

NEW KINGDOM AND THE THIRD INTERMEDIATE PERIOD IN TELL EL-RETABA

Results of the Polish-Slovak Archaeological Mission, Seasons 2009–2010

By Sławomir Rzepka, Anna Wodzińska, Claire Malleson, Jozef Hudec, Łukasz Jarmużek, Krzysztof Misiewicz, Wiesław Malkowski, Miron Bogacki

INTRODUCTION

Tell el-Retaba is one of the more important sites in north-eastern Egypt, located in the middle of Wadi Tumilat, approximately 35 km west of the modern city of Ismailiya. In 2007 a Polish-Slovak Archaeological Mission (PCMA) started explorations with a survey, continued in 2008, which also included geophysical prospection. In 2008, some archaeological testing was carried out.¹ Full scale excavations were planned for 2009, but turned into a rescue attempt once the team had been informed of plans to build a second lane of the asphalt road crossing the western part of the site. Trenches in areas 1 and 2 were abandoned in favour of work to the west (areas 4, 7, 8) and east (areas 3, 5, 6, 9) of the road (cf. map in Fig. 1). Intensive excavations in 2009 and 2010 have brought to light a number of significant discoveries, allowing for a (still sketchy and preliminary) reconstruction of the history of the settlement and fortifications at Tell el-Retaba from the early 18th Dynasty through the Late Period. The main results of the excavations are presented in reverse chronological order, starting with the latest phases of site occupation and ending with the earliest one observed so far. This is followed by the pottery and archaeobotanical analyses. The report ends with a presentation of the geophysical survey carried out in 2010 (which supplements the 2007 and 2008 surveys) and photogrammetrical documentation.

1. EXCAVATIONS

1.1. Third Intermediate Period stable

By Łukasz Jarmużek

A structure found in area 6 in 2010 has been identified as a stable (Figs. 2–4). The western end of the

feature was destroyed when a road was recently built across the site. The two remaining rooms are in a poor state of preservation, the entire area being cut by pipe and cable trenches and various round cut-outs. The preserved part of the building measures 14.3 × 11.3 m. Three parallel walls are aligned more or less E–W. The fourth, east wall runs approximately N–S, falling away from the perpendicular at an angle of about 80 degrees. The maximum surviving height of these walls is approximately 0.65 m. The walls were made of mud bricks of different sizes, the most popular size being 36–40 × 20 × 10 cm. Each course consisted of two bricks in a different arrangement, causing the coursing to be different even at the same level. The thickness of these walls ranged between 0.7 and 0.9 m. Construction irregularities and poor state of preservation made a difficult task of confidently tracing all the bricks. The northern room was entered through a doorway 1.4 m wide in the northern part of the east wall.

The fill of the structure consisted of a series of thin, alternately white and brownish layers in turn, documenting occupation of the stables and periods of abandonment. Three main phases of use have been identified on the strength of the stratigraphic ratios between the walls and the layers of fill, being particularly distinctive in the western part of the centre wall. The first phase of the stable correlated to the preserved lower part of the wall, including the four rows of tethering stones. Sections of the collapsed wall in the eastern part of the stable marked the end of the phase. The entire surface of the stable, including the top of the central wall and the tumbled fragment, was covered subsequently by a white layer interpreted as animal dung (not specifically identifiable however). Interestingly, none of the other walls were covered by

¹ An extensive report on the first two seasons of fieldwork was published in: RZEPKA *et al.* 2009. Previous exploration of the site by Petrie, Naville and others were briefly summarized therein. Short preliminary reports on excavations

carried out by the Polish-Slovak Mission are published after each season in the *PAM* journal of the Polish Centre of Mediterranean Archaeology of the University of Warsaw.

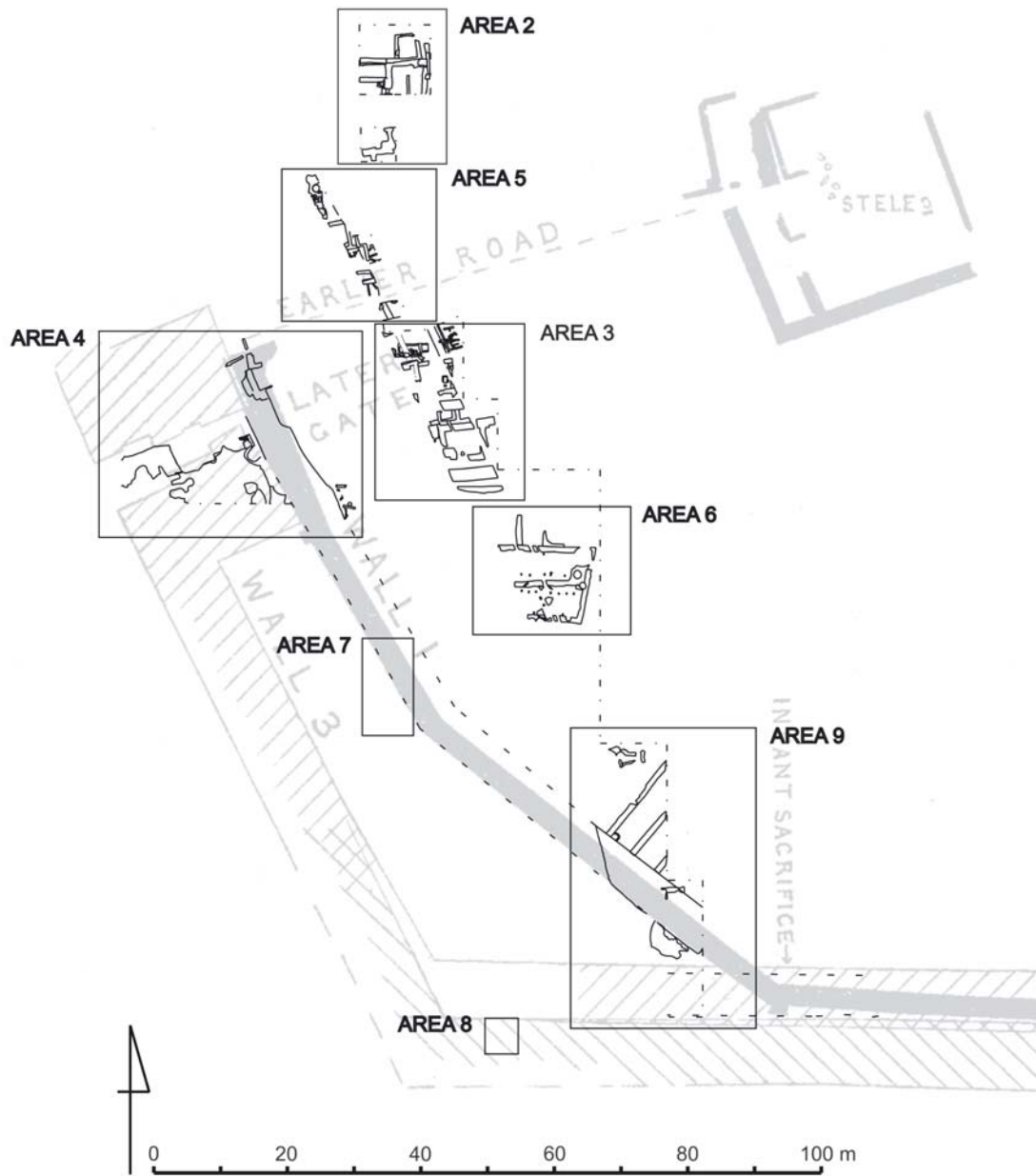


Fig. 1 Map of the western part of the tell with the location of areas explored during the 2009–2010 seasons (drawing Ł. Jarmużek)

the dung, suggesting that the middle wall was in fact a low wall separating two areas inside the stable or else a row of mangers.² No tethering stones

were used in the second phase. In the third phase the centre wall was rebuilt and the stable was once again separated into two rooms.

² Without a centre wall, the roof over this space would have been 11.3 m wide. This rather rules out a barrel vault. While such roofs with a span of up to 12 m existed in Ancient Egypt (ARNOLD 2003, 253), they were never free-standing.

A wooden roof is much more probable in the case of the Retaba stable, held up either by a regular centre wall or a low wall with piers in the middle of the room.

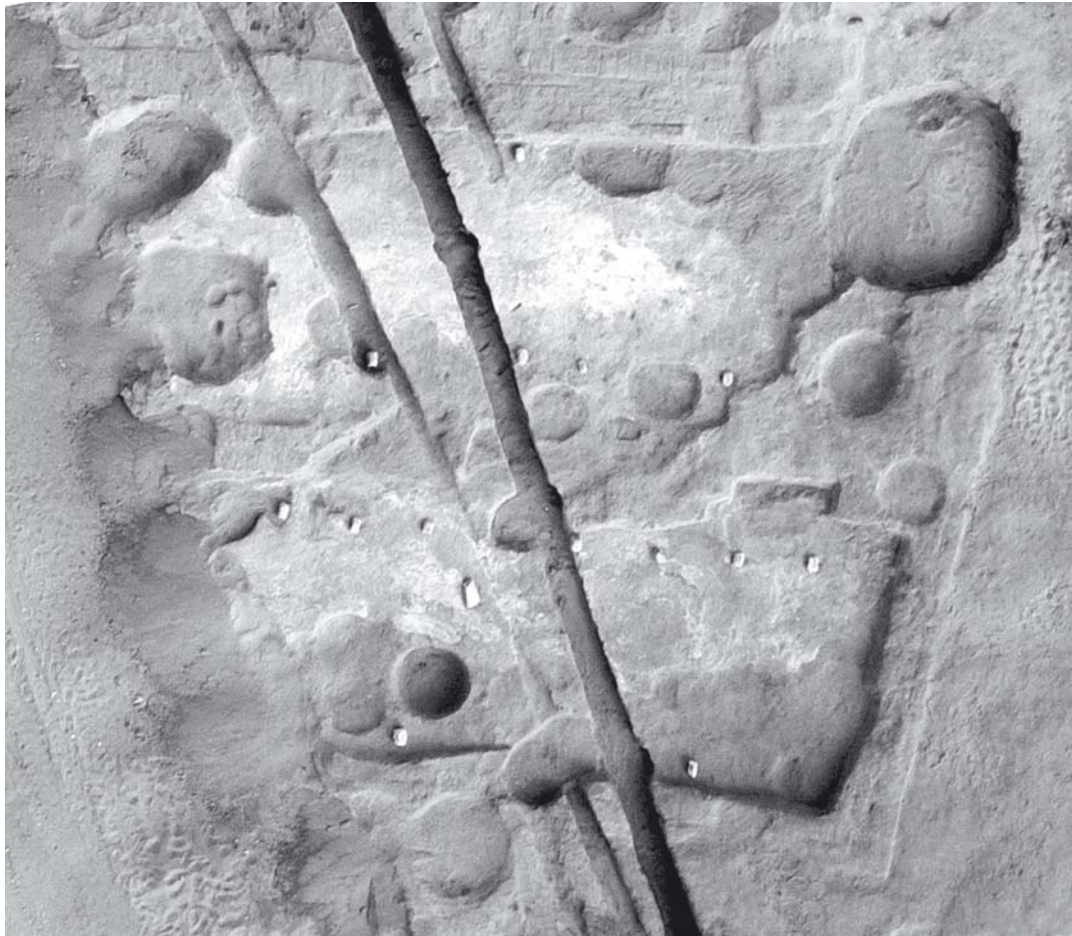


Fig. 2 Stable, view from a kite camera (photo M. Bogacki)



Fig. 3 Stable, looking west (photo C. Baka)

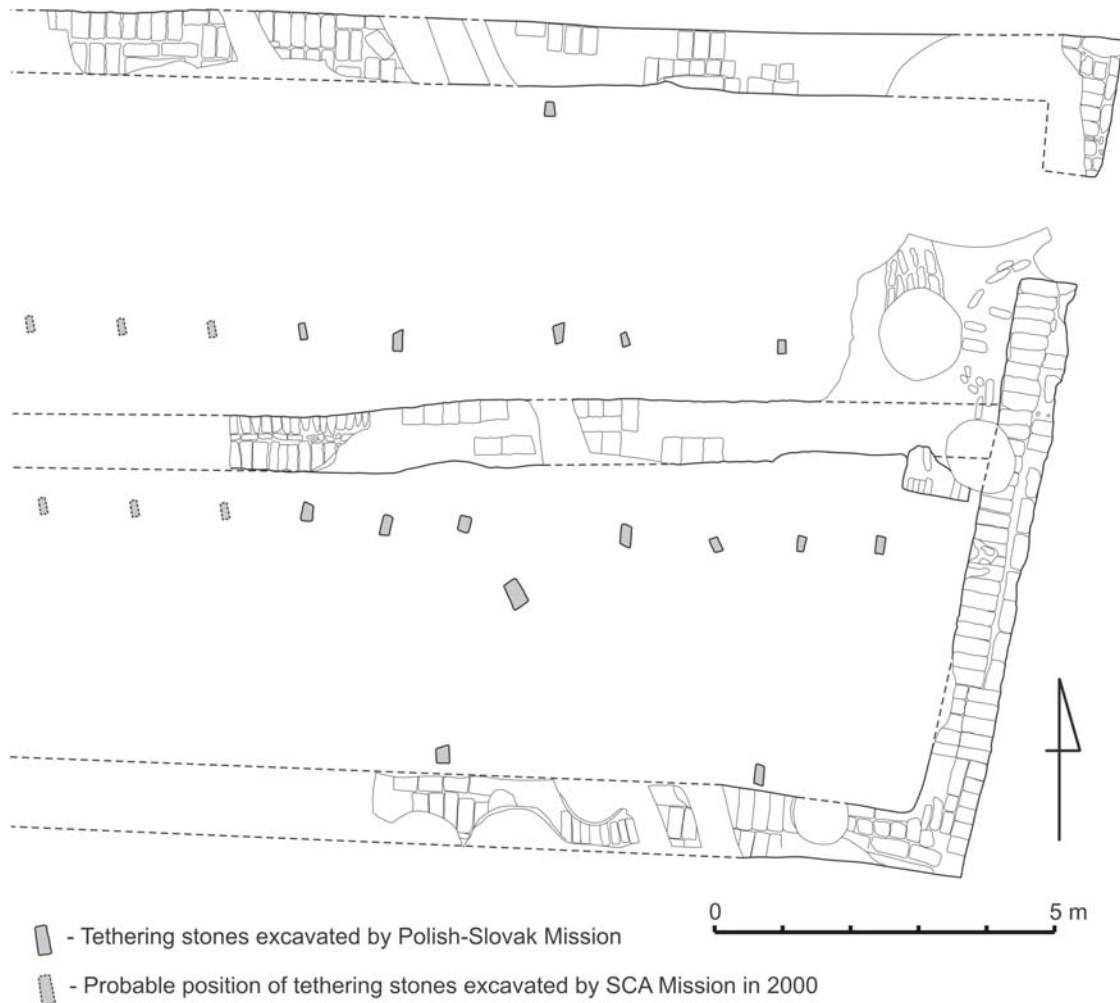


Fig. 4 Plan of the stable (drawing Ł. Jarmużek)

Archaeobotanical examination of samples from stratigraphic units filling the stable revealed a dominance of cereal chaff. It could not be uneaten animal fodder because it was charred. It could have been burned in hearths. It was either swept into natural depressions in the floor during the use of the stable or dumped into an abandoned ruin. The same can be said of the dung in the samples. Most was charred with only a part being desiccated. The fact that the dung appears mostly in several rounded cuts which penetrated the white excremental layers

of the third phase, suggests that the matter accumulated in these pits while the structure was being used as an animal stable. All the identifiable coprolites are from sheep/goats (cf. section 3 below).

Scarce pottery finds from all three phases dated the stable in operation to the end of the Third Intermediate Period (cf. section 2 below).

Sixteen tethering stones were found in layers belonging to the first phase of stable use. Another six were found during Egyptian excavations of the site preceding the building of a modern road.³ The

³ Unpublished report in SCA archives. It can be assumed that they belonged to this phase of the stable as no tethering stones were found in any of the other phases. Neither the

exact location nor the arrangement of the stones is known, but one could surmise that the stable had been at least 2–3 m longer to the west.



Fig. 5 Tethering stone S620 (photo C. Baka; drawing B. Adamski, L. Jarmužek)

stones were made of limestone, cut in a roughly perpendicular shape (Figs. 5–6). A circular hole pierced in the top of every stone used to tie a rope. Fragmentary relief decoration on some of them proves that they were made of salvaged stone (cf. section 1.6 below). They are likely to have been arranged in four irregular rows, but precise assessments are hampered by the condition of the remains. One stone from the southern room even appears to have been dragged out of position back in antiquity and was found near the structure. Analysis of the two middle rows bears out the assumption that the rows were approximately 2.8 m apart and the stones in each row about 1.1 m away from each another.

All the building evidence points to a fairly makeshift and careless construction of the stables.

Parallels

Identified ancient Egyptian stables are relatively rare: only four examples besides Tell el-Retaba. Two different stables are known from Tell el-Amarna. The one in the Central City is similar to the Retaba stable. It consisted of six long rooms, approx. 53.5 m in length and approx. 3.6 m in width, with tethering stones and mangers inside.⁴

The archaeological context clearly demonstrated a connection with military barracks and identified the structure as a horse stable. A row of mangers and tethering stones was also found next to the north wall of barracks. The area was used as a parade ground where horses would not have stayed for longer periods of time.

In the case of the other stables located in the Northern Palace, the arrangement consisted of three units, each divided into three rooms. The first room had a roof supported on piers. Wall decoration prompted the excavator to believe that it was the attendants' quarters.⁵ A doorway led from this room into an almost square courtyard where the animals were kept in daytime. The third, roofed room was where the animals spent the nights. In the case of the northernmost unit, in the last room, mangers and tethering stones were situated in a row along the walls. Images of oxen and antelopes carved on the fronts of the mangers may be deemed suggestive of what kinds of animals were kept there.

The largest complex of Egyptian stables is Qantir.⁶ The main stratum of the stables is dated to the reign of Ramesses III and Sethnacht. It consisted of four segments. In every segment there

⁴ PENDLEBURY 1951, 132–134; the exact arrangement of these installations was not described.

⁵ NEWTON 1924, 289–298.

⁶ HEROLD 2006, 45–48; HEROLD 1999, 85–100; PUSCH 1989, 67–93.

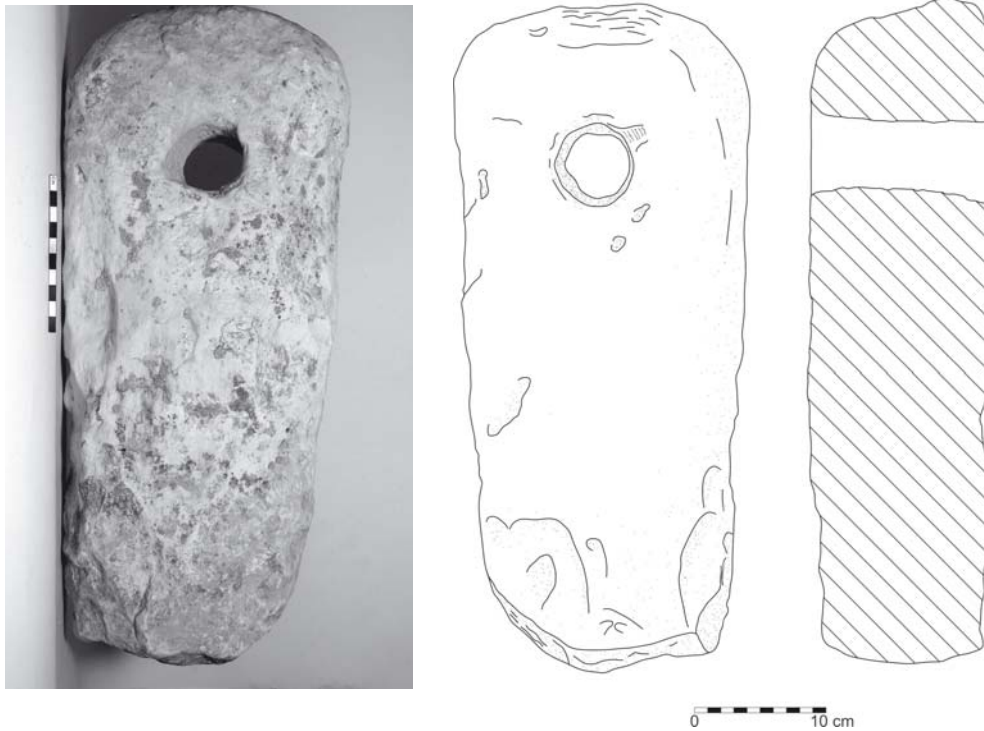


Fig. 6a–b Tethering stone S629 (photo C. Baka; drawing B. Adamski, Ł. Jarmużek)

was a courtyard, a pillared hall and ten longitudinal rooms for animals. The rooms for animals could have had six or eight stalls. Every stall consisted of two tethering stones set at a distance of 3 m from each other. Between them, in the middle, there was a pot or small depression where urine collected. The distance between stalls was about 1.3 m. Numerous finds of fragmentary chariots in the neighbourhood suggested that the stables were intended for horses.

The last example comes from the temple enclosure of Ramesses III at Medinet Habu. Although the building to the south-east of the Great Pylon has been described as stables in some publications,⁷ the case for such an identification is rather weak. The building excavated by U. Hölscher consisted of four rooms situated in a row and a courtyard in front. The entrances, 3 m wide, were situated on the wider side of every room. The first two rooms were very big (14 m wide, 8.85 m in

length). The last two were narrower. None of the finds could be construed as indicating the presence of animals or chariots and the identification of the building as royal stables was based solely on numerous images of horses and chariots belonging to Ramesses III. While royal stables could very well have been situated inside the temple enclosure, the lack of stronger evidence warrants caution in calling this building “The Royal Stables”.

Depictions of stables

Stables are seldom depicted in Ancient Egyptian records, but the existing iconography makes for a good reference point for the stables described above. The first depiction (MMA 21.2.25) was originally part of tomb decoration, probably from the New Kingdom necropolis at Saqqara.⁸ It shows the unloading of cargo ships and feeding of cattle. The cattle stand in three rows, one row apparently

⁷ HÖLSCHER 1951, 18–20; SPENCER 1979, 125; ARNOLD 2003, 253.

⁸ MARTIN 1987, 17–18; SÉE 1974, 254.



Fig. 7 TIP houses, looking northeast (photo K. Górka)

inside a building, the rest outside. The animals are tethered to a round object. The depiction of this object as well as of the tethering rope is inaccurate, but it can be assumed that the objects are the same kind of tethering stones as the ones found at Tell el-Retaba and elsewhere.

The next representation of a stable is part of the decoration of the tomb of Meryra at Tell el-Amarna.⁹ The stable consists of two units surrounded by a low wall. The main entrance to every unit was placed in the middle of the front wall. Inside, there are four groups of cattle standing on the platforms. The stones are of the same shape and have threading holes. In some cases ropes are not attached to the stones, but held by the herdsman sitting in front of the cattle and feeding them.

A similar but three-dimensional image of a stable is provided by a wooden model (MMA 20.3.9) found in the tomb of Meketre.¹⁰ The building consisted of two rooms, separated by a high wall. In the first room, two sedentary herdsmen feed two oxen. In the second one, the oxen stand next to the long mangers situated along the wall. There is no evidence of tethering stones or ropes.

Summary

The stable discovered at Tell el-Retaba is the first example of this type of building dated to the Third Intermediate Period. The first phase of the stable correlates to stables known from the New Kingdom. The size, layout and distance between tethering stones are reminiscent of the structures in

Qantir and Amarna, making it possible for horses to have been kept in this phase of the stables at Tell el-Retaba. On the other hand, there are no facilities for collecting urine and the layering of the fill suggests little effort put into cleaning out the stables and keeping them tidy. Conditions could have been worse generally because of the chronological interval separating the stables. Excavations at Tell el-Retaba have shown a significant difference between constructions dated to the New Kingdom and those dated to the Third Intermediate Period. The iconography of stables in ancient Egyptian depictions accords with archaeological facts. In all cases, however, cattle and not horses are shown. The author is not aware of any depiction of a horse either inside a stable or tethered to a stone. That is why, because of lack of specific and incontrovertible evidence, it cannot be said whether the stables at Tell el-Retaba were used for horses, oxen or donkeys. The same is true of the second phase of the Retaba stables, when the rooms were connected and no tethering stones were used. In the third phase, abundant dung of sheep and/or goats may be construed as evidence for the kind of animals kept in the stables at the time.

1.2. Third Intermediate Period houses and workshops

By Sławomir Rzepka

Domestic architecture with walls standing at a height of 1.5 m was discovered in area 3 in 2009

⁹ DAVIES 1903, 35, pl. XXIX.

¹⁰ JANSSEN and JANSSEN 1984, 26.

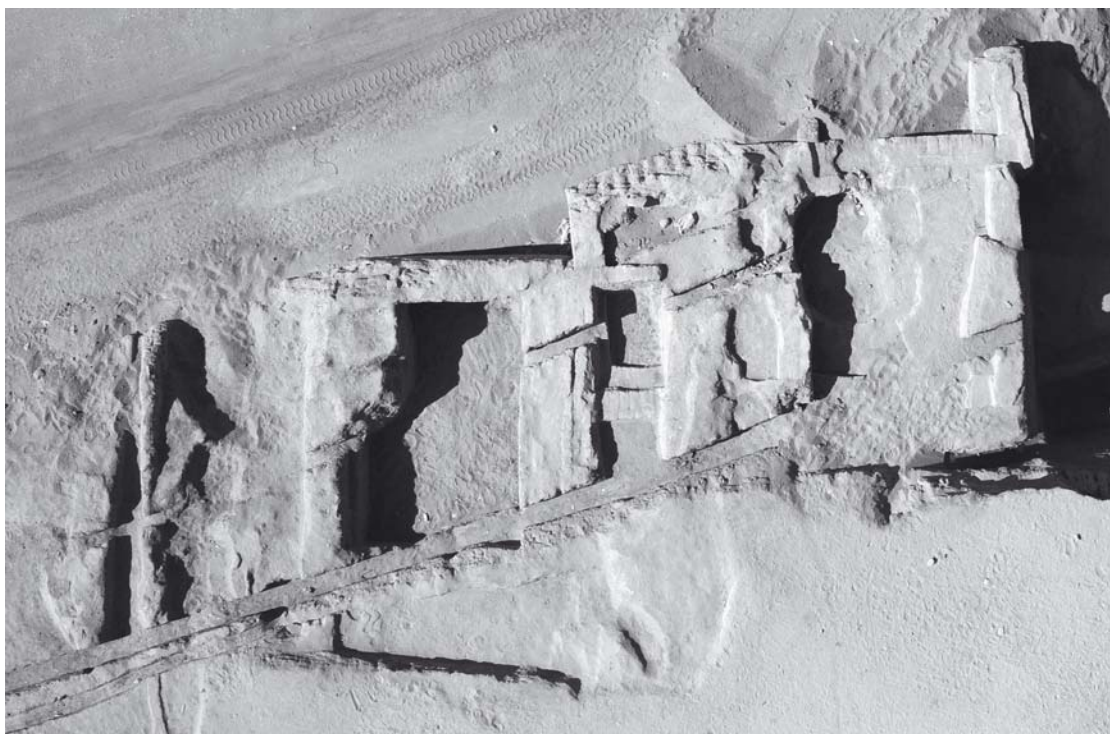


Fig. 8 TIP houses, view from a kite camera (photo M. Bogacki)

(Figs. 7–8). Two houses were partly excavated. The massive walls of the southern “house 2” (cf. Fig. 9), approximately 1 m thick, suggest more than one storey. The largest excavated room in this building (“room 1”, approx. 4×5 m, which shows signs of prolonged occupation (several floor levels), does not have any doors or windows. It can thus be construed as a basement accessed from the upper floor. Both houses went through several stages of rebuilding. A fireplace and three large storage jars were discovered in strata ascribed to a later occupation phase (but still in the Third Intermediate Period) (Figs. 10, 11). Two of these jars contained fish bones and scales. Considering the frequency of such finds at Retaba in general, fish must have been a dietary staple for the inhabitants,

To the north of House 2 there was a space approx. 5 m wide and which appears to have been left open for a long time (a small section was excavated). Once the storerooms of the Ramesses II fortress had been demolished (cf. section 1.5. below), the space was kept free of any structures until the end of the Third Intermediate Period. It appears to be an ancient road running E-W (cf. Fig.

