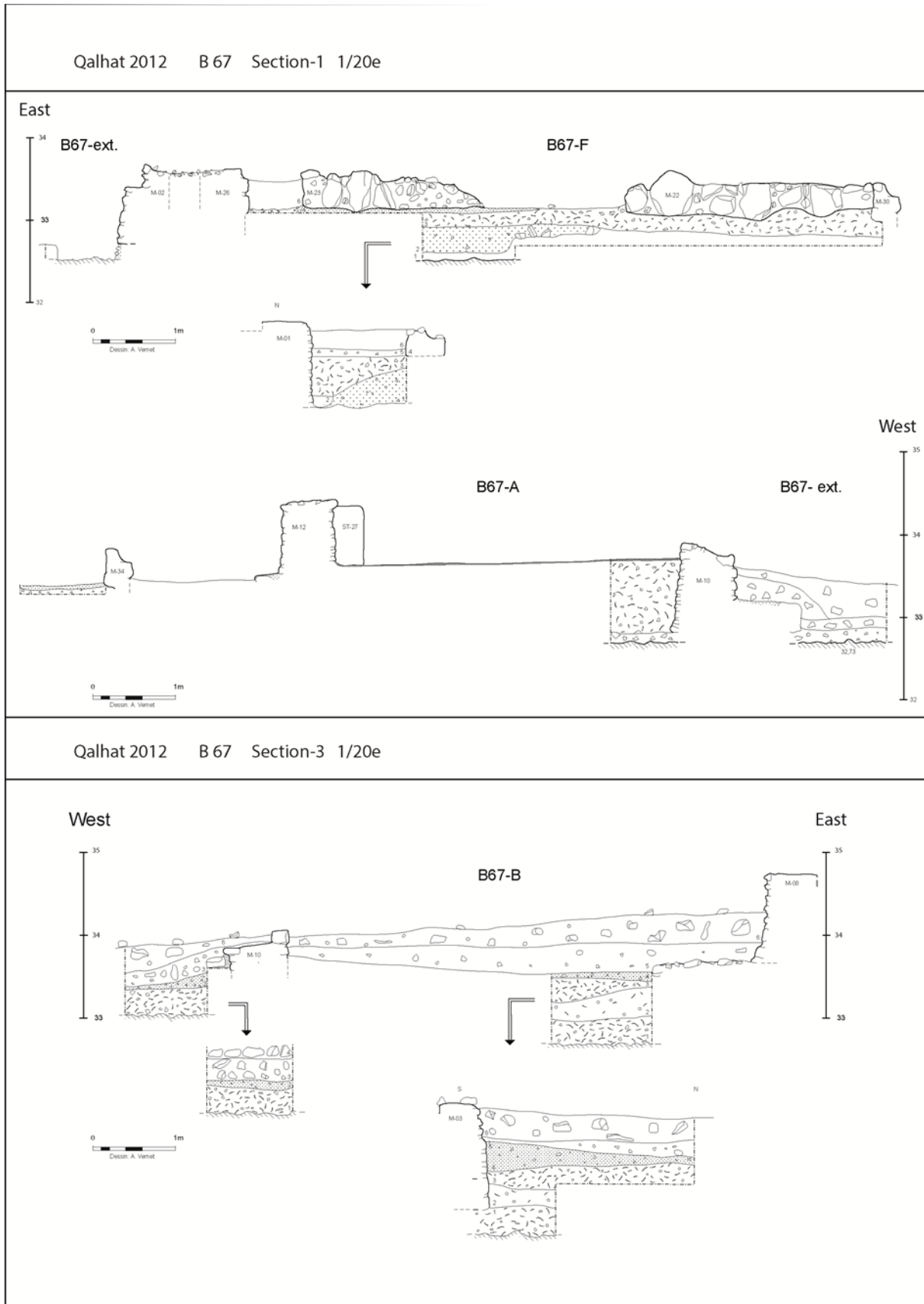


Figure 12: sections 1 and 3.

B67B (Figure 13)

The room was cleared up to 10 cm high on its whole surface to remove the collapse layer. This layer (UF1571) con-

sisted of loosy light brown earth with gravels. Then a sounding of 1.90 x 3 m was opened from wall 003 to wall 014 (south-north direction) and against wall 008 on the east (Figure 12, section 3). We removed this collapse layer (UF1572) made of loosy light brown earth and stones on 30-35 cm high. Then appears the backfill layer (UF1577) made of gravels and pebbles similar to UF1558 dug in F, indicating we reached the last backfill of the terrace. This backfill layer is removed on 35-40 cm before the backfill of pottery sherds appears down. After digging in this backfill (UF1581) we reached the bedrock at Δ 32.63 m. It turns out that the wall 003 is not lying on the bedrock but on this backfill of pottery sherds 35 cm high from the bedrock.



Figure 13: room B.

Moreover, while digging these backfills, we realised that the basement of wall 012 was still remaining and is recorded as ST013. Wall 012 is the eastern wall of the *musalla* (A), and that would indicate the wall was destroyed at this place in the second phase of the building, when reducing the *musalla* to build this room (B) and the terrace C along the wall 008 that closes B on the east. This is confirmed by the position of the *mihrab*, originally located in the middle of the room, that is to say approximately 8 m from each extremity of the *qibla* wall (010). With the construction of wall 014, the *mihrab* seems off-centre in the south.

B67A

Room A is identified as the praying hall of the building, a mosque or more probably a *musalla*, as a *mihrab* (021) was underneath on the western wall 010, thus identified as the *qibla* wall.

The excavation began with the cleaning of the whole surface of the room except the berm. The collapse layer (UF1569) was made of pulverulent light brown earth with stones and corals on 15-20 cm high from the walls to clear them and to level it. A sounding was excavated in the northern part of the room, between the *qibla* wall and 012, and along 011 up to the berm. The collapse layer UF1573 was removed on 10-20 cm high. It is made of vegetal plaster and a kind of felt (or another fibrous material). A few rolled pottery sherds were mixed in what is interpreted as the cover of this part of the *musalla*. Just beneath was the layer of the collapsed cover itself (UF1576). It was made of compact earth with different exposed elements with vegetal traces and remains mixed with the fibrous material. A piece of wood was also found, indicating there could be palm branches. This covering was presumably made of fibrous material and wood mixed with plaster and a backfill take off in the surroundings.



Figure 14: floor 018 in the musalla with postholes.

Three structures were unearthed while removing UF1573 and UF1576. The floor 018, made of a compact white mortar appeared. It is better preserved along wall 011 than on the other side of wall 024, indicating that the covering was only located on this side, which seems confirmed by the presence of postholes (Figure 14).

The second structure is a wall (024) measuring 2.62 m length and 0.45 m width, with only 2 stones rows preserved (0.30 m high) (Figure 15). The wall was built on the soil 018 and leans on the *qibla* wall, and could be a later construction contemporary of the reducing of the *musalla*.



Figure 15: wall 024.

The third structure (027) has a rectangular shape and leans against walls 011 and 012. Alike wall 024, it lies on the soil 018. This structure is interpreted as a pillar and could be linked to the covering.

The floor was removed in a smaller sounding between wall 010, 011 and 024 to find the bedrock. The layer removed (UF1584) corresponds to the soil. It is a thin layer of 3-4 cm thickness made of compact white mortar mixed with gravels.

Under the floor appeared a backfill of pottery sherds (UF1585) as we already observed in room F and B, respectively UF1563 and 1581. Finally, the bedrock appeared at Δ 32.63 m after removing the apron (UF1588) that outcrops on the bedrock and on which were based the walls 010 and 011 (Figure 12, section 3).

B67E—The courtyard

The courtyard was excavated more widely on approximately 20 cm high. Firstly the corners of the wall 003 and 004 were cleared before the digging was extended up to the doorstep at the entrance of the *musalla* in the west and to the berm at the north. This collapse layer is made of loamy light brown earth with stones, corals, a few pottery sherds and some pieces of glass bangles and a weakened coin.

The excavation in the courtyard unearthed a few structures of interest. Firstly, the basement of a wall (035, Figure 16) perpendicular to wall 026 where many tripods and firing waists were found in layer 1567, indicating that the backfill was at least partly made from the pottery kilns waists in Qalhât. This wall is badly preserved and it is impossible to say how long it was and with which structure it was connected apart wall 026. Perpendicularly to it is the wall 025, which is 0.35 m thick and preserved on 3.35 m between the berm and the south excavation limit. It seems that this wall is the continuity of the corner of wall 023. It could have been the same structure, maybe a circulation space.



Figure 16: wall 035.

Secondly, three rows of stones steps (036) appeared just down of the threshold 020 that leads to the *musalla* (Figure 17). This architectural set is of very good quality and indicates a skilled work.

Digging at the south the threshold along wall 012 revealed the basement of the wall turning under the terrace C. This wall (019) is preserved on 2.15 m length and 0.80 m length to the south before it disappears under C. This structure was filled with a brown and pottery sherds (UF1574) similar to UF1581 in room B. Wall 019 goes over the foundations of wall 012 (029). It seems related to the first phase of the building and was destroyed in a later phase to build the terrace C.

I/5. Interpretation and synthesis

From the excavations of the building, we can propose the phasing of the building. Four main phases appear. During the first phase was built B67, in the second phase the building is rearranged, thirdly it is abandoned and squatted and finally the buildings collapsed.

Phase 1

The first phase corresponds to the construction of the main building, that is to say the courtyard (walls 038, 026 003, 010, 011, 012), the *musalla* and the structure H and the one delimited by wall 019.

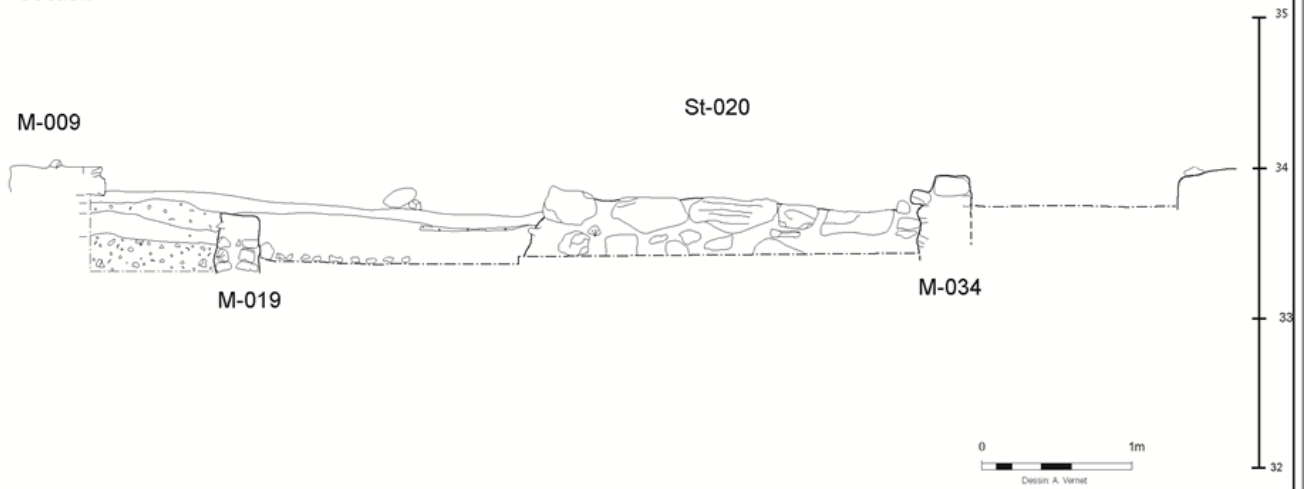
Phase 2A

During the second phase, the building was enlarged in the south so wall 002 is built against wall 026 in order to build the terraces in the south. The remaining part of this wall is still visible along the terrace I (016). Northern walls 038 and 011 are doubled with respectively wall 001 and wall 033 on the basement of big stones (031). This could be the result of a collapse of these walls, in order to reinforce them. Moreover, it is possible that wall 033 was supposed to continue as far as wall 002 in the south direction, but for some reason it stayed unfinished or was destroyed. During this phase, the circulation space delimited by walls 022, 023 and 025 was also built, and the courtyard divided in 2 parts.

Phase 2B

This phase corresponds to the successive construction of terraces C inside, I, G, D and J along the walls 016 and 003.

