ARCHAEOLOGICAL FIELDWORK AT THE ANCIENT SITE OF EL-LAHUN, EGYPT

PROJECT CLOSING REPORT

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In 2008 the EL-LAHUN SURVEY PROJECT, an archaeological mission of the *Museum of Fine Arts, Budapest* directed in the field by Zoltán Horváth, commenced the exploration of the vast monumental area neighbouring the modern village of Lahun (Fayum), in collaboration with the *Supreme Council of Antiquities, Egypt*, the *Petrie Museum of Egyptian Archaeology / University College London*, the *Institute of Archaeology and Ethnology, Polish Academy of Sciences*, the *Szent István University, Department of Public Utility and Civil Engineering*, the *Budapest University of Technology and Economics* and the *Research Institute for Visualization, Architecture and Archaeology*. In 2008, the project was funded by the Museum of Fine Arts, Budapest, and from January 2009 to August 2013 by the *Hungarian Scientific Research Fund* (OTKA).

Strategy of research

The project was aimed at studying the ancient site by applying geodesic, archaeological, GIS and remote sensing methods. The idea of an extensive archaeological survey was prompted by the overall poor condition of the monumental area, the inadequacy of the early excavation record,[1] and the still high archaeological potential of the locality as revealed by the small-scale control excavations conducted by the Illahun Expedition of the *Royal Ontario Museum* between 1988 and 1997.[2]

The monumental area has suffered considerably since the first excavator, Sir William Matthew Flinders Petrie and his colleagues left in 1921; exposed to the wind, direct sunshine and seasonal rain, the uncovered mud-brick constructions have been heavily eroded, and traces of evidently recent disturbances, even probably illicit diggings have been detected all over the area under discussion. Recent fieldwork was also substantiated by the relatively scant documentation produced by the early excavators that does not meet the standard of current archaeological practice: hardly any of the individual find-spots were recorded even for papyri and sealings, only a selected corpus of pottery and tomb equipment was published, and plans were provided exclusively for architectural remains deemed by the excavator to be of special interest. Furthermore, ongoing research on the hieratic manuscripts from El-Lahun as well as the systematic re-excavation of comparable Middle Kingdom sites at Lisht, Dahshur and Abydos has raised a series of questions which, however, can no longer be answered merely by consulting Petrie's journal, notebooks and publications.[3] The frequent

[1] Petrie, W.M.F., *Kahun, Gurob and Hawara*, London 1890; Petrie, W.M.F., *Illahun, Kahun and Gurob*, London 1891; Borchardt, L., Der zweite papyrusfund von Kahun und die zeitliche Festlegung des mittleren Reiches der ägyptischen Geschichte, *ZÄS 37* (1899); Petrie, W.M.F., Brunton, G., Murray, M.A., *Lahun II*, London 1923.
[2] Frey, R., Knudstad, J., The Re-examination of Selected Architectural Remains at El-Lahun, *JSSEA 34* (2007). The largely unpublished excavation archive of the ROM expedition is now kept at the Department of Egyptian Antiquities, Museum of Fine Arts, Budapest. Hereby I would like to thank Krzysztof Grzymski, Rosa Frey and James Knudstad for kindly allowing us to keep and study these invaluable documents.
[3] See esp. Arnold, D., *Der Pyramidenbezirk des Königs Amenemhet III in Dahschur I. Die Pyramide*, Mainz 1987; Arnold, D., Arnold, Do., Dorman, P.F., *The Pyramid of Senwosret I*, New York 1988; Arnold, D., Oppenheim, A.,

references in the hieratic sources to installations not yet located in the field clearly demonstrated that a better understanding of the architectural landscape of El-Lahun would only be achieved by the reinvestigation of specific areas not or just superficially explored by Petrie.[4]

Upon these considerations, the project's main objectives have been specified, as follows:

- to draw up a 1:1000 archaeo-topographic map of the area requested;
- to produce detailed plans and 3D reconstruction models of registered architectural features;
- to conduct a systematic surface collection of pottery sherds for drawing and analysis;
- to detect and relocate installations know only from the textual record by applying remote sensing technology;
- and to produce a complex archaeological GIS to reveal patterns of human activity throughout the area under investigation.

Limitations, current state of affair

In 2008, an Egyptian team delegated by the SCA also started excavations at various places of the large monumental area measuring ca. 800 ha, and their apparently haphazard diggings imposed considerable limitations on the schedule of the Hungarian archaeological mission. As a result of their insufficient way of recording, improper handling of the finds and leaving dozens of freshly unearthed Third Intermediate and Late Period burials in the so-called Dyke Ridge Cemetery open and unguarded, the Egyptian mission was banned by the Ministry of State for Antiquities in 2009, and all archaeological work was suspended, thus preventing even the El-Lahun Survey Project from proceeding with the on-going fieldwork activities. Under the circumstances, the research programme of the Hungarian mission could not have been realized to the full extent.