9), apparently from the big western gate (migdol) of the fortress toward a building identified by Petrie as a “temple”. The migdol belonged to a fortress built by Ramesses III and the road appears to have been in use during the 20th Dynasty and the Third Intermediate Period. In the Late Period, the road was blocked by some buildings, only very scant remains of which have been preserved.

To the north of this ancient road (in our area 5), multiphase building activity datable to the Third Intermediate Period was observed. The structures found here differed significantly from the houses in area 3: their walls were thin, usually approx. 0.30 m thick, some even thinner, built of only one row of bricks (see Fig. 12). The discovery of three ovens in this area (Fig. 13) and a large round silo (approx. 2.5 m in diameter) is significant. No structures of this type have been found on the southern side of the ancient road. The road seems to have separated two functionally different parts of the settlement. To the south of the road there was a residential area with houses of significant size, at least some of which had more than one floor, while to the north of the road there was an “industrial zone”.

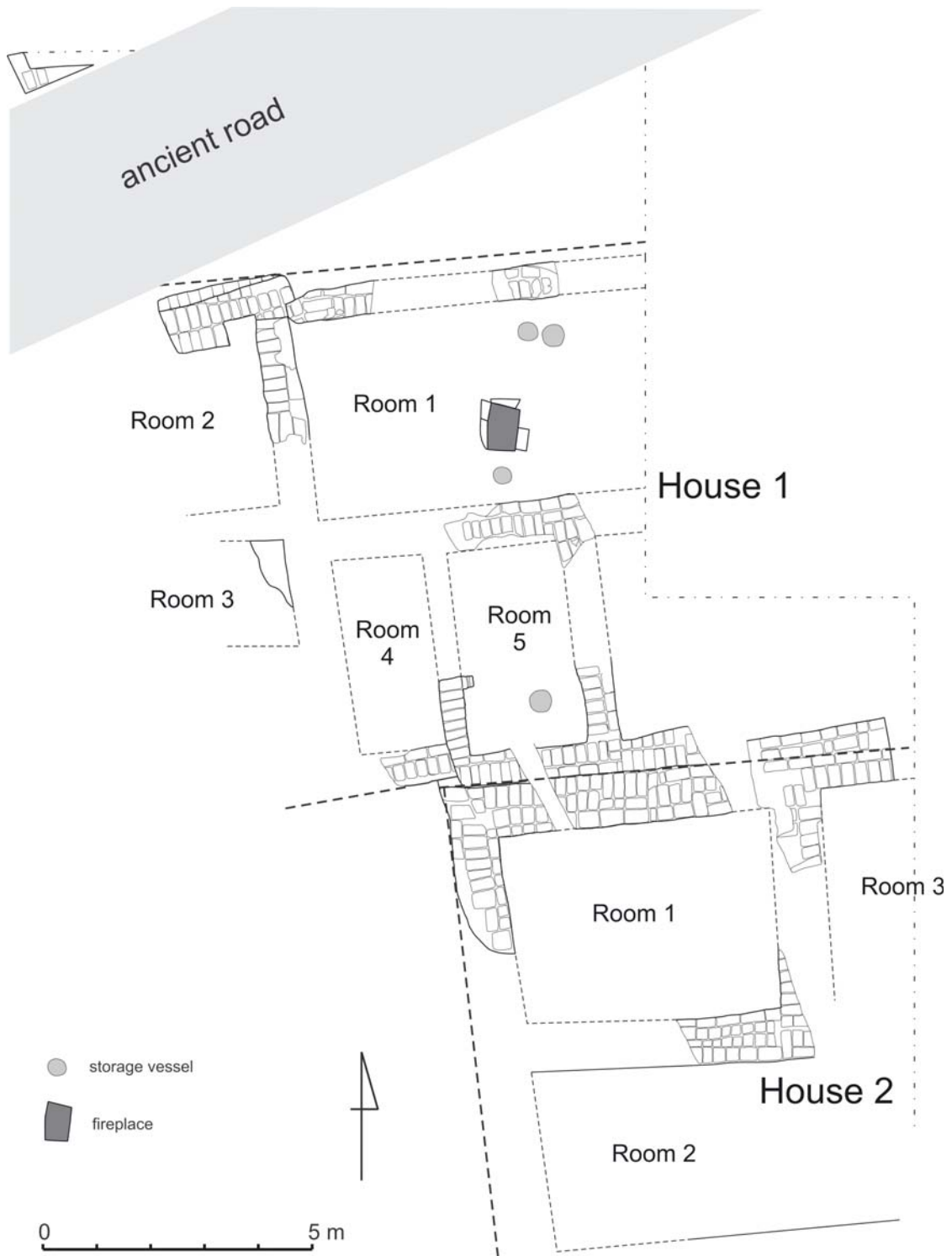


Fig. 9 Plan of TIP houses in their latest phase (drawing Ł. Jarmużek)



Fig. 10 House 1, room 5, looking west (photo K. Górka),



Fig. 11 Storage jars from House 1, room 1 (photo K. Górka)



Fig. 13 Two ovens in area 5 (photo K. Górka)

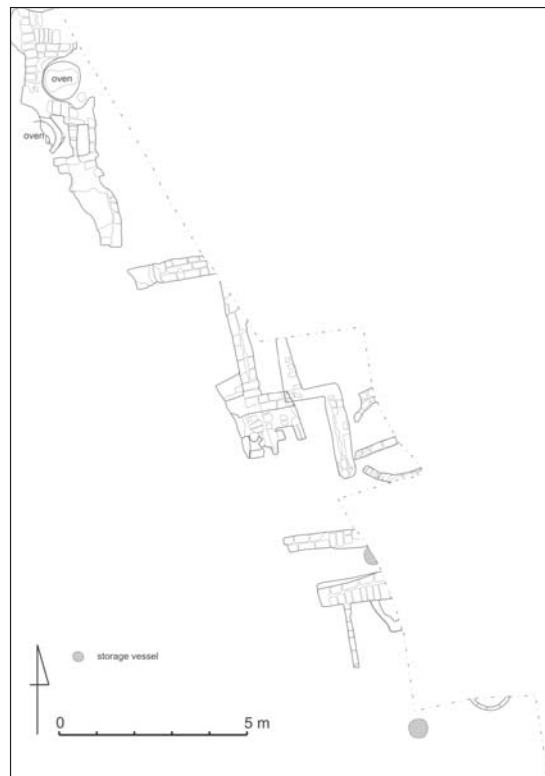


Fig. 12 Plan of TIP "industrial zone" in area 5, north of the ancient road (drawing Ł. Jarmużek)

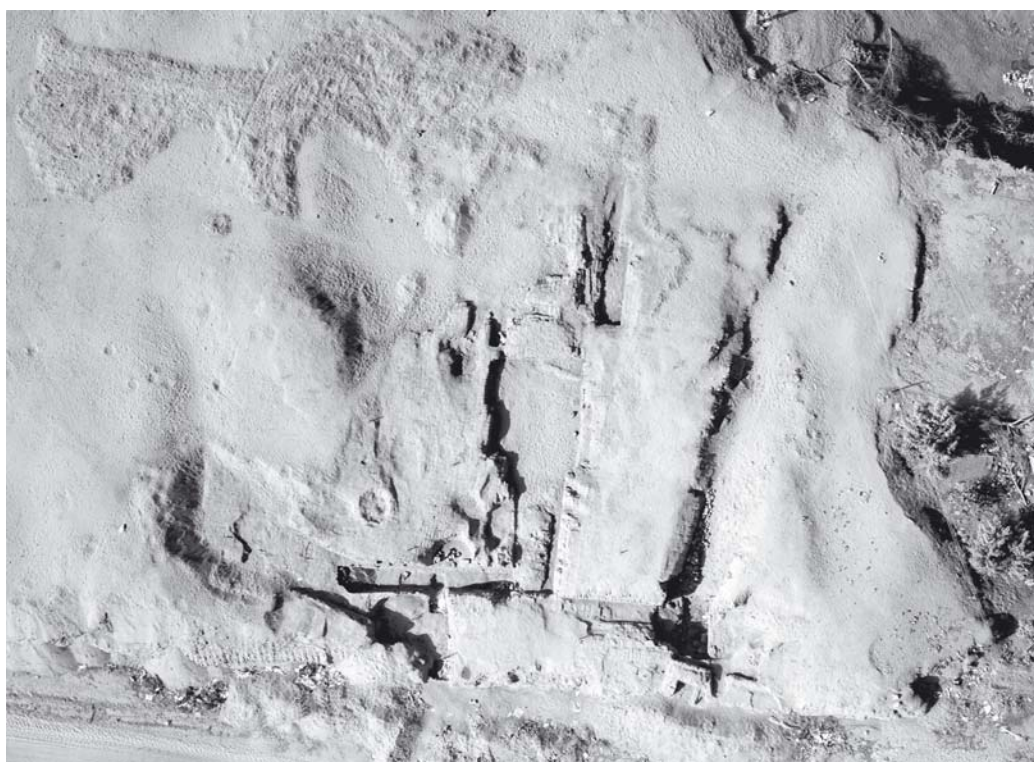


Fig. 14 Western gateway, view from a kite camera (photo M. Bogacki)

1.3. Late Ramesside fortifications – western gateway (migdol)

By Jozef Hudec

Wadi Tumilat was one of the few land routes leading from the Nile Delta to the Sinai Peninsula and further on. There may have been “*little or no occupation elsewhere in the Wadi*” with the exception of Tell el-Retaba which was an important stronghold, especially during the late New Kingdom.¹¹ The military importance of Tell el-Retaba derived foremost from its strategic position in control of drinking water resources. A massive western gate of the migdol type underscored this importance.

In 2009–2010 the Polish-Slovak mission at Tell el-Retaba excavated in area 4 (cf. Fig. 1) parts of a western gateway, flanked by two massive mud-brick towers, and the western part of Petrie’s “wall 1” (Fig. 14). New data on the stronghold enclosures and gates were produced by geophysical

surveying in conjunction with archaeological testing.

Northern tower: In earlier excavations by W.M.F. Petrie, an older phase of the gate in the western “wall 1” had been suggested behind the northern tower of the migdol.¹² The southern face and part of the eastern face of this particular tower were cleaned in 2010. The E-W dimension of the tower was determined at approximately 22.5 m. on the preserved top level. The N-S face without full exploration could only be estimated at about 14 m.

The E-W cut visible in the northern tower (and sometimes confused with another gate) proved to be the remains of a trench dug in the area by E. Naville¹³ and mentioned also by Petrie.¹⁴ Modern fill found at the eastern end of Naville’s trench indicates digging during the past thirty years.

Older western gateway: A well-preserved plastered wall of about 1 m height was uncovered after removing modern deposits mixed with sand and

¹¹ HOLLADAY 1999, 1076.

¹² PETRIE and DUNCAN 1906, 29/38, pl. XXXV.

¹³ NAVILLE 1887, pl. XI.

¹⁴ “... *the very thick wall at the west of it is really the thickness of the gateway bastions, one of which was cut through instead of tracing the face of it.*” PETRIE and DUNCAN 1906, 28.

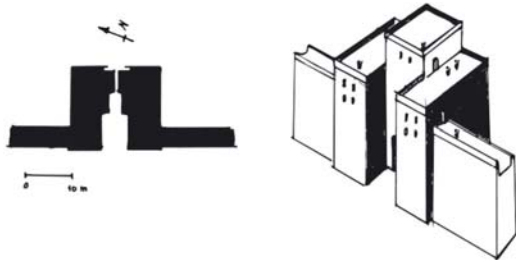


Fig. 15 G. Cavillier's ground plan and reconstruction of the migdol (western gateway) in Tell el-Retaba (after CAVILLIER 2004, 64, figs. 2, 3)

debris from the most recent phase of "wall 1". The wall might have been part of an older western gateway, as suggested not only by Petrie, but also by certain structural factors based on current research. Unfortunately, the area on the inside of this gateway was destroyed when the asphalt road was built several years ago.

Southern tower: Approximately a third of the top surface of the southern tower was cleaned in 2010, tracing the N-S tract of the structure and pinpointing its length on this level at approximately 14.5 m.

Several pits were traced in the eastern part of the tower, most of which had already been explored during previous archaeological digs. The western part of the tower is missing, the damage not noted by Petrie and hence probably due weather conditions or the effect of *sebakhim* digging in the last hundred years.

Gateway: A mirror reflection of the architecture of the towers flanking the gateway is anticipated on the strength of earlier reports, but the location and ground plan of the western gateway, or migdol,¹⁵ differs somewhat from G. Cavillier's recent comprehensive studies.¹⁶ The difference lies in the angular line of the eastern side of the migdol, presumably due to the existence of older structures around and next to it.

Cavillier considers the second phase¹⁷ of the western gate at Tell el-Retaba (Fig. 15) to be similar in terms of military defence strategy to the gateways in the fortresses of Ramesses II in Zawiyet Umm el-Rakham in the Western Delta.¹⁸ From

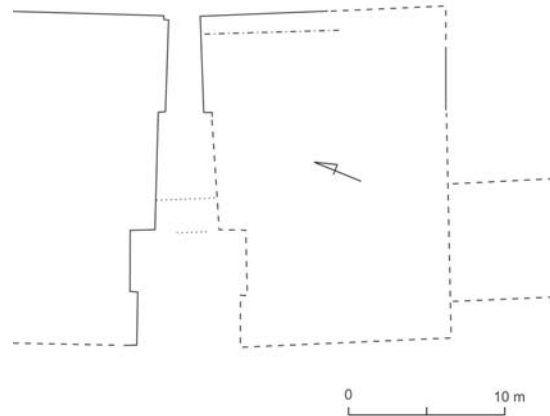


Fig. 16 Ground plan of the western gateway following excavations in 2010 (drawing J. Hudec)

the rule of Ramesses III, the Middle Kingdom strategy of a narrow gateway mouth leading out to a wider court was abandoned in favour of space in front a gateway mouth¹⁹ which was extended even further by using multi-level elevated bastions.²⁰

Without going any further into military architecture and strategy,²¹ it can be said on the strength of current evidence that the narrowest point of the gateway is at its eastern exit and it widens out substantially moving towards the western side.

The structural foundations of both towers are preserved and the architecture would have risen just a few courses of bricks above this level. No trace remains of internal rooms, corridors, staircases, doors or windows. The ground plan of the gateway between them is similar to the migdol of Ramses III in Medinet Habu (Fig. 17) where the stone façades in front were supplemented with mud-brick walls at the rear.²² The foundations at Tell el-Retaba were almost twice as thick as at Medinet Habu, but the depth was almost identical.

The ground line of the southern face of the northern tower traced in 2010 revealed the gateway niches, although dilapidations caused by erosion and older excavations or digging leave some doubts as to their exact layout. The masonry in the gateway (more of which has now been cleared from the western exit, see dotted line in Fig. 16)

¹⁵ GERMER 1982, 124f.

¹⁶ CAVILLIER 2004, 57–79; CAVILLIER 2008.

¹⁷ BADAWY 1968, 470, CAVILLIER 2004, 65.

¹⁸ THOMAS 2003, 523, fig. 1.

¹⁹ LAWRENCE, 1965, 90; CAVILLIER 2004, 65.

²⁰ CAVILLIER 2004, 65.

²¹ MURNANE 1980, 6.

²² CAVILLIER 2004, 70, fig. 7; HÖLSCHER 1957, 5.

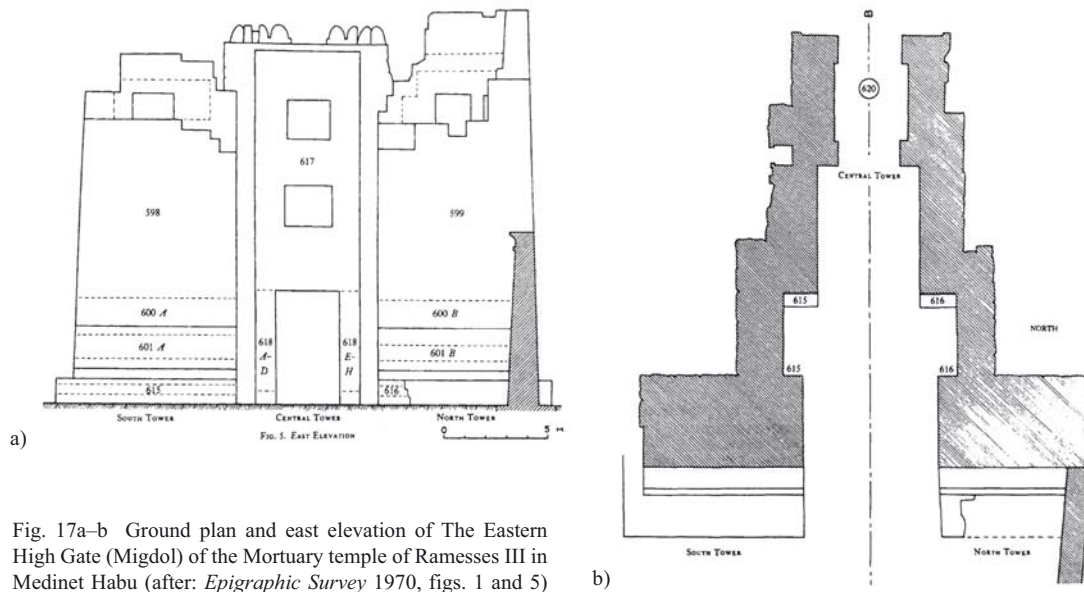


Fig. 17a–b Ground plan and east elevation of The Eastern High Gate (Migdol) of the Mortuary temple of Ramesses III in Medinet Habu (after: *Epigraphic Survey* 1970, figs. 1 and 5)

was first interpreted as either sealing the gateway at the exit in a later stage of extended fortification or as the remains of an earlier fortification wall, below “wall 3” (or rather “wall 2”). The latter idea was formed on the strength of a line of mud bricks continuing below the foundations of both towers in line with the eastern face of “wall 3” or rather “wall 2”. However, the bricks do not continue or were dismantled further south below the eroded masonry of the southern tower.

Another possible interpretation, based on the fact that the original ground level was higher than the tower foundations, was that the bricks served also as a base for a stone threshold. So far, however, no evidence has been discovered of any such stone threshold, not to mention stone jambs, pavement or casing.

In a stronghold, a gate is logically anticipated,²³ and it would be strategically best positioned beside the niche, the wings accommodated in the recesses when opened out. The masonry closer to the western exit could then be interpreted as the remains of a pavement. Similarly, the brick rubble at the eastern exit of the gateway, which is 2 m wide, could also represent the remains of a pavement or rather debris of “wall 1”.

Petrie had suggested that the “gateway axis was blocked across, and it led only to a narrow passage along the face of the first wall. This passage was 50 inches wide, and then was narrowed by a block to 22 inches wide. Thus there was a narrow entrance for persons in single file”.²⁴ There is indeed a space between “wall 1” and the eastern flank of the southern tower of the migdol but, following excavations in 2010 which cleared away a section of the feature 9 m long, it can be interpreted not as a passage, but rather as a pseudo-corridor, approximately 90 cm high and 120 cm wide (Fig. 18). It continues further southward. This feature has sustained some damage from a loader and illicit digging and could not be fully excavated because of safety risks.²⁵ It was filled completely with homogenous yellow sand with a few heavily fragmented potsherds. Petrie’s “passage” therefore may have been the result of a combination of extant ground relief, sebbakhim digging and his own excavation.

A similar feature²⁶ is visible in the mud brick foundations of the northern tower. However, it is not accessible from the younger gateway and is known only from recent digging in Naville’s old trench. It is possible that the northern tower, which

²³ CAVILLIER 2004, 69, fig. 6.

²⁴ PETRIE and DUNCAN 1906, 30/41.

²⁵ The function and chronological implications of the southern pseudo-corridor for the southern tower and “wall 1” will be considered once it has been fully excavated.

²⁶ The space is wider, it is ca 180–200 cm wide; due to technical reasons it was not possible to measure the height of the space.

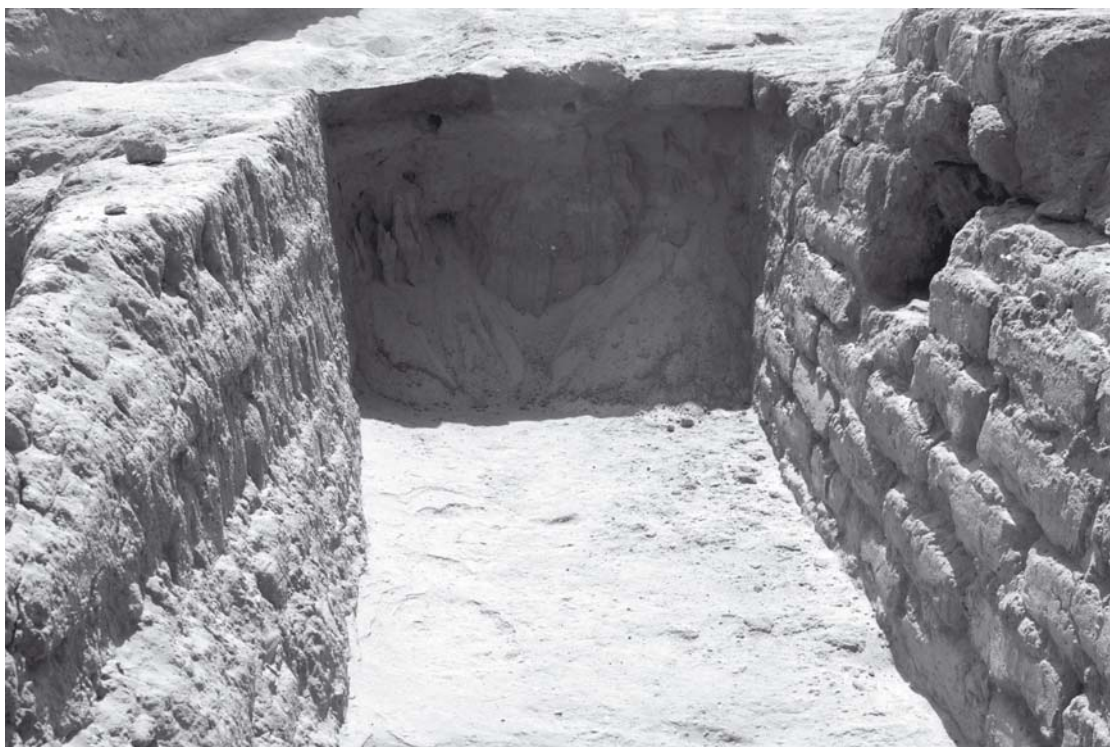


Fig. 18 “Pseudo-corridor” between Wall 1 and the southern tower of the Migdol (photo J. Hudec)

is structurally similar to the southern one, stands on or over older structures, in this case probably belonging to the older western gateway. This is also indicated by the fact of the mud bricks in the tower foundations at the eastern end of Naville’s section being at least three courses deeper than the foundations at the southern side of the tower, in the more recent gateway.

The migdol was incorporated into “wall 2” which was very probably constructed under the rule of Ramesses III, as hinted at not only by a foundation deposit,²⁷ but also by a conceptual similarity between the migdols at Tell el-Retaba and at Medinet Habu. In 2010, relics of the of the “wall 2” were traced in a N-S section in area 8 (cf. Fig. 1), west of the asphalt road. The section was cleaned at a point where the road had damaged the southern part of “wall 2”. *Sebakhim* digging has also apparently reduced the wall’s height and

thickness; the latter recorded as about 9.5 m still by Petrie.²⁸ Today the remains are just two courses high (max. 28 cm) and approximately 2.3 m thick.²⁹ The mud bricks are embedded in about 10 cm of fine yellow sand. Traces of “wall 3” are absent from the section. “Wall 3” must have stood on higher ground and was probably eroded or dismantled by the *sebakhim*. Consequently, Petrie’s “wall 3”, indicated on his plan³⁰ as connected to the migdol, appears today to have been the once massive “wall 2”.

1.4. 19th DYNASTY FORTIFICATIONS (“WALL 1”)

By Sławomir Rzepka

Excavations by W.M.F. Petrie (or rather, his assistant Duncan) at Tell el-Retaba in 1905 revealed a structure which Petrie called “wall 1” and which has now been identified as the earliest fortifications

²⁷ PETRIE and DUNCAN 1906, 30/41.

²⁸ PETRIE and DUNCAN 1906, 30/41.

²⁹ To compare: similar enclosure wall of the mortuary temple of Ramses III was above 10 m thick and about 18 m high. HÖLSCHER 1929, 39: “as one can gather from the tower gate”.