Section



Plan

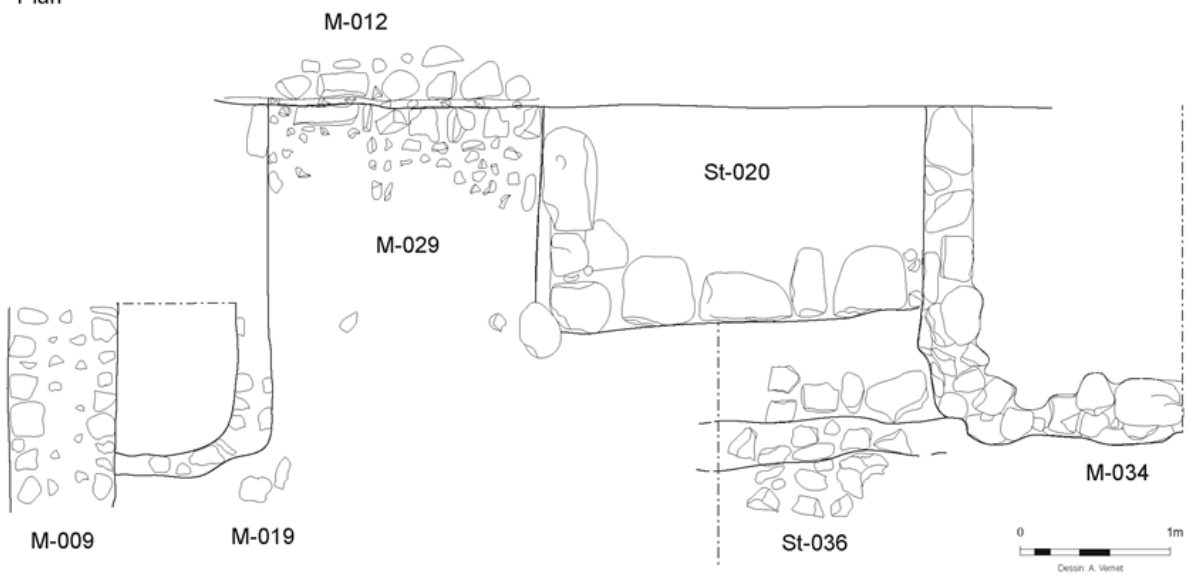


Figure 17: section 2 (courtyard).

Phase 2C

The wall 002 in the east is destroyed, deliberately or not, and as a result the terrace K is built.

Phase 3

The building is abandoned. Some squatting occupation is visible in the building.

Phase 4

The building collapsed.

I/6. Dating according to the pottery study

The pottery sherds found in the surface are not analysed here. The most important part of the pottery comes from the backfills layers found in the building which were analysed by H. Renel

UF 1563, 1566, 1581 and 1585

These layers correspond to the backfills of the building and thus yielded a huge quantity of pottery sherds (Figure 18). These backfills are similar and contemporaneous, dating between the second half of the 13th century and the beginning of the 14th century.

A huge quantity of Indian painted pottery was yielded and represents 95% of the corpus. A few fragments are row and shapeless pottery with the same composition, and consequently from the same origin, that the painted one. This very homogeneous assemblage indicates a specific provenance possibly the use of ships ballasts to build the building's backfill. Other sherds attested are Mustard ware (Yemen), Iranian moulded ware, Chinese stoneware and Sgraffiato (Mesopotamia?).

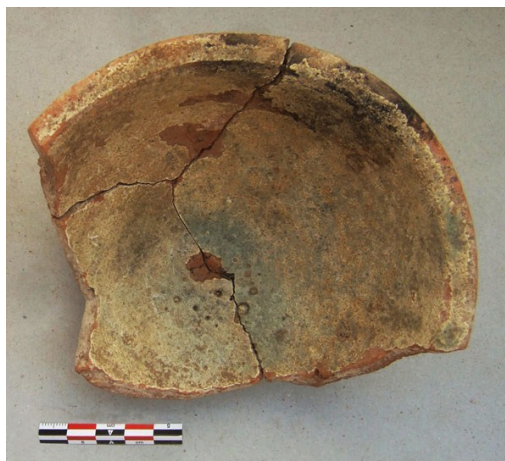
UF1579

This material could be dated from the end of the 15th century or the beginning of the 16th century (Figure 19 and Figure 20). The few pieces reconnected indicate that this layer was a small reoccupation along the destroyed part of wall 002.

Figure 19: Julfar ware found in UF 1579



Figure 20: local glazed



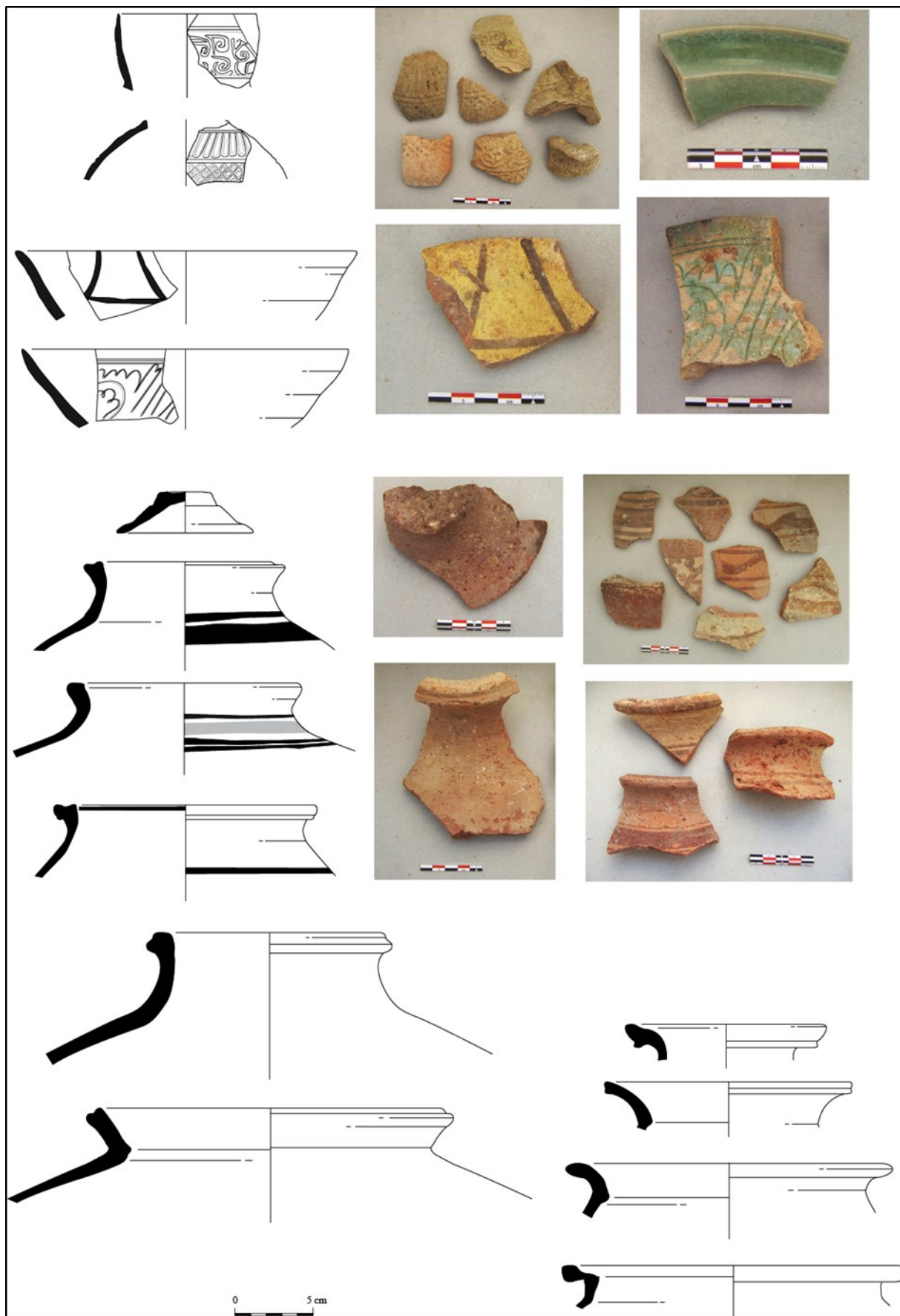


Figure 18: the pottery found in the building's backfills.

Conclusion

Although the building was not unearthed in its totality, much information resulted from this campaign.

First of all, it appears that the *musalla* and the courtyard were built before the funerary structures, at the end of the 13th century or the beginning of the 14th century. It is only in a second phase that the funerary structures were added, and that involved changings in the original building to fit this functional evolution.

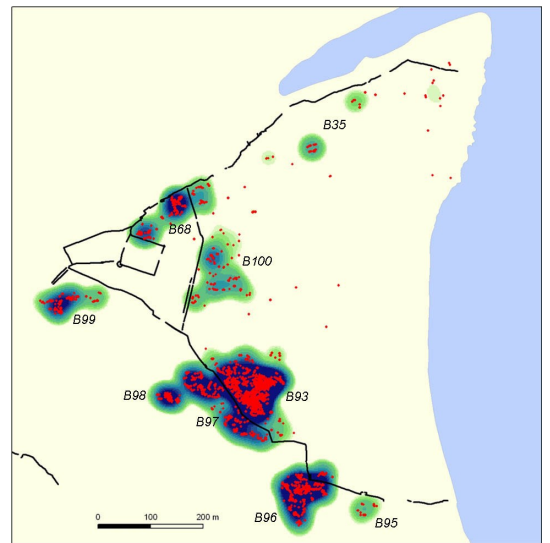
Secondly, many elements indicate this building was of good quality (the thresholds, and generally the quality of the walls built in the first phase). This could be an evidence of the wealth of its owner and/or sponsor.

Finally, this kind of structure has no parallels known yet, and the broader study of the funerary structures of Qalhât should bring major knowledge about this specific and important features.

II. Other funerary structures

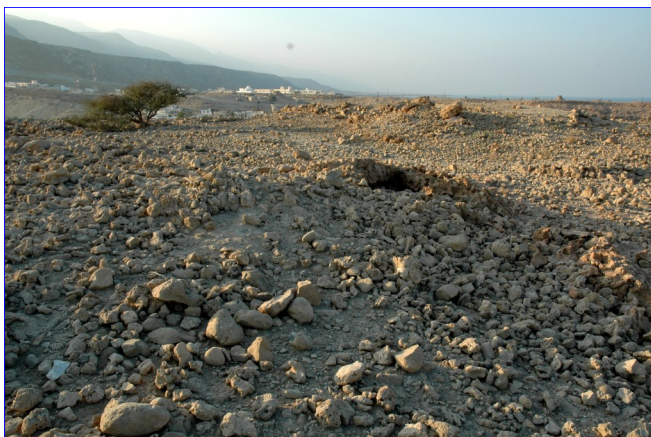
(Axelle Rougeulle)

The funerary quarters of Qalhât cover a wide area west of the site, extending northeast and especially southeast along the walls of the city, *intra* and *extra-muros*. Nine main clusters of funerary structures may be identified. Most of them are located along the south fortification wall B7, inside (B93) and outside (B95, B96, B97, B98, B99) the wall; two more (B68, B35) are near the north wall B5, inside; and the last one is near the intermediary wall B6 (B100) (fig. right). These graveyards include various structures, such as mausoleums, small mosques, funerary terraces, and isolated graves.



II/7-1. Mausoleums

The most prominent feature of Qalhât is the Bibi Maryam mausoleum, a beautiful piece of medieval Omani architecture which is the only monument still standing on the site, one of the most renowned touristic place in Oman (fig. right). It was supposedly built by Bibi Maryam, for herself or for her husband Ayâz, in the beginning of the 14th century. It is located at the western corner of the city, just inside the fortification wall, and it was part of a wide complex which was later destroyed when the great enclosure B3 was built, possibly during the Ottoman period, to control the traffic on the coastal track. The building was recently restored and is well documented.



Besides Bibi Maryam mausoleum, several other mausoleums are still visible on the site, in various stages of decay. Two of them (B70 and B71), now entirely collapsed, seem to have been rather large. Together with graveyard B68, the terrace mosque B65 and many funerary terraces (B66, B69, B72, B73) including B67 (see *supra*), they are part of the funerary area located *intra-muros* in the western corner of the city, not far from the Bibi Maryam mausoleum near the north wall. Fragments of a cupola are discernible on the ground, thin curved masonries made of small coral blocks embedded in a strong pinkish mortar (fig. left), but

nothing is left of the walls and their shape and dimensions are unknown, probably ca ????. No piece of decoration is visible. Each seems to have been part of a square complex including a courtyard and funerary terraces, possibly surrounded by a peripheral wall, ca 17 x 17m (B70) and ca 25 x 25m (B71).



