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Tell El-Retaba, Season 2011

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TELL EL-RETABA, SEASON 2011

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Abstract: The fifth season of archaeological fieldwork by a Polish–Slovak team at Tell el-Retaba in Wadi Tumilat uncovered a section of a Hyksos cemetery, fragments of an early Eighteenth Dynasty settlement and a large building belonging to the fortress of Ramesses III, of which only the defense walls have been traced. New data contributed information on the inner structure of the fortress. Continued excavations also unearthed more fragments of a Third Intermediate Period settlement.

Keywords: Tell el-Retaba, Hyksos, New Kingdom, Third Intermediate Period, fortress

During the fifth season of the Polish–Slovak Archaeological Mission in Tell el-Retaba excavations were carried out in area 4 to the west of the modern asphalt road and in area 9, which is on the eastern side of the road [*Fig. 1*]. The mission also cooperated with an Egyptian team of Mustafa Nour el-Din (SCA) — with support from the General Director of the Inspectorate in Tell el-Kebir Tarek Harash — on the documentation of discoveries made during rescue excavations by this team in 2010 and 2011 along the second line of the asphalt road under

construction (earlier rescue excavations resulting from the road project were carried out by the Polish–Slovak team in 2009 and 2010). The most important finds were Hyksos tombs, a big house from the early Eighteenth Dynasty and a well dating to the Late Period (Rzepka, Nour el-Din *et alii* 2014). Another Egyptian team of Nasrallah el-Killany conducted separate rescue excavations in the middle of the tell, on the site of the construction of a new water pipeline, but without any participation of the Polish–Slovak mission. [SR]

EXCAVATIONS IN AREA 4

Exploration from the 2010 season (Rzepka, Wodzińska *et alii* 2011: 129–184) was followed up in 2011 with excavations or cleaning in the following squares: Y80–Y90/

X180, Y85/X185–195, Y60–70/X185, Y60–75/X190, Y60–85/X195, Y60–70/X200, Y85–90/X200 and Y60–70/X205 [see *Fig. 2*]. The squares were 5 m by 5 m.

MIGDOL GATEWAY

Continued excavation of a yellow sand deposit under the *migdol* gateway of the Twentieth Dynasty fortress, exploration of which had started in 2010 in squares Y80–Y90/X180 and Y85/X185–195,

revealed a child burial [609] in a jar, buried approximately 0.40 m deep in the sand deposits in square Y85/X180 [Fig. 1, right], about 5 m west of “wall 1” and slightly south of the gateway axis. The jar was oriented NE–SW with the rim to



Fig. 1. Child burial [609]: the jar with the burial in situ (right) and the bones after examination (Photos L. Zelenková-Hudáková, L. Hulková)

Team

Dates of work: 13 September–20 October 2011

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We would like to thank Salima Ikram for a preliminary assessment of skeletal remains from the Hyksos cemetery in area 9 and Daphna Ben-Tor for her remarks and bibliographical references concerning the two scarabs from tomb [810].

the northeast. A well preserved skeleton of a child about six months old (L. Hulková, personal communication) [Fig. 1, left] was found inside it, the head to the southwest. The jar was of Ramesside date (A. Wodzińska, personal communication). Lumps of silty material were found around the bones inside the jar.

Two bonded walls at right angle to one another [617/618], built of black mud bricks, were uncovered about 0.50 m below the burial. The building can be dated to the Eighteenth Dynasty. The interior of this “Black house 2” (for “Black house 1”, see below) was open to the northwest and, like the area west of it, was filled with a thick deposit of yellow sand.

Sand layers closer to the western threshold of the gateway were mixed with material used probably for making bricks. The sand deposits underlay the towers of the *migdol*, forcing work to be discontinued due to safety considerations as much as time constraints. The chiefly mud-brick rubble deposits found east of “Black house 2” and closer to Petrie’s “wall 1” formed a kind of platform for the eastern part of the *migdol*.

NAVILLE’S TRENCH

Further work focused on the cleaning of a ditch that cut into the northern tower of the *migdol* [Fig. 3, bottom left]. Analysis of the documentation from É. Naville’s excavations (Naville 1887: Pl. xi, section E–F; here Fig. 3, top) and comments by W.M.F. Petrie: “...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, Duncan 1906: 28), indicated that the cut was a remnant of Naville’s 1885 trench.

Squares Y60–70/X185, Y60–75/X190 and Y60–85/X195 covered an area inside and adjacent to Naville’s trench. Modern deposits included material deriving from Egyptian excavations in the 1990s (as evidenced by newspapers found during cleaning), but the reports from these activities have not been forthcoming so far.

A mud-brick platform about 10 m wide, supporting the northern tower of the *migdol* and/or “wall 2”, was recorded in both sections at the western end of the trench. Bricks (measuring approximately 40–44 x 18–20 x 11–12 cm) in the western margin of the platform were laid diagonally [647], i.e., on their longer, narrow side below the outside part of the fortification. As the platform continued to the north–northwest, it could be interpreted as a base for the massive defense “wall 2” (Petrie, Duncan 1906: 29, Pl. XXXV), even though the superstructure of this wall was not preserved. Bricks in layers above the diagonal base measured approximately 37 x 22 x 10–11 cm. The *migdol* bricks in the western face of the structure above the platform were evidently larger: 40–44 x 22 x 15–16 cm. The platform was necessary presumably to stabilize the structure raised on sandy deposits.

Building foundations of dark mud brick (“Black house 1” [660]) were recorded alongside the northwestern side of the trench [see Fig. 2]. This structure can be dated like “Black house 2”, to the Eighteenth Dynasty, the times of Hatshepsut and Thutmose III. The northeastern part of the building lay directly under the *migdol* and/or the defense wall platform. Its external walls were built either of two parallel rows of

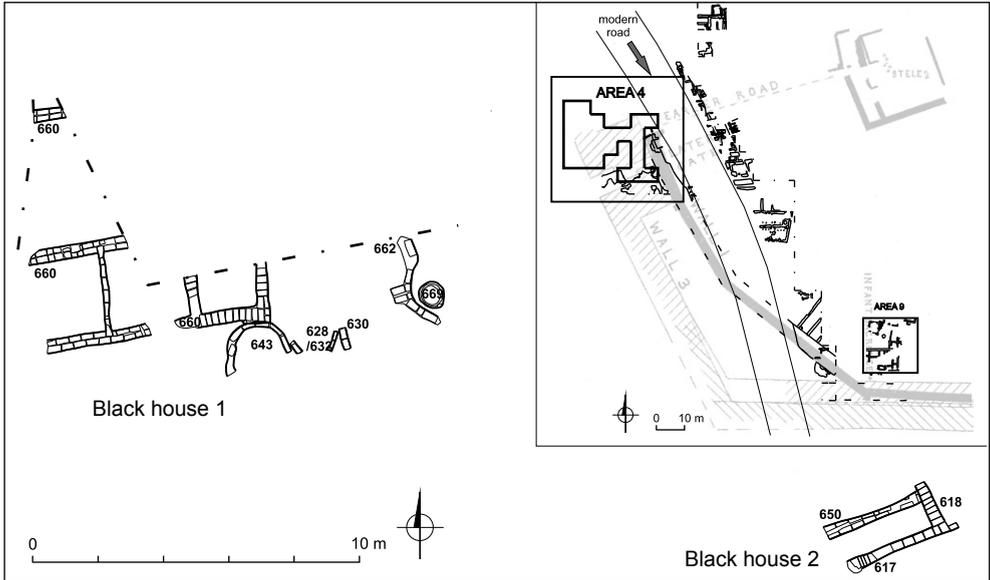


Fig. 2. Eighteenth Dynasty structures in area 4; inset, location of the trench on the plan of the site (Drawing Ł. Jarmużek, L. Hulková)