³⁰ PETRIE and DUNCAN 1906, pl. XXXV.

on the site (see Fig. 1).³¹ Petrie interpreted this structure as chronologically homogenous and dated it to the First Intermediate Period. He also thought the wall was built not by Egyptians, but by “Syrian” invaders, namely because when he searched for a foundation deposit “mining inward” in the south-western corner of the fortress, he discovered underneath the wall “a small arched brick tomb of a child, buried at full length, head to the east. As the grave is only 30 inches long, and the body did not fill the length, it must have been quite an infant. [...] There were no objects with the body.” Petrie interpreted the burial as a Near-Eastern style foundation sacrifice and dated it (despite the lack of any datable finds), “wall 1” and the entire early fortress to the First Intermediate Period: “*This grave is clearly ceremonial, and not only a stray interment. It is placed by the side of the corner mark so closely that it must have been built at the same time. [...] This burial, or child sacrifice, was a custom in Syria [...] But such a custom has never been found among the Egyptians, and hence we must rather look to a Syrian occupation as the cause of this earliest fortification. To judge by the early age of remains here we might look to Syrian invaders after the 7th dynasty as likely builders; and as this is a brick fort, and not an earthwork, it is more likely to belong to such people than to the barbaric Hyksos.*”³²

Why the early date? The main reason (although not explicitly stated) was the discovery of a weight inscribed with the name of King Khety of the 9th/10th Dynasty,³³ found in the “Great House” together with objects dated mainly to the New Kingdom. This discovery must have brought to Petrie’s mind “The Teaching for Merikare”, in which the Asiatic threat and the Asiatic colonization of the Delta are described at some length.³⁴ And why not the Hyksos? The same year he excavated at Tell el-Retaba, Petrie was also working at Tell el-Yehudiya, where he found remains of massive earthwork structures which he interpreted as Hyksos fortifications.³⁵ Thus, he was convinced that “the barbaric Hyksos” would not have been able to build “a brick fort”, therefore could not have constructed “wall 1”.

Petrie’s dating and the “Syrian connection” of “wall 1” have been in doubt for some time,³⁶ but with only small-scale (and unpublished) excavations being carried out at Tell el-Retaba since Petrie, there has been no direct archaeological evidence for a secure dating and interpretation of this structure. The discovery in 2009 of more infant burials yielded the necessary evidence (cf. section 1.7. below) (Figs. 19, 20). Burial 2 actually lay underneath the wall, so it must predate the fortification. It was dated to the early 19th Dynasty. Thus the construction which covered it could not be older.

The burials were discovered while sectioning “wall 1” in a place where it had already been heavily damaged by a large *sebakhin* cut in an effort to investigate its inner structure. This proved to be non-uniform. A core-wall (approx. 1.9 m thick) was evident, faced on both sides by extensions, added later to reinforce the original construction. The western (outer) extension was approx. 1.6 m thick, the eastern (inner) one approx. 1.9 m thick (burial 2 was found below this inner extension). However, it was impossible to compare bonding patterns between the inner and outer extensions because of later obscuring fortifications whilst no data pertinent to the date of the various parts of the construction was obtainable owing to the destruction or serious disturbance of any occupation levels and structures linked to the inner extension. Thus, a number of questions were left open. First of all, when was the core-wall built? How much later is the inner extension, which was built clearly later than the early 19th Dynasty? And finally, was the outer extension built at the same time as the inner one?

To explore these questions, “wall 1” was sectioned again in 2010 (area 9 in Fig. 1). Here, a series of round and oval pits (Fig. 21), apparently modern-day, had destroyed much of the surface. The holes are round and extremely regular, almost as if they had been drilled (as indeed they may have been when the tell was occupied by a military camp in the 1960s–1970s). Both the wall-core and the inner and outer extensions were discernible in the section which intersected at an angle to the wall, following the trench dug in 2000 for the

³¹ PETRIE and DUNCAN 1906, 28 ff., pl. XXXV.

³² PETRIE and DUNCAN 1906, 28.

³³ PETRIE and DUNCAN 1906, 32, pl. XXXIIIA.

³⁴ Cf. e.g. LICHTHEIM 1975, 103–104.

³⁵ PETRIE and DUNCAN 1906, 3–9.

³⁶ MORRIS 2005, 504–508.



Fig. 19 Section through “wall 1” in area 4 (photo J. Hudec)

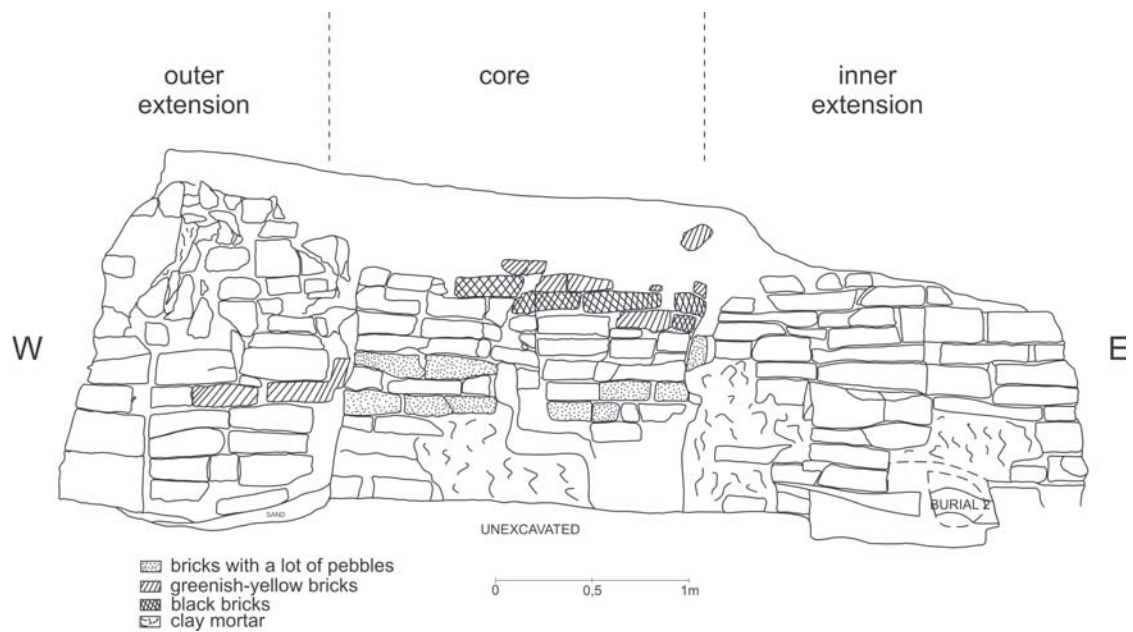


Fig. 20 Section through “wall 1” in area 4 (drawing by K. Górka)



Fig. 21 Area 9, view from a kite camera: “wall 1” damaged by numerous round pits, storerooms abutting its inner face and brick pavement along the outer face (photo M. Bogacki)

present-day road (Fig. 23). The wall was 5.8 m thick, approximately 0.5 m more than in area 3 (Fig. 22), but interestingly, the extensions in both areas, 3 and 9, had the same size: of approx. 1.9 m thickness for the inner one and approx. 1.6 m for the outer one. The difference in width related to the core, being 2.4 m thick in area 9 compared to approx. 1.9 m in area 3.

The extensions were constructed in sections, which differed in the bonding pattern and the colour of the bricks used (cf. Figs. 24, 25). Two types of bonding can be observed: 1) interchangeable layers of erect headers and level stretchers; 2) level headers and level stretchers. Bonding patterns were not strictly followed in the foundations. The sections with different bonding were clearly discernible on the outer face of “wall 1”, but they were also observable on the (less well preserved) inner face (Fig. 25). The length of such sections apparently varied. On the inner face, a section with bonding of the second type was approx. 4 m long,

while a section with bonding of the first type visible on the outer face was at least 10 m long. However, the overall similarity of the bonding patterns and kind of bricks used in both extensions leave no doubt that the two extensions were built simultaneously.

A *terminus post quem* for the extensions of “wall 1” later than the early 19th Dynasty had been provided by the infant burials found under the wall. Pottery dates from storerooms, which abutted the inner face of “wall 1” and which were found to be part of the same construction phase as the extensions (see section 1.5 below), now elicited a dating of the construction to the time of Ramesses II. This king’s involvement in the (re)building of the fortress at Tell el-Retaba had been evidence since Petrie’s finding of decorated stone blocks from a temple built by the pharaoh, as well as a statue and stela of this king.³⁷

Excavations in area 9 also provided important additional evidence for dating of the wall-core. An

³⁷ PETRIE and DUNCAN 1906, 29–30, pls. XXVIII–XXXII.

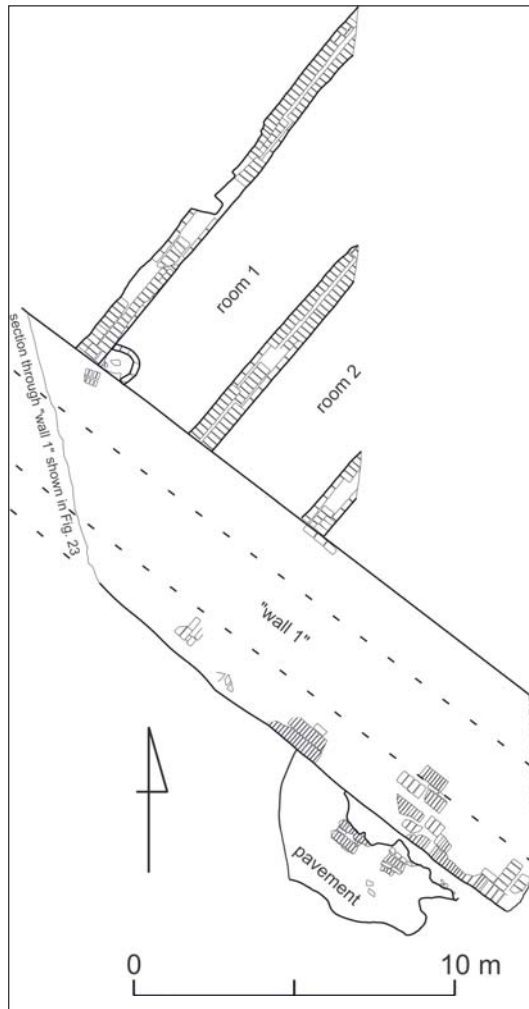


Fig. 22 Plan of 19th dynasty structures in area 9 (drawing K. Górka, Ł. Jarmużek)

ash-rich deposit containing 19th Dynasty ceramics was excavated under the core. It demonstrated the approximate contemporaneity of the wall core and the extensions, disproving assumptions made in 2009 that the core represented walls of the 18th Dynasty fortress. Approximate contemporaneity does not necessarily, though, mean simultaneous construction, as indicated by a pavement of a single layer of mud bricks (cf. Fig. 22) observed on the outside of “wall 1”. Brick rows were aligned flush with the face of “wall 1”, but the pavement did not abut the wall. It was interrupted approx. 0.3–0.5 m in front of the outer extension face. The gap should be interpreted as the remains of a foundation trench dug into the pavement alongside the core of the wall at the time the extension was added. As a result, the core is older than the extensions, but not by much. A date for building the wall-core in the reign of Seti I can be assumed (although only finding relevant epigraphic material can prove it). This king is known to have been active in fortifying the Ways of Horus,³⁸ so it is tempting to see him as the one who also fortified the second route between Egypt and Palestine. His son and successor continued his work, renovating the fortress, strengthening the fortifications and building (enlarging?) a temple of Atum.

Rubble several centimetres thick from the fortress was found deposited on the said pavement outside the defence wall. It included a fragmentary disc made of calcite, flat-convex in section, approx. 5 cm in diameter and 1 cm thick (Fig. 26) which could be taken as indirect evidence of chariots being stationed at Tell el-Retaba during the reign of Ramesses II. The object looks like an ordinary

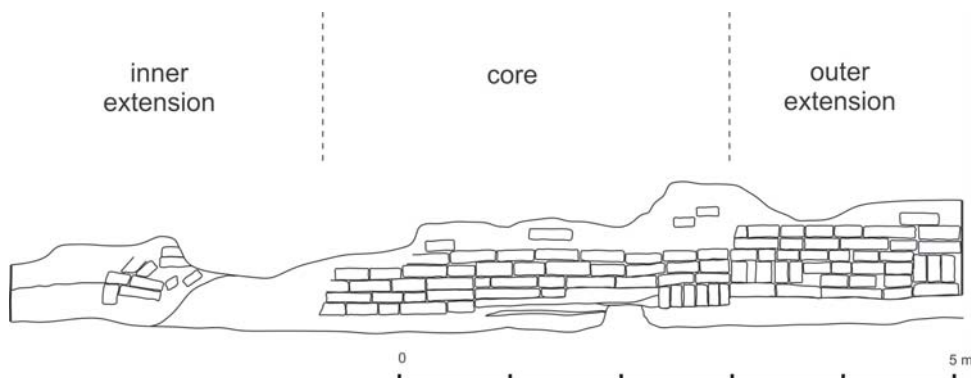


Fig. 23 Section through “wall 1” in area 9 (drawing K. Górka, Ł. Jarmużek)

³⁸ GARDINER 1920; MAKSOUH 1998; HOFFMEIER 2006.



Fig. 24 Outer face of “wall 1” in area 9 (photo S. Rzepka)

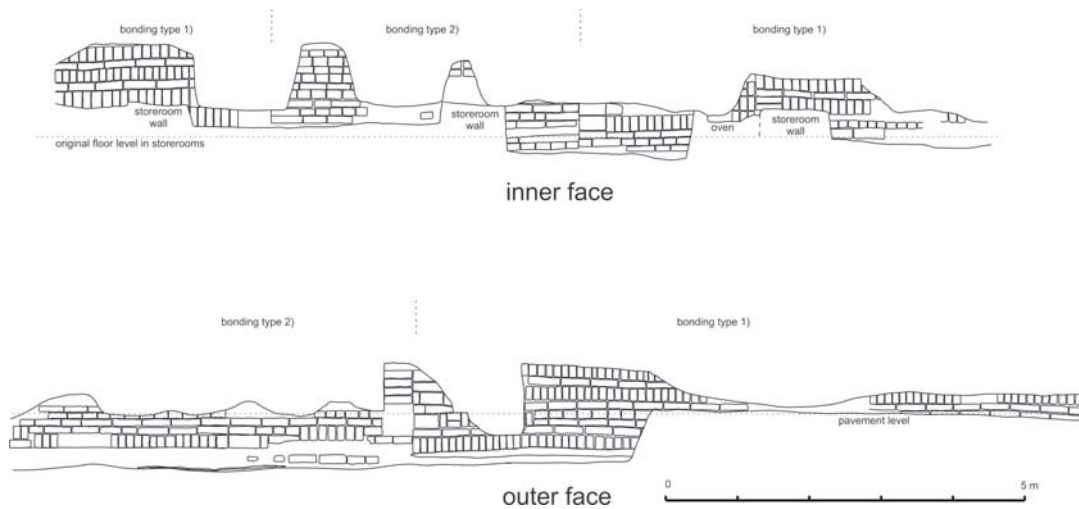


Fig. 25 Outer and inner faces of “wall 1” in area 9 (drawing K. Górka, Ł. Jarmużek)

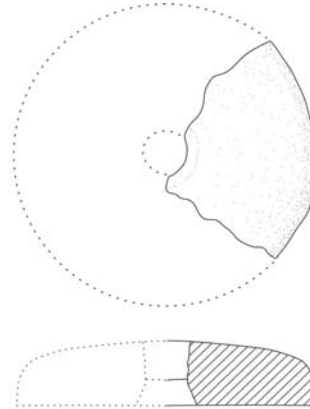
spindle whorl but, as shown convincingly by Herold on the strength of finds from Qantir, it must have been a device used to protect the ends of the wooden frame of a chariot. In size, proportion and biconical drilling, our object fits very well into

Herold’s “Abschlusscheiben” category.³⁹ Chariots in a big and important fortress like Retaba seem a fairly logical and direct assumption, but the disc is the first material evidence of their presence to be found.

³⁹ HEROLD 2006, 8, 116–117, 128, 214–245.



Fig. 26 Fragment of a calcite "ending disc" ("Abschlussscheibe") from a chariot (photo C. Baka; drawing M. Piorun, Ł. Jarmużek)



1.5. Storerooms of the fortress of Ramesses II

By Sławomir Rzepka

A large building was found abutting the inner face of "wall 1" in area 9. Two rooms were partly excavated in 2010 (cf. Figs. 21, 22, and 27). Up to

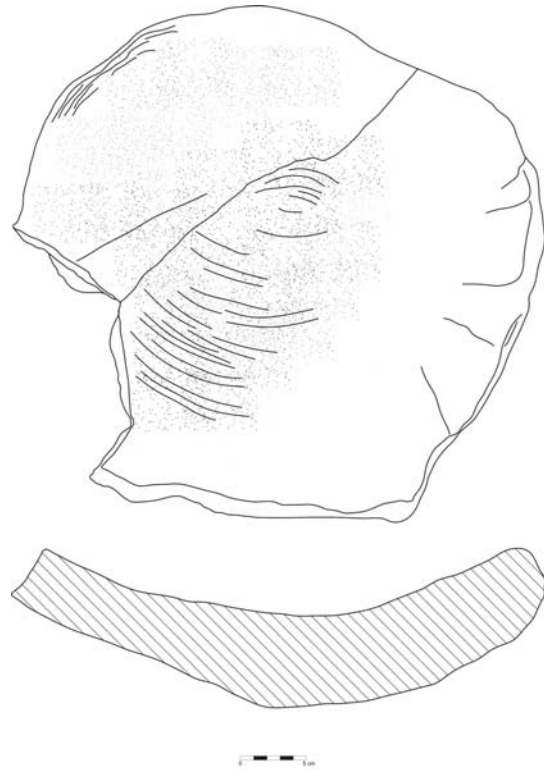
seven courses of bricks were preserved in the walls, three in the foundations and four above the original occupation surface. The rooms were 3.5 m wide and at least 13 m long (the full length has not been excavated this season). Further similar units can be expected to the south, but evidently not to



Fig. 27 Storerooms of the fortress of Ramesses II in area 9, looking northwest (photo S. Rzepka)



Fig. 28 Quartzite quern S669 found in the storerooms (photo C. Baka; drawing B. Adamski, Ł. Jarmużek)

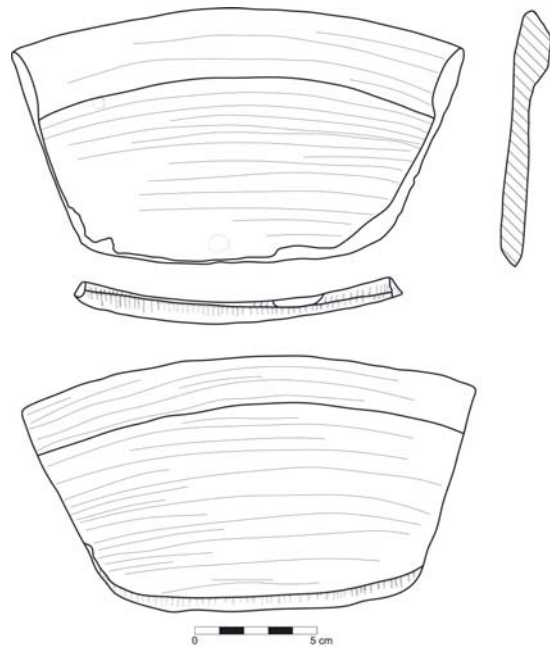


the north where a small test dig at the expected length of the division, 3.5 m, revealed no trace of walls.

A structure consisting of long, narrow and uniform-size rooms finds many parallels in Egyptian architecture and is identifiable as storerooms. A large quartzite quern (S 669, Fig. 28) found on the floor in room 1 may suggest a processing function, besides storage. This could point to a multifunctionality of the building from the outset. At a later stage, it was evidently converted into a workshop, as indicated by a set of more than a dozen scrapers made for the most part of hard, marl clay potsherds (S676, S 682, S714, Figs. 29–30). Objects of a similar kind have been found in comparable contexts at Qantir⁴⁰ and interpreted as tools for tanning



Fig. 29 Pottery scraper S676 found in the storerooms (photo C. Baka, drawing M. Piorun)



⁴⁰ RAEDLER 2007.



Fig. 30 Pottery scraper S714 found in the storerooms (photo C. Baka)



Fig. 31 Siltstone scraper S705 found in the storerooms (photo C. Baka)

animal hides. A shallow triangular pit (dug in the floor of room 1 and later filled with clean sand) could be linked to this work, as could also an oven (installed at this stage in the corner of room 1) and fireplace, as well as the remains (actually only white traces) of a reed mat covering the floor in room 2. The absence of cooking pots in these layers suggests more of a craft than domestic function for the former storeroom.

Objects with sharp working edges similar to the pottery scrapers but made of siltstone (S705, S717, Figs. 31–32) were also found in this context. If they are indeed, as they appear to be, re-used Predynastic or Archaic cosmetic palettes, then their original provenance raises interesting questions. A survey carried out by a German mission at Wadi Tumilat in 1930 allegedly found a number of flint tools from “prehistoric times” as well as pottery from the Old Kingdom.⁴¹ Neither the Canadian survey⁴² nor our investigations could confirm this early an occupation of the site. The nearest site, at which Archaic period remains are undoubtedly present, is Kafr Hassan Dawood, about 10 km southwest of Tell el-Retaba.⁴³

Another noteworthy find from the workshop is a hieratic ostrakon (S 668, Fig. 33) found in room 1. It is fragmentary with only three lines of poorly preserved inscription. It may have been an amphora docket.

Apparently similar storerooms were discovered in areas 3 and 5 (Fig. 34). The excavated walls



Fig. 32 Siltstone scraper S717, found in the storerooms (photo C. Baka)

outlined the pattern of a very elongated rectangular room of exactly the same width, that is, 3.5 m, as the storerooms in area 9. The west wall was 0.9 m wide, just like the walls in area 9, but the east one was much thicker (1.2 m). This in itself is understandable, assuming it represented an outer wall. Wall orientation paralleled closely that of “wall 1” in area 4. It is likely, therefore, that the sequence of long rooms continued westward, ending close to “wall 1”. Since only wall foundations have been preserved under a levelling layer of gravel, it can be surmised that the structure was intentionally demolished. The levelled ground was subsequently used to plot the road leading from the late Rameside migdol.

⁴¹ SCHOTT *et al.* 1932, 44.

⁴² HOLLADAY 1982; REDMOUNT 1989.

⁴³ TASSIE and WETERING 2003; cf. also the website: <http://www.e-c-h-o.org/khd/>.



Fig. 33 Ostracon S668 found in the storerooms
(photo M. Bogacki, drawing S. Gromadzka)



Following these two work seasons , we have gained a glimpse, despite the limited extent of the excavated area, into the internal architecture of the fortress of Ramesses II, consisting of the defence wall (“wall 1”) and storerooms in areas 9 and 3 and 5 (Fig. 35).

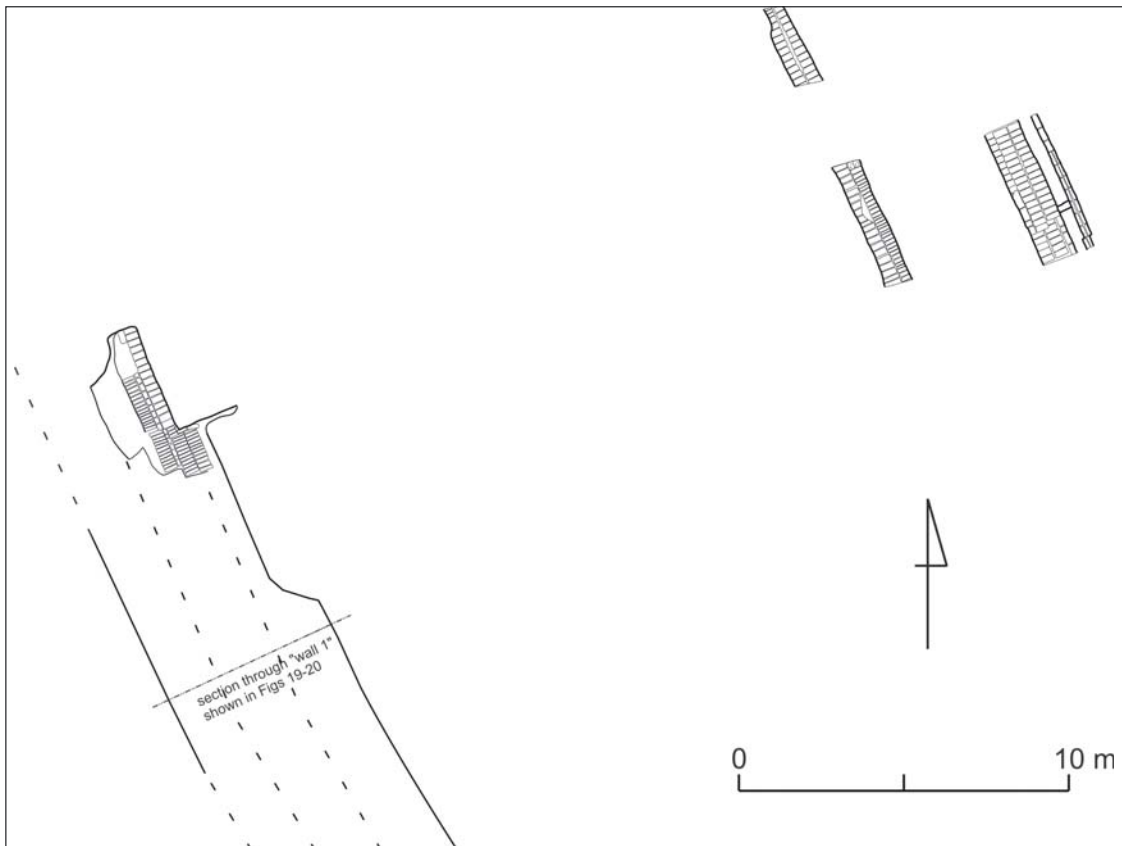


Fig. 34 Plan of 19th dynasty structures in areas 3, 4 and 5 (drawing Ł. Jarmużek)

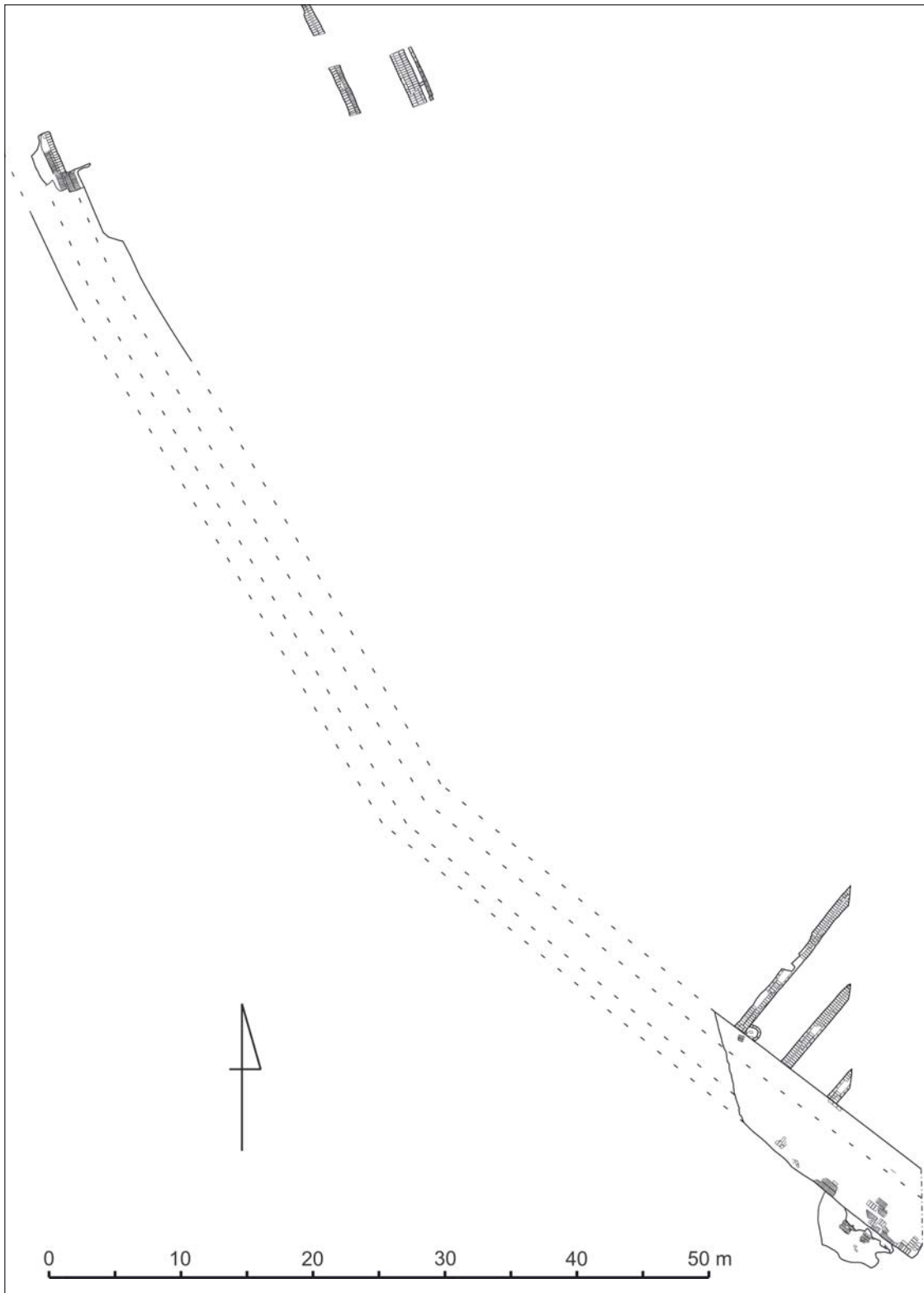


Fig. 35 Plan of all 19th dynasty structures documented in the western part of the tell (drawing Ł. Jarmużek)

1.6. Ramesside reliefs

By *Slawomir Rzepka*

Remains of relief decoration in the form of figural scenes and parts of monumental hieroglyphic inscriptions figural scenes are preserved on five of the tethering stones discovered in the Third Intermediate Period stable (cf. section 1.1 above). Tethering stone S633 (Fig. 36) bears decoration on two adjacent surfaces: two columns of inscription on one surface and a hieroglyphic sign of similar size on the other. The original stone must have been part either of a door jamb or a pillar. Judging by the symmetrical distribution of the hieroglyphs, the face of the block with two columns of inscription preserves the original width of this door jamb/pillar, which was 52.5 cm, i.e., exactly one royal cubit. It is noteworthy that tethering stone S626 (Fig. 37) is of the same height and bears a fragment of an inscription in large, deeply sunk hieroglyphs. In this case, although only a small part of the original text is preserved, one can easily recognize a common royal epithet: *nb ḥꜣw*, i.e., the lord of diadems. Regarding the size of blocks and the form of inscriptions preserved on them, it seems quite probable that both tethering stones S633 and S626 were made from the same architectural element, a door jamb or pillar which, on at least one of its faces, was covered with a monumental inscription listing royal names and epithets.