Mapping (László Szűcs)

The available survey map of the area under concession is at scale 1:25.000, produced in 1928 and edited in 1950, which is inadequate to archaeological purposes. The need of a detailed contour topographic map of the site is self-evident, the sketch published by Petrie in 1923 still being the only one showing the location of the main archaeological remains.[5] The main objective of this research panel was thus data capture (locations and elevations) in order to produce a 1:1000 archaeo-topographic map, available for recording the mapped architectural remains as well as each individual find-spots observed during the survey.

In 2008 a geodesic grid of 10m side-length was laid down across the temple area and alongside the westernmost settlement wall. In 2009 it was necessary to double-check and reinstall the points of

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Allen, J.P., *The Pyramid Complex of Senwosret III at Dahshur: Architectural Studies*, New York 2002; Wegner, J., *The Mortuary Temple of Senwosret III at Abydos*, New Haven-Philadelphia 2007.

[4] Such installations include the food-processing area (*shena*), the administrative gateway area of the mayoral residence, and most probably the local temple of Anubis. As to the still high archaeological potential of the site, especially as far the presumed location of these structures are concerned, the new structures discovered by the ROM expedition in extramural context may be taken indicative; cf. Frey-Knudstad in *JSSEA 34*, 28-30, 36-37.

[5] Petrie-Brunton-Murray, *Lahun II*, pl. 2.

this grid as most of the stakes have been removed or stolen since last year, and the grid-system has also been extended with further 105 points. As preliminary to the magnetic survey, a new grid-system consisting of squares of 20x40m side-length has been laid down with a different direction as the grid used for mapping and architectural survey to minimize the magnetic anomalies. The grid for the magnetic survey included further 150 points. Geodesic work in the temple-town complex was focused mainly on the valley temple and the mayoral residence once excavated by Petrie and re-excavated by the ROM Expedition to El-Lahun. Based on the revised plan produced by the Canadian mission, geodesic data at fixed points of some significance have been recorded. The most important element of the geodesic work in 2009 was to carry out a detailed topographical survey by applying real-time kinetic GPS technology. Since the accuracy of this mapping method is ca. 5cm, it was one of the most detailed and most accurate topographical surveys ever done at an archaeological site in Egypt. By carrying a rover GPS receiver around the area investigated, each day some 4.500 geodesic points could be recorded within an area of 300 x 400m. By the end of the fieldwork season, the total number of recorded points has amounted to some 70.000, from which a preliminary digital terrain model has been generated (fig. 1).

Magnetic survey (Tomasz Herbich)

The aim of the geophysical survey, carried out as a part of the *El-Lahun Survey Project* of the Museum of Fine Arts Budapest in 2009 was to register archaeological structures in the south-western part of the Middle Kingdom temple-town complex (fig. 2). The survey comprised the area of the valley temple and the ground to the east and west of the southern section of the enclosure wall bordering the town on the west. The prospection included buildings of Rank A and Rank B from the Western Town, structures in the southern part of Rank N in the Eastern Town and architecture to the north of the valley temple, adjacent to the enclosure wall of the town on the east side. Measurements also covered an area referred to as the "temple heap" to the west of the enclosure wall.

The site: surface conditions

Excavations carried out earlier at the site have left the ground in the area of the temple very uneven, consisting of mounds and depressions. No traces of walls have been noted on the surface. The eastern part of the temple is strewed with a layer of mud bricks covering an area of approx. 100 m^2 (fig. 3). The magnetic susceptibility of bricks is fairly strong, comprised in the range 2 – 2.5 $x10^{-3}$SI. To the east and south of the temple there is evidence of the rocky ground being leveled under the building.

The ground where structures had been discovered to the east of the enclosure wall and north of the temple is also uneven. The surface in the Rank A area is slightly undulating; the southern extreme edge of the architecture corresponds to a slight dip in the ground. Small mounds cover the area with architecture in the Rank B region; slightly smaller mounds are prevalent in the rank N area. Nowhere in any of the mentioned areas is there any evidence of masonry features visible on the surface.

Dumps with large amounts of potsherds scattered over the surface can be seen in an area of approx. 400 m^2 between the temple and the "temple heap". Dips in the ground mark the run of the Western Town enclosure wall and the wall separating the Eastern Town from the western one. In the

remaining areas that were surveyed the ground is fairly even, formed by slope erosion and bearing no evidence of archaeological excavations.