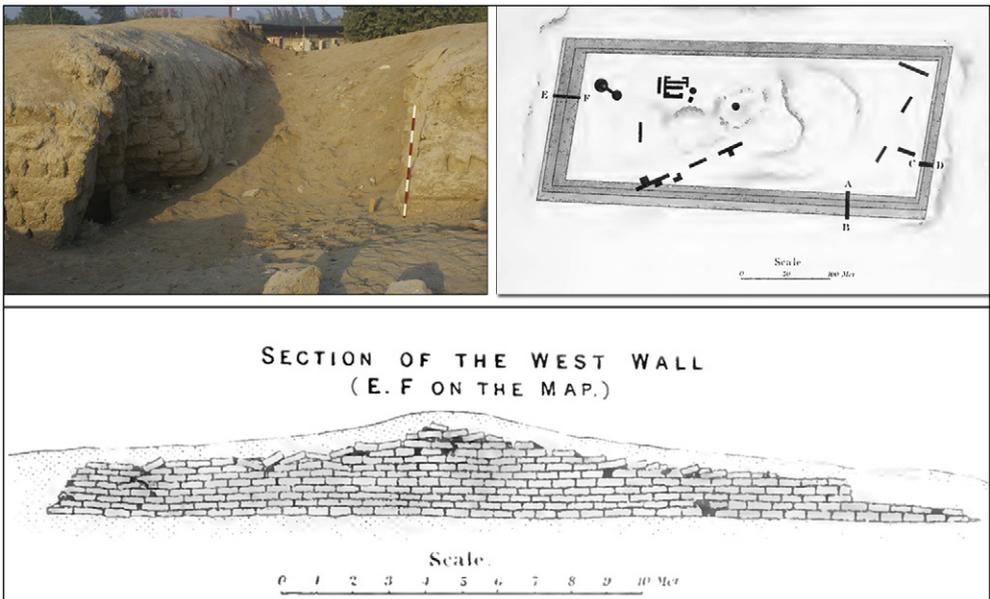


Fig. 3. Naville's trench before reexcavation in 2011 (top left); section E–F, view to the north (bottom), marked on Naville's plan of 1885 (top right) (After Naville 1887: Pl. XI and section E–F; photo J. Hudec)

mud bricks laid lengthwise or of a single row of mud bricks laid crosswise (brick dimensions approximately 38 x 18 x 8 cm), thus the thickness of the external walls reached 37–38 cm. The walls (or rather their foundations) were preserved up to four courses high. An internal east–west wall was also built of two parallel rows of mud bricks, whereas north–south internal walls were constructed of one row of mud bricks. The bricks had the same dimensions as those mentioned above. In the uncovered part of the structure,

four rooms of different sizes could be traced [667, 685, 688, 706]. None was fully excavated.

Raw materials for making paint and cosmetics, such as mica, galena, red, yellow and brown ochre, were found together with grinding stones and grinders [Fig. 4c]. A small carved-bone kohl container [Fig. 4b] and a copper-alloy dagger, 33 cm long [Fig. 4d], were found in this context. The date of the dagger corresponds to that of the early New Kingdom pottery discovered in



Fig. 4. Finds from layers corresponding with “Black house 1” architecture (Eighteenth Dynasty): a – alabaster lid of stone kohl pot (S769); b – carved bone kohl pot (S764); c – grinder with traces of red ochre (S770); d – bronze dagger (S747) (Photos V. Dubcová)

the “Black house 1”. The dagger could belong to one of the types discovered by W.M.F. Petrie (1917: 29, Pl. XXXIV, D 52, BM 30463; Pl. XXXIV, D 47, UCL 40681; Pl. XXXIV, D 52, UCL 16603). Veronika Dubcová proposed to attribute the dagger to Type VII of S. Petschel’s typology (Petschel 2011: 191–221). Fragments of Cypriote black and bichrome pottery (A. Wodzińska, K. Kopetzky, personal communication), imported or imitated (Merrillees 1970: 3–27), were found in the building, and an alabaster lid of a stone kohl pot [Fig. 4a] lay outside its southern wall. A piece of pumice appears to have been used as a tool.¹

Superimposed walls made of greenish (upper) and yellow (lower) bricks were uncovered below “Black house 1”. The greenish walls were preserved for the most part to a height of only one or two courses of bricks; the older, yellow walls were more massive.

In the southwestern section of the trench, two siloses [628/632 and 643] were discovered below the mud-brick platform [see Fig. 2]. Silo [643], diameter approximately 1.50 m, was contemporary with adjoining “Black house 1”, as indicated by the stratigraphy, mud-brick type and the color of the debris. The other silo [628/632], situated further to the east, was lost in two thirds, but its reconstructed diameter was about 1.50 m. It was slightly higher in the stratigraphic sequence, and therefore later than the first one. The silo had a north–south wall (18–20 cm thick) on its eastern side. Although previous (Egyptian?) excavations disturbed both siloses, some datable pottery from secure contexts was recovered.

Recent modern investment cutting into the western side of “Black house 1” and partly also into the northwestern platform of the defense wall resulted in a large north–south section, in which the massive yellow walls under “Black house 1” were partly uncovered. The deposits among these walls consisted largely of reddish sand and gravel. The walls stood on top of a thick reddish (river?) gravel deposit.

Inside Naville’s trench, above and east of “Black house 1”, several settlement layers were probably removed already in antiquity either when digging a moat(?) or excavating clay for brick-making (probably in the times of Ramesses III when the *midgol* was erected). As a result, the terrain sloped eastwards with several ashy layers preserved on top. An oven [669], 0.60 m in diameter, and a silo (or another oven) [663], as well as several scattered mud bricks of the same kind as those in the tower platform, were uncovered on the brink of the slope. The two structures were separated from the area west of them by a simple wall. Due to earlier digging, it is not possible to estimate whether this wall reached “Black house 1” further to the west. A series of overlapping greenish and yellow walls, made of mud bricks laid lengthwise, were uncovered between these structures and “Black house 1”. The depression/moat was filled with yellow sand up to 2.50 m thick. The situation is similar to what was encountered below the *midgol* gateway, however, with an opposite elevation of the slope. The bottom of the yellow sand deposit lay on reddish gravel.