The relief on tethering stone S545 is a fragment of the torso and arms of a figure facing right, executed in deep sunken relief (Fig. 38). It appears to be a fragment of an offering scene in which the king holds the offering with both his hands raised. The figure of the king must have been about 120 cm high (without the crown) and the register, of which the scene was part, was at least 150 cm high.

A sunken relief on tethering stone S630 shows a cloaked figure, facing left, seated on a throne on a low dais, holding a composite staff in his hands (Fig. 39). The head is not preserved, but the iconographical features allow identification of the figure as the god Ptah. His figure is considerably smaller (the original height can be estimated at about 35 cm) than the king's figure on S545. The relief used here is also much shallower. These two fragments cannot be part of one composition. They belonged either to the wall decoration of different rooms of a temple, decorated with reliefs of different scales, or the relief on S630 did not decorate a wall, but a much more limited surface, a door jamb, lintel, pillar or niche, for example.

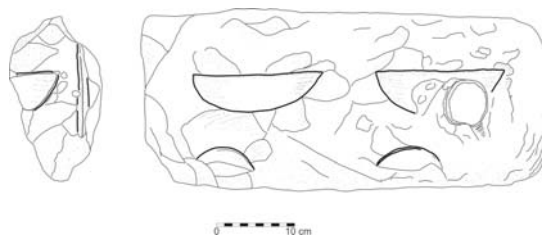
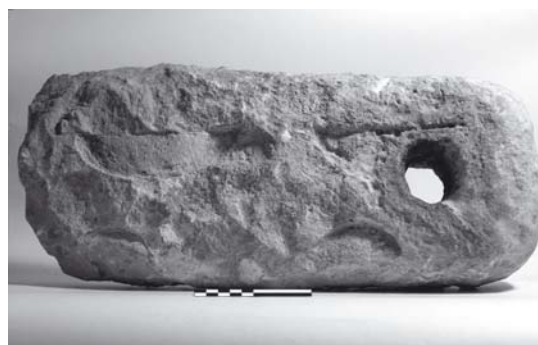


Fig. 36a Tethering stone S633 with fragments of hieroglyphic inscriptions on two faces (photo C. Baka, drawing B. Adamski, Ł. Jarmużek)

A small fragment of raised relief on tethering stone S619 (Fig. 40) is difficult to interpret. The relief is obscured by thick salt incrustations on the surface. It is possible that the fragment shows the tip of a toe with baseline. The design technique is noteworthy, as no decoration in raised relief has so far been found at the site.



Fig. 37 Tethering stone S626 with hieroglyphic inscription (photo C. Baka)



Fig. 38 Tethering stone S545 with remains of figural decoration (photo C. Baka)



Fig. 39 Tethering stone S630 with remains of figural decoration (photo C. Baka)



Fig. 40 Tethering stone S619 with remains of figural decoration (photo C. Baka)

This discovery of decorated blocks, re-used in the late Third Intermediate Period stable as tethering stones, must raise the question of their original context. Three groups are distinguishable among the finds:

- Blocks from an Atum temple built by Ramesses II;⁴⁴

⁴⁴ PETRIE and DUNCAN 1906, 29, 31, pls. XXIX–XXXI.

⁴⁵ PETRIE and DUNCAN 1906, 31, pl. XXXI.

- Block with the figure of Ramesses III, possibly from the enlarged Atum temple;⁴⁵
- Doorjamb with inscriptions of Usermaatra-nakht, belonging either to his tomb⁴⁶ or, more probably, to his house or office.⁴⁷

The recently found fragments belong in all likelihood to group 1) or 2) and not to group 3). Reliefs on stones S545 and S630 showing an offering king and a god are surely parts of temple decoration. Monumental inscriptions with the royal protocol on S633 and S626 also fit well into this context, but they cannot be discounted as part of one of the gates in the defence walls. Unfortunately, no fragments of royal names have been preserved. Thus it

⁴⁶ PETRIE and DUNCAN 1906, 31, pl. XXXI.

⁴⁷ BUDKA 2001.

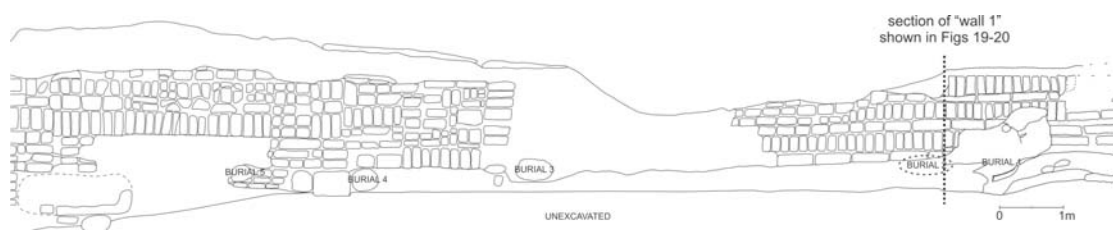


Fig. 41 Inner face of “wall 1”, with location of infant burials beside and beneath the wall (drawing K. Górka)

is not possible to connect them with either Ramesses II or Ramesses III. In the late Third Intermediate Period the Atum temple had apparently already been destroyed and used as a source of building material.

1.7. Early 19th Dynasty infant burials

By Sławomir Rzepka

Remains of six infant burials were discovered in area 4 in 2009.⁴⁸ In three cases, the skeletons in the jars were almost completely preserved. One skeleton was found without a jar and another evinced an incomplete burial (only the skull was preserved). One oval pit was found empty, the burial having evidently been removed from it. All of the burials were located close to Petrie’s “wall 1” (cf. above, section 1.5.), some of them under this wall (cf. Figs. 19–20). All were deposited on approximately the same level (as can be seen in the drawing of the eastern face of “wall 1”, Fig. 41). The children buried here were about 10–12 months’ old.



Fig. 42 Infant burial 1 (photo K. Górka)

Burial 1 (Fig. 42)

Amphora made of marl fabric, type A4. Dimensions: height 45 cm, neck diameter 9 cm, body diameter 20 cm. Base smashed. Handles positioned vertically. Exterior smoothed, interior uncoated.

The jar was lying on its side, the mouth pointing north-west. Several sherds of other vessels were found nearby. These may have been part of the original burial equipment. No architectural remains of a tomb were observed.

The skeleton inside the jar was placed on its right side with the head near the mouth of the vessel. The legs were pulled up to the chest. The tibia and feet bones were missing. The bones were very fragile.

Burial 2 (Fig. 43)

Amphora made of marl fabric, type D. Dimensions: height 48 cm, body diameter 22 cm. Neck and base broken. Handles positioned vertically. Exterior covered with cream slip and burnished, interior uncoated.

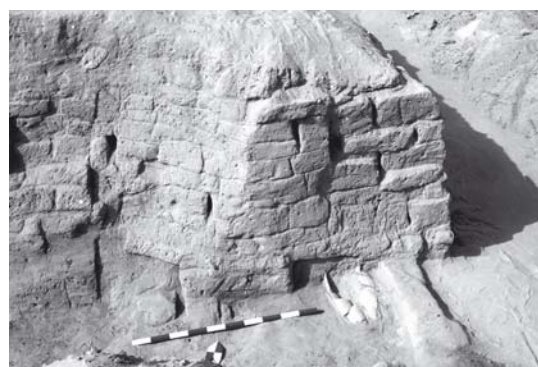


Fig. 43 Infant burial 2 (photo K. Górka)

⁴⁸ Detailed report on the infant burials and their analysis will be published in: GÓRKA and RZEPKA forthcoming.



Fig. 44 Infant burial 4 (photo K. Górka)

The jar was lying on its side, the neck pointing to the north-west. It was deposited in an ashy layer. A single row of bricks observed east of the jar could have been the sole remains of an almost completely destroyed small burial chamber. No objects were found near the burial.

The head of a child was near the mouth of the jar. The body was on its left side. Skull broken, bones very fragile.

Burial 3

Only fragments of a child's skull were identified from a burial probably destroyed during the modernization of the asphalt road in 2000. Apparently the child had not been placed inside a jar.

Burial 4 (Fig. 44)

Amphora made of marl fabric, type D. Dimensions: height 60 cm, neck diameter 12 cm, body diameter 25cm. Base smashed. Handles positioned vertically. Exterior covered with cream/pink slip and burnished, interior uncoated.

Rim directed to the southeast, facing "wall 1", partly under it. The amphora was deposited in a dark, ashy layer. Sherds of three other vessels found nearby, possibly remains of burial equipment. The head of the corpse was directed towards the mouth of the jar. The body had been laid on its back. The leg bones were found near the chest in an unnatural position. Very fragile bones.

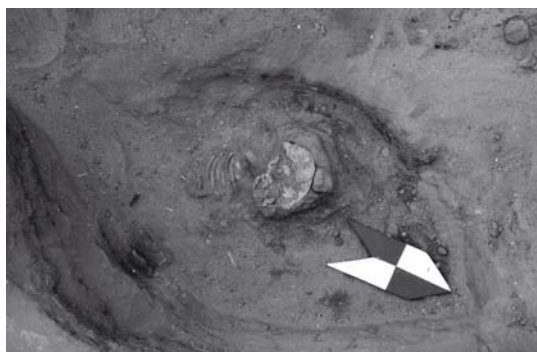


Fig. 45 Infant burial 6 (photo K. Górka)

Burial 5

An empty oval pit which by its size and shape can be considered to have contained a burial in an amphora. The pit had been clearly disturbed from the east end. The jar may have been removed in antiquity or (more probably) during the Egyptian rescue excavations in 2000 (these excavations preceded a major reconstruction of the road). The oval pit extended north-south and was dug in an ashy layer.

Burial 6 (Fig. 45)

Burial without a jar, placed farther from the wall than the others. The head points north and the body was in a contracted position on the left side. Some sherds were found beside the body.

The jars (Fig. 56) were dated to the early 19th Dynasty (cf. section 2 below).

This infant cemetery is proof of the existence of a settlement somewhere nearby. Its location, however, remains to be identified.

1.8. 18th Dynasty silos and huts

By Sławomir Rzepka

The earliest archaeologically confirmed occupation of the site is dated to the Second Intermediate Period. The American mission working in 1977–1981 at Tell el-Retaba reached a layer datable to this period at the very bottom of a 7-m deep trial trench dug from the very top of the tell.⁴⁹ The oldest remnants so far discovered by the Polish-Slovak

⁴⁹ The results of this mission have not been published, except for some photos and drawings presented by Michael Fuller,

who participated in the excavations, on his website: <http://users.stlcc.edu/mfuller/Retaba.html> (accessed 16.5.2012).



Fig. 46 Silo in area 3 (photo C. Baka)



Fig. 47 Early 18th dynasty hut in area 3 (photo K. Górka)

Mission refer to the early 18th Dynasty and consist of a relatively large silo (approx. 2.5 m in diameter) constructed of mud bricks (Fig. 46). Only a small section of this layer has been excavated inside a trench, approximately 5 m below ground level and, until more of the context is investigated, it cannot be said whether the silo belonged to a “private estate” (house? hut or group of huts?) or was rather a government-built facility which was part of the first fortress. The diameter and manner of construc-

tion (very thin walls, built of bricks standing on their longer sides) places the Retaba silo among other structures of the kind at Tell Hebua,⁵⁰ which are apparently part of a government-organized structure (dated to the Second Intermediate Period, however, not the New Kingdom).

While there is no archaeological evidence to suggest the existence of an 18th Dynasty fortress at Tell el-Retaba, there is an inscription confirming the existence of a fortress at Tjeku (i.e., Tell el-Retaba)

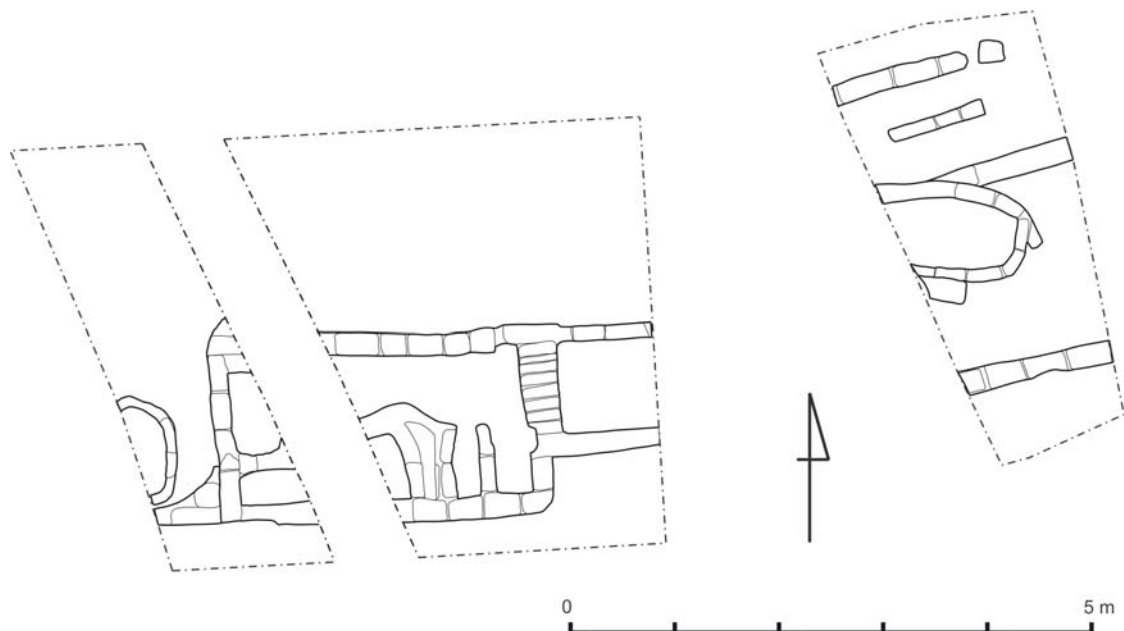


Fig. 48 Early 18th dynasty huts in area 3 (drawing K. Górka, Ł. Jarmużek)

⁵⁰ ABD EL-MAKSOUH 1998, 127, tab. 2, 136, fig. 11, 144, fig. 19.



Fig. 49 Loom weight (?) S615 from early 18th dynasty huts (photo C. Baka)



Fig. 50 Selection of ceramic sherds from the Late Period–Third Intermediate Period layers

in the reign of Thutmose IV.⁵¹ It would be tempting to see this silo as an installation belonging to this early fortress. One could speculate that Ahmose or Thutmose I, both of whom were quite actively involved in Syro-Palestine, may have fortified Tell el-Retaba to guard one of the two main routes linking Egypt with Palestine. This must remain mere speculation, however, until more of the layers belonging to this time frame has been explored.

Judging by the results of excavations in area 3 (which, however, encompassed a very limited area), it seems that after the above-mentioned silo was abandoned, there was an occupational hiatus on the site (or at least a phase of very limited occupation). The ruins of the silo were covered by approximately 20 cm of clean, windswept sand, followed by a thin layer of ash and pottery-rich layer which, in its turn, was covered by approximately 20–30 cm of clean sand. No architectural traces were observed in this phase.

After this period of limited occupation, small huts appeared around the area. They had very thin

walls (Figs. 47–48) and their domestic use is clear from the material found inside and in associated dump pits: a large millstone of quartzite, a set of grinders, a loom weight (Fig. 49). Pottery from the huts can be dated to the first half of the 18th Dynasty. Thus, the occupation hiatus on the site did not last long, but the nature of the occupation seems to have changed. These seemingly poor private houses were clearly not part of a fortress installation planned and built by the state. One can presume the existence of only a poor unfortified settlement at Tell el-Retaba at this point in time.

2. CERAMIC MATERIAL

By Anna Wodzińska

Introduction

Pottery finds were noted in 120 units excavated by the Polish-Slovak team in the 2009 and 2010 seasons. In total 8014 diagnostic fragments of pottery were recorded.⁵² The ceramic material came from all of the areas investigated where remnants of

⁵¹ A graffito from Serabit el-Khadim (IS 60) mentions an “overseer of troops of Tjeku” from the time of Thutmose IV, cf. GIVEON 1978, 172; cf. TALLEY 2003, 463, 471. I would like to thank Claire Somaligno for drawing my attention to this inscription.

⁵² Field drawings of the pottery presented in the article were made by Bartosz Adamski, Cezary Baka, Kamila Braulińska, Joanna Ciesielska, Karolina Górka, Sylwia Gromadzka, Małgorzata Korzeniowska, Malwina Piorun, and Anna Wodzińska. Digital images were prepared by Edyta Klimaszewska-Drabot and Małgorzata Korzeniowska. All photographs were taken by Anna Wodzińska.

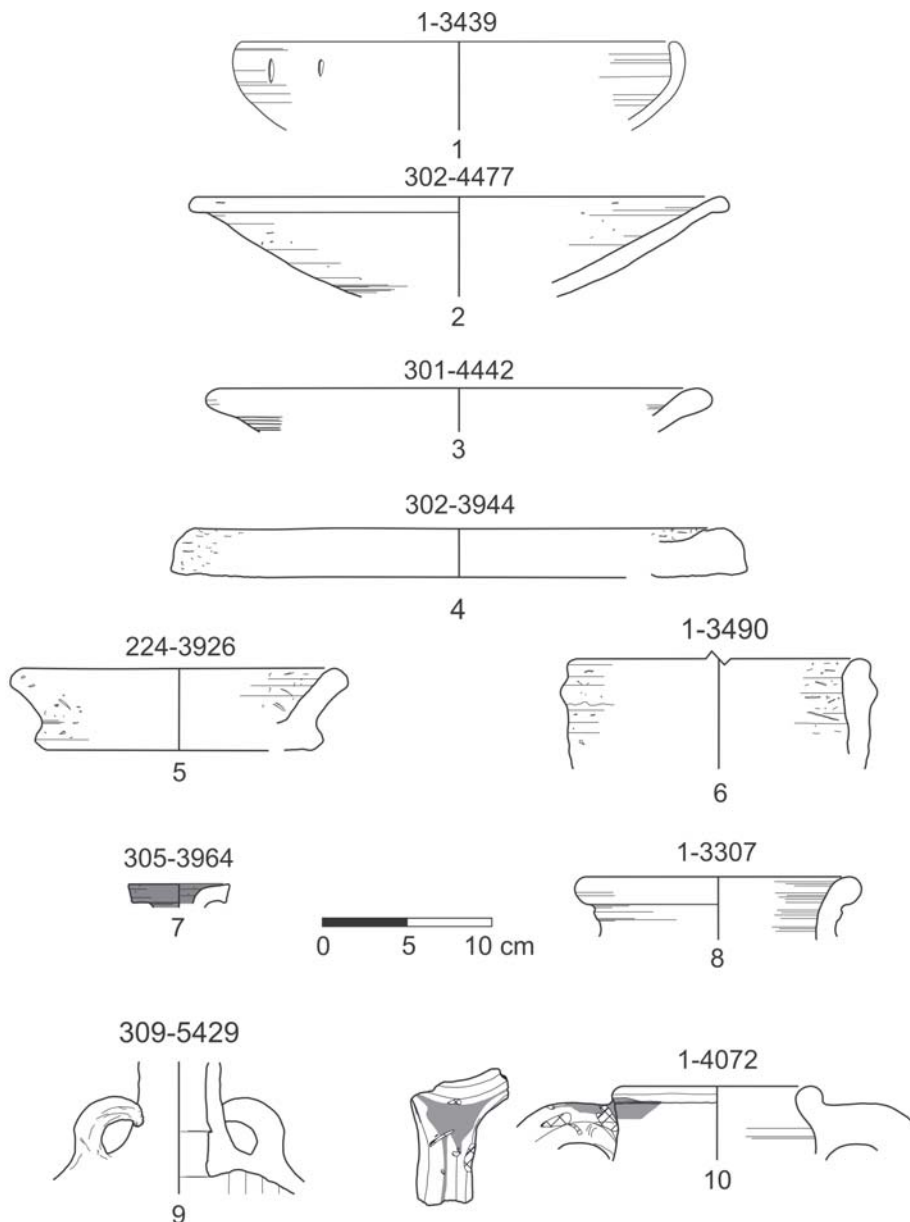


Fig. 51 Ceramic vessel types from the Late Period–Third Intermediate Period layers

Late Period buildings, houses from the Third Intermediate Period and remains of living quarters from the New Kingdom were uncovered. For the first time vessels from the early 18th Dynasty were discovered.

Late Period–Third Intermediate Period

The ceramic material from the top excavated layers came from a much eroded structure of presumed Late Period date. The building was found

directly above houses from the Third Intermediate Period and it seems likely that there has been some disturbance and mixing of earlier and later deposits. The pottery material (878 diagnostic fragments) included large storage jars, coarse basins and flat bread trays (see Figs. 50, 51 for a selection of Late Period/Third Intermediate Period vessels).

Hemispherical bowls with an incurved rim (Fig. 51.1) were made of very well levigated Nile B1 fabric. Their external surface was well

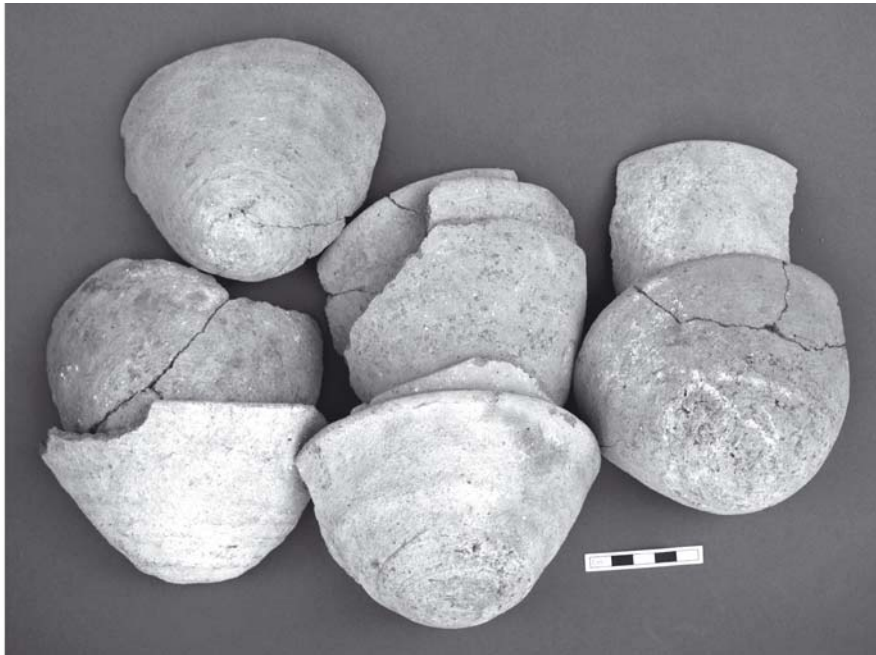


Fig. 52 Small cups from the Third Intermediate Period

smoothed, sometimes burnished with visible traces of using a hard tool on the outside surface.