Method, data processing and presentation

Fluxgate-type gradiometers by Geoscan Research, model FM256, 0.1 nT resolution, were used during the survey. The measurement grid applied was 20 x 20 m, with points every 0.25 m along measuring lines (20 m long) set 0.5 m apart. The measurement density of this grid (8 measurements per square meter) guaranteed the recording of even small-size features (e.g. walls not more than 20 cm wide). The measurements were carried out in parallel mode, meaning that the magnetic-intensity recording equipment was moved along the measuring lines in one direction only. Sensors were adjusted at the reference point after completing each grid. The described procedures (point density, parallel mode and sensor adjustment) draw out the actual measurement process (parallel mode requires twice as much time as the commonly used zigzag method where the apparatus is moved back and forth along the lines while taking measurements), but they increase substantially the clarity of the resultant geophysical image.

The magnetic survey results were processed using the following software: Geoplot 3.0 for preliminary measurement processing and Surfer 8.0 for map analysis and printing. Results are imaged as the Earth's magnetic field intensity gray-tone maps (hereafter magnetic maps), with white and black corresponding to extreme measurement values (fig. 4). The presence of negative values is due to the gradiometer recording only the difference in magnetic intensity at two different levels (sensor height difference in the FM256 is 0.5 m). This procedure eliminates from the observation disturbances of the Earth's magnetic field, such as daily fluctuations and disturbances caused by magnetic storms, power lines, etc. FM apparatuses by Geoscan Research are capable of tracing changes in ground structure down to a depth of 0.5-4 m, depending on the magnetic susceptibility of the objects.

Results of the survey

Area of the valley temple. The magnetic map shows a series of anomalies that approximately corresponds to the known extent of the temple. Anomalies recorded in the eastern part of the temple correspond to mud features. A set of anomalies (characterized by raised magnetic-field intensity values) in the eastern part of O7 and by the western edge of O8 corresponds to a platform of mud brick seen in this part of the site. The linear anomaly (of raised values) running along the joining of M8 and N8 corresponds in all likelihood to a mud-brick wall approx. 2 m wide situated below a ditch running in this spot (fig. 5). This feature would be the wall fronting the temple on the north (fig. 6). A mud-brick feature expectedly corresponds to a linear anomaly approx. 5 m long, observed parallel to and approx. 2 m to the south of the above-mentioned anomaly, in the northeastern corner of N7. Nothing of the like is to be seen on the ground surface in this place. An anomaly suggestive by its shape of a wall approx. 2-3 m wide is to be seen to the north of the temple, in the southeastern corner of M7 and the southwestern corner of M8. The temple plan has in this spot a structure designated as a "porter's lodge", but the shape of the anomaly is different from the plan of this unit.

The temple pylons appear to have found no reflection on the magnetic map. In the place of the northern of the pylons there is a depression in the ground (fig. 7). Slightly raised values of magnetic

field intensity in the depression might be evidence of some remnants of a mud-brick foundation for the pylon. Absolutely no echo of the southern pylon could be found on the magnetic map, indicating that all remnants of the building material of which it was constructed had been removed.

Two sets of anomalies by the eastern edge of the prospected area are a reflection of residually surviving mud-brick structures. The western and southern edges of the northern set (seen in the eastern part of N8 and the northeastern part of O8) run along a dip visible in the ground. The southern and western edges of the southern complex (in the southeastern part of O8 and further to the south) are also marked by a dip in the ground. Anomalies of irregular shape seen in other parts of the temple area correspond to dumps which are scattered all over the surface. The raised magnetic values characterizing the dumps near the edges of the temple are proof of the presence of remains of mud bricks from the temple walls. One can also recognize the eastern end of the forecourt in the magnetic anomalies that have been mapped. There is however no echo even of any of the internal divisions of the building. The disturbances caused by the dumps occasionally form more or less distinct lines. The most distinct of these runs in an EW line through the center of P5 and P6; it corresponds to a dump of grayish color (made so evidently by the mud content) lining a threshold excavated in bedrock (fig. 8). Much less distinct are two parallel lines marked by maximum-value anomalies, running along the northern and southern edges of the temple. The northern line has a counterpart in the temple plan reconstruction; the eastern part of the southern line corresponds to the southern front wall of the temple (running to the east of the pylon). This line however finds a continuation all the way to square P4.