Cleaning of the mud-brick platform in areas Y60–70/X200 and Y60–70/X205 north of the *midgol* showed that

¹ For the use of pumice in the ancient Mediterranean, see Vienna University of Technology 2008.

nothing remained of the bricks of Petrie's "wall 2" on top of it. Some of the bricks in the platform measured 46–50 x 22 x 10–11 cm. Several recent disturbances were detected in the platform, as was evidence of previous excavation or cleaning alongside its eastern internal face and its inner corner with the northern tower of the *migdol*. It seems that the thick deposit of yellow sand continued on the inside of "wall 2" north of the *migdol*.

NORTHERN TOWER OF THE *MIGDOL*

Cleaning the surface of the northern tower in areas Y75–85/X195 revealed several refuse pits alongside its northern edge. Above the northeastern corner of the tower (square Y85/X200), a wall running north–south was uncovered, built on a thick ashy layer. The ashes yielded a piece of textile. Third Intermediate Period pottery (drinking bowl) was found between a wall [661] and the Ramesside(?) tower masonry [687], covered by younger masonry. The superposition raises questions about building chronology in the post-Ramesside period and the relation of the younger structures to Petrie's "wall 3".

SUMMARY OF WORK IN AREA 4
Settlement dated tentatively to the early New Kingdom was excavated outside (west of) the area fortified by the hitherto known defense walls. No direct military purpose appears to be in evidence and it was used more likely by craftsmen. The destruction may have been violent.

Upper (Eighteenth–Nineteenth Dynasty) settlement layers in the area were probably removed during the construction of the *migdol* during the rule of Ramesses III, as there is a direct superposition of early New Kingdom and Twentieth Dynasty structures on the ground.

The *migdol* stands on a thick deposit of sand filling a depression (ditch?) confirmed, below the gateway and the southern tower. There are also indications of it continuing under the inside face of "wall 2" north of the *migdol*, which need to be confirmed by tracing the edges of the ditch in future research.

There are several architectural relics at the northeastern corner of the northern tower of the *migdol*, which might indicate settlement or reconstruction of the tower in the Third Intermediate Period.

[JH]

EXCAVATIONS IN AREA 9

Excavations in this area were carried out in 16 squares measuring 5 x 5 m. The upper layers were heavily disturbed by *sebakhin* cuts. In the southern part of the area, a deep trench, 14 m long and 4 m wide, was found running from the southwest to the northeast. It had evidently been bulldozed in modern times and was filled with windblown sand.

HYKSOS PERIOD CEMETERY
The bulldozing, which destroyed structures of later date, revealed a Second Intermediate Period level [Fig. 5:A]. Dug into a layer of coarse-grained reddish gravel was a burial pit measuring an estimated 3.50 m by 2.50 m, at the bottom of which was a vaulted mud-brick chamber [810] [Fig. 6]. The fill contained a clay beaker

that must have been left during the burial ceremonies (it was lost before it could be properly documented). The rectangular chamber, 2.90 m long and 1.20 m wide, was oriented NNW–SSE axis. The long walls consisted of four courses of bricks

laid in a stretcher bond, the bricks coming in two kinds and sizes: quality greenish gray measuring 37 x 15 x 9 cm and displaying evidence of being made in molds (seams on the surface), and fine-grained, dark gray bricks, approximately

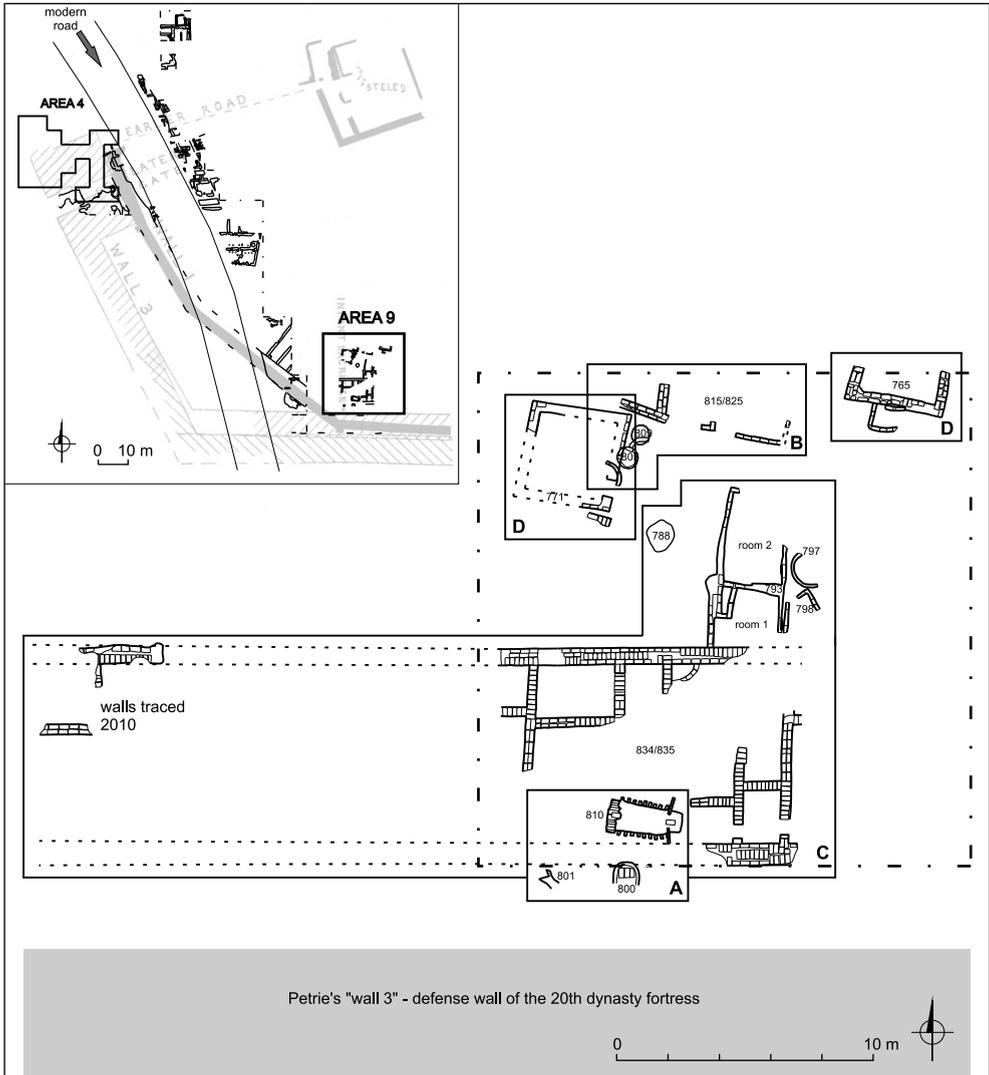


Fig. 5. Plan of structures unearthed in area 9; inset, location of the trench on the plan of the site (Drawing Ł. Jarmużek)

33 x 15 x 6 cm in size. The latter bricks were used for the bottom courses, the former for the rest of the structure. The back (west) wall was higher than the side walls with eight courses of bricks stepped in at the sides. It supported the vault, which was constructed of rows of three to four bricks springing from the side walls. The row adjoining the back wall rested inclined against the wall in an apparently intentional measure to increase the friction and thus make the vault more stable and capable of withstanding pressure. Eight bricks on each side stuck out at intervals from the outer face of the side walls; they were part of the vault structure, but their function is hard to comprehend. They may have added stability to the whole construction thanks to the pressure that the gravel layer outside the chamber put on them (Forstner-Müller 2008: 29). The entrance to the burial chamber was through the short east wall (which could not be explored because of the superimposed later structures in this place). It was blocked by several mud bricks laid headers into the tomb. Two low walls on either side of the entrance, built at right angle to the chamber axis, were designed to hold the fill of the burial pit from sliding into the entrance. The interior of the chamber except for the entrance wall was rendered with mud mortar. The outside surface of the vault was also rendered with mortar.