Bowls with flaring rim made of Nile B2 fabric (Fig. 51.2–3) are very common in the material from the Late as well as Third Intermediate Periods.

Some coarser vessels were also found. Hand-made flat trays (Fig. 51.4) and bowls with thick walls (Fig. 51.5) were probably used as bread moulds.

Coarse basins with a ledge, that is, a narrow clay strip attached to the outside just below the rim, were also identified (Fig. 51.6). These can be dated by parallels from Buto⁵³ and Saqqara⁵⁴ to the 26th Dynasty.

Fragments of jars included a small rim part made of Nile B2 fabric (Fig. 51.7), red-slipped on the outside and partly inside, probably from a pilgrim flask. A round flaring rim fragment made of Nile B2 fabric (Fig. 51.8) was part of a storage jar with well-smoothed outside surface.

Two imported pots are of special interest. A piece of pilgrim flask, a keg (Fig. 51.9), most likely came from the Western Oasis. No rim survives but the long and narrow neck with two handles finds good parallels in Dakhla Oasis⁵⁵ and other sites like Elephantine.⁵⁶ The other fragment is an Archaic Greek amphora (Fig. 51.10) with smoothed surface and red-painted rim and handles. It bears a resemblance to Chian amphorae with so-called “swollen-neck”, dated to 500–480 BC (27th Dynasty).⁵⁷

Third Intermediate Period

Stratigraphic units with the largest quantity of ceramic vessels (5590 diagnostic fragments) were dated securely to the Third Intermediate Period.⁵⁸ The vessels were usually made of Nile fabrics (98%), especially B2.

A frequent component of the assemblage is a small conical cup probably used for drinking (Figs. 52 and 53.1–3).⁵⁹ Cups of this kind, made of

⁵³ FRENCH 2004, 93–94, 97, fig. 1, type 7.

⁵⁴ FRENCH and GHALY 1991, 112, fig. 55.

⁵⁵ HOPE *et al.* 2000, fig. 3, especially b-d described as “large two-handled flasks with tall necks of type A3.”

⁵⁶ ASTON 1999, 186–188, no. 1701, dated to the mid 8th and 7th centuries BC.

⁵⁷ DUPONT 1998, 150–151, fig. 23.2d.

⁵⁸ See also WODZIŃSKA in: RZEPKA *et al.* 2009, 268–273.

⁵⁹ ASTON 2007b, fig. 42, nos 446–481. See also WODZIŃSKA in: RZEPKA *et al.* 2009, 268, 270, fig. 30.9.

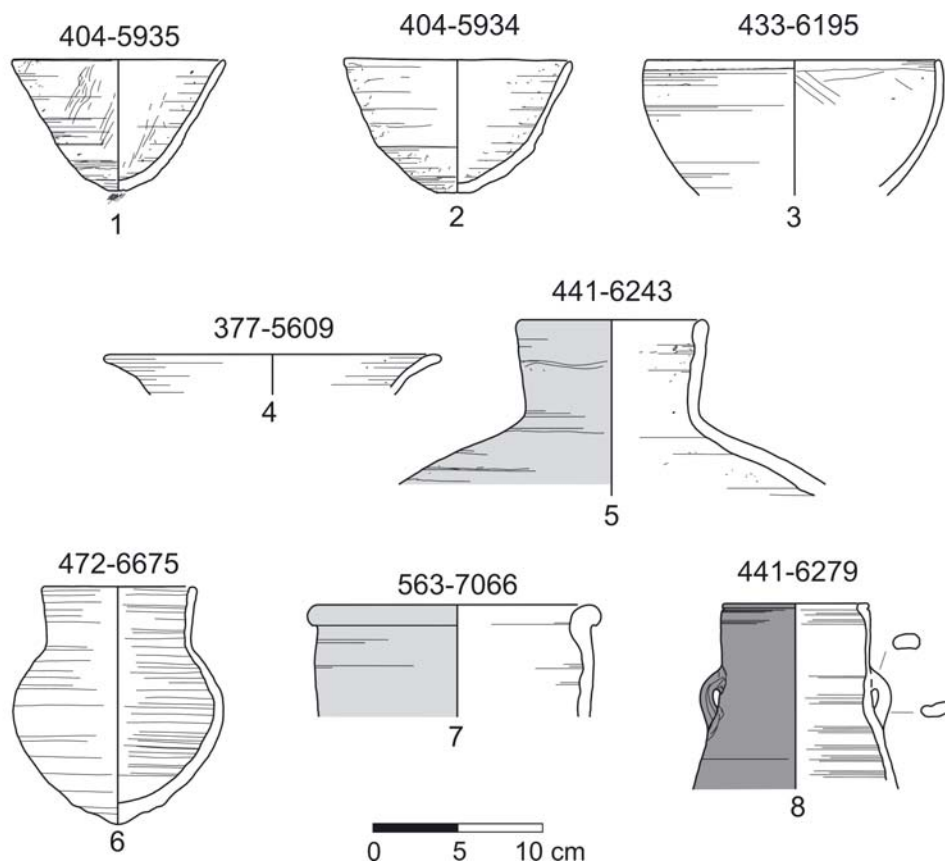


Fig. 53 Selection of ceramic sherds from the Third Intermediate Period

Nile B2 fabric, were mass-produced on the wheel in a standardized process. Evidence of the use of a hard tool, possibly of wood, for shaping the base can be observed on the lower parts of pots, outside and on the base itself (see Fig. 53.1). The bottoms were frequently cut from the wheel with such a tool.

Another common ceramic type consisted of large bowls with flaring rims (Fig. 53.4). Such vessels were well known at Tell el-Retaba⁶⁰ and in other parts of Egypt.⁶¹

A small complete jar with short cylindrical neck, globular body and nipple base (Fig. 51.6) was found in area 3, in the remains of a house. According to Aston, such jars were common during the Third Intermediate Period, also later, especially in the 26th and 27th Dynasties.⁶²

Many jars with cylindrical necks and round rims were characteristic of the period. Some of them had a pinkish slip coating on the outside (Fig. 53.5 and 7). Parallels have been noted in Memphis, for instance.⁶³

A unique jar made of very well-levigated Nile A-B1 fabric was found in area 4. The external surface was red-slipped and burnished. The shape (Fig. 53.8) was reconstructed from several fragments. There were at least two small handles attached at the point where the long cylindrical neck joined the body.

A large jar made of Nile B2 fabric and coated on the outside with thin red slip was found *in situ* in a Third Intermediate house in area 3 (Fig. 54.1). It was part-sunk into the ground for storage purposes.

⁶⁰ WODZIŃSKA in: RZEPKA *et al.* 2009, 268, 270, fig. 30.7–8.

⁶¹ ASTON 2007b, fig. 40, nos. 415–417, fig. 41, nos. 423–439.

⁶² ASTON 1999, 170–173, nos. 1591–1995.

⁶³ For fig. 53.7 see ASTON 2007b, fig. 49, no. 573, also fig. 51, nos. 593–597.

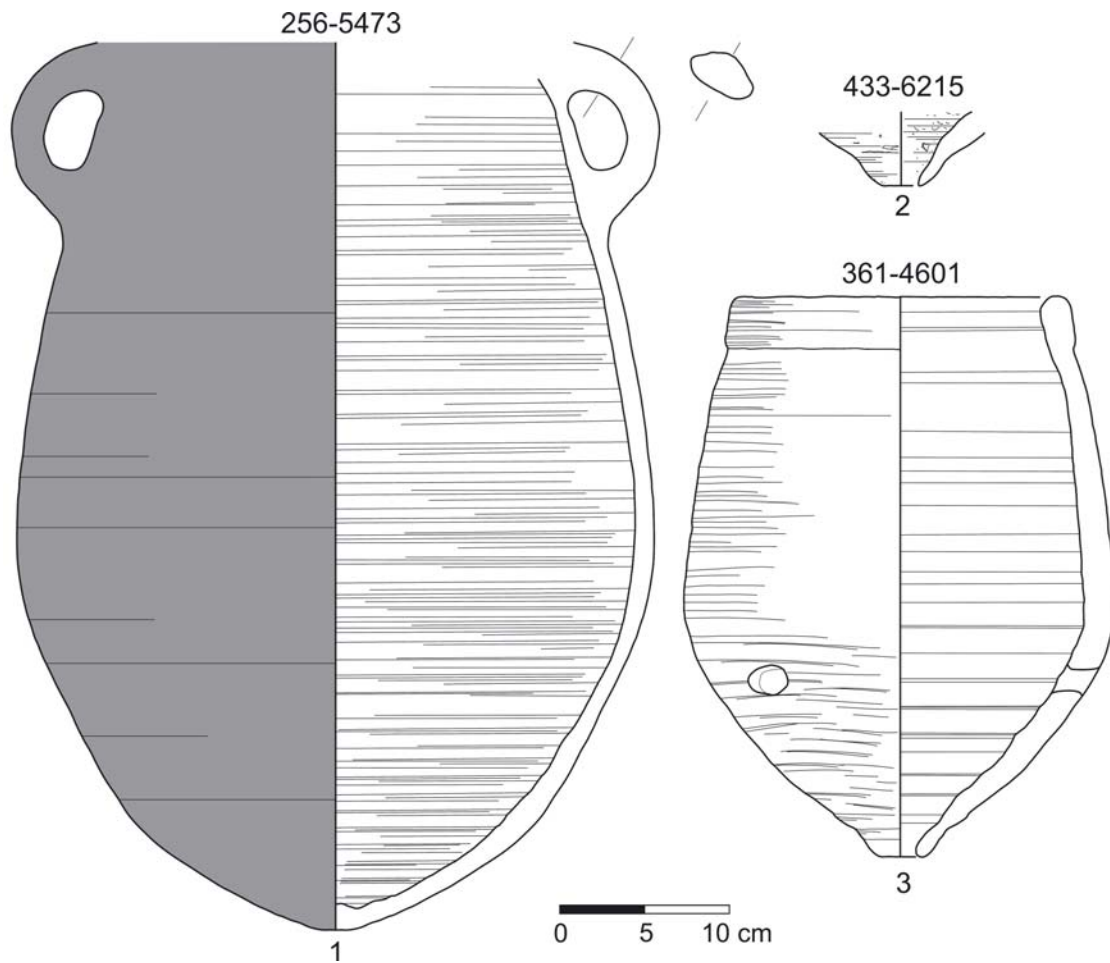


Fig. 54 Large storage jar and pigeon pots from the Third Intermediate Period

Many fragments of so-called pigeon pots were discovered (Fig. 54.2–3), including an almost complete one from area 4. The uncoated pot is made of Nile B2 fabric. A hole was pierced in the lower part of the body before firing. Such vessels are well known from domestic areas at Tell el-Retaba,⁶⁴ but also from other sites, such as Memphis⁶⁵ and Tanis,⁶⁶ for instance.

Third Intermediate Period pottery was found in domestic contexts, mostly rooms of not fully uncovered houses. The pots are indicative of various

activities, including cooking, food serving and drinking. Ceramic material has also dated the stable in area 6,⁶⁷ especially its later phase. Altogether 101 diagnostic fragments were recorded in the structure. Bowl and jar frequency in this assemblage, 52% and 46% respectively,⁶⁸ replicates the general ceramic statistics for the Third Intermediate Period at Tell el-Retaba. It is interesting, however, that many bowls with flaring walls (Fig. 53.4.) were found in the floor context of the stable, but only two of the small conical cups (Fig. 53.1–3) which are other-

⁶⁴ WODZIŃSKA in: RZEPKA *et al.* 2009, 273, fig. 32.19.

⁶⁵ ASTON 2007b, fig. 50, no. 584.

⁶⁶ BAVAY 1998, 323–324, fig. 34, no. 41.

⁶⁷ See contribution by ŁUKASZ JARMUŻEK in this volume.

⁶⁸ 2% of the vessels were too fragmentary to be classified securely as either bowls or jars.

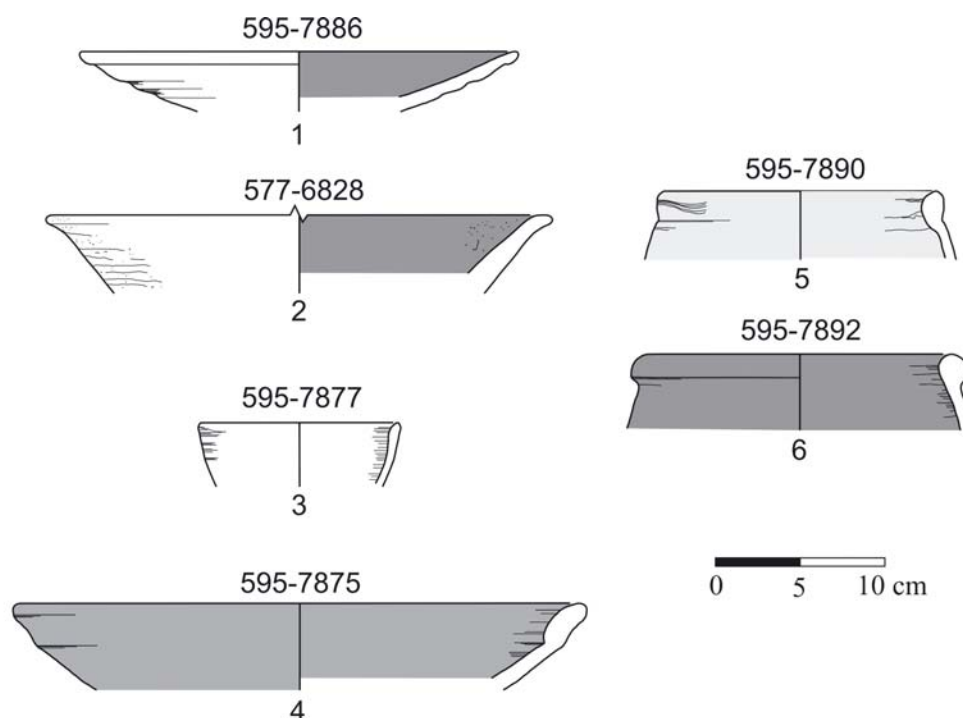


Fig. 55 Selection of ceramic sherds from the New Kingdom (early 19th Dynasty)

wise so common in Third Intermediate contexts. These small vessels could have been used as drinking cups. The space identified as a stable was clearly used to keep animals. People, if they stayed there, did so occasionally. Larger bowls may have been used to serve food to animals or for milking, assuming cows or female goats had been kept there.⁶⁹

New Kingdom – 19th Dynasty

Units from the time of the 19th Dynasty, the reign of Ramesses II in particular, found immediately under the Third Intermediate Period levels, produced 588 diagnostic ceramic sherds. About a quarter of these (25%) represented marl fabrics, especially Marl D.

Bowls of various sizes made of Nile B2 covered with red slip (Fig. 55.1–2) were typical of the period.⁷⁰ The red slip was usually applied on the

inside of the vessels, although sometimes also on the outside.

There were two examples of marl bowls: a small cup made of Marl A3 with well-smoothed surface (Fig. 55.3) and evidence of burnishing on the outside, and a large bowl made of Marl D, cream/pinkish-slipped and burnished, featuring a slight carination and thickened rim (Fig. 55.4). This was one of the commonest open forms from Ramesside layers,⁷¹ beside the so-called meat jars, also made of Marl D. A meat jar with cream slip, burnished on the outside (Fig. 55.5) finds numerous parallels in Qantir.⁷² Tell el-Retaba bowls with thickened rim and meat jars were very often re-used and reshaped into scrapers.⁷³ Similar scrapers have also surfaced at Qantir.⁷⁴

Storage jars made of Nile B2 fabric (Fig. 55.6) were covered with red slip and smoothed. They

⁶⁹ I would like to thank Richard Redding for suggesting that the Tell el-Retaba stable might have been used for milking goats.

⁷⁰ ASTON 1998, 124, nos 206–219; also WODZIŃSKA in: RZEPKA *et al.* 2009, 267–268, fig. 29.1–2.

⁷¹ See also in Qantir – ASTON 1998, 466–467.

⁷² ASTON 1998, 478–486.

⁷³ MALWINA PIORUN in preparation.

⁷⁴ RAEDLER 2007.

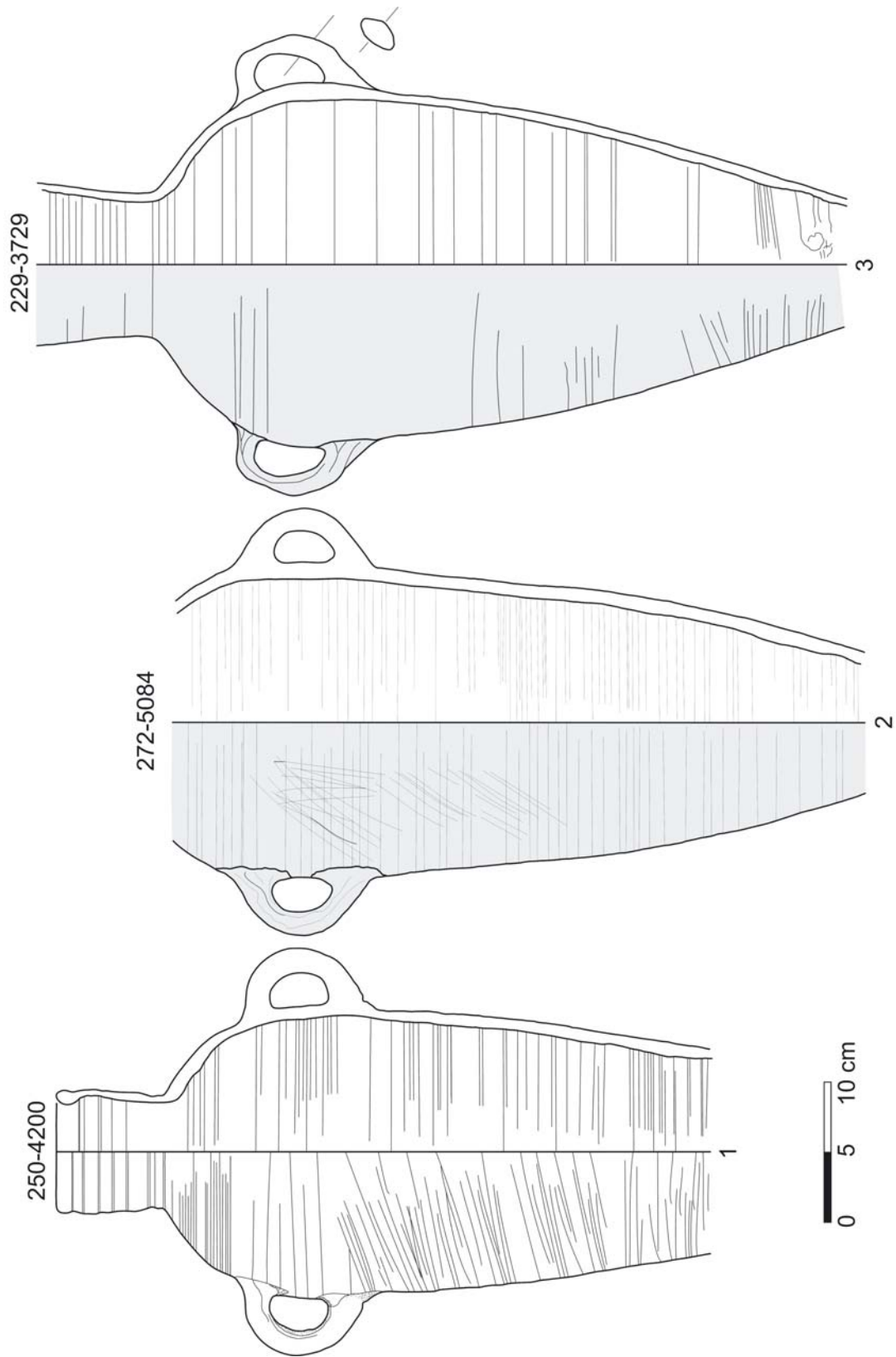


Fig. 56 Wine amphorae used as coffins for children

have been noted previously in other parts of the Tell el-Retaba kom, in area 1.⁷⁵ Some handles and bases of wine amphorae made of Marl D with cream slip on the outside were also identified.⁷⁶

The Ramesside ceramic material found at Tell el-Retaba, especially in area 9, resembles pottery forms⁷⁷ and fabrics⁷⁸ from Qantir. The similarity is reinforced by the apparent use of scrapers made of reused ceramic vessels.⁷⁹

The 19th Dynasty ceramics came from layers associated with Ramesside domestic structures in area 9, namely, long parallel walls built against the enclosure wall (Petrie's "wall 1").⁸⁰ Two rooms separated by three walls contained bowls for serving food, also some storage jars, like meat jars. Fragments of wine amphora implied storage, but also consumption of wine. These long rectangular units are likely to have served a variety of purposes. Originally intended as storage facilities, they later turned into workshops for different crafts and even dining-rooms. No ostensible cooking pots were recorded in the area.

Large New Kingdom wine amphorae found in area 4 were used as coffins for burying children (Fig. 56). Such coffins were placed near the enclosure wall (Petrie's "wall 1").⁸¹ The vessels are slender with two small handles attached to the upper part of the shoulder, each stripped of the base which had to be removed in order to insert the body for burial. Only one amphora had a preserved rim (Fig. 56.1). The amphorae were usually made of Marl D fabric with an external cream/pinkish slip (Fig. 56.2–3). The necks and shoulder were burnished. One vessel was made of Marl F and smoothed (Fig. 56.1). Amphorae with elongated body and small handles seem to be characteristic of the later 18th and early 19th Dynasties up to the time of Ramesses II.⁸² Amphorae made of Marl F fit well into the post-Merenptah time according to Aston.⁸³

New Kingdom – early 18th Dynasty

The deepest-lying excavated units produced pottery from the early 18th Dynasty (Figs. 57–61), most probably from the time of Thutmose III (267 diagnostic fragments).⁸⁴ Similar to the 19th Dynasty units, the early New Kingdom assemblage also contained many red-slipped bowls (see Figs. 57 and 58.2–4); some, carinated (Fig. 58.4) or with incurved rim, with black painted rims, dated to the early 18th Dynasty, to the reign of Thutmose III in particular.⁸⁵ A number of carinated bowls with low ring bases bear decoration in the form of black painted strokes on top of their rims (Fig. 57).⁸⁶

A small lid fragment made of Nile E fabric came to light during the 2009 season (Fig. 58.5). One small hole was made in the wall before firing. The base of the vessel was hollow. The external surface was cream-slipped and well-smoothed.

A large basin with wide rim diameter was made of Nile B2 fabric, sandy variant (Fig. 58.6). A string tied onto the body of the vessel just after it had been shaped, when the clay was still wet, left an impression. Vessels of this kind were typical of the New Kingdom. Similar types were found in Amarna.⁸⁷

Biconical jars with short flaring rim, made of Nile B2 fabric, were covered with a thin layer of red slip on the outside and well-smoothed (Fig. 58.7–8). One of them (Fig. 58.8) was found almost intact in the fill of a house. Jars of this type are known from Amarna.⁸⁸

Several fragments of New Kingdom beer jars were identified (see Fig. 58.9). These coarsely finished pots are among the most typical vessels found in New Kingdom context.⁸⁹

Only a few sherds bear more elaborate decoration. A large basin with white coating and black painted simple bands and a zigzag on the outside (Fig. 59.1) came from an early 18th Dynasty context.⁹⁰ It was made of a sandy Nile B2 fabric.

⁷⁵ WODZIŃSKA in: RZEPKA *et al.* 2009, 268, fig. 29.3–4.

⁷⁶ See also in Qantir – ASTON 1998, 496–499.

⁷⁷ ASTON 1998.

⁷⁸ ASTON 1998, 60–74; also ASTON *et al.* 2007

⁷⁹ MALWINA PIORUN in preparation.

⁸⁰ See section 1.5 above.

⁸¹ GÓRKA and RZEPKA forthcoming; see also WODZIŃSKA 2011, 1020–1021, fig. 8.

⁸² HOPE 1989, fig. 2.4–7.

⁸³ ASTON 2005, 196, fig. 11c; see also ASTON 1998, 506–509.

⁸⁴ WODZIŃSKA 2011, 1016–1019, figs 2–6.

⁸⁵ ASTON 2007a, especially 218–219.

⁸⁶ PETRIE and DUNCAN 1906, pl. XIIA, one of the pots from group 54 – described as before Thutmose III.

⁸⁷ ROSE 2007, 54, 197, type SD.1.8, no. 92, with red wash inside, approximately 6 cm.

⁸⁸ ROSE 2007, 111, 260, type SI.1.2, especially no. 490.

⁸⁹ ROSE 2007, 99–101, type SH.8, the closest parallel for the Tell el Retaba fragment, see page 243, type SH.8.3, no. 410.

⁹⁰ PETRIE and DUNCAN 1906, pl. XIID, grave 102.



Fig. 57 Selection of ceramic sherds from the New Kingdom (early 18th Dynasty)

Wine amphorae, many fragments of which were discovered among the early 18th Dynasty vessels, were made of Marl D and cream-slipped on the outside (Fig. 59.2–4). Large handles of the kind presented in Fig. 59.2 can be dated to the time of Hatshepsut-Thutmosis III⁹¹ or from early (?) Thutmosis III⁹² to Amenhotep II.⁹³

Large storage jars made of Marl D and cream-slipped on the outside are represented in large number (Fig. 59.5). The common New Kingdom type called meat jar⁹⁴ also occurred in the later Ramesside period (see above), although its first usage at Tell el-Retaba has been associated with the early 18th Dynasty.

One large base of an imported Levantine amphora was found in area 4 (Fig. 60). Traces of two handles were visible on the upper part of its body. The stratigraphy of the pot is not clear, but it seems that it can also be dated to the early 18th Dynasty.⁹⁵

Two fragments of Cypriot juglets (Fig. 61) were found in areas 3 and 4. The external surface of the vessels, covered with a brown slip and polished, was later painted white. These are examples of ‘Base Ring II ware.’ The Tell el-Retaba juglets can be dated by analogy to the reigns of Thutmosis III and Amenhotep II.⁹⁶

Pottery dated to the early 18th Dynasty came from the lowermost layers of area 3 and loose material from area 4. The vessels from area 3 were associated with remains of thin walls and a silo.⁹⁷ The relative amount of bowls, of the red-slipped variety in particular, compared to remains of jars, was much larger. The bowls accounted for 76% of the early 18th Dynasty material. A similar pattern was observed in area 4. Bowls of this kind could have been used for serving food. Some of them, especially the ones with black painted rims and a diameter of about 18 cm, could have been used as drinking cups, perhaps for beer and wine.

⁹¹ HOPE 1989, fig. 1, category 1a.

⁹² ASTON 2005, 188, fig. 6c.

⁹³ ASTON 2005, 189, fig. 7a.

⁹⁴ ROSE 2007, 129–130, 274–276, type MF.1.1–4, nos. 594–602.