An anomaly approx. 4 m wide and observed over approx. 25 m in the northern part of M4 and the northwestern part of M5 could also have something to do with the temple. It is more or less parallel to the north temple wall, but finds no reflection in anything seen on the ground surface; part of it runs under a road.

Area around the southern section of the enclosure wall of the Western Town. The town's enclosure wall has been mapped as an anomaly between the northern corner of G2 and the western part of J5. The shape of the anomaly in the northern part (to the north of the northern corner of I4) is due to the irregular course of the fault that correspond to the wall remains (fig. 9); Where the anomaly runs in a straight line (I4-J5) this fault is clearly lower and takes on a straight line. The map also indicates a parallel wall running at a distance of 5 m to the east of the main wall. This feature can be observed between the western corner of H4 and the northern corner of J5. It probably corresponds to the western extent of the architecture recorded by W.M.F. Petrie, although it shows the distance between it and the enclosure wall to be greater than that marked by Petrie.

The extremely uneven ground surface in the area excavated by Petrie makes it difficult to be sure which of the registered anomalies correspond to surviving structures and which reflect only the archaeological dumps. Virtually all of the distinct rectilinear, mutually intersecting anomalies observed in I5, J5, western corner of I6, and J6 reflect dumps (fig. 10). The only anomalies not reflected in ground relief are those in the northern and central part of K6. They seem, however, to correspond to structures recorded on Petrie's plan.

The map also introduces corrections in the position of the wall running perpendicular to the north temple wall and joining it on the eastern side of the "porter's lodge", registered in M8 and north part of K7. It is reflected on the map as a distinct anomaly 2 m wide, running for 35 m but approx. 4 m

further east compared to its position on Petrie's plan. The wall is situated below a ditch running in this spot.

The high-amplitude irregularly shaped anomalies in L5 and L6 correspond to dumps containing much pottery. A few parallel anomalies of narrow linear shape seen to the south of the dumps, in the northern part of M6, correspond to narrow mud features, one of which is even visible on the surface (fig. 11).

The mapping shows no trace of structures to the west of the enclosure wall. The anomalies registered here (in K3 and L3) correspond to mud concentrations seen immediately under the ground surface, but the arrangement does not in any way suggest architecture. Some pottery was noted in the western corner of L3 where an anomaly has been mapped.

Area with urban architecture. The only mapped anomaly with a possible connection to urban architecture is a linear one running between the center of H3 and the eastern part of F5. The anomaly corresponds to a weakly marked dip in the surface marking the southern extent of the architecture in Rank A. Oval-shaped anomalies with raised magnetic-field intensity values correspond to small pottery-strewn mounds noted on the surface (fig. 12). Wherever values are even higher the mounds show burnt soil as well as potsherds in the composition (fig. 13). The map verifies the absence of all architecture from the eastern part of Rank A as recorded by Petrie. Even if any such architecture had existed here, it would have all been destroyed by slope erosion — there is a shallow wadi in this place.

Mapping of the Rank N area resulted in a similar image as that obtained for Rank A and B: oval anomalies corresponding to dumps, the value amplitudes dependent on the potsherd and burnt soil content. There is no trace of the wall dividing the eastern town from the western one except perhaps for the anomaly seen at the western corner of D7 and the northern corner of E7. Corresponding to it on the ground is a long narrow area characterized by a considerable addition of mud.

An oval anomaly of high amplitude in the eastern corner of E7 corresponds to a mound of mud, burnt soil and pottery.

Recapitulation

The survey contributed only insignificantly to the results already brought by the earlier excavations. It allowed for minor revision of the position of a few structures and possibly indicated the presence of as yet unknown features in the temple area. For the most part, however, the prospection reflected the degree of destruction of both the temple and the town area. The mapping leaves practically no illusions as to the survival of any architectural remains of substance in the town area. In the temple area, the survey showed that the only preserved mud brick structures are present in the eastern part of the complex. In central and western parts, remains of mud brick are a component of irregularly placed dumps, the linear arrangement of which — itself seldom encountered — is largely the only indication of the run of possible wall features.

Ceramics (Ashraf Senussi and Máté Petrik)

In 2009, surface pottery collection was focused on three archaeological contexts: a large and extensive dump of sherds most probably identical with Petrie's *masons' pottery heap*,[6] a test area within the northern part of the so-called "Western Town", and surface sherds related to specific archaeological features collected in the course of the extensive survey.