The tomb contained two male individuals, probably young adults (S. Ikram, personal communication), and a goat skeleton. The primary burial (skeleton 1) was at the rear of the tomb, whereas the secondary burial (skeleton 2) was placed in the front part of the tomb and the goat was located near the entrance, behind the head of skeleton 2. The

arrangement of the bodies suggests reuse of the tomb for a second burial after at least several years from the original one. The bones of the original tomb owner, already disarticulated, were pushed to the rear of the chamber in order to create room for the new burial. Scraps of textiles and a juglet and scarab (S1044, see below) were found in association with the remains of the first burial. Skeleton 2 was laid out parallel to the tomb axis, on the right side, head to the entrance and facing north. The legs were slightly contracted, arms bent at the elbow and hands drawn to the face. The head rested on a brick wrapped in a textile. A hole in the right temporal bone can be identified as a probable cause of death. Small fragments of textiles were preserved also under the right leg, indicating that the body could have been wrapped in a shroud. A scarab (S1058, see below) and a small ceramic vase, very much like the juglet in decoration (see Wodzińska 2014: Fig. 1, in this volume), were found near the pelvis of skeleton 2 and an amethyst bead and some fragments of bronze wire near its hands. The similarity between the vessels and the fact that the second scarab lay in a thin layer of different color than the rest of the fill in the burial chamber suggest that all of the described equipment had belonged to the primary burial.

Typical features of tomb construction draw parallels among tombs discovered at other sites of Second Intermediate Period–Middle Bronze Age II (MBII) date in the eastern Delta, such as Tell el-Dab'a (Forstner-Müller 2008), Tell el-Maskhuta (Holladay 1982: 44–47), Tell el-Koa, Tell Om-Bordi (El Hangoury 2003). The tomb represents Type IV (single-vault burial chambers) in the well documented Tell el-Dab'a typology (Van den Brink 1982:

21–22; Forstner-Müller 2008: 29–30). Relying only on its design and manner of construction, the Retaba tomb can be correlated with tombs from layer D/3 at Tell el-Dab’a, e.g., No. 3 (A/II-m/15) and No. 4 (A/II-m/15) (Forstner-Müller 2008: 308–319), which means that it was

constructed probably in the MBIIB/C phase, i.e., the Hyksos Period (Forstner-Müller 2008: 21, Table 1).

The scarabs found in the tomb (both probably belonging to the equipment of the primary burial) also clearly point to the Hyksos Period and to its late phase at that

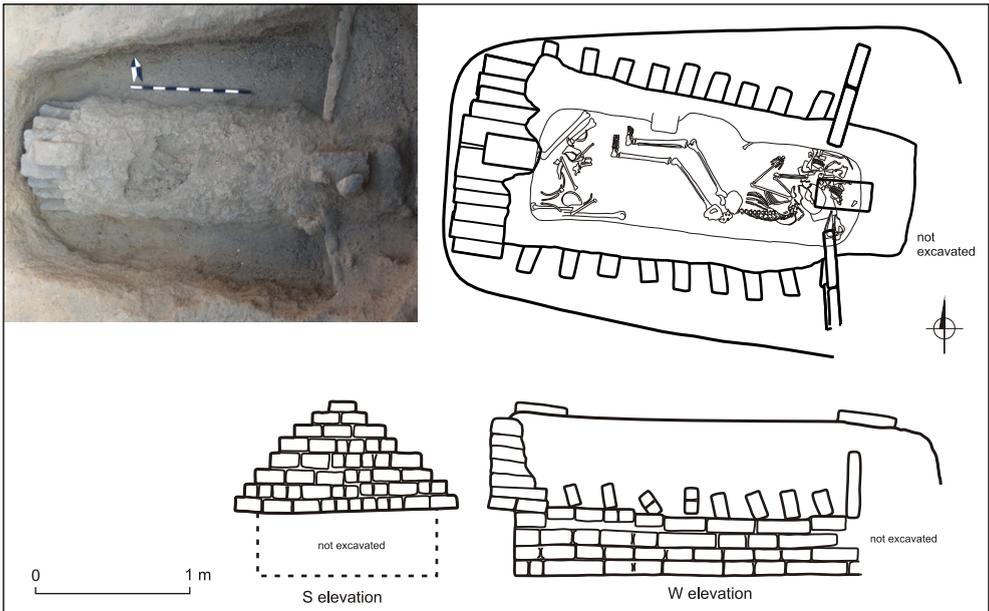


Fig. 6. Hyksos tomb [810]: plan and sections; top left, top view of the grave pit before exploration (Drawing M. Piorun, Ł. Jarmużek; photo S. Rzepka)



Fig. 7. Scarab S1044 (left) and S1058 from Hyksos tomb [810] (Photos S. Rzepka)

(D. Ben-Tor, personal communication). Scarab S1044 [Fig. 7, left] is decorated on its flat side with a symmetric composition of small signs, which forms a decorative pattern and not an inscription: a central column (composed of *ankh* surrounded by an oval frame, *ka*, *kheper* and *r*) is flanked by ureai, ankhs, papyrus stems, red crowns (?). This type of symmetric patterns of hieroglyphs occurred first in the late Middle Kingdom (late Twelfth and Thirteenth Dynasty) (Ben-Tor 2007: Pls 8–10), but remained popular during the Second Intermediate Period and the choice of signs and their arrangement on the Tell el-Retaba scarab clearly dates it to the Hyksos period. The closest parallels come from Tell el-Dab'a, which is presumed to have been a production center (Mlinar 2004; Ben-Tor 2007: 78, 81, Pls 33:41,42, 34:2,15, 35:9,15, 42:4,8). Decoration on the flat side of the scarab as well as the form of its back point to the second half of the Fifteenth Dynasty (Mlinar 2004: 129, 132, 134, Fig. 14). The other scarab (S1058) [Fig. 7, right] confirms this dating. Its back type suggests the final phase of the Second Intermediate Period. Its design is quite unique: a bird (falcon?) perching on a tall conical object. The fairly deep cutting of the decoration, typical of the late Hyksos Period, is noteworthy.