Smaller mausoleums were located in the main intra-muros graveyard B95, near the fortification wall B7. One of them (B115) is still partly preserved, a dome on a hexagonal base with a wide arched bay in each side (fig. left). It is built in small pebbles and coral in a thick strong pink mortar, the faces and the dome coated inside and outside with the same mortar. Two sides only are preserved. The rest of the structure has collapsed inside, preventing to get information about a possible grave in the center. Nearby to the east are the ruins of another similar structure, now totally collapsed

(B116, 73-d). Voir aussi juste entre les deux au N sur plan carto ?? + loin au sud-est au milieu des maisons

Similar structures were found in the extra-muros funerary areas. Five are located southwest of the city, between wall B7 and the mountain. One of them, in graveyard B97 near the wall, is a square structure, still partly standing (B112, 7-3f). It looks rather rectangular, 2.5 x 2.8m wide at its base, with walls 30cm thick in small coral blocks embedded in a strong pink mortar. One squinch is still preserved in a corner under the base of the cupola (fig. right).



Four more were located 80m westwards, near the foot of the mountain in graveyard B98 (fig. right). One, seemingly rather large, is now totally destroyed (B129). Another is badly damaged; it seems to have been ornamented with several niches (B110). Some meters far stands another mausoleum, hexagonal with a diameter of ca 3.10m (B111); the walls are 40cm thick at their base; The door was located on the south side but the structure is preserved up to less than 1m and the top of the walls, as the cupola, are unknown although it was partly rebuilt in 2008; small openings were seemingly situated in the upper parts of the walls. A grave is located inside. The last structure was entirely restored in 2008. As shown on ancient photographs, it was the best preserved, nearly intact except for its south wall. The base is square, 2.20 x 2.20m wide and 1.50m high, with a door on its south side and narrow openings on the three others; the walls are 38cm thick at the base and the exact shape of the door is not known as the south side was entirely missing before restauration. The base is topped by two superimposed hexagonal drums, respectively 30cm and 23cm high, on



which rests a low cupola ca 35cm high. Inside, four squinches are located in the corners of the base, starting midway between the floor and the base of the cupola, and creating a single hexagonal drum (fig. right); stucco decorations are found in the corners of this drum and a graffiti of a boat is also preserved on the west side of the drum (fig. left).

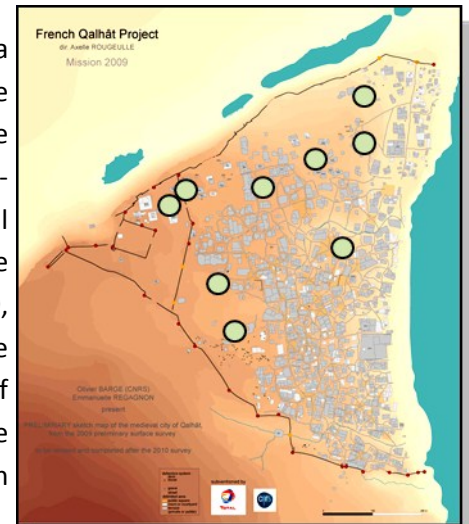


inside, four squinches are located in the corners of the base, starting midway between the floor and the base of the cupola, and creating a single hexagonal drum (fig. right); stucco decorations are found in the corners of this drum and a graffiti of a boat is also preserved on the west side of the drum (fig. left).

Finally, two more mausoleums were located about 100m south of the extra-muros cistern B9, in graveyard B96. A hexagonal structure ca 4.5m in diameter, built in small coral blocks, is located at the southern extremity of B96 (B118). It is now totally ruined and could be a mausoleum as well as a platform supporting a mausoleum now vanished. The other is square 2.5 x2.5m, with walls 30cm thick ; it is also mostly ruined but fragments of a cupola are still discernible (B118, 7-3e).

II/7-4. Small platform mosques

The medieval city of Qalhat was dotted with small mosques built on a platform, which were certainly prominent features of the landscape. Nine such mosques were registered until now, all seemingly associated with the funerary areas (fig. right). Most of them (B68, B51, B19, B28, B18), are standing in a line stretching from west to east at the northern edge of the city, all along the northwest and north funerary areas. Another one (B130) was close to the northeast gate B37, near some funerary terraces. Two more (B29, B131) are located between the city and the southwest graveyard B93. One only (B132) seems to have little or no connection with the funerary areas of the city. It is situated at the northern border of the central quarter, up the south bank of the inside wadi. All these structures have a similar layout, which is well illustrated through mosque B19, excavated in 2008.



Mosque B19

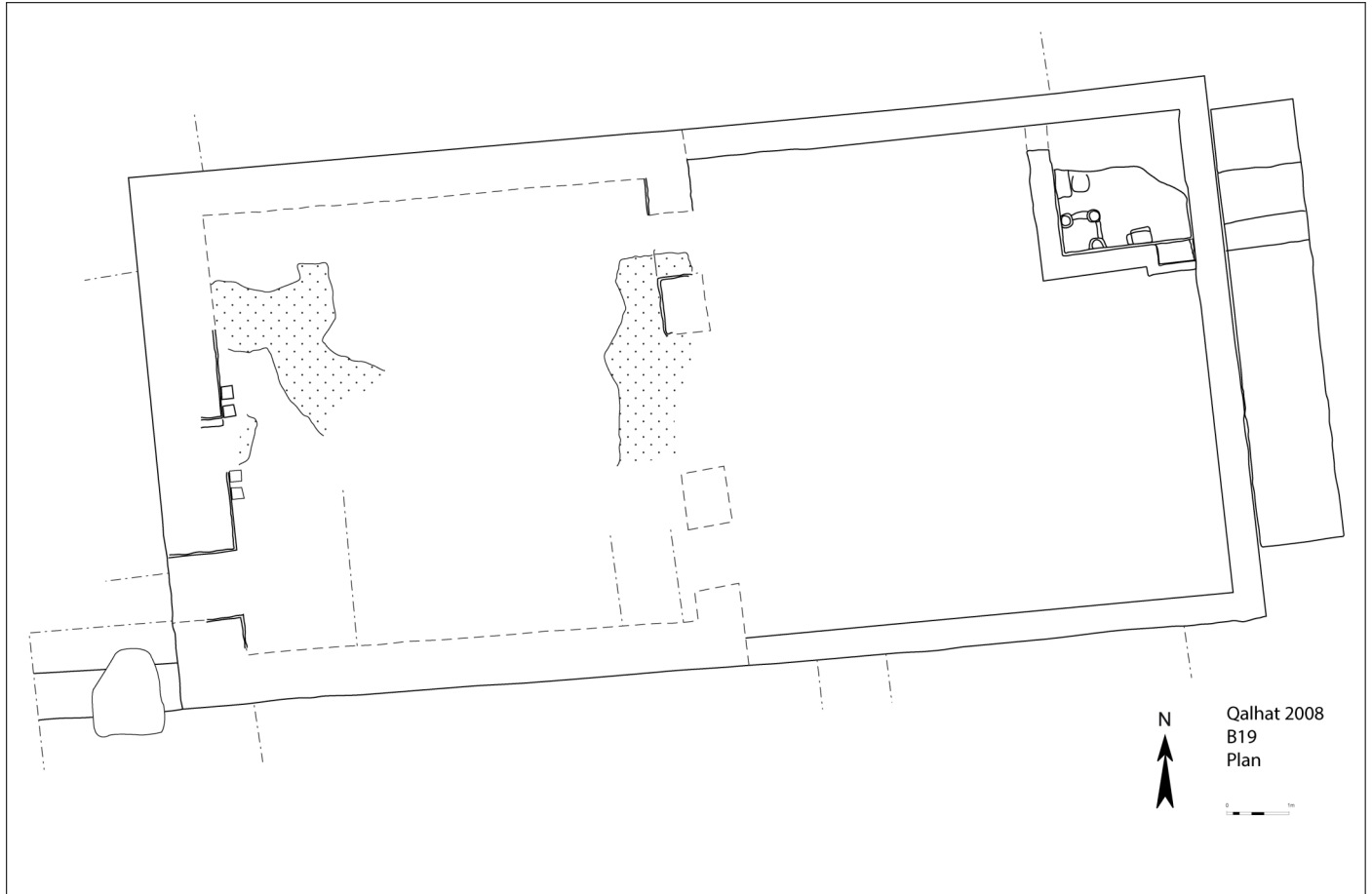
B19 is situated in the north-west quarter QNW1, at the southern edge of the north funerary area. It stands to the north of a rectangular square which is lined on the three other sides by seemingly houses, B21 to the south (see infra), B20 and B22 to the east and west (fig. down).



The building is erected on a platform, 16.4m e-w, 8.2m n-s and about 1.5m high, with retaining walls built in stone blocks of various dimensions (10-40cm) embedded in a pinkish and rather smooth mortar with many inclusions of gravels and small pebbles; the filling is unknown (7-4c). As a matter of fact, the platform is made of two contiguous terraces, one under the courtyard, and the other under the musalla (fig. down).

Built against the eastern façade, a staircase 1.30m large is accessible from the north and three stairs, about 1m long and 30cm high, are now preserved (7-4e). The staircase was leading to a nearly square courtyard, 7.8 x 8.2m, located on top of the eastern platform, covered with small grey gravels and pebbles. The surrounding retaining walls are erod-





ed and it is not known whether this courtyard was limited by a low wall, which is anyway probable. A shallow ablu-tion basin is located in the north-east corner (fig. up middle). Due to erosion its dimensions are not known precise-ly, about 2 x 2m. At least three successive phases were identified in the coating of this basin, thick layers of plaster separated by levels of gravels, the depth of the basin in the end reduced to about 30cm. During the intermediate phase the basin was decorated with low plastered bumps which were later buried under the last coating (7-4g).

The *musalla*, ca 6.5 x 6.5m inside, is standing on the western terrace, opened onto the courtyard with three bays, one central bay 2.1m wide and two lateral bays 1m wide. This façade, 65cm thick, is built on top of the east retain-ing wall of the western terrace, which forms a threshold in each bay. To the contrary of the retaining walls, the superstructures were built nearly exclusively in coral blocks set in a strong dark pink mortar, with a similar mortar as a coating on the walls. The *qibla* wall is more than 1m thick but is also mostly destroyed, except in the area of the *mihrab*, which was only partly excavated to avoid further erosion. It was at the beginning a simple niche, which was later decorated with thin square pillars, two against the *qibla* wall on each side of the *mihrab*, and other ones inside the niche itself (fig. up left). Traces of further decoration of the mosque were found in the collapse layer of the wall (fig. right), mainly slight depressions in the mortar



coating which could indicate the presence of panels. Some relief decorations were also found (7-4i), together with two small fragments in stucco which could be part of an inscription. Two lateral bays flanked the *mihrab* in the *qibla* wall, and other openings were also probably located in the lateral walls.

B19 was built directly on the puddingstone bedrock, except at its south-western corner. Here an earlier wall, preserved 45cm high, was reused as the base of the southern wall of the terrace (7-4j); its eastern limit is not clear but this wall is continuing further west than the *qibla* wall of the mosque. It is not clear whether this structure proves the presence of an earlier building in this area, or if it is only the trace of an early construction stage of B19. No occupation level associated with this wall was found anyway.

The archaeological material from B19 was found in unstratified collapse layers only. Identified pieces may be dated to the 13-14th centuries, as a fragment of Mustard ware (ca 1250-1350), a Chinese celadon bowl with typical incised decoration (13-14th c.), a Dehua porcelain bowl (14th c.), and blue and white porcelains (fig. 24). No later wares of the 15-16th centuries were identified in this building. Although the assemblage is maybe too limited to be really significant, it must be noted that the lateral walls of B19 both collapsed in a northern direction, the southern wall inside the *musalla* and the northern wall at the foot of the north terrace wall outside. The significance of such a characteristic has still to be checked, but this is not the normal way of building collapsing, which is generally rather symmetrical. It could therefore indicate that B19 was destroyed by an earthquake

Other platform mosques

The other platform mosques registered at Qalhât are very similar to B19, with a courtyard and a *musalla* of comparable dimensions. Some of them are seemingly erected on a podium, as B18, others are associated with a high funerary terrace, as B131 and especially B28 where the courtyard is twice as large as the *musalla* and shows standing stones indicating the presence of graves (fig. right).