As a continuation of the 2008 season, sherds have been collected from five 10 x 10m squares in line K (K4 and 5) and in line J (J3, 4 and 5) in the large pottery heap due north of the temple area (*temple heap*), thus covering almost 70% of the heap's total area by the end of the season. The surface sherd collection followed the same procedure as laid down in 2008: each square has been divided into 5 x 5 units, from which only the diagnostic pieces have been picked up. The sherds have been sorted and analysed according to form and function, and pieces significant in terms of type and/or chronology have been recorded and kept for further study. A single sample section of 2 x 2m has been marked out within each 5 x 5m unit, and all sherds whether diagnostic or non-diagnostic have been collected. The non-diagnostic sherds have been sorted according to clay fabric and compared to the classes in the Vienna system. In 2008, 13 separate groups were specified, the number of which were not exceeded in 2009, either.

This season, the five sample squares of the *temple heap* produced 2772 non-diagnostic and 2248 diagnostic pieces, of which 207 diagnostic pieces were kept for further study. The corpus of season 2008 represents a rather narrow range of forms that agrees with the restricted variety of forms the 2009 corpus display based on the preliminary results. The altogether 25 distinct forms specified during the two fieldwork seasons appears to be a very low number, especially as compared with a corpus from a quite similar context, the East Block rear doorway deposit in the temple of Senwosret III at South Abydos (73 forms).

Nile open forms are represented almost exclusively by two types: the hemispherical cups and the miniature dishes (ca. 10% of the total diagnostic rims in 2008; ca. 12% of the studied diagnostic rims in 2009). These types might be related to ritual activity in a temple context, such as presenting offerings. A similar function was attributed to the same types in the above mentioned East Block rear doorway deposit in the temple of Senwosret III at South Abydos, where the occurrence of these types display roughly the same proportion as in Lahun (15%). Large open forms made of Nile silt fabric such as plates, basins or bowls are represented only by a few rim sherds (cf. 2008.095, 017, 050, 057, 066).

Most of the diagnostic sherds of Nile silt fabric belong to medium and large size storage jars. The three most frequent types are rough beakers with modeled rim, direct rim beakers and beer jars (2008: ca. 70% of the all diagnostic rim sherds, 2009: ca. 50% of the studied diagnostic rims). It is very interesting however, that the rate of the different base types doesn't fit to the picture represented above. Among diagnostic base sherds flat bases can be observed almost exclusively (2008: ca. 90% of the diagnostic base sherds, 2009: ca. 75% of the studied diagnostic bases). Regarding Middle Kingdom storage vessels this base type represent a minority, as round base appears to be used usually in the case of beer jars as well as beakers. A flat based type of the direct rim beakers however can be detected in Middle Kingdom pottery corpus, also published by Petrie in the Kahun material.[7] This type however cannot be the sole source of flat bases, as the form presents only one-fourth of

[6] Petrie, *KGH*, 25.
[7] Petrie, *KGH*, pl. 12.

the diagnostic rim types from Nile storage jars. The usual round base of the beer jars is represented only by a few sherds (cf. 2009.031) whilst the rim sherds of this type dominate the whole material (2008: ca. 30% of the diagnostic rim sherds, 2009: ca. 25% of the studied diagnostic rims). The function of these close vessel types in a temple context might have been the temporary storage and serving of offerings, especially beer. These three forms are also present dominantly in the material of the East Block rear doorway deposit from South-Abydos.

As to the diagnostic pieces of Marl clay fabric, they all seem to come from large-size storage vessels (*zirs*) and complex rim wine jars. Sherds from open form Marl clay vessel are but seldom represented (cf. 2008.025).

Based on the observations and the study of the ceramic repertoire provided by the first two fieldwork seasons, the following suggestions can be made with regard to the function and chronology of the *masons' pottery heap* context. All statements are essentially of preliminary character.

Most of the vessel types described above could be associated with storing and serving offerings, especially beer. From this perspective, a close parallel might be drawn between this corpus and that of the East Block rear doorway deposit in the temple of Senwosret III at South Abydos. The latter corpus is related to temporary storage and serving of offerings in the rooms connected to the rear doorway of the temple. A marked difference should be underlined, however: the types associated with food offerings, particularly the two types of bread moulds are extremely well represented in the South Abydos corpus (ca. 20%), whereas in Lahun, these forms occur in a very low number (ca. 5%, cf. 2008.019, 2009.161-2.).