The dating toward the end of the Fifteenth Dynasty is also confirmed by the vessels found in the tomb, which seem to represent a local ceramic tradition (see Wodzińska 2014: 109–110 and Fig. 1).

NINETEENTH DYNASTY

Excavations in area 9 in 2010 had revealed part of the fortress of Ramesses II: a fragment of defense wall (Petrie's "wall 1")

and barracks/workshops abutting the inner face of this wall (Rzepka, Hudec, Jarmužek 2013; Rzepka, Wodzińska *et alii* 2011: 142–152). Further parts of the fortress to the east of the explored structures in area 9 were excavated in 2011, but without recording any remains. This part of the fortress was apparently a large open court.

A thick layer of tumbled bricks from Petrie's "wall 1", found scattered all over the excavated area, is evidence for the abandonment of the fortress, which occurred before the successor, Ramesses III, took the throne. The latter king built a completely new stronghold, larger and better protected with very thick walls, on the ruins of the old one. Although there is no clear archaeological evidence for a more precise dating of the abandonment of the earlier fortress, it seems plausible that it happened during the late Nineteenth Dynasty, which was a period of marked internal strife in



Fig. 8. Kilns [805] and [809] and remains of a house(?) [815/825] to which they belonged (Photo S. Rzepka)

the Egyptian state. The cemetery which arose on the ruins (two burials found in the southern part of the area) indicates, however, that the site had not been completely deserted.

The phase after the abandonment of the fortress of Ramesses II is represented most probably by a rather poorly preserved structure [815/825]. Only the southern part of this feature could be explored and it appeared to be composed of three units as well as domestic installations in the form of two kilns and a silo on the southern side [*Fig. 8*; see *Fig. 5:B*]. Both kilns were made of fired clay, [809] was 0.74 m in diameter with walls 2 cm thick, [805] was slightly bigger, about 0.84 m in diameter, placed on a platform of mud-bricks and with a low, rounded wall of mud brick [816] attached to its outside face. The second kiln appears to have replaced the first one. A round structure [820] next to the first kiln may have been a silo. The remains can be interpreted as a rather poor house with thin walls and small irregular rooms, accompanied by some installations for bread baking and storage outside.

TWENTIETH DYNASTY

A large structure [834/835], destroyed in the middle by the bulldozer cut, was discovered in the southern part of the area excavated this season [see *Fig. 5:C*]. The building was rectangular, oriented E–W. It was 8.50 m wide and at least 30 m long (taking into consideration remains discovered further to the west in 2010), although its full length cannot be determined as neither the eastern nor the western limit has been reached. It was composed of two thick outer walls, running parallel to one another and

a series of inner divider walls that were much thinner (thickness of 0.67–0.88 m and 0.37–0.39 m respectively). The outer walls were constructed in a regular bond of alternate courses of headers and stretchers, for the partition walls, the two bonding patterns were used on the same level. Brick dimensions were regular (38 x 19 x 12 cm). At least 10 rooms were traced in outline, but without exploring the fill this season, hence the following remarks concerning their date and function should be taken as tentative at best. In any case, the building orientation strictly parallel to the late Ramesside defense wall (Petrie's "wall 3") suggests that the structure belonged to the Twentieth Dynasty fortress. Examination of pottery from a layer excavated north of the building confirmed this dating. The complex may have served as living quarters for the fortress garrison in this period.

During the Twentieth Dynasty still to judge by the pottery evidence, some poorly constructed structures [793] were attached to the north wall of building [834/835]. The walls were thin (0.17–0.30 m), the layout irregular. At least two rooms could be identified, one 2.20 m by 2.40 m, the other relatively bigger, 3.60 m by 2.40 m. A mud-brick manger and two separate layers of dung (much like the layers of whitish soil mixed with organic material found in a large stable in 2010, see Rzepka, Hudec, Jarmużek 2013: 84–87) on the floor of the first room suggests use as a kind of pen for small animals, presumably goats or sheep. A walking level to the west of the second room, considerably disturbed by later cuts in its western part, may have been an open court or another room, of which no walls have been preserved. A storage pit [788] was discovered at the western

edge of this “floor” [Fig. 9]. It contained 15 pots, most of them fully preserved (see Wodzińska 2014: 112–113 and Fig. 6, in this volume). An unidentifiable structure [798] and a severely damaged silo [797] with a diameter of about 1.20 m were also recorded in this area. These poorly constructed additions and installations should be seen as serving the “private” needs of the fortress garrison.

Linked with structure [834/835] is a thick dump layer in the western part of the excavated area [829], containing large quantities of pottery (from the Twentieth–Twenty-first Dynasty), animal bones and diverse small finds, such as limestone loom-weights and net weights, faience beads, pottery figurines. The distinction between

loom- and net weights is not always obvious (Jarmužek 2010), but S1069 apparently represents the first category and S1089 the latter [Fig. 10]. Crude clay figurines of cobras form a separate, interesting group. One (S1118) [Fig. 11, bottom] was found in a stratigraphic unit [829], but several others were recorded nearby in disturbed contexts; most probably they originated from the same deposit. Similar objects are known from other sites in Egypt, e.g., Amarna, Memphis, Kom Firin, and in the Levant (Szpakowska 2003: 113–114). They are found usually in fragments, as is the case of the Tell el-Retaba examples, and it seems that they were smashed intentionally, probably during some kind of ritual from the sphere of personal piety. Another



Fig. 9. Cache of pottery vessels [788]
(Photo Ł. Kumkowski)

pottery figurine (S1081), also reflecting personal piety, is quite schematic (only the upper part has been preserved) and of crude craftsmanship. It may be a representation of a deity (Hathor?) with horns and a sun disc on its head.

THIRD INTERMEDIATE PERIOD
Two structures dating to the Third Intermediate Period were discovered in the northern part of area 9 [see *Fig. 5:D*]. Building [771] is poorly preserved, the walls rising only 0.45 m high, its