II/7-5. Funerary terraces

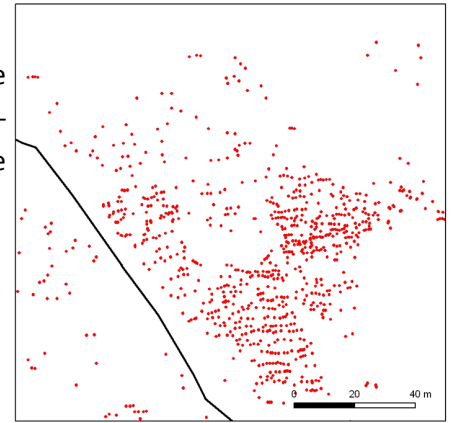
As already stated (ch. I), funerary terraces were among the most characteristic features of the medieval city of Qalhât, and many such structures are found in the funerary areas at the site. These are raised surfaces, covered with small pebbles and/or gravels and most often of a whitish colour, lined with stone blocks. They may have different shapes, rectangular or roughly circular, different heights, from 30cm to ca 1.5m, and different sizes although they are larger than an isolated grave. They may be isolated or associated in groups, and some are included in wide buildings. These structures seemingly played an important part in the religious and social life at Qalhât and deserved a detailed study. Excavations in 2012 therefore focused on B67, a large construction including several funerary terraces located in the western corner of the intra-muros area, not far from the Bibi Maryam mausoleum.



II/7-6. Graves

More than 2 000 isolated graves were registered in the course of the Cartographical Project. They are located in all the funerary areas, *intra* and *extra-muros*, sometimes isolated, sometimes grouped in graveyards. They are especially numerous in the *intra-muros* southwest graveyard (7-6a).

Besides graves associated with funerary terraces and marked by two standing stones on top of the terrace (see *supra*), several types of graves were recorded:



Simple graves.

These are the most common graves. They are marked by a pair of standing stones on the ground, oriented north-south and distant of ca 2m at maximum (7-6b,c,d). The stones are generally small to medium natural elongated blocks, but some could have been roughly cut. The inside between the two stones does not show different from the natural surface around but some of these graves are also indicated by an oval peripheral line of small blocks at the level of the surface, and it is possible that most of them had this peripheral line, probably now buried under the surface with erosion

Raised oval graves

These graves (7-6efghi) are made of a peripheral wall of big blocks, one to two courses high, with an oval or sometimes nearly circular shape and an inside surface of small stones, gravel or tiny white pebbles; they look quite similar to pre-Islamic graves. They measure generally less than 2m in length and about 90cm in width, and some show one or two standing stones at the extremity.

Raised rectangular graves

They are similar to *supra* with the same large blocks and the same surface, except that the shape is strictly rectangular, about 2 x 0.9m (7-6jkl).

Raised rectangular plastered graves

These structures are few, less than 5 registered until now. They are built in smaller blocks than *c/* and are of larger dimensions, up to 3.0 x 1.6m (7-6lmn). A strong pinkish coating is still visible on the sides as on the periphery of the upper surface, and the traces of a rectangular smaller superstructure, 2.0 x 0.9m are visible on top. These graves were therefore two stepped structures, and one of them was seemingly recently restored in the south-western *extra-muros* graveyard B97 (7-6n).

Cist graves

These specific structures are not extremely numerous, less than 20 registered until now, especially in the south *extra-muros* graveyard but also in the others. They are in the shape of a narrow coffin, 1.25 to 1.50m long and 30cm wide, made of two parallel lines of vertical sandstone cut slabs, generally 8cm thick and ca 30/40cm long (7-6oprstuvw). The coffin is sometimes hardly visible on the surface and the graves are discernible thanks to the rectangular standing slabs standing at the extremities. They are 30cm large and sometimes seemingly rather high although none of them was found complete; in some of them the upper part is cut as a circle, on others the shape is more complex, especially in the north-west graveyard. Most of these standing slabs were decorated with inscriptions on the side facing the grave, sometimes on both slabs. These inscriptions will be studied this year from photos and drawings to check if they can bring interesting information on the deceased.



Simple graves



Raised oval graves



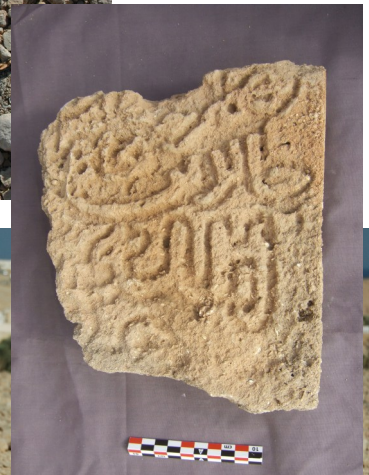
Raised rectangular graves



Raised rectangular plastered graves



Cist graves



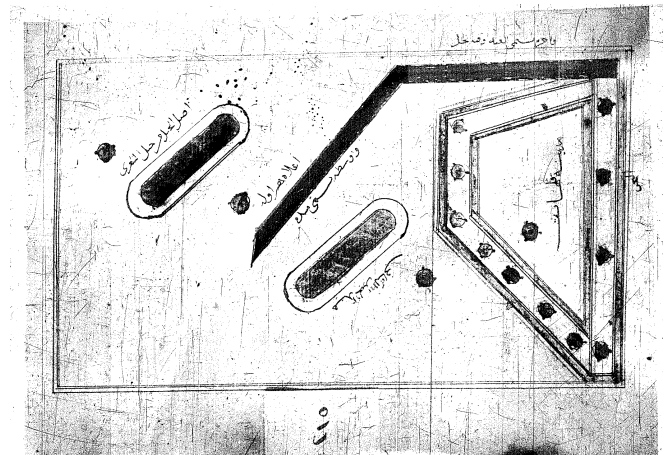
III. The defensive system

(Axelle Rougeulle)

The detailed surface study of the site held this year proved that the medieval city of Qalhât was very strongly defended, with varied constructions as ramparts, towers, gates, advanced walls and extra-muros defensive structures. Together with information brought in 2008-2011 by excavations at some precise points, this study now allows a complete description of the defensive system of Qalhât and its chronology.

III/1. Historical data

Historical information on the fortification of Qalhât is found in Ibn al-Mujawir's *Tarikh al-Mustabsir*, who even produced a sketch plan of the city showing its defensive system as he saw it around 1230 (fig. right). According to this plan, the city was at that time in the shape of a trapeze, and entirely surrounded by walls with towers. Four towers are indicated on the seaside eastern wall, three on the western wall, and four more on the south wall which therefore had six towers if we include the ones at the corners with contiguous walls; the northern wall on the wadi had no towers except the one at the corner with the west wall. The geographer also indicates one tower inside the city, rather near its southern side, and three others outside on the mountain, two north of the Wadi Hilm and one south. He adds that the fortifications were built in A.H. 615 / 1217-18 AD, so shortly before his visit, in stone and juss.



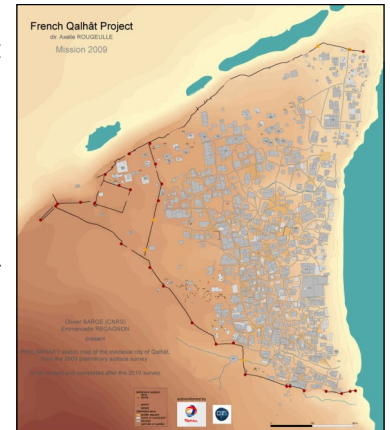
Further information, especially about the gates of the city, is given in the description of the attack of Qalhât by The Portuguese in 1508, with some boats and 230 men. According to the Portuguese chronicle (REF), Afonso de Albuquerque had first the idea to attack the city on two sides. "As soon as they disembarked they (his lieutenants Martim Coelho and Fransisco de Tavora) were to proceed at once to attack the city on the side near the mosque, which was close to the sea, while he with the rest of the men would enter by the other end". But, given that "the Moors who were stationed on the beach [; and] when they found themselves harassed by our artillery, they fled away in a body as quickly as they could to the city", he changed his plans and "as soon as he disembarked, with all the forces united, (he) entered the city along with the enemy in great confusion, passing through the gates into the inner part, and pursuing them through the streets until he had driven them out" (id. p217-218).

Having left the city, "the Moors rallied about the distance of a cannon shot from the walls, and Afonso Dalboquerque, being anxious lest they should return and attack him because of the fewness of his men, ordered the captains to guard the gates of the city" (id. p218). Then Sharaf al-Din tried to attack the walls with 300 men, who were driven back along a mountain range. Albuquerque took four cannons from his boats and « placed them upon the walls, and began to fire upon them. When Xarafadin saw the cannon, and that our men had guarded and defended the city for three days already, as if they had in mind to fortify themselves therein, and to sustain a siege, he withdrew to the mountains with all his army. As soon as Afonso Dalboquerque found himself relieved from the attacks of the Moors, he gave orders to Diogo de Melo, and D. Afonso de Noronha, to watch the gates of the city that led to the mountains, while he himself with Martim Coelho and a hundred men stationed themselves at the other gate which led to the beach, and he also ordered a look out to be placed in the tower of the mosque, to keep watch from thence upon the movements of the Moors" (id. p218-219). Later, as the Portuguese troops were pillaging the city, Sharaf al-Din "came down from the mountains with five hundred men, and set to work to attack the gate where D. Antonio de Noronha and Diogo de Melo were stationed, and fought so fiercely with them that he got

in by sheer force, and they proceeded to retire through some narrow streets in order to make them a better stand against the superior number of the Moors" (id. p219). Eventually, after fights in melee in the city streets the Qalhâtis were driven back "up to the gate by which they had entered" .

This detailed description of the Portuguese attack on Qalhât clearly demonstrates that the city was strongly fortified, by walls on the sea as on the mountain sides which were able to resist fierce attacks. It also shows that these walls could afford artillery on top and that both of them had several gates, allowing access from inland as from the beach, where the citizens obviously used to meet and stand. The Portuguese also noticed, during their first visit to Qalhât in 1507, that "on the land side, a little distance from the city, there was a wall about the height of a lance, which comes down from the top of the mountains, and reaches to the sea; this was made by the citizens out of love for [peace with] the Moors of the interior, for they had come into collision with them on several occasions" (id. p66).

Textual evidence on the Qalhât fortifications is therefore quite detailed but does not fit exactly with what appears now on the surface (fig. right). This is the case in particular for the trapezoidal shape of the city described by Ibn al-Mujawir, as the present layout is triangular with the western corner separated by an inside partition wall. This is also the case for the sea wall mentioned by this geographer as by the Portuguese, which does not show on the ground now. Furthermore, at the time of Ibn al-Mujâwir, in the beginning of the 13th century before the rise of Hormuz, the size of the city was certainly much reduced than in the 14/15th centuries. The intra-muros area could therefore have been smaller, although the layout of the walls was probably mostly commanded by the topography of the ground, the steep bank of the Wadi Hilm to the north and of a deep depression to the south affording unique natural defense.



III/2. The ramparts

As visible from the ground, Qalhât was protected by two walls, northwest and southwest, with an intra-muros area in the shape of a regular triangle opened eastwards to the sea, ca 900m in length on each side. The western corner of this triangle, where is located the Bibi Maryam mausoleum, is separated from the rest of the city by an inner north-south wall.

III/2-1. The north-western wall B5/B27

Description

The northern fortification wall is made in two sections, east and west, forming an angle. The east section (B27), about 100m long, is running east-west from the sea-shore, leaving the northern angle of the site, at the mouth of the wadi, outside the intra-muros area. It starts about 30m from the sea at high tide and the city was therefore easily accessible from the north by crossing the mouth of the wadi and following the beach. No doubt there existed some kind of other defensive structure, but its layout is not clear at all. As the matter of fact, wall B27 is connected here with a perpendicular wall running northwards parallel to the sea and ending with a rather large structure, which could be a tower, near the mouth of the wadi, thus rather protecting the extra-muros area. On the contrary, no wall is visible eastwards in the direction of the sea, here lined by a small cliff 1.50m high only and covered at high tide, which could protect the entire area. And no wall is visible either southwards on the coastline, which could protect the city itself; some isolated sections of walls only were found, running east-west or north-south without any clear layout. Wall B27 is preserved up to ca D 10.00 and runs straight and more or less horizontally westwards. It is interrupted at its first third by a gate connecting the north-east quarter of the city to the mouth of the Wadi Hilm (see *infra*).