⁹⁵ AMIRAN 1969, 138–141, especially plate 43.1–2, see also fig. 131 showing a complete jar from the time of Hatshepsut.

⁹⁶ MERRILLEES 1968, 175–186.

⁹⁷ See section 1.8 above.

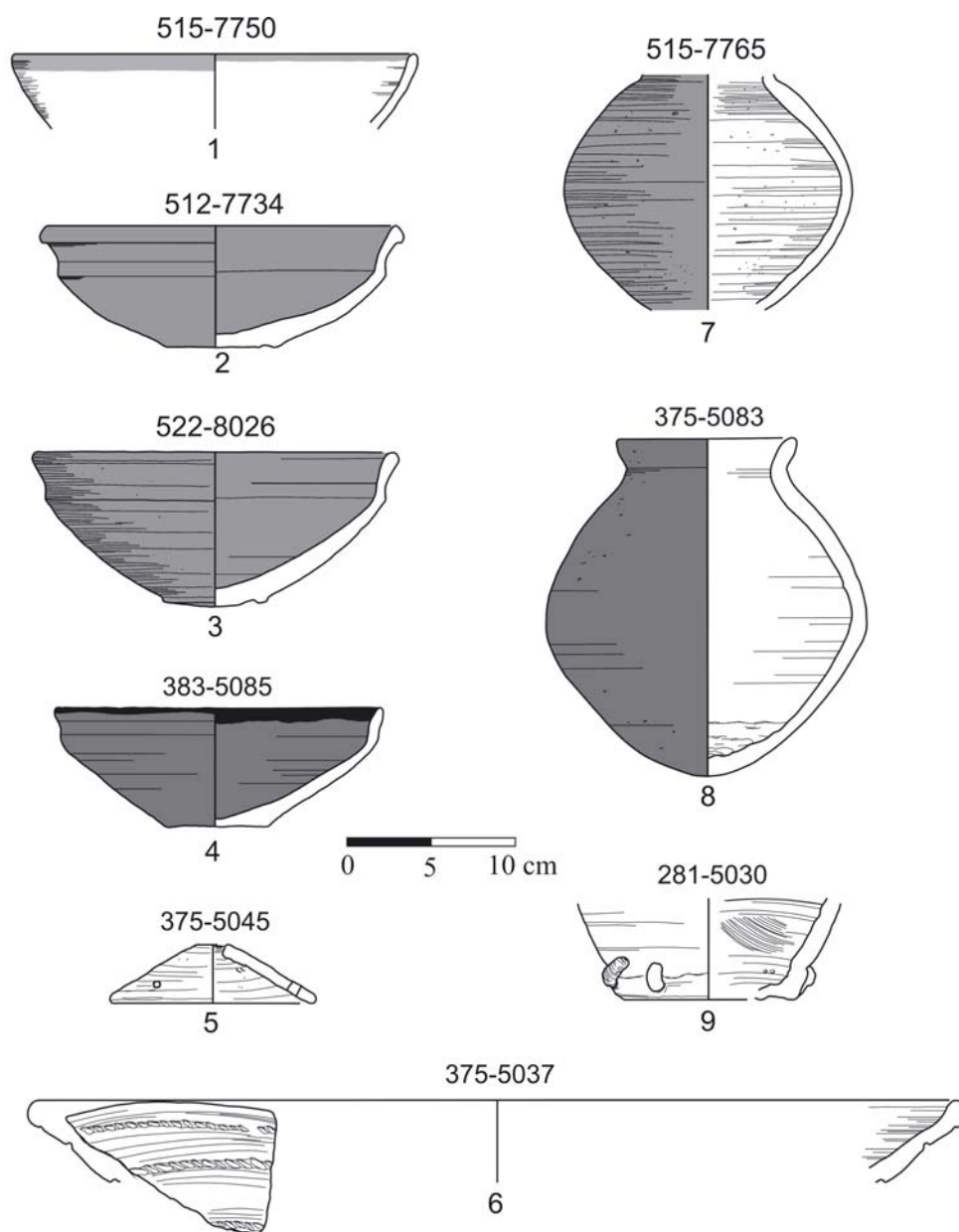


Fig. 58 Selection of ceramic sherds from the New Kingdom (early 18th Dynasty). Surface of bowl no. 2 is much eroded, especially on the rim. Black strokes may have been painted on the top of the rim, similarly as on the largest bowl in Fig. 57

Whichever the case, the bowls were part of the tableware. Several large, open structures could have been used for preparing food. Fragments of amphorae made of marl fabrics suggest that wine was stored and presumably consumed here. Large 'meat' jars could have been utilized as storage vessels. All of the pots described seem to be associated with regular domestic activities, food con-

sumption in particular, as well as storage to a certain extent.

Conclusions

Pottery from the Polish-Slovak excavations at Tell el-Retaba represents a very rich domestic assemblage coming from chronologically different contexts, from the New Kingdom through the Third

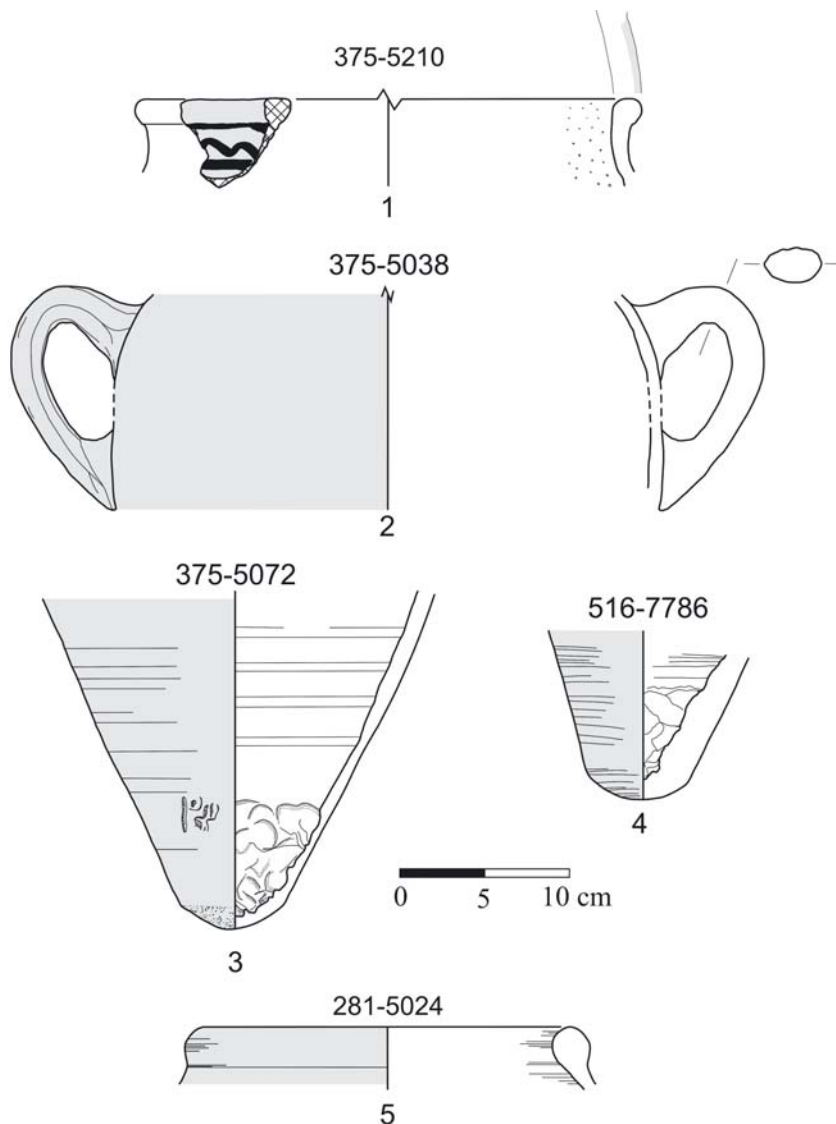


Fig. 59 Ceramic vessels from the early 18th Dynasty

Intermediate to Late Period. The New Kingdom material can be divided into two main groups, namely, 19th Dynasty, times of Ramesses II and early 18th Dynasty, most probably the times of Thutmosis III. There was nothing from the later phases of the 18th Dynasty, showing a chronological gap, at least in the excavated areas of the site. Is it possible that the settlement inside the fortress was abandoned between the reign of Thutmosis III and that of Ramesses II? The kom at Tell el-Retaba is very large and only a small portion of it has been excavated. It is interesting, however, to observe that the part of the site located near Petrie's "wall

1" was used only in the listed periods, indicating that in fact the fortress was not in use during the mid and late 18th Dynasty.

The excavated settlement from the early 18th Dynasty appears to have been used by people consuming a great deal of food which could have been stored in the area. During the Ramesside period, arts and craftwork had also been an activity carried out in the excavated part of the fortress. Initially, the space between the long walls could have doubled as a magazine and later turned into a workshop. No cooking pots classified as such have been found, making it rather unlikely that food was

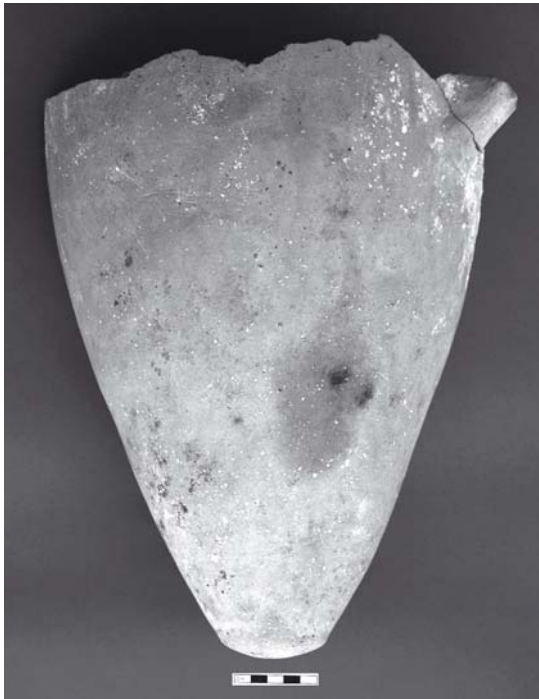


Fig. 60 Levantine amphora from the early 18th Dynasty

cooked in the area in either the early 18th and the 19th Dynasties. Interestingly, Ramesside period ceramics from Tell el-Retaba show a clear similarity to the pottery from Qantir, Pi-Ramessé, the Egyptian capital of the time. Both sites were used in similar periods with a hiatus between the early 18th and early 19th Dynasties.⁹⁸

The New Kingdom inhabitants of Tell el-Retaba maintained contacts with foreign lands. Imported pots from Cyprus and Levant are proof for an international trade, especially during the early 18th Dynasty.

The very rich pottery assemblage from the Third Intermediate Period, reflecting activities from storage to cooking and food consumption, was associated with houses. All the listed activities were performed indoors, probably for the house inhabitants and their families. The general function of the settlement at Tell el-Retaba seems to have been different in New Kingdom and later Third Intermediate times. The New Kingdom activities were addressed to a larger group of people, per-

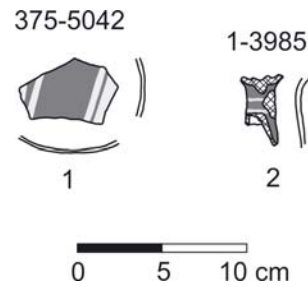


Fig. 61 Fragments of Cypriot juglets from the early 18th Dynasty layers

haps soldiers of Thutmosis III and Ramesses II. The Third Intermediate Period settlement was inhabited by families living in separate houses. Additionally, a large stable was constructed, perhaps to keep animals. This feature was dated to the later phase of the Third Intermediate Period. Several pots found in the stable might have been used for feeding or maybe as milking vessels.

The Late Period is not well represented. The remains of standing walls suggest houses of some sort. The pottery appears to have been used for domestic activities, such as storage of food and its preparation. Large storage jars seem to have been especially common. Greek carrying amphorae, like the one from Chios, indicate a preference for imported wine.

Catalogue of pots

Fig. 51.1 – Number: 3439. Area: 3. Unit: 1. Fabric: Nile B1. Surface ex: smoothed. Surface in: smoothed. Manufacture: thrown. Remarks: potmark on external surface made after firing. Rim diameter: 25 cm.

Fig. 51.2 – Number: 4477. Area: 3. Unit: 302. Fabric: Nile B2. Surface ex: smoothed. Surface in: smoothed. Manufacture: thrown. Rim diameter: 32 cm.

Fig. 51.3 – Number: 4442. Area: 3. Unit: 301. Fabric: Nile C. Surface ex: smoothed. Surface in: smoothed. Manufacture: Rim diameter: 30 cm.

Fig. 51.4 – Number: 3944. Area: 3. Unit: 302. Fabric: Nile C. Surface ex: roughly smoothed. Surface in: roughly smoothed. Manufacture: hand made. Rim diameter: 32 cm.

Fig. 51.5 – Number: 3926. Area: 3. Unit: 224. Fabric: Nile C. Surface ex: smoothed. Surface in: smoothed. Manufacture: hand made. Rim diameter: 20 cm.

Fig. 51.6 – Number: 3490. Area: 3. Unit: 1. Fabric: Nile C. Surface ex: roughly smoothed. Surface in: roughly smoothed. Manufacture: thrown. Rim diameter: ca. 18 cm.

⁹⁸ For the periods represented in Qantir, see ASTON 1998, 3.

Fig. 51.7 – Number: 3964. Area: 3. Unit: 305. Fabric: Nile B2. Surface ex: red-slipped and well smoothed Surface in: smoothed. Manufacture: thrown. Rim diameter: 6 cm

Fig. 51.8 – Number: 3307. Area: 3. Unit: 1. Fabric: Nile B2. Surface ex: smoothed. Surface in: smoothed. Manufacture: thrown. Rim diameter: 17 cm.

Fig. 51.9 – Number: 5429. Area: 3. Unit: 309. Fabric: homogenous Oasis ware. Surface ex: smoothed. Surface in: smoothed. Manufacture: thrown. Decoration: none. Remarks: much secondarily burned

Fig. 51.10 – Number: 4072. Area: 4. Unit: 1. Fabric: Greek. Surface ex: well smoothed. Surface in: smoothed. Manufacture: thrown. Decoration: irregular red painted pattern on the handle and around the lower part of rim on the outside. Remarks: archaic Greek amphora from Chios. Rim diameter: 11 cm.

Fig. 53.1 – Number: 5935. Area: 5. Unit: 404. Fabric: Nile B2 sandy. Surface ex: roughly smoothed. Surface in: roughly smoothed. Manufacture: thrown. Remarks: base cut with a hard tool. Rim diameter: 12.7 cm.

Fig. 53.2 – Number: 5934. Area: 5. Unit: 404. Fabric: NB2 sandy. Surface ex: roughly smoothed. Surface in: roughly smoothed. Manufacture: thrown. Remarks: base cut with a hard tool. Rim diameter: 13.5 cm.

Fig. 53.3 – Number: 6195. Area: 4. Unit: 433. Fabric: Nile B2 sandy. Surface ex: smoothed. Surface in: smoothed. Manufacture: thrown. Rim diameter: 17.6 cm.

Fig. 53.4 – Number: 5609. Area: 3. Unit: 377. Fabric: Nile B2. Surface ex: smoothed. Surface in: smoothed. Manufacture: thrown. Rim diameter: 20 cm.

Fig. 53.5 – Number: 6243. Area: 4. Unit: 441. Fabric: Nile B1. Surface ex: pink-slipped smoothed. Surface in: smoothed. Manufacture: thrown. Rim diameter: 11.5 cm.

Fig. 53.6 – Number: 6675. Area: 3. Unit: 472. Fabric: Nile B2 sandy. Surface ex: smoothed. Surface in: smoothed. Manufacture: thrown. Rim diameter: 9 cm.

Fig. 53.7 – Number: 7066. Area: 9. Unit: 563. Fabric: Nile B2 dense. Surface ex: pink-slipped and smoothed. Surface in: smoothed. Manufacture: thrown. Rim diameter: 17.4 cm.

Fig. 53.8 – Number: 6279. Area: 4. Unit: 441. Fabric: Nile A/B1. Surface ex: red-slipped and burnished. Surface in: well smoothed. Manufacture: thrown. Rim diameter: 7.4 cm.

Fig. 54.1 – Number: 5473. Area: 3. Unit: 256. Fabric: Nile B2. Surface ex: thin red-slipped and smoothed. Surface in: smoothed. Manufacture: thrown. Decoration: none.

Fig. 54.2 – Number: 6215. Area: 4. Unit: 433. Fabric: Nile B2 sandy. Surface ex: smoothed. Surface in: smoothed. Manufacture: thrown. Remarks: Rim diameter: 2 cm.

Fig. 54.3 – Number: 4601. Area: 4. Unit: 361. Fabric: Nile B2 sandy. Surface ex: smoothed, lower part of body trimmed with a hard tool. Surface in: smoothed. Manufacture: thrown. Rim diameter: 18 cm (wider rim).

Fig. 55.1 – Number: 7886. Area: 9. Unit: 595. Fabric: Nile B2 sandy. Surface ex: smoothed. Surface in: red-slipped and smoothed. Manufacture: thrown. Rim diameter: 26 cm.

Fig. 55.2 – Number: 6828. Area: 9. Unit: 577. Fabric: Nile E. Surface ex: smoothed. Surface in: red-slipped and smoothed. Manufacture: thrown. Rim diameter: ca. 30.

Fig. 55.3 – Number: 7877. Area: 9. Unit: 595. Fabric: Marl A3. Surface ex: well smoothed and burnished Surface in: well

smoothed and burnished. Manufacture: thrown. Rim diameter: 12 cm.

Fig. 55.4 – Number: 7875. Area: 9. Unit: 595. Fabric: Marl D. Surface ex: pinkish red-slipped and well smoothed. Surface in: pinkish-red well-smoothed. Manufacture: thrown. Rim diameter: 34 cm.

Fig. 55.5 – Number: 7890. Area: 9. Unit: 595. Fabric: Marl D. Surface ex: cream-slipped and well smoothed. Surface in: cream-slipped and smoothed. Manufacture: thrown. Rim diameter: 17 cm.

Fig. 55.6 – Number: 7892. Area: 9. Unit: 595. Fabric: Nile B2 sandy. Surface ex: red-slipped and smoothed. Surface in: red-slipped and smoothed. Manufacture: thrown. Rim diameter: 20 cm.

Fig. 56.1 – Number: 4200. Area: 4. Unit: 250. Fabric: Marl F. Surface ex: well smoothed. Surface in: smoothed. Manufacture: thrown. Remarks: wine amphora used as coffin. Rim diameter: 8 cm.

Fig. 56.2 – Number: 5084. Area: 4. Unit: 272. Fabric: Marl D. Surface ex: cream-slipped and well smoothed/burnished. Surface in: smoothed. Manufacture: thrown. Remarks: wine amphora used as coffin.

Fig. 56.3 – Number: 3729. Area: 4. Unit: 229. Fabric: Marl D. Surface ex: cream/pink-slipped and well smoothed/burnished. Surface in: smoothed. Manufacture: thrown. Remarks: wine amphora used as coffin.

Fig. 58.1 – Number: 7750. Area: 3. Unit: 515. Fabric: Nile B2 sandy. Surface ex: smoothed. Surface in: smoothed. Manufacture: thrown. Decoration: red-painted rim. Rim diameter: 24 cm.

Fig. 58.2 – Number: 7734. Area: 3. Unit: 512. Fabric: Nile B2 sandy. Surface ex: red-slipped and smoothed. Surface in: red-slipped and smoothed. Manufacture: thrown. Decoration: rim much eroded but it was probably painted with black strokes' pattern. Rim diameter: 20 cm.

Fig. 58.3 – Number: 8026. Area: 3. Unit: 522. Fabric: Nile B2 sandy. Surface ex: red-slipped and smoothed. Surface in: red-slipped and smoothed. Manufacture: thrown. Rim diameter: 21 cm.

Fig. 58.4 – Number: 5085. Area: 3. Unit: 383. Fabric: Nile B2. Surface ex: red-slipped and smoothed. Surface in: red-slipped and smoothed. Manufacture: thrown. Decoration: black painted rim. Rim diameter: 19.5 cm.

Fig. 58.5 – Number: 5045. Area: 3. Unit: 375. Fabric: Nile E. Surface ex: smoothed. Surface in: smoothed. Manufacture: thrown. Remarks: hole made before firing. Rim diameter: 12 cm.

Fig. 58.6 – Number: 5037. Area: 3. Unit: 375. Fabric: Nile B2 sandy. Surface ex: smoothed and deep string impressions. Surface in: smoothed. Manufacture: thrown. Rim diameter: ca. 56 cm.

Fig. 58.7 – Number: 7765. Area: 3. Unit: 515. Fabric: Nile B2 sandy. Surface ex: red-slipped and smoothed. Surface in: smoothed. Manufacture: thrown. Decoration: none.

Fig. 58.8 – Number: 5083. Area: 3. Unit: 375. Fabric: Nile B2 sandy. Surface ex: red-slipped and smoothed. Surface in: smoothed. Manufacture: thrown. Remarks: complete pot. Rim diameter: 11 cm.

Fig. 58.9 – Number: 5030. Area: 3. Unit: 281. Fabric: Nile B2 sandy. Surface ex: roughly smoothed. Surface in: roughly smoothed. Manufacture: thrown. Base diameter: 10 cm

Fig. 59.1 – Number: 5210. Area: 3. Unit: 375. Fabric: Nile B2. Surface ex: cream-slipped and smoothed. Surface in: smoothed. Manufacture: thrown. Decoration: black painted pattern on the external surface. Rim diameter: >30 cm.

Fig. 59.2 – Number: 5038. Area: 3. Unit: 375. Fabric: Marl D. Surface ex: cream-slipped and smoothed. Surface in: smoothed. Manufacture: thrown. Decoration: none.

Fig. 59.3 – Number: 5072. Area: 3. Unit: 375. Fabric: Marl D. Surface ex: cream-slipped and smoothed. Surface in: smoothed, the very base finger kneaded. Manufacture: partly made in a mould. Remarks: potmark made before firing on the external surface.

Fig. 59.4 – Number: 7786. Area: 3. Unit: 516. Fabric: Marl D. Surface ex: cream-slipped and smoothed. Surface in: roughly smoothed, the very base finger kneaded. Manufacture: partly made in a mould. Decoration: none.

Fig. 59.5 – Number: 5024. Area: 3. Unit: 281. Fabric: Marl D. Surface ex: cream-slipped and well smoothed. Surface in: smoothed. Manufacture: thrown. Rim diameter: 24 cm.

Fig. 60 – Number: 5474. Area: 4. Unit: 98. Fabric: Levantine – red clay with many white grits of various sizes. Surface ex: well-smoothed. Surface in: smoothed. Manufacture: thrown. Remarks: Levantine transport amphora.

Fig. 61.1 – Number: 5042. Area: 3. Unit: 375. Fabric: Cypriot. Surface ex: brown-slipped and well-smoothed. Surface in: smoothed. Manufacture: handmade. Decoration: white-painted stripes on the external surface. Remarks: Cypriot ring base juglet.

Fig. 61.2 – Number: 3985. Area: 4. Unit: 1. Fabric: Cypriot. Surface ex: brown-slipped and well-smoothed. Surface in: smoothed. Manufacture: handmade. Decoration: white-painted stripes on the external surface. Remarks: Cypriot ring base juglet.

3. ARCHAEOBOTANY

By Claire Malleson

Since 2009, 76 samples have been recovered for archaeobotanical analysis from the excavations at Tell el-Retaba.⁹⁹ The results have in general been very good; remains are well preserved and relatively abundant with an average of 83.83 plant items per litre (see Table 1). As is the case at many ancient Egyptian settlement sites the plant macrofossils (cereal chaff elements, wild grasses, crop weeds, potential fodder plants and potential food plants) represent crop processing waste used as fuel and fodder, preserved by charring.¹⁰⁰ This

report will focus on overall observations; full analysis and data presentation will be reserved for the final site publications. The general discussions below consider all the material recovered from the site, these are followed by more detailed analysis for the fully phased excavation areas (3, 6 and 9).

Species present

Overall, the most abundant material at the site is *Triticum dicoccum* (emmer wheat) chaff, followed by *Lolium* sp. grains (Rye Grass), Trifolieae tribe seeds (cf *Trifolium* sp., *Melilotus* sp. and *Medicago* sp.) and Cyperaceae seeds (*Eleocharis* sp. and *Scirpus* spp.). Overall, *Triticum dicoccum* (emmer wheat) is more abundant than *Hordeum vulgare* (barley) which was only present in very low num-

Area	Phase	Total count of items	Number of samples	Volume of deposit (litres)	Density. Number of items per litre
1	?	137	2	10	13.70
2	?	409	1	5	81.80
3	?	102	1	5	20.40
3	2	24	1	6	4.00
3	3	903	7	35	25.80
3	3/4/5a	679	3	15	45.27
3	4	655	4	20	32.75
3	5	193	4	20	9.65
3	5b	350	3	15	23.33
3	6	15	1	5	3.00
3	7	2668	4	18	148.22
3	8	1175	1	5	235.00
3	9	304	1	5	60.80
3	10	7	1	5	1.40
4	?	8189	7	35	233.97
5	3	4390	4	20	219.50
6	2	186	1	5	37.20
6	3	5916	12	51.5	114.87
6	5	328	1	5	65.60
9	1	1153	2	6	192.17
9	2	74	3	9	8.22
9	3	308	1	2	154.00
9	6	1096	4	20	54.80
9	7	542	7	33	16.42
SITE TOTALS		29803	76	355.5	83.83

Table 1 Samples taken during seasons 2009–2010

⁹⁹ For methodology and techniques see MALLESON forthcoming a and b.

¹⁰⁰ MURRAY 2000 and 2009; VAN DER VEEN 1999; MOENS and WETTERSTROM 1988.