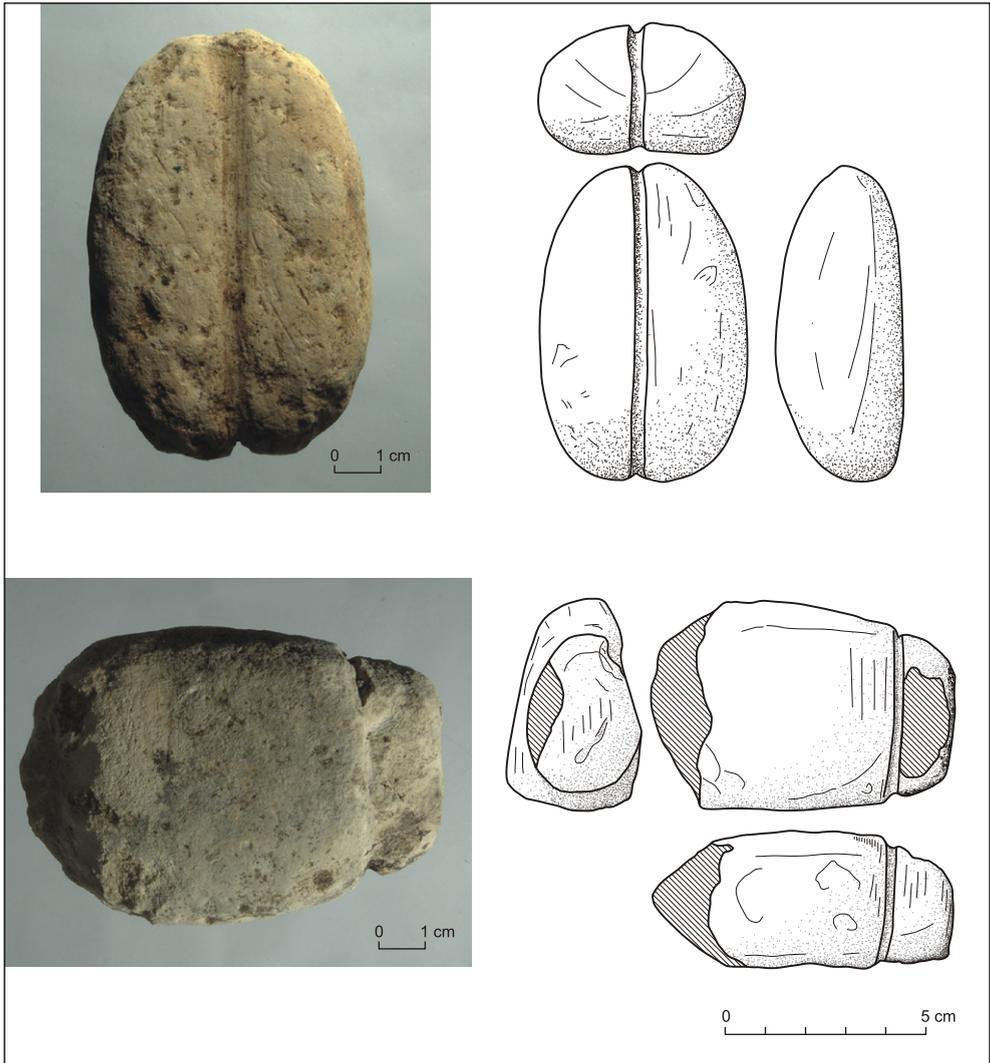


Fig. 10. Weights of limestone: top, loom weight S1069; bottom, net weight S1089 (Photos S. Rzepka; drawings B. Adamski, Ł. Jarmużek)

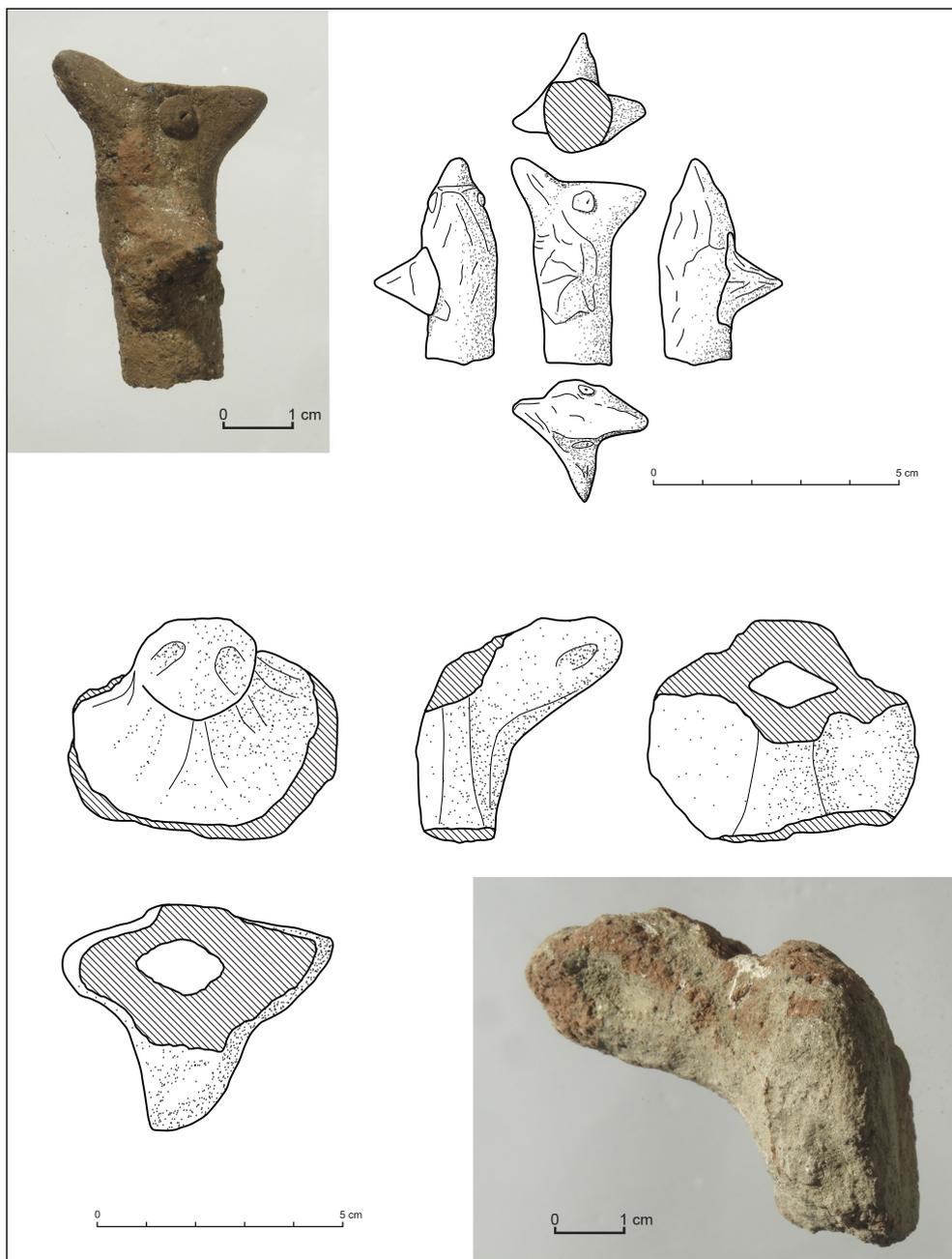


Fig. 11. Clay figurines: top, Hathor(?) S1081; bottom, cobra, S1118
(Photos S. Rzepka; drawings B. Adamski, E. Jarmużek, M. Piorun)

southwestern part completely destroyed by *sebbakhin* pits. It was roughly square in plan, approximately 4 m to the side, containing a single room with inner dimensions about 3.10 m by 3.10 m). The walls were 0.40 m thick, built of regular bricks (37 x 20 x 12 cm) in a stretcher bond where discernible. The entrance, 0.70 m wide, was situated in the southern part of the east wall. The ruins of the building were later used as a dump for large quantities of pottery sherds and animal bones. Another one-room building [765], situated several meters to the southeast, was constructed later than the above described structure, but still in the Third Intermediate Period. It was of similar size and wall thickness, but the bonding pattern of the walls was quite irregular and the mud-bricks of different size. The floor of the room was covered with a thick layer of broken pottery, ashes and fishbones.