For the study of chronology, three types with solid chronological value might be used of the material collected during the first two seasons. The vessel index of the hemispherical cups is clearly indicative.[8] The wide and shallow types of the hemispherical cups of the First Intermediate Period became more and more slender during the 12th dynasty, thus the vessel index is decreasing. The diagnostic sherds of hemispherical cups with a definitive profile show a vessel index around 150 and 160 which fits a Late Middle Kingdom date. This horizon agrees with distribution of the other two types with clear chronological value. Of the rim sherds of beer jars, type 5 with rolled rim and trumpet neck and type 6 with ledge rim and straight neck are predominating. Based on the study of the Tell el-Dab'a corpus, both types can be dated to the late 12th dynasty.[9] Rim sherds of type 7 beer jars with a definitive kettle-shaped rim typical of the 13th dynasty were also recorded in season 2009, which shed more light on the date of the Lahun material. The rim-type of the *zir*-vessel sherds found in Lahun also show late Middle Kingdom forms, type 3 as defined by B. Bader in particular.[10]

In 2009, surface pottery was collected from a particular area inside the settlement site: the ceramic material was picked up, recorded and studied from six 10 x 10m squares (AP11, AO11, AN11, AM11-12-13). Although the analysis is still in progress, some suggestions can be made even at this early stage of research. As compared with the *Temple Heap* corpus, the repertoire includes a much broader range of types (ca. 25 vs. 40), of which the Marl forms occur in far larger number (5% vs.

[8] Arnold, Do., Keramikbearbeitung in Dahschur, 1976-1981, *MDAIK* 38 (1982), 51, fig.14; Bietak, M., Problems of Middle Bronze Age Chronology. New Evidence from Egypt, *AJA* 88 (1984), 479-80.
[9] Cf. Szafranski, Z., Seriation and Aperture Index of the Beer Bottles from Tell el-Dab'a", *Ä&L* 7 (1998), 95-113.
[10] *Tell el-Dab'a* XIII. *Typologie und Chronologie der Mergel C-Ton Keramik,* Wien 2001.

25%), particularly *zirs*. Sherds dated to the New Kingdom were recorded mainly in settlement context (ca. 10% of the sherds studied so far represent a later New Kingdom and Late period horizon), as opposed to the *Temple Heap* where New Kingdom sherds but seldom occur (cf. 2008.050, 057, 066). Future research on the settlement context might reveal a more detailed view of the ceramic repertoire.

Archaeological survey (Zoltán Horváth, Máté Petrik and Zsolt Vasáros)

The primary aim of the survey was to locate and record each find spot for a topographic map in preparation. These include features easily recognizable from Petrie's outline plans or from his or Brunton's description, whereas others are rather difficult to explain and may have gone unnoticed by the early surveyors. Three segments of the vast area were surveyed in 2008 (fig. 14). Each surface feature has been recorded by its GPS coordinates, dimensions, and by providing a basic description. Photos were taken and whenever it was possible we also collected samples from the material culture associated with that particular feature.

a) Survey of the area extending from the East Gate of the settlement up to the so-called *Table Hill*.

The records of some interest include two stations (02 and 11) with remarkable concentration of stone implements (these need to be studied in the future), and a small cluster of pits oval and rectangular in form with only a few sherds scattered around (stations 04-07). In *Lahun II*, Brunton reports in brief about *a large cemetery, apparently of Roman age which was ravaged, and not worth working* somewhere in the close vicinity of *Kahun*,[11] which thus might well be identical with this group of burials, yet our group is anything but large amounting to only four graves (fig. 15). On the top of the flat-topped limestone formation dubbed *Table Hill* by Petrie, a large and deep shaft measuring ca. 2 x 3,80 x 6 m was found – evidently excavated by Petrie's men some time in 1920 (fig. 16).[12] Several minor pit-like features are situated in the vicinity with an abundance of pottery sherds. Not far from the east side of the shaft, a broken stone scarab amulet was found.

b) Survey of the area extending from the eastern face of the pyramid, due east of the heaps of debris, up to the north end of the *West Ridge*.

Two stations may be worth mentioning from this part of the site. Just opposite to the group of Petrie's tombs Nos. 650 and 618, apparently Middle Kingdom burials reused in the Late Period, where a quarry site is indicated on Petrie's plan, did we find an oval pit measuring 3,50 x 2,40 m with a faience *Nehebkau*-amulet in the nearby (station 203). Station 204, a small elevation forming the northern end of the West Ridge, is characterized by a central shaft tomb (identical with Petrie's tomb No. 651)[13] and several small pits to the east, north, and south. A faience *wedjat*-amulet and two small faience pieces were found (fig. 17).

c) Survey of the extensive cemetery situated to the south and west of the valley temple area, labelled for the time being as *Southern Cemetery*.

[11] Petrie-Brunton-Murray, *Lahun II*, 24.
[12] Petrie-Brunton-Murray, *Lahun II*, 1 and pl. 2.
[13] Petrie-Brunton-Murray, *Lahun II*, 32 and plan on pl. 36A.