After an angle to the south-west, the main fortification B5 is built straight on the crest of the bank of the Wadi Hilm, and follows the course of the ridge which climbs regularly up to the altitude of ca 40m at its western extremity near the foot of the mountain. The bank is very steep, nearly vertical in some places (fig. left), except at its eastern, lowest, part near the angle with B27. Here the wall is hardly visible, hidden under a collapse of small blocks and pebbles ca 20/30cm which also entirely covers the slope of the bank down to the wadi.



Further west, the wall appears very clearly. It is 1,90 to 2,50m wide, made of two faces of medium and large blocks, 40/50cm long in average, sometimes up to 90cm, with an inside filling of very small gravels and limestone chips, making a white smooth regular surface (figs up). The outside face stands on the upper part of the escarpment and the masonry reaches 3m in height in some places, with up to 6 courses resting on a row of very large blocks (1m long x 70cm high) (fig. up left). On the city side the base of the wall fills the irregularities of the ground and the height of the masonry may reach 1,50m (fig. up middle), but in most of the distance only one course of stones is visible, the white filling nearly at the same level as the intra-muros surface (fig. up right). It is difficult to ascertain whether this surface is the original one, the wall being erected astride the crest of the wadi bank, or if it was at the same altitude as the one visible outside, the inner face later buried up to the summit under a natural backfill brought by runoff. The presence of graves clearly visible on the surface near the western extremity of B5 suggests that the level of the surface did not change much, at least in this area. In any case no fallen stone is visible inside, a few only are visible on the slope and down in the wadi bed, and it is quite probable that the wall was not higher than it stands actually, the escarpment crowned by masonry being enough to make the city inaccessible from down.

Several openings are visible in the wall. Near the corner with B27, one is giving access to two gently sloping paths leading down, eastwards and westwards, to the wadi bed near its mouth. About 200m further west is a gate whose width is narrowing from 2.30m at the level of the outside façades, here preserved on nearly 2m, to 1.60m inside; some steps seem visible in the passage. The bank is here high and rather steep except to the east where a natural ridge in the topography makes an easy pathway down. After ca 80m it reaches an artificial platform, 5 x 12m, cut 2m deep in the sandstone which makes the foot of the bank, down to the level of the water at high tide (fig. right). The depth of the wadi bed during the medieval period is not known. It is now 60cm and could afford the landing of small embarkations, the platform therefore probably a landing stage. From there a path on the shore, partly cut in the base of the slope, leads to the beach at the mouth of the wadi. 100m further west, the wall shows strange developments in its layout which are difficult to interpret, seemingly two passages limited by small walls perpendicular to the line of B5.



Walls B5, with its white regular filling between two lines of big stone at the level of the intra-muros surface, stretches westwards, including at its connexion with the intermediary wall B6. And yet, B6 was much higher, especially against B5 where it ends with a massive bastion abutting the inner face of B5 and now preserved nearly 2m higher (fig. left, see *infra*). 130m further west the crest of the wadi bank drops down dramatically, following the slope of the breach which leads to the wadi bed. The main access to the city was located there and the area was highly landscaped with walls and various structures. Furthermore, the coastal track from Sur to Qurayat passed through this breach until the opening of the highway in 2009 and nothing is now clearly visible in this area, except for a hammam which was excavated in 2003 by the Australian team (see *infra*).

III/2-2. The south-western wall B7

Description

The south-western fortification wall was running from the Wadi Hilm bank, at the foot of the mountain up the access breach, to the sea, protecting the city on the southern coastal plain side. It runs mostly on the flat and gently sloping ground of the plain, except at its eastern end where it is built on the edge of a small wadi and then slopes sharply down to the beach.



Here, the extremity of the wall is a massive structure standing on an outcrop of the bedrock on the upper part of the beach, ca 5m far from the seashore at high tide (figs right). The facades are now nearly totally eroded but the heart of the structure is preserved on parts, more than 4m high with ca 20 courses of medium limestone blocks and fragments of puddingstone bedrock in a very strong pinkish mortar as concrete, with many small pebbles, limestone chips and fragments of pottery. Its exact shape is not very clear, seemingly a very thick a quadrangular or roughly circular bastion more than 4m large and 6m long, protruding southward from the south façade of the fortification wall. Its north façade is in the same line as the corresponding face of the wall, which is on the slope approximately 3.50m wide.



Further west, the wall was located straight at the edge of a steep and elongated depression in the bedrock, which runs to the sea as a short wadi about 12m deep and 130m long (fig.right). Very little is kept of this section of the wall which nearly entirely collapsed down as shown by the many medium blocks lying on the slope. As a matter of fact it was probably not very high here, as the northern wall up the Wadi Hilm, and in one place at least a large building of the city was even built on the crest, acting itself as a wall.



The fortification wall proper starts on the plain up the start of the hollow. Its layout is slightly meandering, with several sections forming angles, especially at a spot where it makes a quadrangular corner to leave place to an extra-muros cistern built inside a small wadi (B9, see infra). Its width varies from 1.90 to 2.20m, made of two facings with medium blocks, sometimes very well built as walls 60cm thick, and a filling of very small pebbles 1/3cm. It is preserved up to 2m in some places and it appears that it was not much higher, with a sidewalk protected by a parapet, whose height is unknown. Three staircases at least, at the back of a tower, provided access to this sidewalk, both reaching the top of a tower. One is located in the corner east of the cistern and is hardly visible under the collapse of the wall. Ca 320m further west following the line of the wall, the other one is made of at least 6 stairs (fig. left). Some built holes, as pipes, are arranged at the base of the wall, maybe for drainage although their width seems much reduced.



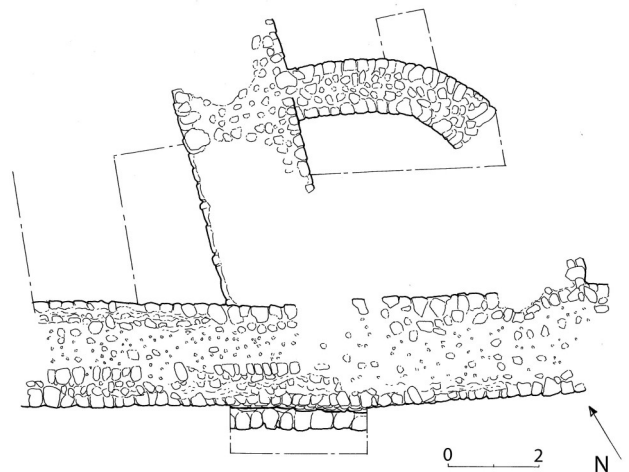
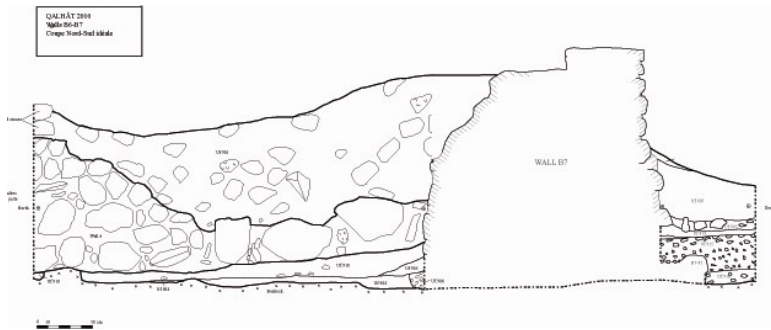
To the contrary of the north wall, several towers are located on that wall, one at each extremity and seven in-between. They are irregularly spaced and, strangely enough, are not by force

located at the junction of two sections of wall, sometimes near, and not on, an angle. These are massive full structures with the same masonry as the wall, roughly circular or patatoidal in shape with a diameter of 6m to 8m, and generally protruding on about 4m outside the fortification wall, although one of them protrudes inside (fig.19 right).



The sounding against the southern face of wall B7 (2010)

A sounding was opened against the outer face of B7 in the area of its junction with the intermediary wall B6 to check its chronology and its connection with B6 (see *infra*). It proved that the wall was here built in one single architectural stage, and most probably on its whole length (fig. down and right).



The bedrock surface is here very irregular, with a deep slope toward the east forming some kind of a basin. It was first covered with a thin occupation layer with no diagnostic pottery (Uf 916) prior to the wall B7 which was built just on top of it (fig. up). Its foundation is made of a single row of large pebbles bounded with grey mortar (fig. right), covered by a thick layer of gravels (Uf 915) and a thin layer of soft grey sediment containing few inclusions (Uf 919), on top of which the fortification itself was erected, 2.10m large, with faces in large stones bounded with a grey mortar or clay and a filling seemingly also in big stones (fig.22). Its maximum height is 1.50m and it is still possible to observe on top the presence of a narrower wall (80cm) as a parapet for a walkway. The ceramic material associated with the occupation of the wall is rather poor, but includes some rather ancient pieces as Iranian sgraffiatos of the 12-13th centuries and Yemeni mustard ware of the 13-14th centuries (Uf 902/903). This in turn is sealed by the collapse of the wall (Uf 907).



III/2-3. The inner wall B6

Description

The western corner of the intra-muros area is separated from the rest of the city by an intermediary wall in two sections forming a slight angle (B6). The wall is 2.40/50m thick, made of two medium stones facings with a filling in small gravels (fig. right). It is preserved up to 1.5m in average and its upper part is traversed by conduits, 20 to 40cm wide, built obliquely through the masonry of the wall from face to face. About 40 such pipes were registered at the level of the actual summit of the wall, all now opened to the sky except one which is still covered with several long stones (fig. right). They are rather irregularly arranged, 3m to 10m apart, except in the northern part of the south section, near the tower, where they are obviously arranged in converging pairs, 1.50 to 2m apart. The altitude of their base is varied, from 33.60 to 34.70, i.e. ca 1.5m to 2.5m above the surrounding surface, and the function of these structures therefore remains unclear. They could be interpreted as loopholes but their narrow width added to the thickness of the wall would allow a shooting angle much too narrow to be efficient. They could also testify of the presence of wood beams through the wall, maybe to support some kind of wood structure outside its face, inside or outside, maybe a walkway; as a matter of fact, a construction against the intra-muros face of the wall in the area of the corner of the two sections could be a staircase leading access to this walkway. But the fact that they are not located at the same level in the wall goes against this hypothesis.



Three towers are situated in the northern part of B6 (B6-001, 002, 003), the medium one located at the corner of the two sections of the wall. They are massive circular structures, protruding on about 4/4.50m on the eastern *intra-muros* side of the wall, but. B6-002 is preserved up to 3m high, but B6-003 is much lower, up to 0.60m

only and no thick layer of collapse is visible around. To the north the wall ends with a quadrangular bastion about 4.50 x 4.50m (B6-004) which also protrudes on the eastern, intra-muros, side of the wall; It is built in medium blocks 20/30cm and now preserved about 2m higher than the surrounding surface (cf *supra*) The northern extremity of the wall and bastion is built contiguous to the inside facing of the northern wall B5 which is only one course high, nearly 2m below the actual summit of the bastion (see *supra*). The southern extremity of B6 leans against the inside face of the south wall B7 with a curving wall in the eastern corner (see *infra*). Two gates at least were registered in B6, connecting the western corner of Qalhât to the city proper about midway in the southern section (see below).

As already stated, the sketch drawing of the city made by Ibn al-Mujawir around 1230 shows a fortification in the shape of a trapeze, i.e. without the western corner. It was therefore conceivable that B6 belonged to an original line of defence, the western extremities of B5 and B7 being later additions. Actually, surface study and excavations proved that the walls B5 and B7 were each built in a single architectural stage, the original outline of the fortifications thus being triangular. Above the Wadi Hilm, wall B5 shows no interruption or change in its layout at the junction with B6 which is abutting against its inner facing (see *supra*). The sounding against the outside face of B7 also show that this wall was made in one single line (see *supra*). And a sounding in the western corner of B6/B7 proved that B6 was in fact built later than B7.