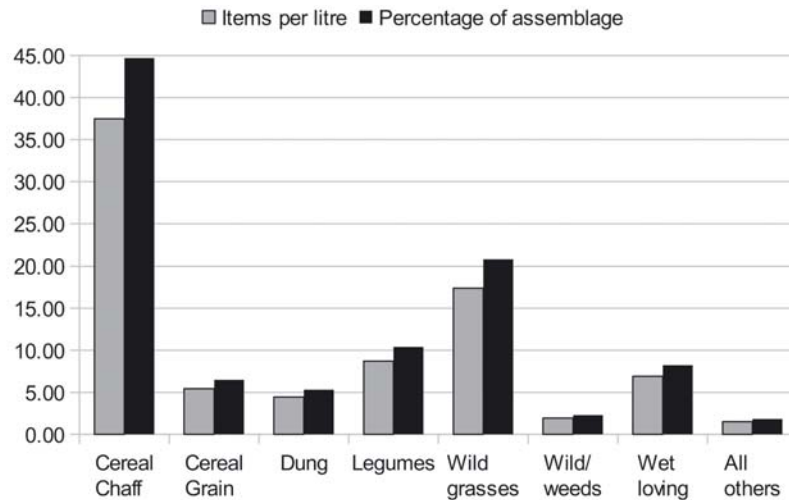


Fig. 62 Taxa groups from all areas

bers. Other wild grasses present include *Phalaris* sp. (Canary grass) and *Bromus* sp. (Brome grass). Fabaceae (Pea family) are represented by Viciae tribe species including *Cicer arianatum* (Chick pea), *Lens* sp. (Lentils), *Lathyrus* sp., and *Vicia ervilia* (Bitter vetch) as well as *Scorpiurus* sp. Other wild/weed species include seeds of the Asteraceae, Boraginaceae, Brassicaceae, Caryophyllaceae, Chenopodiaceae, Juncaceae, Labiateae, Malvaceae, Polygonaceae, Primulaceae, Ranunculaceae and Rutaceae families.

Fruits present at the site include *Ficus carica* (Common fig), *Vitis vinifera* (Grape) and *Phoenix dactylifera* (Date palm). Finally, several other species of economic value were present, including *Linum usitatissimum* (Flax/Linen) and, in one feature, a number of Paniceae tribe grains (Millet). All samples included charcoal – the wood species unidentified at present, but fragments of Tamarisk and seeds of Mimusiodeae tribe (i.e. Acacia family) were present.

Within this report species belonging to the Trifolieae and Viciae tribes are grouped as legumes. These species may well represent plants cultivated as fodder,¹⁰¹ but given the lack of any examples that clearly derive from dung (i.e. no examples were found within a dung matrix) and the lack of

barley (considered to be an indicator of fodder;¹⁰² see Fig. 63) they quite probably represent a mix of field weeds with species cultivated for human consumption.

As has been noted previously (illustrated in Fig. 62), the charred plant macro-fossils at Tell el-Retaba are clearly composed of the charred remains of cereal crop processing waste.¹⁰³ Cereal chaff is not only the most abundant material (with the highest number of items per litre), but it also represents nearly 45% of the total assemblage. Wild grasses represent a further 25% of the assemblage with a count of over 15 items per litre. This dominance of cereal chaff and wild/weed species is clearly indicative of cereal crop processing waste. The high levels of fragmentation of the emmer wheat chaff (see Fig. 63) support this evidence – emmer has to be pounded to remove its chaff, one spikelet fork breaks into two glume bases; the dominance of glume bases over spikelet forks in this assemblage shows that this material represents heavily pounded material.¹⁰⁴

The relative proportions of scarce grain, abundant grasses, abundant chaff (predominantly glumes) and abundant smaller seeded weeds (Trifolieae tribe and Cyperaceae family) is suggestive of on-site post-pounding/fine sieving and hand-sorting of stored grains.¹⁰⁵ The overall lack of

¹⁰¹ MURRAY 2009, 251.

¹⁰² MURRAY 2009, 255.

¹⁰³ For more discussion see MURRAY 2000 and 2009; VAN DER VEEN 1999.

¹⁰⁴ See HILLMAN 1984 and MURRAY 2000 for detailed discussion of cereal crop processing methods.

¹⁰⁵ Based on HILLMAN 1984, table 1, VAN DER VEEN 1999, 212 and MURRAY 2009, 253.

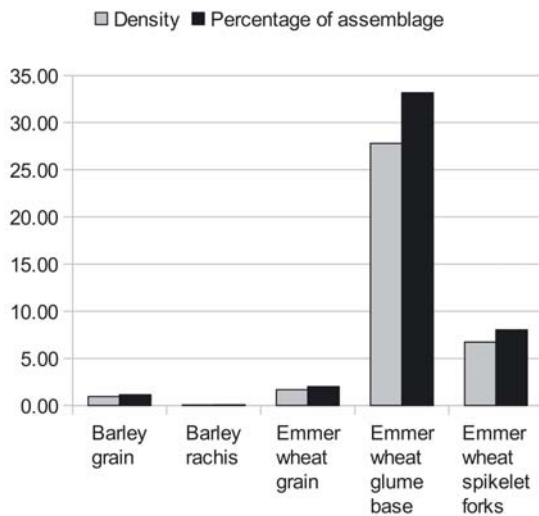


Fig. 63 Cereal grains and chaff from all areas

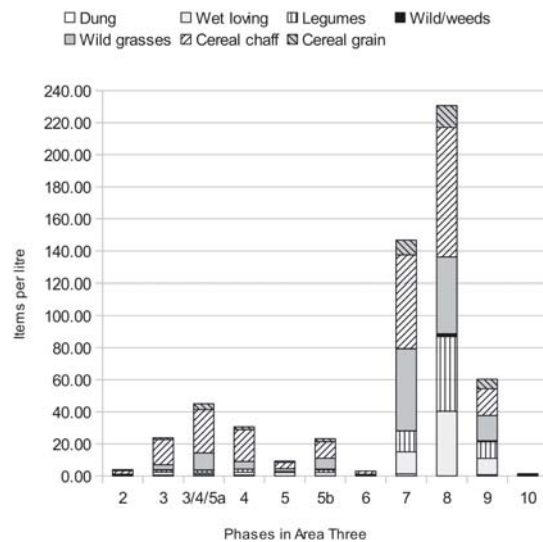


Fig. 64 Density of items per litre of taxa groups in Area Three

cereal straw elements (culm nodes and culm bases) compared with the abundance of emmer glumes and wild grasses could suggest that this site was in fact provisioned with partially processed emmer grain for human consumption, or that the heavier chaff was utilised in such a way that it has not been preserved. Legumes may occur as the remains of fodder, they could represent field weeds or food. The large numbers of seeds of wet loving species (Cyperaceae family) may be indicative of wetter conditions attracting these species as field weeds, or the utilisation of local wet-lands as grazing and the subsequent dung used as fuel.

Summary of results from Primary areas of investigation.¹⁰⁶

Area Three. Settlements and roads

Area Three phases:

Phase 1: Modern

Phase 2: Blocking of the road to migdol (building of the “house on the road”)

Phases 3/4/5a: Road to migdol in use

Phase 5b: Demolition of the ruins of the fortress of Ramesses II, levelling of the ground for the fortress of Ramesses III.

Phase 6: Fortress of Ramesses II (“storeroom”)

Phase 7: Poor settlement (huts)

Phase 8: Hiatus?

Phase 9: Settlement (silo).

Phase 10: Natural deposits? (gezira sand?)

There seems to be a gradual shift in the ratios of cereal chaff/ wild species over time; although the overall density of chaff and wild grasses is higher in the earlier phases (9–7) (Fig. 64), the relative proportion of chaff is actually slightly higher in the later phases (Fig. 65), whilst the proportion of wild grasses and other weeds gradually decreases. There is a marked decrease in the proportion of legumes and a general trend towards a decrease in the relative proportion of wet loving species. The phases with the largest quantities of remains are 8 (18th Dynasty hiatus between two settlements), 7 (huts pre-dating the Ramesses II fortress), 9 (18th Dynasty settlement remains) and 3–5 (Ramesses III fortress and the road to the migdol). Phase 8 is represented by just one sample from unit [529]; a layer of aeolian sand.¹⁰⁷ This unit contained a relatively even mix of cereal chaff, wild grasses, legumes and some other wild/weed species. Given the archaeologists’ interpretation of this feature, it seems probable that the charred plant materials in this

¹⁰⁶ At present all phasing is preliminary and each area has its own independent phasing.

¹⁰⁷ See section 1.8 in this report.

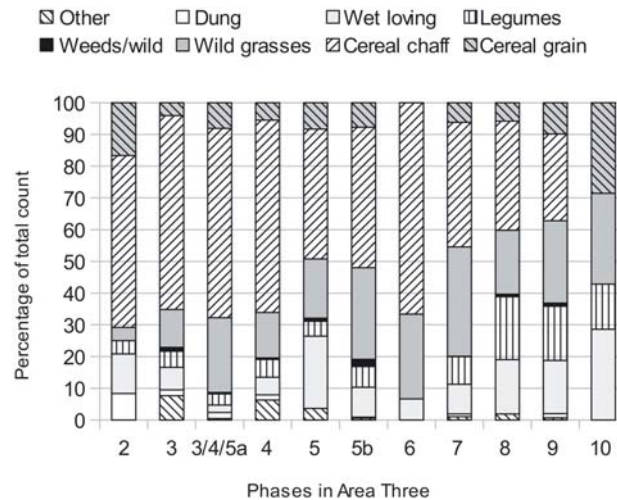


Fig. 65 Taxa groups as percentages of total counts from Area Three

feature represent intense dumping in the area, perhaps whilst it was temporarily abandoned. The rough settlement remains in phase 7 did not contain any hearth structures as such; the charred remains derive primarily from features relating to the destruction of these huts, thus representing heavily disturbed occupation deposits. As might be expected, there is a relatively even mix of chaff, grasses and wild/weed species. It seems likely that the deposits deriving from the migdol road (phases 3/4/5a and 5b) all represent continuous dumping to level the road. It is notable that both the contemporary dumping in the settlement (phases 3, 4 and 5) and the earlier domestic dumping in phases 7 and 8 do contain higher densities of legumes, whilst the road dumps contain higher ratios of chaff and wild grasses, suggesting that the materials dumped in the road may derive from a slightly different source. As is the case at many sites,¹⁰⁸ the material generally derives from secondary/tertiary dumping – clearing out of hearths and ovens.

Area Six. The stables

Area Six phases:

Phase 1: Modern

Phase 2: Structure made of “bubblegum bricks”

Phase 3: Third phase of the stable

Phase 4: Second phase of the stable

Phase 5: First phase of the stable

During the initial phase of use of this area (phase 5) the assemblage is dominated by cereal chaff and wild grasses – a typical crop-processing waste pattern. During the third phase of use (phase 3), the quantity and relative proportion of dung and legumes increases, particularly in the series of small pits ([481], [482], [483], [484]). After the stables fall out of use, during the Third Intermediate Period (phase 2) the quantity of dung increases again (suggesting a build-up of waste as they fell out of use), but there are no legumes present. Whilst some of the dung was preserved through desiccation, the overwhelming majority was found charred. This suggests that the dung produced in these stables was used on the spot as a ready fuel source. It could also suggest that the legumes found in these samples represent uneaten fodder swept up and burned. The fact that all the dung is sheep/goat may be an indicator that these animals were being raised/housed in these stables. It is worth noting that the (sheep/goat) dung quite clearly consisted of the chewed remains of light chaff, not sieving waste, a pattern recognised in ethnographic studies.¹⁰⁹ The lack of any apparent large mammal dung (i.e. equid) in the stables is probably an indication of its high economic value; it is likely to have been removed in bulk and used as fertiliser and/or fuel.

¹⁰⁸ MURRAY 2009, 256.

¹⁰⁹ PALMER 1998, 4.

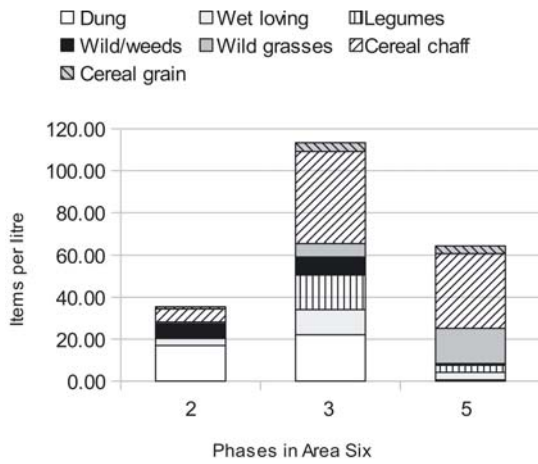


Fig. 66 Density of items per litre of taxa groups in Area Six

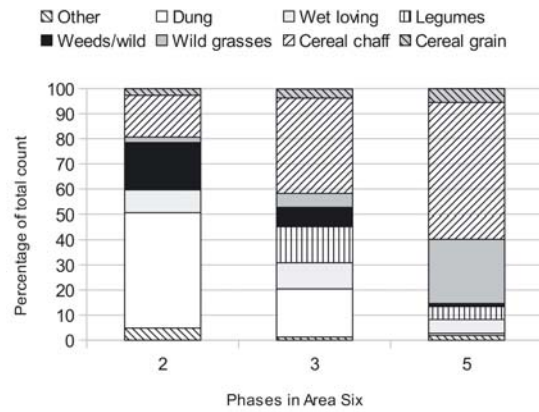


Fig. 67 Taxa groups as percentages of total counts from Area Six

Area Nine. Storerooms and walls

Area Nine phases:

- Phase 1: Modern
- Phase 2: Very numerous round and oval pits
- Phase 3: A house built on the top of the ruins of “wall 1”
- Phase 4: Scanty remains of buildings of unspecified function (houses?)
- Phase 5: Petrie’s “wall 3” – a completely new fortress built by Ramesses III or later
- Phase 6: Abandonment and destruction of the fortress

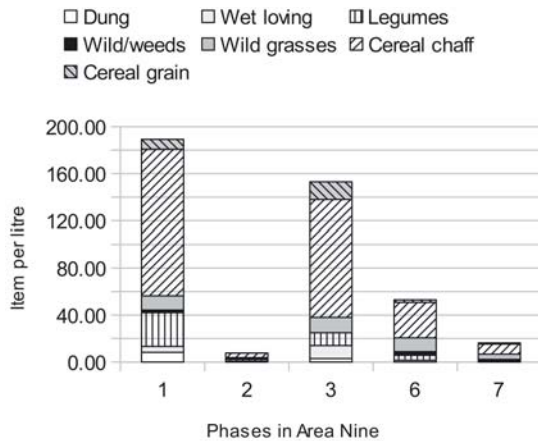


Fig. 68 Density of items per litre of taxa groups in Area Nine

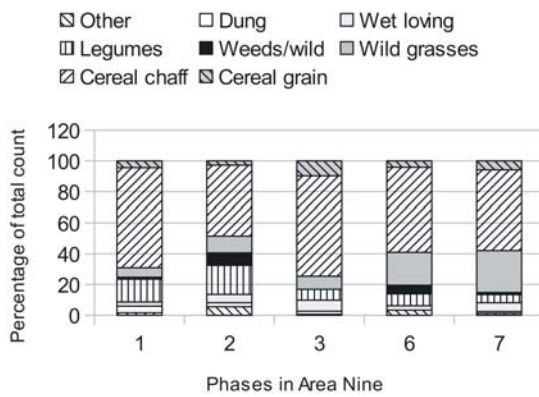


Fig. 69 Taxa groups as percentages of total counts from Area Nine

Phase 7: Fortress of Ramesses II – Petrie’s “wall 1” and storerooms

Phase 8: The oldest defence wall (the core of Petrie’s “wall 1”)

More so than any other area, the material from this area was dominated by cereal chaff, primarily emmer wheat glume bases. The late material from phase 1 derives from two units, both apparently the remains of pots containing deposits of ash. Within these two pots there were around 60 Paniceae family grains (millet) and large quantities of millet chaff; a species not found elsewhere on the site. Millet is attested in Egypt from the Predynastic onwards.¹¹⁰ All the cereal chaff in this phase, with the exception of a few emmer wheat glume bases, is in fact millet chaff. The presence of emmer, even

¹¹⁰ DE VARTAVAN *et al* 2010.

in small quantities does provide a *terminus ante quem* for this material of the Greco-Roman period as after that date emmer was replaced by the more easily processed free threshing bread wheat (*Triticum aestivum/durum*). However, this heavily contradicts the archaeological interpretation of these pits and thus the material/phasing may need to be re-examined. A pit within the earlier house built upon wall 1 in phase 3 ([563]) contained abundant quantities of charred emmer wheat chaff, placing it firmly within a Pharaonic timeframe. A number of ovens and occupation deposits from the Rameses II storerooms (phase 7) were sampled, but, as is often the case with 'primary' charred features, there was little identifiable material in these samples – much of the plant material having been totally burned away or destroyed by repeated use of the oven/hearth.

Conclusions

The plant macrofossils remains at Tell el-Retaba represent the charred remains of cereal crop processing waste; cereal chaff (predominantly emmer wheat glumes), wild grasses (predominantly *Lolium* sp.), legumes (Trifolieae and Viciae tribes) and other wild species. The interpretation at this stage is that most of the remains are representative of the waste produced on a daily basis in the dwellings;¹¹¹ partially cleaned cereals undergoing the final stage of fine sieving and hand-sorting prior to grinding into flour for bread and beer. The overall lack of barley at the site could be indicative of an as yet undetected regional variation in crop-preference. The material derives primarily from secondary/tertiary dumping, i.e. hearth and oven waste cleared out and dumped in abandoned rooms and dwellings and on roads; what little material did remain in the primary features were the most affected by contemporary taphonomic conditions i.e. constant raking out/re-lighting. The relative abundance of wet-loving species may be indicative of either wetter field conditions or the use of wetlands for grazing. At this stage, it is hard to discern if the legumes represent animal fodder, cereal weeds or alternative food crops, but the lack of

fodder indicators and the edible nature of many of the Viciae tribe species suggest that many of them may represent food crops.

4. MAGNETIC SURVEY

By Krzysztof Misiewicz and Wiesław Małkowski

Measurements carried out in October 2010 at the Tell el-Retaba site complemented earlier geophysical prospection using electromagnetic and magnetic methods.¹¹² These included sections already surveyed as well as previously not prospected parts of the site. A cesium magnetometer was used to repeat measurements and to extend the depth of penetration. The decision was prompted by the knowledge that the Geoscan fluxgate device used previously has a noise level of about 0.1 nT, which enables surveys in areas of weak magnetic contrasts, but the depth of penetration is limited to 0.8–1 m.¹¹³ Using the cesium magnetometer enabled the mapping of anomalies relating to features (including archaeological remains) found at greater depth,¹¹⁴ but it should be noted that some of the anomalies recorded might reflect changes in the natural geological structure and aspects of the modern irrigation system. Measurements were also impacted by surface deformations resulting from changes in ground relief, both now and as a result of earlier excavations.

A Geometrics Mag-Mapper system was applied, making use of a cesium magnetometer G-858 with two probes measuring the pseudo-gradient of the horizontal or vertical component of the total vector of the magnetic field. The magnetometer was connected to a GPS RKT receiver. The co-ordinate system from latitude and longitude values in degrees (BLH) was converted to the metric system (UTM), according to parameters adopted for the position of Tell el-Retaba.¹¹⁵

In addition to observing value changes of the pseudo-gradient of the horizontal component, the total vector values of magnetic field intensity were also recorded, enabling an assessment of measurement accuracy and discernment of strong magnetic anomalies that could have lowered the chances of

¹¹¹ See MURRAY 2000 and 2009 for discussion of these processes.

¹¹² Magnetic measurements were conducted in 2008 by T. Herbich using a fluxgate gradiometer (cf. RZEPKA *et al.* 2009) and in 2010 by W. Małkowski using a cesium magnetometer.

¹¹³ TABBAGH 2003.

¹¹⁴ BECKER *et al.* 2009.

¹¹⁵ UTM parameters: ellipsoid WGS-84 (1984), central meridian 33 degree, scale factor 0.9996, northing 0.00, easting 0.00.

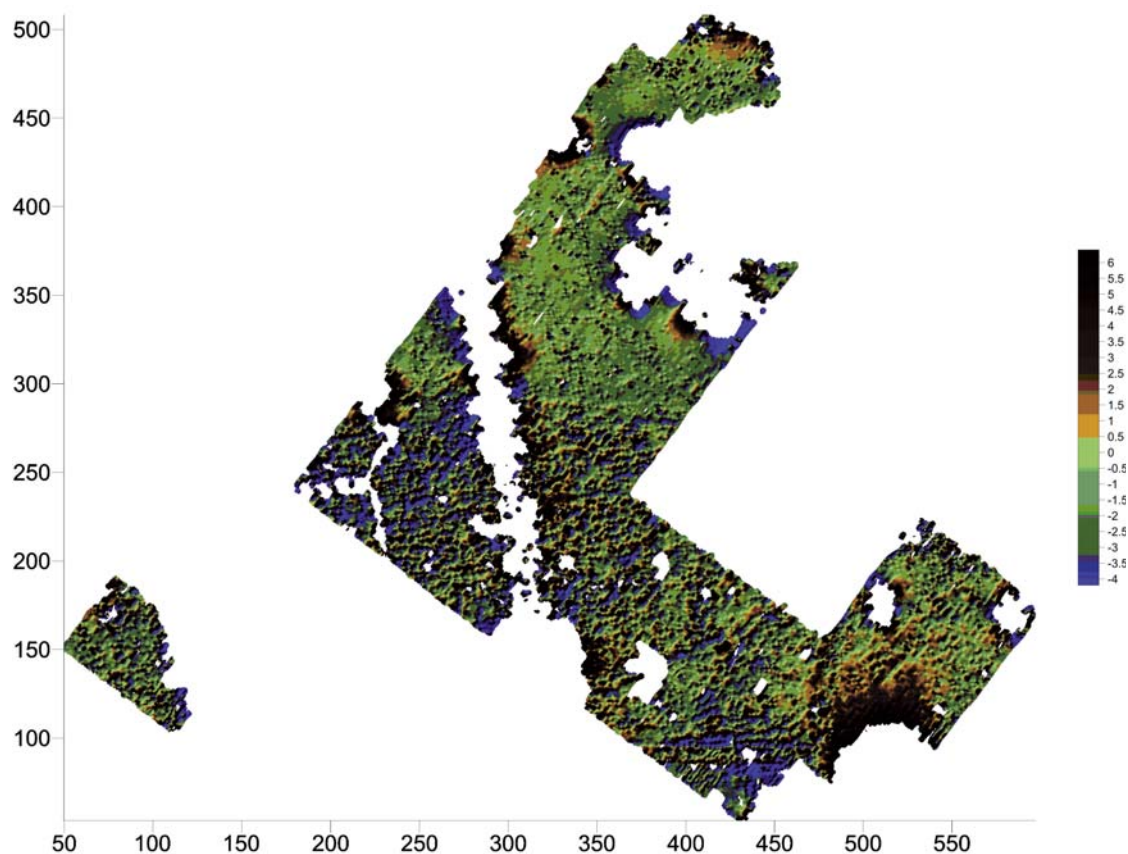


Fig. 70 Colour map of the distribution of value of the horizontal component of magnetic field intensity total vector (range of analysis from -4 to $+5.5$ nT / m) (Processing W. Małkowski, K. Misiewicz)

detecting the presence of anticipated archaeological remains. The high-gradient tolerance of the cesium magnetometer also proved its usefulness in measuring strongly magnetized archaeological objects at very shallow depths.

MagMapper 2000 software by Geometrics was applied in integrating data from the earlier magnetic surveys and to project it onto a local geographical co-ordinate system. Surfer 9.0 by Golden Software, Inc. made possible the export of maps in GeoTIFF format, enabling further spatial analysis and integration of results with parallel aerial images (developed as ortho-photo maps) and three-dimensional models of surface relief.

The results of the prospection have been presented as black-and-white and colour maps (Fig. 70) recording the changes of magnetic field intensity (in a different colour convention) and three-dimensional models of the distribution of these values.

The data was analyzed by gradually narrowing the scope of recorded changes in magnetic field

intensity in order to eliminate highly dynamic anomalies chiefly due to municipal utilities (plumbing, water irrigation and power lines) as well as metal objects present in the subsurface layer. This produced better results than the line filters (low and high pass filter) commonly used at this stage of the analysis.

The next and ultimate step of the analysis was the integration of data from measurements made in 2008 and 2010 and their projection onto a local system of co-ordinates preserving maximum original data from the fluxgate gradiometer surveys and complementing them with the results of measurements with the cesium magnetometer. The resultant map (Fig. 71) enabled a reliable verification of sources of recorded anomalies and the detection of anomalies corresponding to archaeological features.

The site boundaries were plotted on the strength of geophysical magnetic prospection, as was the course of the preserved fortifications. The maps show groups of anomalies with different values of

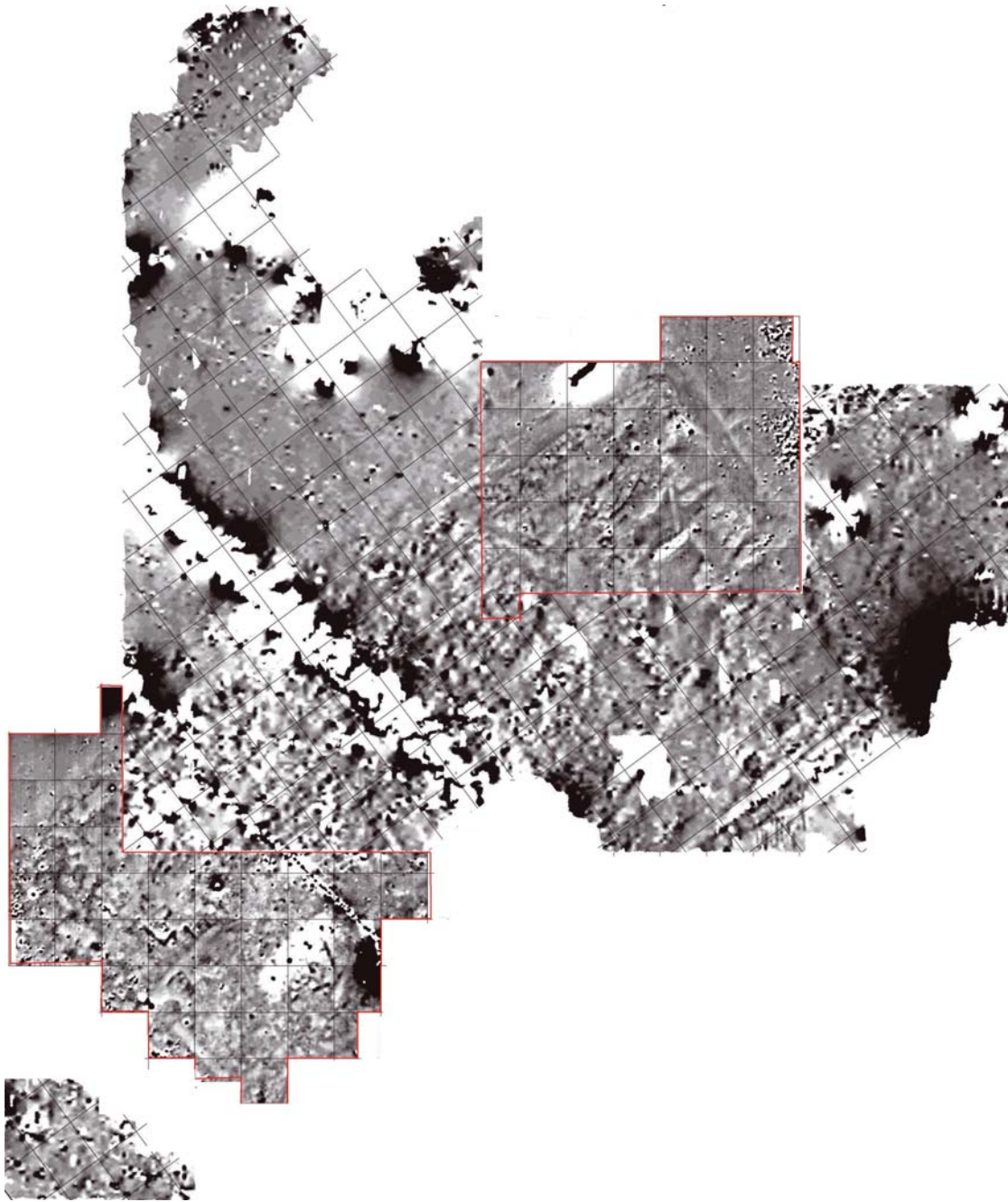


Fig. 72 Interpretative map of the results of magnetic prospecting in 2008–2010 (Processing W. Małkowski, K. Misiewicz)

magnetic field intensity within the area enclosed by walls. Measurements with the use of a cesium magnetometer made it possible to determine the course of the foundations of the wall in its northern, eastern and southern parts. The north-south aligned walls are particularly well-visible, as is the fortification in the eastern part of the site which

shows linear anomalies with higher values of the vector components of total magnetic field intensity (marked brown).