Although the explored area is quite small, the changes in settlement pattern and spatial organization between the late Ramesside and Third Intermediate Period are significant. Compared to the well planned and constructed building [834/835] of Ramesside times, the Third Intermediate Period settlement consisted of small, single-room houses that were poorly planned and executed. There is also a clear change of building orientation with the new structures no longer following with such precision the course of the late Ramesside defense walls.

SUMMARY OF WORK IN AREA 9

The discovery of tombs belonging to a Hyksos cemetery was surely the most important result of work in 2011 in area 9. Only one tomb was explored by the team, but two other burial pits [800] and [801], partly under late Ramesside structures, were observed in the immediate neighbourhood and rescue excavations by Mustafa Nour el-Din along the asphalt road uncovered more than a dozen of similar type, testifying to the presence of a more extensive cemetery. This has pushed back the beginnings of settlement history at Tell el-Retaba to the Second Intermediate Period. At the moment there are no indications of any kind of human activity before this period.

The spatial organization of the interior of the Ramesside fortresses was augmented with new data, adding to the limited evidence so far that consisted of the impressive defense walls (Petrie's "walls 2 and 3").

Last but not least, further structures belonging to the Third Intermediate Period settlement supplemented the data already collected from areas 3, 5 and 6 in earlier seasons to show that an extensive settlement existed on the site in the times following the New Kingdom. This occupation was apparently different in character from that of the Nineteenth and Twentieth Dynasties, the large and well planned "state" buildings being replaced with smaller and less elaborate "private" structures.

[SR, ŁJ, MP]

APPENDIX ARCHAEOBOTANICAL INVESTIGATIONS (TELL EL-RETABA 2011, PRELIMINARY REPORT)

Claire Malleson

independent

In the 2011 season of the archaeological excavations at Tell el-Retaba 41 samples were analysed for macrobotanical remains (for the results of the 2009 and 2010 seasons, see respectively Malleson 2012; 2013). The samples came from two areas of exploration. They were processed via bucket flotation using a 300µm mesh to collect the (primarily charred) plant macrofossils. This material was dried and examined under a binocular microscope at 7–15x magnification; species were identified based on seed morphology, and recorded in an Access database.

The overall density of items and the diversity of taxa was considerably higher in the 2011 season than in previous seasons (2009 average IPL = 70.4, 2010 = 98.55, see Malleson 2012; 2013) [Table 1]. This was due to some exceptionally rich samples deriving from ashy layers. The large presence of very small seeds (around 500µm or less) was especially notable: *Fymbristillis bis-umbellata* seeds, kernels of *Eleocharis* sp., seeds of two as yet unidentified species, and grains of two unidentified Poaceae (Grasses), all of which occurred in high densities.

Table 1. Raw data counts of identified items by period, area and density

Area	Date*	Number of samples	Sample volume (litres)	Total count of items	Density (items per litre)
4	Eighteenth Dynasty	12	47.5	11,149	234.72
	New Kingdom	5	16.5	5717	346.48
9	Hyksos (Fifteenth Dynasty)	4	20	1660	83.00
	Nineteenth Dynasty	3	15	6676	445.07
	Twentieth Dynasty, early	6	27	13,770	510.00
	Twentieth Dynasty, late	9	38	6235	164.08
	Third Intermediate Period	1	5	2285	457.00
Total		40**	169	47,492	281.02

* Dating to Dynasty where possible based on currently available archaeological data

** One modern (20th–21st century) sample disregarded

Table 2. Percentage of samples with the most common species (for those over 25%)

<i>Eleocharis</i> sp. seed (Spike rush)	88.64
<i>Triticum dicoccum</i> chaff (Emmer wheat)	88.64
<i>Lolium</i> sp. grain (Ryegrass/Darnel)	86.36
Trifolieae tribe seeds (Clovers)	84.09
Unidentified seed A	75.00
Unidentified seed B	70.45
<i>Phalaris</i> sp. grain (Canary grass)	65.91
Vesicular fragments	65.91
Dung fragments	63.64
<i>Fimbristylis bis-umbellata</i>	63.64
Indeterminate cereal grain	61.36
<i>Triticum dicoccum</i> grain (Emmer wheat)	61.36
Indeterminate Poaceae grain (Wild grass)	61.36
<i>Hordeum sativum</i> grain (Barley)	56.82
<i>Hordeum sativum</i> chaff (Barley)	54.55
Indeterminate Poaceae A grain (Grass)	54.55
Indeterminate seeds	54.55
<i>Scirpus</i> sp. seed (Club rush)	52.27
Cyperaceae family seed (Sedges)	45.45
Indeterminate Poaceae B grain (Grass)	43.18
<i>Lolium</i> sp. chaff (Ryegrass/Darnel)	38.64
<i>Ficus carica</i> seed (Common fig)	36.36
Asteraceae family seed (Daisies)	34.09
<i>Scirpus praelongatus</i> seed (Rush)	34.09
Indeterminate cereal chaff	31.82
<i>Portulaca cf. oleraceae</i> seed (Common purslane)	31.82
<i>Tamarix nilotica</i> leaflets (Nile tamarisk)	31.82
<i>Glinus lotoides</i> seed (Carpetweed)	29.55
Viciae tribe seed (Pea family)	29.55
Roots / Tubers	27.27
<i>Beta vulgaris</i> seed (Beet)	25.00
<i>Carex</i> sp. seed (Sedges)	25.00
Lamiaceae family seed (Culinary herbs)	25.00
<i>Rumex</i> sp. seed (Dock / Sorrel)	25.00