The sounding at the junction of B6/B7 (2010)

This sounding delivered similar information as the sounding on the outer face of B7, with 4 phases (fig. section preceding page, and right). The bedrock is covered with a very hard layer made of grey earth and few stones, with slight traces of occupation prior to the construction of B7 (Uf 908). This wall is based on the same foundation of gravels (Uf 906) surmounted by a homogeneous thin layer of grey earth (Uf 905); an occupation layer of rather soft grey earth and few stones is leaning against its base (UF 907/910). Wall B6 was built on this level, with a construction layer of a yellowish and very hard clay very similar to the mortar of the wall leaning against the base of the wall in the eastern part of the sounding (Uf 909). B6 is badly preserved here but clearly abuts against the face of B7, with some big stones in its lower course and few small ones added to fill the gap with the facing of B7 (fig.24). It is made of big blocks bounded with a yellowish clay, approximately 2m50 wide and preserved ca. 1m20 high. In the eastern corner of the walls a section of a curving wall was discovered under the collapse layer (B6-001), abutting against B6 (fig. right). Its eastern extremity was not cleared and its general layout is unknown, maybe a quarter-tower about 1.20m in radius. It is entirely built in medium blocks, facings and filling, with some big ones in the curving part. No occupation layer was found associated with B6, the area being later buried under a mass of collapse stones, mostly pebbles and very few corals, mixed with a light brown earth, soft in the surface, harder and darker in the bottom, 1.50m thick in some parts (Uf 901). On top, the north part of the sounding is mostly made of gravels, ca. 10 x 10 cm maximum, with some pottery (Uf 904).



Five chronological phases were therefore identified in the area of B6/7: a pre-fortification occupation (phase 1), the periods of construction (phase 2) and occupation (phase 3) of the original wall B7, the later construction of the intermediary wall B6 (phase 4), and the final collapse (phase 5). Unfortunately, nearly no diagnostic material was found in this sounding which could allow the dating of the construction of B6.

III/2-4. The eastern seawall

The sea tower B24 and structure B25 (2008)

According to Ibn al-Mujawir and de Albuquerque, the city of Qalhât was entirely surrounded by walls, including on the sea-side where 4 towers are represented by Ibn al-Mujawir.

No sea-wall is now apparent on the ground above the seashore, an area which was strongly eroded by the

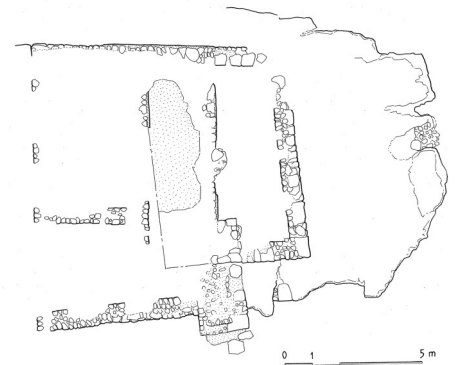
sea and runoff from the slopes above (fig. right). However, a quadrangular structure encroaching onto the beach, out of the line of the built area, is visible south of the ancient quarter, not far north from the southern inside wadi (fig. right). It is a massive



and nearly square basement, 9,60 x 10 m, erected on an outcrop of the bedrock at Δ 6.50 (B24-001), 3m away from the limit of the city which is here lined by a large building (B36). The peripheral walls are built in fragments of puddingstone bedrock, pebbles and limestone blocks which sometimes reach 80cm in length, bounded in a thick pinkish mortar with many grey gravels, small white pebbles and chips of red stone. The filling is a very compacted pisé with many small pebbles 1/3cm in a red clay matrix. On the eastern side is a terrace 3m wide, probably a breakwater, with a small part of a floor preserved, at Δ 7.62 (B24-002) (fig. right down). On the west stood a structure which is now nearly totally eroded, a rectangular construction, 6,70 x 10 m, which was probably a tower. Two successive inside floors are preserved, the later one at Δ 8.58, which are made of a thick and strong pink mortar similar to the one of the basement. Except for an inside partition wall (B24-003) the superstructures have disappeared in the excavated area, but the extension of the floor show that they did not exceed 50cm in thickness. Remains of a white plaster are still visible at the base of the eastern façade of the structure which was possibly entirely coated in its first stage. A small massif was built against this wall in a second stage, when the plastered coating was already eroded, possible a stair leading to a door (B24-004).



On the south side of the platform, a wall (B24-005) was built at the junction of the tower and the platform but the area is much eroded and the chronological relationship between these structures is not very clear (fig. right). The wall is ca 2m thick, 2.50m long southwards, and was probably forming the northern jamb of a city gate opening onto a narrow street leading to the south part of the ancient quarter, as it is visible on kite photographs of the area (fig. up).



The southern jamb of this probable gate was not found, as this area is now totally eroded and covered with pebbles. Anyhow, 30m further south a large structure stands at the mouth of the southern inside wadi (B25). This is a roughly rectangular building, ca 11 x 14m, erected on a wide natural limestone slab which forms the bedrock at the northern edge of the mouth of the wadi, with walls ca 1m thick (fig. right and down). This slab is strongly sloping up, from Δ 7.50 in front of the east wall on top of the beach, to Δ 11.50 at the back of the structure up the slab, and the southern wall (B25-002) is rather irregular, built directly on the slope at the edge of the slab over the wadi.

The western (B25-003) and northern (B25-004) walls seem straight but are not clearly visible under the collapse. On the sea-side, the eastern wall (B25-001) stands approximately in the same line as the northern jamb of the sea-gate near the tower B24, preserved up to the average level of Δ 8.50



(fig. up). A masonry ca 4m large in big blocks (B25-005) is located against its face, maybe a step to climb up the slab, or more probably the base of a buttress. As a matter of fact this wall was most probably a retaining wall for a back-fill used to create a horizontal level on the sloping surface of the bedrock slab inside B25, therefore ca 4m over the level of the beach. As the structure is badly eroded it is impossible to know whether this horizontal level was some kind of a courtyard, or a terracing for a building erected on this level and now totally destroyed. Another structure (B74) is contiguous to B25 on its northern side, its sea-wall in the continuity with the sea-wall of B25 in the direction of B24. Several partition walls are visible inside, maybe to strengthen a similar terracing.

The city was therefore seemingly limited in this area by high walls of contiguous buildings, with a projecting tower and an access gate. To the south, the southern bank of the wadi climbs steeply up to the southwest rampart, making an efficient natural defence line.

The area of the B12/B13 complex

The situation is less clear north of B24 where no trace of a wall symmetrical to B24-005 is visible. It is most probable that the limit of the city makes here an angle, the line of defence being positioned at the eastern wall of B36, 3m at the back of the tower. This edge of the site is farther extremely eroded and nothing is visible northwards up to the area of the great mosque (fig. right). Here the line of defence was formed by the wall of the B12/B13 complex, 80m long, with the high wall of the mosque on its base culminating more than 10m above beach level, overlooked by the tall square minaret acting as a tower (see *infra*). Several accesses to the city were located here, one opening onto a street lining the southern wall of the complex up to the city centre, and two leading into the courtyard of the mosque itself, which seem to have been provided with doors (see *infra*).



The north-east quarter

Another gate to the city was most probably located north of the complex, opening onto the long south-north street of the north-east quarter which connected the beach and harbour to the north gate B37 and the north coastal plain. Further north the sea-shore is lined by a low but steep cliff battered by the waves at high tide (fig. up), which also makes an efficient natural defence; it is possible that a protecting wall, at least a parapet, was standing on top of the cliff but the original edge had now fallen into the sea in most parts and nothing is left of such a structure. At the northern tip of the city near the mouth of the Wadi Hilm, the cliff turns to a gentle slope. This area was the more easily accessible part of the city and was most certainly protected by specific structures but nothing is left of them to-day.

III/3. The gates

As just stated, several gates were positioned in the sea-line of the city, at the mouth of streets leading to the shore and harbour. But the main accesses to Qalhât were located in the northwest and southwest fortification walls, connecting the city with its hinterland, west through the Wadi Hilm, north and south along the coastal plain.

The southeast gate B8

B8 was the most impressive gate of Qalhât when coming from the south, leading to the city centre. It is located near the eastern extremity of B7, about 40m far from the crest of the depression. The passage is 3m wide, and it is protected outside by two square towers 5.00 to 5.50m on each side (fig. down). They are built on the bedrock with one or two courses of roughly squared large limestone blocks at the base, 50 to 80cm long, the upper courses in smaller blocks about 30cm long. Although they are now preserved up to about 2.50m high, the facings are mostly eroded and the quality of their masonry is not known. To the contrary of the circular towers of the wall, they seem to have been empty as shown by a central hollow in the ruins. Two small rooms against the inner face of the wall at the end of the passage were most probably for guards. Another structure was located outside, in the corner of the western tower and the western wall (fig. down). It is an elongated room, or possibly an enclosure,

13m long and 5.50m wide as the tower, with a peripheral wall 70cm thick of the same masonry as the tower, a basement of two courses of large roughly squared blocks topped by facings in medium blocks with a filling of small pebbles in a strong mortar. The structure is preserved about 1m high, except in the middle of the façade where one course of large stones only is kept, probably a door 2m wide. The function of this structure is unknown, associated with the south gate or possibly with the large funerary terraces located nearby, one of them partly in the line of the gate.

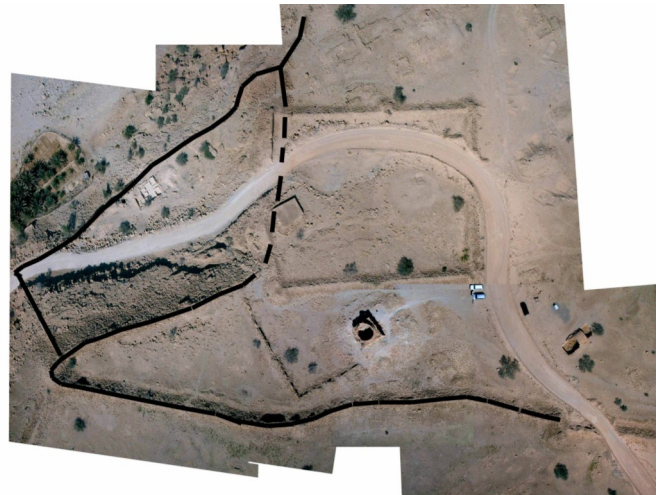


The southwest gate to the western corner

Although it has been destroyed by the modern coastal track, another south gate was most certainly positioned near the western extremity of B7. As in modern times, this access would have allowed the medieval coastal road from Sûr to cross the western corner of Qalhât near the Bibi Maryam mausoleum and reach straight the northern coastal plain through the breach in the Wadi Hilm bank, thus avoiding passing through gate B8 and the city center with its meandering narrow streets. Given that the layout of the track was certainly perpendicular to the wall, it could have passed east of the intra-muros cistern B2, rather than west as now.

The northwest gate in the breach to the Wadi Hilm

The main gate of Qalhât on the northern side was located near the western extremity of the intra-muros area, where an intermediary terrace, as a breach in the Wadi Hilm bank, allows easy connection between the wadi bed and the city (fig. right). The area was partly destroyed by the large enclosure B3 and by the modern track, and the general organization of this entrance, as the layout of the ancient track and the defensive system, is not clear. Several walls in deep boulders are nevertheless visible. At the western extremity of B5, up the breach, a large structure is visible, possibly a tower although its layout does not seem very regular (see *supra*). From there the fortification divides in two walls. One (B134) turns south then west again, following the edge of the crest up the breach. A main gate was certainly located in its first section, on top of the track, but this first section was destroyed when the west wall of the large enclosure B3 was built and nearly nothing is left of it; the second section is still standing, forming the western tip of the site at the foot of the mountain. The second wall (B133) continues the general layout of B5 south-westwards, still following the crest of the wadi bank which drops here dramatically as it follows the line of the breach. The breach and the track were therefore protected by two defensive walls, one to the north at the top of the wadi bank preventing access from down, and one to the south along the edge of the mountain protecting the area from up. This entrance area was in fact also closed down by a wall connecting the west angle of the city down to the extremity of B135, which is still visible on the steep slope but was completely destroyed by the track on the terrace, where was most probably located a second gate. Located along the track, a hammam (B4) associated with two deep wells allowed the visitors to wash before entering the city (see *infra*).



The central gate B31 in the intermediary wall B6

The west corner of the city was therefore a major crossing point between the northern and southern sections of the coastal plain, for people, caravans and herds wishing to avoid the city. It was also a very easy place to control the traffic on this road. This is maybe the reason why the intermediary wall B6 was at a time built there, to separate this area from the city proper. Two gates at least were located in this wall, one (B31) about midway its south section and the second (B136) near its southern extremity.