To the south and west of the temple area lays an extensive cemetery with burials apparently all excavated or plundered. Tomb types range from shallow graves with coarse pottery coffins extending markedly along the south desert edge, through single-coffin burials clustering mainly on the crest to the west of the temple area, to rock-cut shaft tombs of the Middle Kingdom which were reused during the Late Period and the Graeco-Roman Period. These tombs seem to vary not only in terms of chronology, but may represent various social strata as well. From the perspective of archaeology, this part of the site is extremely poorly documented: there are sparse references by Petrie and Brunton to *surface graves (…) now entirely robbed*,[14] or elsewhere *a cemetery, apparently of Roman age which was ravaged, and not worth working*.[15] Millet considered the southern pit-tombs with fragments of pottery coffins dating to the Roman-Byzantine Period, however it needs to be confirmed by a detailed investigation in the future (fig. 18). A burial place was found just on the south of the temple area showing traces of disturbances with architecture collapsed, fragments of pottery coffins scattered all around (a single piece still *in situ*) and a case filled with shrouds put aside but left on the spot (figs. 19 a,b). Sherds have been collected and some sample pits have been recorded.

Architectural survey

In 2008, the architectural survey focused on structures unearthed recently by the Egyptian mission: the cultivation-edge mortuary temple of Sesostris II and the mud-brick constructions to the south of the pyramid precinct. The documentation was based on 5 x 5 m squares as part of the 10 x 10 m grid laid by the surveyors. The preserved remains have been drawn at a scale of 1:50 or 1:20, which will be converted by subsequent digital processing into a reproducible A3 and A4 format appropriate for publication.

The stairway-ramp entrance complex (Zoltán Horváth and Zsolt Vasáros)

A feature of particular interest is the mud-brick stairway-ramp construction, situated just outside the southern section of the pyramid's outer enclosure wall. These structures, all excavated by the Egyptian mission, include two separate stairways with different axis, a kind of artificial continuation of the *wady* running S-SE; a sort of approach route leading up from the desert edge to the pyramid precinct. The southern stairway followed the natural slope of the terrain up to the present ground level and ended in a brick-paved platform. The other stairway to the north continues at ground level in a ramp leading up to the top of the brick enclosure wall. The remains of a tree pit, removed and re-installed again, can still be seen at the junction of the stairway and the ramp (fig. 20). Based on our observances, at least three building stages may be detected with intentional backfilling of the structures, the use of which may have been confined to a very limited period of time. The mode of construction as well as the surprisingly good condition of the brick steps virtually excludes the possibility that these approach ways served as service routes for the transport of materials from a workshop area to the site of construction. It may be suggested that they may have had some ritual

[14] Petrie-Brunton-Murray, *Lahun II*, 1.
[15] Petrie-Brunton-Murray, *Lahun II*, 24.

function and thus comparable in one way or another to the multi-ramp entrance complex of the Sesostris III royal tomb at South Abydos.[16] An additional brick stairway, excavated and backfilled by Petrie and Brunton in 1914 inside the outer precinct wall,[17] indicates that the architectural landscape of the area to the south of the pyramid is more complex than ever thought of, and should be considered in full once the archaeological exploration is complete.

Works in the area of the royal mortuary temple (Zoltán Horváth and Zsolt Vasáros)

The now lost mortuary temple of Sesostris II neighbouring the ancient town of Kahun was excavated by Petrie first in 1889 and some years later when he returned to the site to complete the archaeological record.[18] He found the temple in a very ruined state: most of the stone masonry had gone as a result of extensive quarrying by the workmen of Ramesses II, and several intrusive graves gave evidence that the place was used in the Coptic Period as a burial ground. The remains defined an area measuring ca. 38 m in width and at least 91 m in length, which was reported in 1889 to have been enclosed by a massive mud-brick wall of extreme thickness, in fact most probably a conflation of various features including the enclosure wall, a brick-paved corridor and perhaps the brickwork subfoundation of the temple. Petrie proposed that a highly decorated chamber at the back may have been fronted by an open courtyard probably with a colonnade. The temple terrace was accessed via an approach leading up to the main entrance in the vicinity of which Petrie found the ruined portion of a stairway (fig. 21).

Recent discoveries in Middle Kingdom pyramid complexes shed light on the significant place the Sesostris II temple had in the evolution of royal mortuary temples. Over the years, the analysis of certain hieratic documents and the re-excavation of other cult buildings of 12th Dynasty – Second Intermediate Period have opened the way for presenting various theoretical reconstructions of the royal temple at El-Lahun,[19] which could only be confirmed or rejected through careful and systematic archaeological fieldwork.