Similar narrow linear anomalies, but with lower values, correlate to probable mud-brick remains. Mapping with a cesium magnetometer registered a linear anomaly correlating most likely



Fig. 73 Tell el-Retaba, view from the northeast (photo M. Bogacki)

to the remains of the oldest phase of defence wall in the south-eastern part of the surveyed area. Plenty of anomalies, most likely reflecting mud-brick architecture, were recorded in the area enclosed by the fortifications. The interpretive map (Fig. 72) shows concentrations of such anomalies especially in the eastern part of the area surveyed (circles marked red). Narrow linear structures with right angles (marked as red lines) are typical of extant architectural foundations. Detailed plans of archaeological features were drawn using supplementary data from the fluxgate gradiometer prospection.

The interpretative map of the results of the survey in the area north of the preserved fortress remains (see Fig. 72) shows another two groups of anomalies that could correlate to archaeological remains. Of particular interest is the northernmost group, with two linear anomalies of varying character (narrow one with lower magnetic field intensity values and a broader one with higher values).

A model of the surface relief and an orthophotomap should be helpful in positioning future excavations which should, in turn, produce archaeological material for dating individual features, as well as conclusively interpreting all recorded magnetic anomalies.

5. PHOTOGRAMMETRY

By Miron Bogacki

Photographic and photogrammetric documentation of the site of Tell el-Retaba was completed in 2010 using kite aerial photography equipment designed by Miron Bogacki. This equipment was tested at the site in Ptolemais in Libya¹¹⁶ and at other excavations and has served photogrammetric studies.¹¹⁷ The team consisted of Miron Bogacki, photographer-documentalist and Wiesław Małkowski, a kite operator.

The study area was located on a treeless, sandy mound cut by power lines and an asphalt road

¹¹⁶ MIKOCKI *et al.* 2007, 117.

¹¹⁷ BOGACKI *et al.* 2010, 123–126.

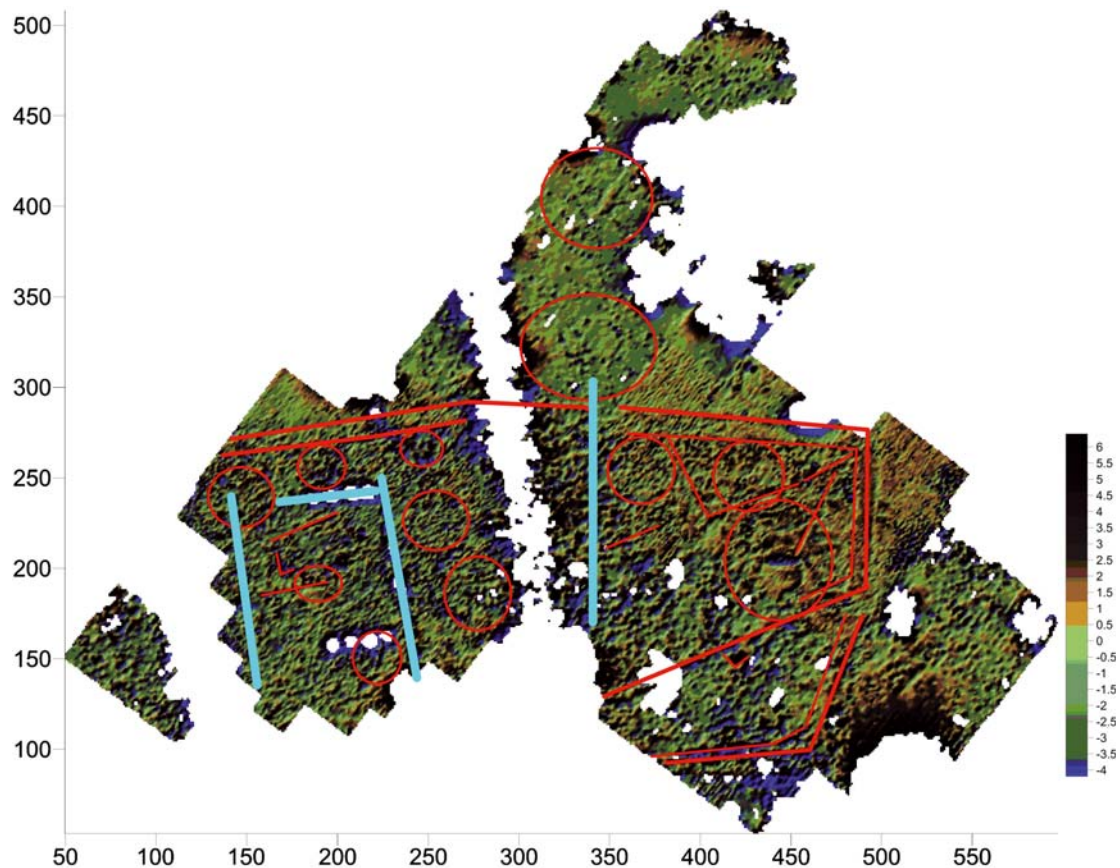


Fig. 74 Digital surface model of the excavations (area 4 to the left, areas 3 and 6 in the middle, area 9 to the right) (Processing M. Bogacki)

which constituted a considerable impediment. Suitable winds for flying the kite blew only a few times during the documentation team's two-week stay. Working hours were limited to eight hours between 6 am and 2 pm, dictating the morning or afternoon light of the exposures. The main objective was to document the south-western part of the site excavated by the Polish-Slovak archaeological mission.

Photographs were taken with a Canon 5D with fixed focal lens Canon 35 mm f.2.0. The camera was mounted on a remote-controlled rig which provided rotation and tilt of the camera in every direction. The control console was operated with a 7-inch LCD monitor and remote control apparatus. This gave insight into the view from the camera at any given moment and control over its movements and shutter operation. Three "flowform" kites of different size served as the carrier, adjusting size to wind-strength: the biggest kite for the weakest wind and the smaller kites for stronger wind. The

kite was released no higher than 100 m because of difficulties associated with the terrain. One photo session ended with the kite plunging, presumably due to a gust of wind and a stone which had got inside one of the chambers of the kite. The camera frame hit the ground hard but survived, neither the camera nor the memory card sustaining any damage that could prevent further work.

More than 900 aerial photographs, both oblique and vertical, was taken during the sessions held over two weeks. Oblique pictures presented a larger area from a more natural perspective (Fig. 73). Vertical photographs were used as photomaps and were further processed by photogrammetric software. Finally, the area of the Polish-Slovak excavation was documented, including the south-eastern part of the site where the walls of the fortress from the time of Ramesses III are visible on the surface.

Digital models of ground relief (Figs. 74, 75, 76) and orthophotomaps (general map with orto-

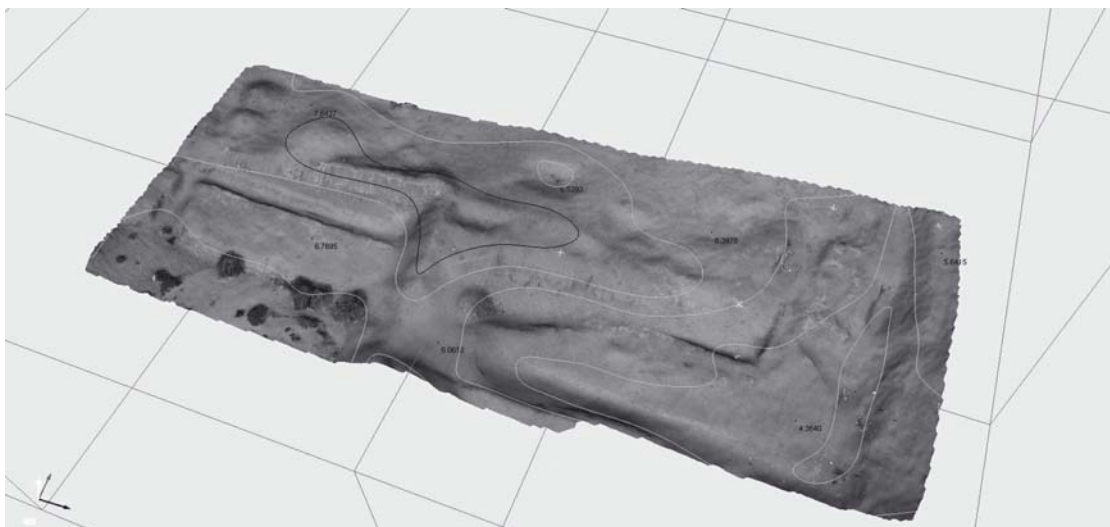


Fig. 75 Digital surface model of the ground relief in the south-eastern corner of the 20th Dynasty fortress (Processing M. Bogacki)

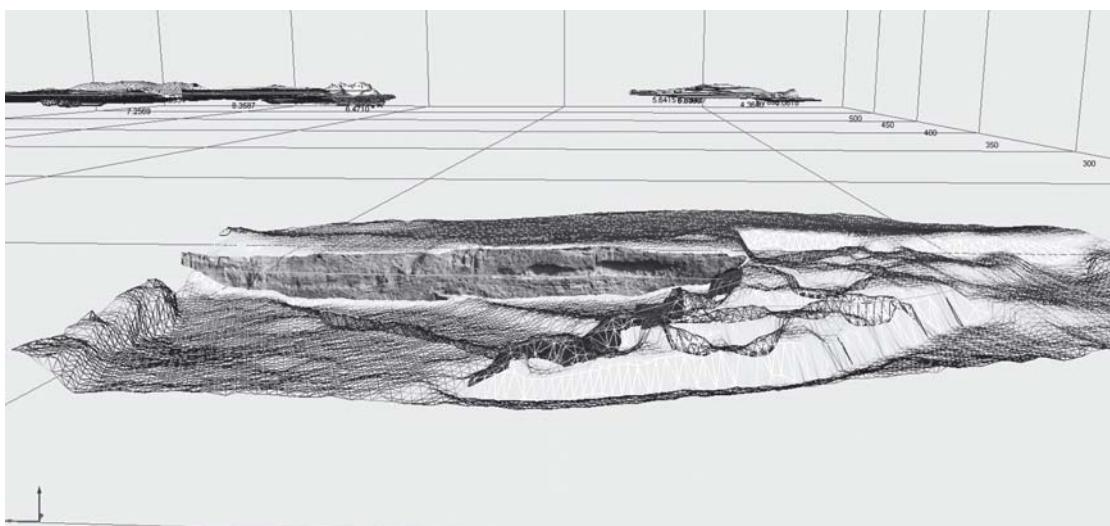


Fig. 76 3D model of the Polish-Slovak excavations at Tell el-Retaba, area 9 (Processing M. Bogacki)

photos) were made from vertical photos and geodetic measurements, using Topcon Image Master photogrammetric software. To do so, the camera had to be calibrated with the lens. Photopoints were established in the form of crosses visible from a height. These points were surveyed with RTK GPS (operated by W. Małkowski) and the data entered as a text file into the photogrammetric software. For each model there were a few to several control points. The same co-ordinate system was used for all models. Satisfactory accuracy of

the models created was achieved. For most models, plane resolution did not exceed 2 cm and depth resolution 15 cm. TIN (triangular irregular network) resolution was set at 0.5 or 1 m for relatively easy processing.

Eleven orthophotomaps with different resolution and size of presented area were created. The most accurate one included part of the Polish-Slovak excavation covering 848m². The largest area which was photographed was situated in the western part of the site and measured 15,732m².

The results of a terrestrial photogrammetry study conducted with the same software were added to a 3D model. Processing images of four excavation profiles and laser theodolite measurements (made by Łukasz Jarmużek) catered for a comprehensive study of the data in a single 3D model and the same co-ordinate system (Fig. 76).

A model and orthophotomap was also created for one of the monuments found at the site (cf. Fig. 39). Two photographs, using a simple ruler for scaling, helped create a photogrammetric description of a relief. Model accuracy was very

high. Plane and depth resolution were less than 1 mm.

Documentation prepared with the photogrammetric method has provided accurate measurement of distance, depth and surface, without actually having to be onsite. The 3D models and orthophotomaps taken at Tell el-Retaba supply up-to-date, objective documentation of site preservation and progress of archaeological work, making for easy data-processing and sharing opportunities. The material is also likely to contribute to a virtual reconstruction of the research site.

Bibliography

- ABD EL-MAKSOU, M.
1998 *Tell Heboua (1981–1991). Enquête Archéologique sur la Deuxième Période Intermédiaire et le Nouvel Empire à l'Extrémité Orientale du Delta*, Paris
- AMIRAN, R.
1969 *Ancient Pottery of the Holy Land. From Its Beginnings in the Neolithic Period to the End of the Iron Age*, New Brunswick.
- ARNOLD, D.
2003 *The Encyclopedia of Ancient Egyptian Architecture*, London
- ASTON, D.A.
1998 *Die Keramik des Grabungsplatzes Q I. Teil 1. Corpus of Fabrics, Wares and Shapes*, Forschungen in der Ramses-Stadt. Grabungen des Pelizaeus-Museums Hildesheim in Qantir-Pi-Ramesse, Mainz am Rhein.
1999 *Elephantine XIX: Pottery from the Late New Kingdom to the Early Ptolemaic Period*, AV 95, Mainz am Rhein.
2005 Amphorae in New Kingdom Egypt. *Ä&L* 14, 175–214.
2007a Kom Rabia, Ezbet Helmi and Saqqara NK 3507. A Study in Cross-Dating, 207–248, in: M. BIETAK, E. CZERNY (eds.), *The Synchronisation of Civilisations in the Eastern Mediterranean in the Second Millennium B.C. III*. CChEM 9, Vienna.
2007b Pottery of the Twelfth to Seventh Centuries BC, 17–59, in: D.G. JEFFREYS and D.A. ASTON (eds.), *The Survey of Memphis III: The Third Intermediate Period Levels*, London.
- ASTON, D.A., MOMMSEN, H., MOUNTJOY, P., PUSCH, E.B., and REHREN, T.
2007 Die in- und ausländischen Werkstoffe ger Grabung Qantir in Wort und Bild, 511–554, in: E.B. PUSCH and M. BIETAK (eds.), *Die Keramik des Grabungsplatzes Q I, Teil 2. Schaber – Marken – Scherben*, FoRa 5, Hildesheim.
- BADAWY, A.
1968 *A History of Egyptian Architecture, The Empire (the New Kingdom)*, Los Angeles.
- BAVAY, L.
1998 La céramique dans le secteur du parvis de la porte monumentale, 316–332, in: P. BRISAUD and C. ZIVIE-COCHE (eds.), *Tanis: travaux récents sur le tell Sân el-Hagar: Mission française des fouilles de Tanis*, Paris.
- BECKER H., HIMMLER T., CAMPANA S., NICOLosi I.,
2009 Fluxgate, Overhouser and Caesium-magnetometry, 283–289, in: S. PIRO and S. CAMPANA (eds.), *Seeing the Unseen. Geophysics and Landscape Archaeology*, London.
- BOGACKI, M., GIERSZ, M., PRZĄDKA-GIERSZ, P., MAŁKOWSKI, W., MISIEWICZ, K.
2010 GPS RTK Mapping, Kite Aerial Photogrammetry, Geo-physical Survey and GIS Based Analysis of Surface Artifact Distribution at the pre-Hispanic site of the Castillo de Huarmey, North Coast of Peru, 121–130, in: R. REUTER (ed.), *Remote Sensing for Science, Education, and Natural and Cultural Heritage*, Oldenburg.
- BUDKA, J.
2001 *Der König an der Haustür. Die Rolle des ägyptischen Herrschers an dekorierten Türgewänden von Beamten im Neuen Reich*, Beiträge zur Ägyptologie 19, Veröffentlichungen der Institute für Afrikanistik und Ägyptologie der Universität Wien 94, Wien.
- CAVILLIER, G.
2004 Il “Migdol” di Ramesse III a Medinet Habu fra originalità ed influssi asiatici, *Syria* 81, 57–79.

- 2008 *Migdol. Ricerche su modelli di architettura militare di eta ramesside (Medinet Habu)*, BAR 1755, Oxford.
- DAVIES, N. DE G.
1903 *The Rock Tombs of el Amarna I*, London.
- DE VARTAVAN, C. *et al.*
2010 *Codex of Ancient Egyptian Plant Remains*, London.
- DUPONT, P.
1998 Archaic East Greek Trade Amphoras, 142–190, in: R.M. COOK and P. DUPONT (eds.), *East Greek Pottery*, London, New York.
- EPIGRAPHIC SURVEY
1970 *Medinet Habu VIII, The Eastern High Gate with Translation of Texts*, OIP 94, Chicago.
- FRENCH, P.
2004 Distinctive Pottery from the Second Half of the 6th Century B.C., *CCE* 7, 91–97.
- FRENCH, P., and GHALY, H.
1991 Pottery Chiefly of the Late Dynastic Period, from Excavations by the Egyptian Antiquities Organisation at Saqqara, 1987, *CCE* 2, 93–124.
- GARDINER, A.H.
1920 The Ancient Military Road between Egypt and Palestine, *JEA* 6, 99–116.
- GERMER, R.
1982 Migdol, 124–125, *LÄ* IV.
- GIVEON, R.
1978 A Long-lost Inscription of Thutmose IV, *Tel Aviv* 5/3–4, 170–174.
- GÓRKA, K., AND RZEPKA, S.
forthc. *Infant Burials or Infant Sacrifices? New Discoveries from Tell el-Retaba*.
- HEROLD, A.
1999 Ein Kindergrab im königlichen Marstall, *Ä&L* 9, 85–100.
2006 *Streiwagentechnologie in der Ramses-Stadt. Knäufe, Knöpfe und Scheiben aus Stein*, FoRa 3, Mainz.
- HILLMAN, G.
1984 Interpretation of Archaeological Plant Remains: The Application of Ethnographic Models from Turkey, 1–42, in: W. van ZEIST, W.A. CASPARIE (eds.), *Plants and Ancient Man. Studies in Palaeoethnobotany*, Rotterdam.
- HOFFMEIER, J.K.
2006 “The Walls of the Ruler“ in Egyptian Literature and the Archaeological Record: Investigating Egypt’s Eastern Frontier in the Bronze Age, *BASOR* 343, 1–20.
- HOLLADAY, J.S.
1982 *Tell el-Maskhuta. Preliminary Report on the Wadi Tumilat Project 1978–1979*, Cities of the Delta 3, Malibu.
- 1999 Wadi Tumilat, 1076–1079, in: K.A. BARD and S.B. SHUBERT (eds.), *Encyclopedia of the Archaeology of Ancient Egypt*, Routledge.
- HÖLSCHER, U.
1929 *Medinet Habu 1924–28, Part II*, Chicago.
1957 *The Mortuary Temple of Ramses III, Vol. IV, Part II*, Chicago.
1951 *The Mortuary Temple of Ramses III. Part II*, Chicago.
- HOPE, C.A.
1989 Amphorae of the New Kingdom, 87–118, in: C.A. HOPE (ed.), *Pottery of the Egyptian New Kingdom. Three Studies*, Burwood.
- HOPE, C.A., ECCLESTON, M.A.J., KAPER, O.E., MARCHAND, S., and DARNELL, D.
2000 Kegs and Flasks from the Dakhleh Oasis, *CCE* 6, 189–234.
- JANSSSEN, R. and JANSSSEN, J.
1984 *Egyptian Household Animals*, Aylesbury.
- LAWRENCE, A.W.
1965 Ancient Egyptian Fortifications, *JEA* 51, 69–94.
- LICHTHEIM, M.
1975 *Ancient Egyptian Literature. A Book of Readings. Vol I: The Old and Middle Kingdoms*, Berkeley - Los Angeles - London.
- MALLESON, C.
forthc. a Report on the Archaeo-botanical Investigations at Tell el-Retaba 2009, *PAM* 20/21.
forthc. b Report on the Archaeo-botanical Investigations at Tell el-Retaba 2010, *PAM* 22.
- MARTIN G.T.
1987 *Corpus of Reliefs of the New Kingdom from the Memphite Necropolis and Lower Egypt*, London.
- MERRILLEES, R.S.
1968 *The Cypriote Bronze Age Pottery Found in Egypt. Studies in Mediterranean Archaeology* 18, Lund.
- MIKOCCI, T., BOGACKI, M., MAŁKOWSKI, W., MISIEWICZ, K., MUSZYŃSKA, M.
2007 Multimethodological Approach to the Study of Ancient City Planning: the Case of Ptolemais in Cyrenaica, Libya, 117–119, in: I. KUZMA (ed.), *Študijné Zvesti Archeologického Ústavu Slovenskej Akadémie Vied* 41, Nitra.
- MOENS, M-F, AND WETTERSTROM, W.
1988 The Agricultural Economy of an Old Kingdom Town in Egypt’s West Delta: Insights from the Plant Remains, *JNES* 47 159–173.
- MORRIS, E.F.
2005 The Architecture of Imperialism. Military Bases and the Evolution of Foreign Policy in Egypt’s New Kingdom, *PdÄ* 22, 504–508.
- MURNANE, W.J.
1980 *United with Eternity. A Concise Guide to the Monuments of Medinet Habu*. Chicago - Cairo.

- MURRAY, M. A.
 2000 Cereal Production and Processing, 505–536, in: P.T. NICHOLSON, I. SHAW (eds.), *Ancient Egyptian Materials and Technology*, Cambridge.
 2009 Questions of continuity: Fodder and Fuel use in Bronze Age Egypt, 249–262, in: A. FAIRBURN, E. WEISS (eds.), *From Foragers to Farmers: Papers in Honour of Gordon C. Hillman*, Oxford.
- NAVILLE, E.
 1887 *The shrine of Saft-El-Henneh and the Land of Goshen. Egypt Exploration Fund Memoir 5*, London.
- NEWTON, F.G.
 1924 Excavations at El-Amamah: 1923–24, *JEA 10*, 289–298.
- PALMER, C.
 1998 The Role of Fodder in the Farming System: a Case Study From Northern Jordan, *Environmental Archaeology 1*, 1–10.
- PENDLEBURY, J.D.S.
 1951 *The City of Akhenaten. Part III*, London.
- PETRIE, W.M.F. and DUNCAN, J.G.
 1906 *Hyksos and Israelite Cities*, London.
- PUSCH, E.B.
 1989 Bericht über die sechste Hauptkampagne in Qantir/ Piramess-Nord. Herbst 1988, *GM 112*, 67–93.
- RAEDLER, CH.
 2007 Keramikscherben aus den Werkstätten der Ramses-Stadt, 11–266, in: E.B. PUSCH and M. BIETAK (eds.), *Die Keramik des Grabungsplatzes Q I, Teil 2. Schaber – Marken – Scherben*, FoRa 5, Hildesheim.
- REDMOUNT, C.A.
 1989 *On an Egyptian/Asiatic Frontier: an Archaeological History of the Wadi Tumilat*, Chicago.
- ROSE, P.J.
 2007 *The Eighteenth Dynasty Pottery Corpus from Amarna*, EES EM 83, London.
- RZEPKA, S., WODZIŃSKA, A., HUDEC, J. AND HERBICH, T.
 2009 Tell el Retaba 2007–2008, *Á&L 19*, 241–280.
- SCHOTT, S. *et al.*
 1932 Bericht über die zweite vom Deutschen Institut für Ägyptische Altertumskunde nach dem Ostdelta-Rand und in das Wadi Tumilat unternommene Erkundungsfahrt, *MDAIK 2*, 39–54.
- SÉE, G.
 1974 *Grandes villes de l’Égypte antique*, Paris.
- SPENCER, A.J.
 1979 *Brick Architecture in Ancient Egypt*, Warminster.
- TABBAGH J.
 2003 Total Field Magnetic Prospection: Are Vertical Gradiometer Measurements Preferable to Single Sensor Survey? *Archaeological Prospection 11*, 75–82.
- TALLET, P.
 2003 Notes sur la zone minière du Sud-Sinaï au Nouvel Empire, *BIFAO 103*, 459–486.
- TASSIE, G.J. and WETERING, J. VAN
 2003 Early Cemeteries of the East Delta: Kafr Hassan Dawood, Minshat Abu Omar, and Tell Ibrahim Awad, Cairo, 499–507, in: Z. HAWASS, L. PINCH BROOK (eds.), *Egyptology at the Dawn of the Twenty-First Century: Proceedings of the 8th International Congress of Egyptologists, Cairo 2000, Vol. 1 Archaeology*, Cairo.
- THOMAS, S.
 2003 Imports at Zawiyet al-Rakham, 522–528, in: Z.A. HAWASS and L.P. BROCK (eds.), *Egyptology at the Dawn of the Twenty-First Century. Proceedings of the Eighth International Congress of Egyptologists, Cairo 2000, Vol. 1, Archaeology*, Cairo.
- VAN DER VEEN, M.
 1999 The Economic Value of Chaff and Straw in Arid and Temperate Zones, *Vegetation History and Archaeobotany 8*, 211–224.
- WODZIŃSKA, A.
 2011 Pottery and Chronology. Preliminary Remarks on Ceramic Material from Tell el Retaba, 1015–1036, in: D. ASTON, B. BADER, C. GALLORINI, P. NICHOLSON and S. BUCKINGHAM (eds.), *Under the Potter’s Tree. Studies on Ancient Egypt Presented to Janine Bourriau on the Occasion of her 70th Birthday*, OLA 204, Leuven.