Gate B31 (fig. down) was probably the main gate in B6, connecting the coastal track, opposite the Bibi Mar-

yam mausoleum, to the city center and the Friday mosque complex. The wall is here 2.40m thick and the passage was 3.50m wide, lined by two jambs made of very big blocks, measuring up to 70 x 60 x 60cm. Four seemingly advanced walls are lining B6 to the east and west of B31, on both sides of the passage, but surface study proved that the eastern structures were not walls, only elongated heaps of loose stones of various sizes, with no faces, no courses, no mortar and no inside filling visible. The heaps are rather regular and parallel to B6, similar to piles of rubble stones from a clearing of the wall, but B6 appears to have been never cleared and the origin, the dating and function, of the heaps remain unexplained. On the contrary, the parallel walls located west of B6 are built structures; their eastern face is very clear, ca 3.50m from B6, as the filling of small gravels and pebbles, although the west face is hidden under the collapse. They are possibly some kind of defensive structures, as advanced walls to protect the gate.



The southern gate B136 in the intermediary wall B6

The second gate in B6 was located near its southern extremity and B7, leading to the main intra-muros graveyard of the city. It looks as a simple opening in the line of the wall and its width is unknown as the northern jamb only is preserved, between 1.50m and 3.50m. Large boulders from the bedrock are now protruding in the passage which was probably leveled during the medieval period.

A breach recently opened by a bulldozer in the northern section of B6 could also indicate the presence of an ancient passage at that place, leading to the northern quarters of Qalhât, although neither jamb is now preserved.

The northeast gate B37 to the mouth of the Wadi Hilm (excavation 2008)

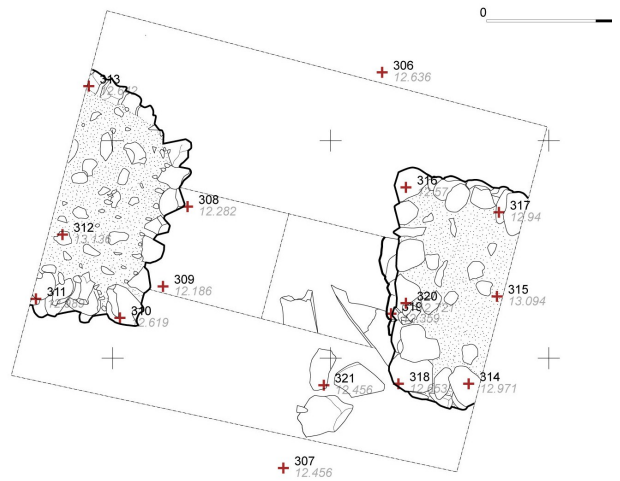
Located on an intermediary horizontal terrace on the seashore up the cliff, the north-east quarter was crossed by a rather straight street connecting the beach in front of the mosque area to the northern wall B27. A breach was visible in this wall at the end of the street and excavations were conducted here to check the presence of a gate.

This part of the fortification wall is mainly collapsed and the removing of the erratic stones on the surface (Uf 350) led to the clearing of a passage between two sections of walls, both around 2m thick but of different construction techniques (fig. right and down). To the East the wall is finely built, with facades made of big stones – mostly pebbles with some coral blocks – bonded with a light brown clay mortar, and a filling of smaller stones embedded in a thick mortar. The jamb of the gate is also made of big stones and it has to be noticed that this jamb is not strictly perpendicular to the wall, but slightly diagonally, the passage being larger in the south – *i. e.* inner - side than in the north – *i. e.* outer - one. The wall west of the passage is much more roughly built, with medium pebbles and coral for the facades, without any mortar, and a filling of small dry stones. The jamb is here more or less perpendicular to the south face of the wall, the gate being therefore 2.40m wide on its inner side and 2.00m in the outer one. In the area cleared, the north face of the wall is not exactly parallel, not lined up with the corresponding face of the opposite wall, east of the gate.



The two sides of the gate therefore obviously did not belong to the same architectural stage. A trench 1m wide opened between the two jambs down to the bedrock revealed three chronological phases in the evolution of the area. The puddingstone bedrock, here at level Δ 11.80, is covered by a thin layer of sand, in turn surmounted by three successive layers prior to the construction of the fortification, phase 1, altogether 25cm thick (Uf 361, 360, 357, up to Δ 12.05). Uf 360 is a clear layer of occupation with quite many bones, fish and mammal, charcoal and ceramics sherds, including two fragments of sgraffiato bowls, of the polychrome and champlevé types, which can be dated to the 11-13th centuries, and one piece of Mustard ware dated to around 1250-1350; one piece of an undiagnostic Chinese stoneware jar was also found.

This phase was then sealed by a surface of hard clay with some small stones which is associated with the base of the eastern jamb of the gate and therefore contemporary with the construction of the eastern section of the wall. In the south part of the trench, a kind of gutter limited by two small walls in coral blocks coated with clay is associated with this floor. It starts obliquely from the southern corner of the jamb across the passage but it is destroyed towards the north and its function is not clear. The inside of the gutter is mostly filled by sandy earth (level 5', Uf 356), when the surface outside is covered by a compacted layer ca 10cm thick, with few material, leaning against the wall of the canal and the jamb of the gate (level 5, Uf 355, 12.07>12.16). Both the floor and the layer associated with this first stage of the gate continue westward under the visible western jamb and it is clear that, during phase 2, the gate in the fortification wall was much larger than the one visible on the surface. It is also more than probable than the original western section of the wall was of the same masonry that the eastern one, with big stones and mortar, and that both jambs were symmetrical, the gate therefore much larger on the inner side than on the outer one (ca 80cm difference). About 50 sherds were found in these levels, and most of them are undiagnostic except for one fragment of frit ware with decoration in blue and black under a colourless glaze probably of the 14th century, one of Mustard ware, and two fragments of buff moulded pieces. Five sherds of Chinese celadon bowls were also found.



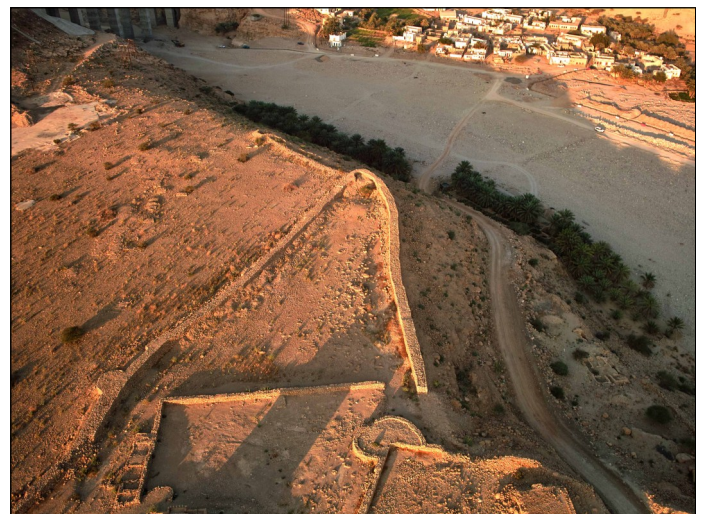
In the beginning of phase 3 the width of the gate was reduced to about 2.20m. In the western side of the trench, the hard surface of level 5 was covered with a heap of small pebbles and limestone fragments up to 5x5cm at maximum (level 6, Uf 353), ca 20cm thick, which makes as a protruding foundation on which the new western jamb was built (12.16>12.35), a construction much coarser than the previous one. The passage was then covered by a superposition of very thin layers, sometimes less than one centimetre thick, some made of sand and dust mixed and some with very small pebbles/gravels not more than 2cm big (level 7, uf 352), which lean on both the jamb of the original wall to the east and the foundation of new wall to the west (12.16>12.30). Material from phase 3 is scarce (58 ex.) and mostly includes undiagnostic plain unglazed sherds, except for some Longquan green stoneware.

These occupation layers were then sealed by the collapse of the wall, phase 4, first a mix of sand and earth including few big stones (level 8, Uf 351), with a lot of fish bones near the western jamb, then the actual surface layer of collapsed stones (level 9, Uf 350). The material (215 ex.) is dated to around the 15th/16th centuries, including several fragments of blue speckled bowls from Iran, a bowl with a red fabric and a cream glaze from Myanmar (Burma), and the base of porcelain bowl with an outside marine blue glaze.

III/4. the advanced north (B137) and south (B10) walls

The north advanced wall B137

Starting from the extreme western tip of the city, behind the Bibi Maryam mausoleum, a large wall stretches westwards along the crest of the bank of Wadi Hilm, which is here more than 40m above the bed of the wadi (fig. right). It is rather well preserved on the first 50m, until a wide circular structure with a hollow inside which is probably a tower. It is preserved much lower further west and was eventually totally destroyed for the building of the highway and the bridge over the Wadi Hilm, at the foot of the first mountainous range. Here, a wall is visible on the crest overlooking the site, climbing up to the area where was located a look-out including several structures (see *infra*). The coastal plain south of



the Wadi Hilm and the medieval city of Qalhât were therefore totally inaccessible from the north, except through two successive gates.

The south advanced wall B10

South of the depression at the foot of the south fortification wall of Qalhât, the coastal plain is lined by rather high and steep cliffs. About 700m further south, its width reduces dramatically and the plain is cut by the lower slope of the mountain which protrudes here until the coast; all this area is therefore well demarcated and a strong fortification wall was built at its end to close it entirely from the south (figs right and down).



This wall starts from the edge of the cliff and stretches along the bank of a small wadi on the plain, and then it climbed the foot of the mountain up to the first ridge but that part is now destroyed by the highway. It is certainly the one mentioned by the Portuguese “a little distance from the city”, “about the height of a lance, which comes down from the top of the mountains, and reaches to the sea”.

The part now preserved down the highway is ca 170m long. The layout of the fortification is curving inwards and ancient aerial views show that the curve was continuing on the slope of the mountain (fig. down). The



wall is 2.50m to 3m thick, with a sidewalk 2.00m large and 1 to 2m high, protected by a parapet 0.5m thick (figs right and down). In some places it is made of three contiguous masonries: on the intra-muros side is a sidewalk 1.40m wide and ca 1.40m over the ground, covered with small stones; in the centre a second sidewalk, 70/90cm wide and ca 1m higher than the previous one, with small gravels; and to the south a parapet 60cm thick and now preserved up to 80cm high, with a filling in medium gravels. The outside façade is made in rather large blocks at the base, in smaller blocks up, with no clear courses visible. A monumental and strongly defended gate, the only access to reach Qalhât from the south, is located in the eastern part of the wall, not far from the coast (fig.



up and right). It is flanked by two large towers or buttresses, probably quadrangular although they are now largely destroyed. The passage is therefore 7.50m long and its width is unknown as the east side only is visible, in any case rather narrow. Two other towers, seemingly quadrangular with round corners, are protruding from the wall on both sides of the gate, one of them preserved up to 5m high. They are in fact enclosing a wide staircase connecting the intra-muros surface with the sidewalks. The eastern extremity of the wall, on the edge of the cliff up the mouth of the wadi, is badly preserved. It is connected with a long wall, 1.20m thick, which is running northwards on nearly 80m along the edge of the



cliff; one course only is preserved and it is likely that it was not much higher, rather a parapet than a real defensive structure, as B5.

The area enclosed between the mountain, the sea, the advanced wall B10 and the south city wall B7, ca 18ha, is rocky and rather barren, nearly flat except for a low ridge parallel to the mountain. Beside several high funerary terraces and the cistern B9 near the city wall, structures are few in this area, mainly a low rectangular terrace against the advanced wall and a square enclosure, ca 11 x 11m, midway on the line between both walls. Vestiges of water supply structures are nevertheless visible in the bed of a wadi crossing the plain, a dam at the place where it goes out of the ridge, and a probable cistern upstream along its northern bank (fig.45). A second wadi, even deeper and steeper, is located 50m further north. It was also most probably dammed although no trace is now left of the wall which was most probably destroyed by the stream.

III/5. The extra-muros structures

The defensive system of Qalhât was extended outside the city proper and several *extra-muros* structures were registered around the site.