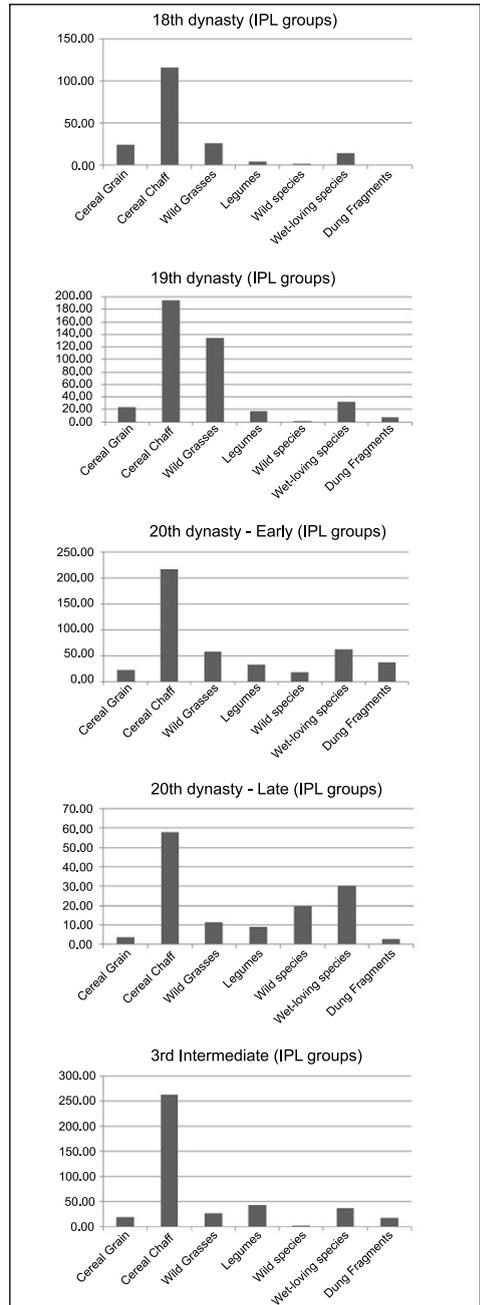


Fig. 12. Densities of major taxa groups per period (IPL = items per liter)

Generally, the assemblage contained the same range of species [Table 2] as found in 2009 and 2010, but several new species were added to the list for the site: *Glinus lotoides*, *Bromus* sp., *Crepis* sp., *Lithospermum/Echium* sp., *Stellaria* sp., *Silene* sp., and Lamiaceae family.

The most common species and plant parts have been presented in order of frequency. The list of the most common species and plant parts is far longer than in previous seasons, proving that the samples were generally much more diverse. As was the case in 2009 and 2010, *Eleocharis* sp. seeds, emmer wheat chaff, *Lolium* sp. grains, Trifoliace tribe seeds, *Phalaris* sp. grains, barley chaff and

grains, *Ficus carica* seeds, Viciae tribe seeds, *Scirpus* sp. and *Rumex* sp. seeds were all very commonly present. However, in the 2011 samples there was a high frequency of four as yet unidentified species: two types of wild grass and two other wild weed species, all four of which have exceptionally small seeds (500µm or less). In addition, *Fymbristillis bis-umbellata* seeds, *Carex* sp. seeds, *Scirpus* cf. *praelongatus* seeds, and seeds of other Cyperaceae family plants, as well as *Glinus lotoides* seeds, Nile tamarisk leaflets and *Beta vulgaris* seeds were all far more pervasive than in samples from previous years.

As has been ascertained in previous seasons, the Tell el-Retaba assemblage

Table 3. Proportions of main taxa groups as percentages of the overall assemblage

Area	Date	Cereal grain	Cereal chaff	Wild grasses	Legumes	Wild species	Wet-loving species	Dung fragments	Others
4	Eighteenth Dynasty	10.52	49.42	11.01	1.89	0.65	7.06	0.38	19.08
	New Kingdom	3.34	51.18	7.22	10.50	0.79	13.05	5.02	8.90
	Hyksos (Fifteenth Dynasty)	5.06	39.40	20.66	4.46	0.84	14.58	0.66	14.34
9	Nineteenth Dynasty	5.32	43.66	30.29	3.82	0.36	7.29	1.81	7.44
	Twentieth Dynasty, early	4.37	42.45	11.23	6.40	3.36	12.11	7.13	12.94
	Twentieth Dynasty, late	2.07	35.32	7.04	5.32	12.03	18.59	1.70	17.93
	Third Intermediate	4.11	57.42	5.95	9.58	0.70	8.62	4.03	9.58

Table 4. Taxa groups as percentage of overall assemblage for each excavation year

Season	Cereal grain	Cereal chaff	Wild grasses	Legumes	Wild species	Wet-loving species	Dung fragments	Others
2009	9.28	49.82	25.82	4.87	0.86	4.52	1.22	3.61
2010	4.70	41.28	17.26	11.97	1.17	8.02	10.61	4.98
2011	5.53	44.98	12.90	5.42	2.91	11.13	3.46	13.67

contains a mix of seeds, grains and other plant parts which represent the use of cereal-crop processing by-products as both fuel and fodder, preserved by charring in domestic and industrial hearths, ovens and kilns. It is well established that this 'waste' from the processing of cereals includes not only the cereal chaff elements, but also the seeds of wild and arable-weed species which were a valuable commodity, used both directly as fuel, and also as animal fodder. Many of the seeds and chaff elements survive the digestive tracts of animals, and thus become incorporated in their dung; when this dung is used as fuel the seeds become a part of the charred archaeobotanical assemblage. In addition, chaff and straw may be added to the dung to form more useable 'cakes' (Van der Veen 1999).

Observation of the densities (number of items per litre of sample, see *Fig. 12*) and the relative proportions (percentages of the assemblage, see *Table 3*) of the major taxa groups from the 2011 samples shows that whilst those densities vary a great deal through time, the overall pattern does not change much. In every period, cereal chaff (primarily Emmer wheat) is dominant, occurring in the highest densities and representing between 35% and 58% of the assemblage. There are low densities of cereal grains (2–11% of the assemblage), wild species (0.3–3% on average) and legumes (2–11%) present throughout. The ratios of grasses and wet-loving species are the main variables, with the most notable differences occurring in the Twentieth Dynasty materials, which contained higher densities of wet-loving species (12–18.6% of the assemblage) compared to wild grasses (7–10%), possibly an indication of a wetter local environment at that time.

Overall, the 2011 remains from Tell el-Retaba do actually differ in many respects from previous seasons [*Table 4*]. Just under 45% of the assemblage is made up of cereal chaff items, and 5% of cereal grains, both falling roughly as the average for all three seasons, and there was a similar amount of legumes to the 2009 season (the high percentage of legumes and dung for 2010 is a reflection of the Third Intermediate Period stable contexts). However, a smaller proportion of the assemblage was made up of wild grasses, but there was a higher proportion of wild/weed and wet-loving species, and far more 'other' classes (oil plants, edible plants, unidentified seeds) present. It may reflect the changing nature of the areas under excavation, resulting in an increase in numbers of samples from primary domestic and industrial contexts — hearths, ovens, kilns, dumps — all of which are expected to contain higher densities of a more diverse range of identifiable specimens.

Conclusions about the changing local ecology and environment, changing land-use patterns and the resulting adaptations to the plant-economy of the site, especially with respect to animal husbandry and fuel-material choices will follow from the increasingly built picture of the changing assemblage of species present at Tell el-Retaba. Preliminary comparisons have already been made with New Kingdom remains at Memphis, but further investigation into the earliest remains at the site, i.e., Hyksos/Second Intermediate Period contexts, will make possible more detailed comparisons with the nearby site of Tell el-Maskhuta (for a report, see Crawford 2003). The initial impression is that the Hyksos period assemblage at Tell el-Retaba differs somewhat from

that at Tell el-Maskhuta: both sites have significant quantities of wet-loving species present, but the Tell el-Maskhuta assemblage contains a greater diversity of these wet- and marsh-land plants. More detailed research is needed however.

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