The look-out posts on the mountain

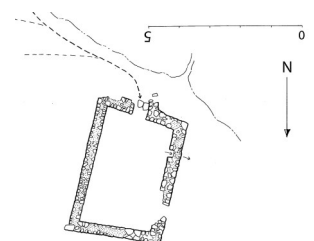
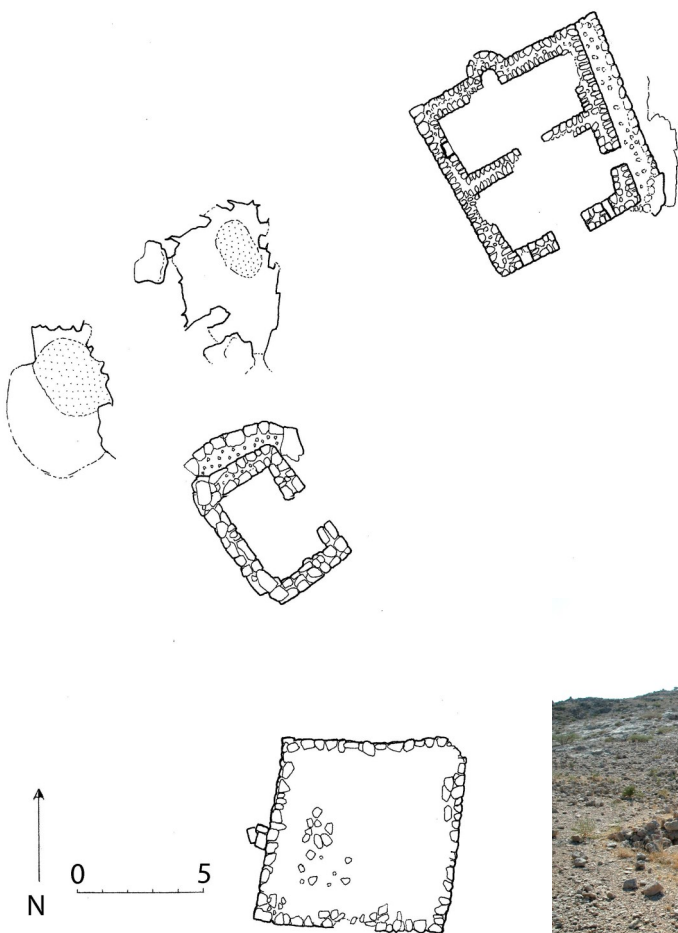
On its sketch of the fortifications of Qalhât, Ibn al-Mujawir indicates three towers on top of the mountain, two north of the Wadi Hilm and one south. Survey northwards along the crest was limited to the immediate vicinity of the wadi and the only structures discovered there is a small and possibly rather late quadrangular structure, probably domestic, and several ancient graves.

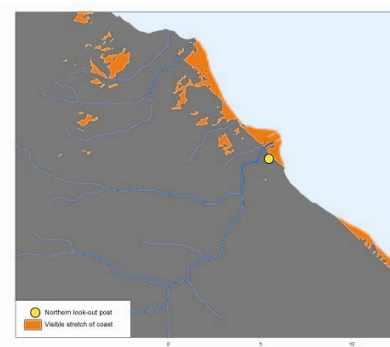
South of the wadi, immediately to the west of Qalhât, a rather wide plateau makes the lower foot of the Jebel al-Akhdar, overlooking the city from about 140m. The slopes are steep and the natural passages to climb up are few. One of them was landscaped with retaining walls to build a winding mule path leading to two look-out posts. Its lower part is now destroyed by the highway but it was starting approximately from the area of the western corner of the city, near the Bibi Maryam mausoleum.

The ramp is rather wide, up to about 4m at some points. It ends with a long straight section leading north-

wards up to a rather flat area where is located a small cistern, 3.45 x 2.30m (B102, figs down). Its depth could not be checked. The tank is limited by narrow walls 35cm wide which are preserved up to 55cm higher than the highest surrounding surface. Rain water could be supplied by a rocky area gently sloping from the north-west down to the western wall of the structure and an overflow is situated on the northern wall. Some 200m south of the cistern on the edge of the plateau is a group of three structures (fig. left) including a small terrace with peripheral walls in blocks and a filling of large stone chips (B104), a small mosque (B103) and a small building (B105). From this position, the view extends on Qalhât, on the sea, and on the northern coastal plain as far as 7.5km (figs next page). 300m further south, on the other side of a shallow thalweg, a wide rectangular structure (B106) is standing on the edge of the plateau, from where

the view extends southwards as far as Sûr (figs next page). Each post was visible from the other one,





both were visible from Qalhât, and this installation therefore allowed a complete scrutiny of the sea, of the roads south and north, and an immediate warning of the city in case of approaching boat or of danger.

These look-out posts were associated with a long fortification wall more than 1m wide (B107), which extends northwards on the ridge of the mountain down to the wadi cliff and is now preserved on about 262m. It was connected with a similar wall (B108) running on the edge of the wâdî, which stands here as a high and nearly vertical cliff, from the foot of the mountain to the western corner of the city walls. Qalhât was therefore entirely protected on the northern and western sides, from the Wadi Hilm as from the mountain.



The northern building

A large ancient building, now totally ruined, is located just on top of the steep cliff overlooking the northern arm of the Wâdî Hilm, opposite Qalhât, near the border of the plateau up the coastal plain and therefore commanding the coastal road and the lower course of the Wâdî Hilm. It is a wide irregular construction, ca 25m x 35m including a large courtyard to the west and several rooms to the east. The walls are hardly visible under their ruins but lines of pinkish plaster similar to the one used on many buildings at Qalhât are visible on places. Some sherds were found on the surface, in and around the building, which are dated to the 14th century onwards. Although this building is described by local informants as the house of a famous shaykh, Shaykh Mohammad Sa'id Qulhâti, and estimated around 200 years old, it is possible that its construction goes back to the period of medieval Qalhât, maybe a fort controlling the coastal road north of the city.



The base of a circular tower (Burg Shaykh) is found nearby to the west, but it is a late structure as shown by the many palm trunks protruding from it (fig. right). Another tower, of square shape, is located further west, at the edge of a small branch of the Wadi Hilm, overlooking the present village (fig. right). Its date is not known either but it is also most probably late



III/6. Conclusions on the defensive system of Qalhat

To conclude, field observation confirms most of the textual information, although some details are different:

1. Soundings in B6/7 and B37 confirm that Qalhât was not walled at the origin. A thin layer of occupation prior to the construction of the walls was found in all soundings, and the associated material shows that the walls could actually been dated to the beginning of the 13th century, possibly around 1217/18 as indicated by Ibn al-Mujawir.
2. The city was then strongly protected on all sides, including on the sea-side although here the defence was in fact made by the high walls of contiguous buildings overlooking the beach, rather than by an effective wall. The Portu-

gueses never speak about a possible danger coming from the Wadi Hilm side, which means that the northern tip of the city at the mouth of the wadi was probably also strongly defended. It is equally possible that the wadi bed was deeper than it is now, although the presence of gate B37, originally built as a real city gate and not as a secondary opening, seems to indicate that the waterflow was easily crossable, at least at low tide.

3. To the contrary of what drew Ibn al-Mujawir, the shape of the intra-muros area was triangular since the beginning. The intermediary wall B6 was added later, possibly very quickly as Ibn al-Mujawir seems to have noticed it in 1230. In fact, the geographer was especially attentive to fortifications, and it is unlikely that he would have specified a trapezoidal shape if it was triangular, while the western corner of the city could have stayed rather unnoticed given that it was far outside the built area and that the Bibi Maryam mausoleum did not exist at that time. This evolution in the planning of the fortification could have been motivated by the objective to control more efficiently the traffic on the coastal track. Another hypothesis is that B6 was built later when Qalhât city underwent a main development, possibly in connexion with the construction of the mausoleum complex.

4. The drawing of Ibn al-Mujawir is rather precise as far as the towers are concerned. Except for the bastion at the corner of B6, no tower is indicated on the northwest wall up the Wadi Hilm, which fits with reality. Wall B6 is described with 3 towers, and that also fits with reality though their location is different. 6 towers are described in the south-western wall B7, when they are actually 8, not including the ones flanking gate B8. As for the sea wall, 4 towers were located there according to Ibn al-Mujawir, which could correspond to the southern tower on the beach at the extremity of B7, to tower B24, to the minaret of the Friday Mosque, and to another tower still unidentified, near of, but not exactly at the corner with B5.

5. The Portuguese text mentions several gates on the sea side as on the mountain side which also reflects reality. It is difficult to appreciate whether the mountain side includes the area north of the Wadi Hilm and if the main northern gate down the breach was part of the mountain gates defended by the Portuguese against the 'Moors'. It seems more likely that the Wadi Hilm side was rather impregnable, including from the gate, and that most fighting was held along the southwest wall and its two gates, east (B8) and west, on the southern coastal plain.

6. Although the Portuguese text notes that the southern advance fortification was not higher than the length of a lance, this wall was high and sturdy and especially the gate which was very strongly defended. As a matter of fact, the city was guarded south by this gate more than by the gates in the wall B7 and it seems that the "collision" with the "Moors of the interior" could be rather fierce.

7. Surveys on the mountain north the Wadi Hilm were too limited to check the presence of the towers mentioned there by Ibn al-Mujawir. but the effective presence of the look-out posts to the south could confirm this notation.

8. Given that Ibn al-Mujawir drawing of Qalhât is rather precise, the presence of the inside tower has to be questioned. One rather high structure isolated at the edge of the intra-muros graveyard (B29) could fit with this description, although it seems more likely that it is a small platform mosque.

IV. Publication of the Qalhât Project 2008-2012

(Th. Creissen, H. Renel, A. Rougeulle, A. Vernet)

Besides finalizing field information on the various aspects of the medieval city of Qalhât, the 2012 mission had the objective to get the publication of the Qalhât Project 2008-2011 under way, i.e. to start writing the text and complete the associated illustration, especially the CAD.

Given the results of the excavations, a tentative preliminary plan of the publication may be summarized as follows

Introduction

The Qalhât Project / history of researches / issues / technical notes / acknowledgments

I. Geographical and historical contexts of the site

Geographical context / history, textual evidence / history, archaeological evidence

II. The medieval city

The cartographical project / spatial organization of the city / the quarters / the street network

III. The defensive system

The fortifications walls / the gates / the advanced walls / the extra-muros structures

IV. The Friday mosque

The B12-B13 complex / the mosque / the upper courtyard / the main gate / building B95 / the terracing wall / the lower courtyard / collapse of the mosque / conclusions

V. Domestic buildings

The governor residence B13 / the majlis house B16 / the oysters house B38 / the boris house B21 / the twin house B94

VI. Public buildings

The ceramic factory B41 / the khan (?) B14 (Iranian excavations) / the hammam B4 (Australian excavations) / various

VII. Funerary structures and small mosques

The funerary quarters / Bibi Maryam mausoleum B1 / other mausoleums / large funerary terraces, B67 / small funerary terraces / graves / small platform mosques

VIII. The water supply system

The wadis / the wells / the outdoor cisterns B2, B9 / the indoors cisterns in B12 and B94

IX. The material

Local ceramics / imported ceramics / far eastern porcelain and stoneware / objects / faunal remains / floral remains

X. Conclusion

Qalhât harbour city in the medieval regional and international context / late history of the city / the Qalhât Development Project

During the 2012 mission A. Rougeulle & Th. Creissen were able to achieve the chapters III (the defensive system), IV (the Friday mosque), and V (domestic buildings) except for the twin house B94 where excavations will be completed next year. This makes altogether more than 35000 words for the text and approximately 200 illustrations, photos and drawings. Chapters VII (funerary areas) and VIII (water supply systems) are in progress.

The CAD of all drawings from excavation, plans and sections, are also under achievement by A. Vernet, thanks to a scholarship from the CNRS – UMR8167 Orient & the Mediterranean.

The study of the archaeological material of the 5 years of excavations was completed by Helene Renel, documentalist-ceramologist at the CNRS – UMR8167 Orient & the Mediterranean, in charge of the registration and study of the Qalhât material. A tessonier was prepared for the guidance and training of Omani and foreign archaeologists, especially for those who will participate to the Qalhât Development Project. It includes some characteristics sherds of the 28 main ceramic wares found at Qalhât, each being associated with a typological file, plasticized, including a short descriptive text, drawings of the main shapes, photos of objects, and a macro-photography of the fabric.