Upon arrival, a considerable portion of the temple area was found to have already been unearthed without proper cleaning and documentation, so all essential geodesic and mapping works across the exposed area of some 1000 m^2 have been carried out by the Hungarian mission. The preserved parts of the temple are in a disappointingly bad condition. Petrie's approach has not yet been cleaned, but most of the stone masonry of the foundation of the temple terrace has gone, leaving much of the subfoundation brickwork exposed (figs. 22, 23). Comparable to the case of the Sesostris III pyramid complex at Dahshur, several courses of roughly uniform bricks have been laid to support and level the surface of the limestone foundation blocks. The bricks are made from Nile mud with admixture of chaff, with no inclusion of pebbles or sand. The brick size 12-14 x 21-22 x 41-44 cm used at Lahun invariably in the temple and in the pyramid core represents the standard format employed in the

[16] Wegner, J., Beneath the Mountain-of-Anubis: Ancient Egypt's First Hidden Royal Tomb, *Expedition 48/2* (2006) 18, 21.
[17] Petrie-Brunton-Murray, *Lahun II*, 9.
[18] Petrie, *KGH*, 11, 21-23, pl. 15; Petrie-Brunton-Murray, *Lahun II*, 39-40, pl. 33.
[19] Luft U., Der Taltempel von el-Lahun, in: Schade-Busch, M. (ed.), *Wege öffnen. Festschrift für Rolf Gundlach zum 65. Geburtstag*, ÄAT 35, Wiesbaden 1996; Horvath Z., What was the "august chamber" of El-Lahun? A lexicographical approach to the cult complex of Sesostris II, *Acta Ant. Hung. 46* (2006).

Sesostris III complex at Abydos as well as in the Amenemhat III complex at Dahshur. The vast majority of bricks bear fingermarks, of which some 10 varieties have been assembled so far; these form a corpus comparable with the brickmarks recorded in the funerary complex of Amenemhat III at Dahshur and Mentuhotep at Deir el-Bahari (fig. 24).[20] The structures of the area under discussion have been mapped at scale 1:20.

The foundation deposits of the royal mortuary temple (Zoltán Horváth and Zsolt Vasáros)

In 2009 the architectural mapping and exploration of the valley temple was continued: the area which had been excavated by the Egyptian mission before we started our work in 2008. Since the excavation of the area was claimed to have been completed by the Egyptian mission, the mapping as well as the geodesic and architectural investigation of the area exposed has been carried out by the El-Lahun Survey Project. In the course of the survey work in 2009, the systematic and meticulous investigation of the rock foundation of the cult building in search for surface traces of former wall structures, which do not exist anymore, led to the discovery of two intact temple foundation deposits. While laying down a geodesic grid as preliminary to the magnetic survey, two covering slabs were discovered embedded into the rock foundation of the temple (fig. 25). The slabs were marked on the surface where the bed rock shows up among the excavations heaps, and their position within the temple area suggested that they indicate the SE and SW corners of the now dismantled cult building. Acoustic investigation of the features confirmed the existence of a pit beneath both slabs.

The archaeological exploration of the pits has yielded evidence for two, still intact foundation deposits of the royal mortuary temple of Senwosret II, each containing extremely fine set of finds, similar in content with those known from the temple's central foundation deposit that Petrie had already excavated in 1889.[21] Each pit was covered with three finely cut limestone slabs, with a layer a pure sand between each of them. Each strata and operational phase have been properly recorded, the finds removed and transported to the Kom Aushim magazine for further study and restoration. At the end, the pits have been party backfilled with the sand found inside.

The covering slab of Pit A was of 10 cm in thickness and measured 100x100 cm. It covered a layer of pure sand of ca. 9 cm, the removal of which has revealed a finely cut second slab of 9 cm in thickness and measuring 74x80 cm. Beneath the second slab, another layer of sand of ca. 4 cm followed on the top of the lowermost slab of 38 cm in thickness and measuring 80x80cm. This large, roughly cut stone covered a 60 cm thick sand bed containing the finds of the deposit at the depth 80 cm. Pit B repeated basically the same structure with slight differences in the size of the slabs and the thickness of the sand layers.

The finds discovered and carefully removed from the bottom of the pits represent an excellent and unique set of items used for royal temple foundation deposits. The object types we found and picked up layer by layer show similarities with the content of the central deposit discovered by Petrie, yet they exceed that both in terms of quality and quantity. The types found in each pit include a good number of complete pottery vessels (beer jars with in situ stoppers) as well as miniature models of

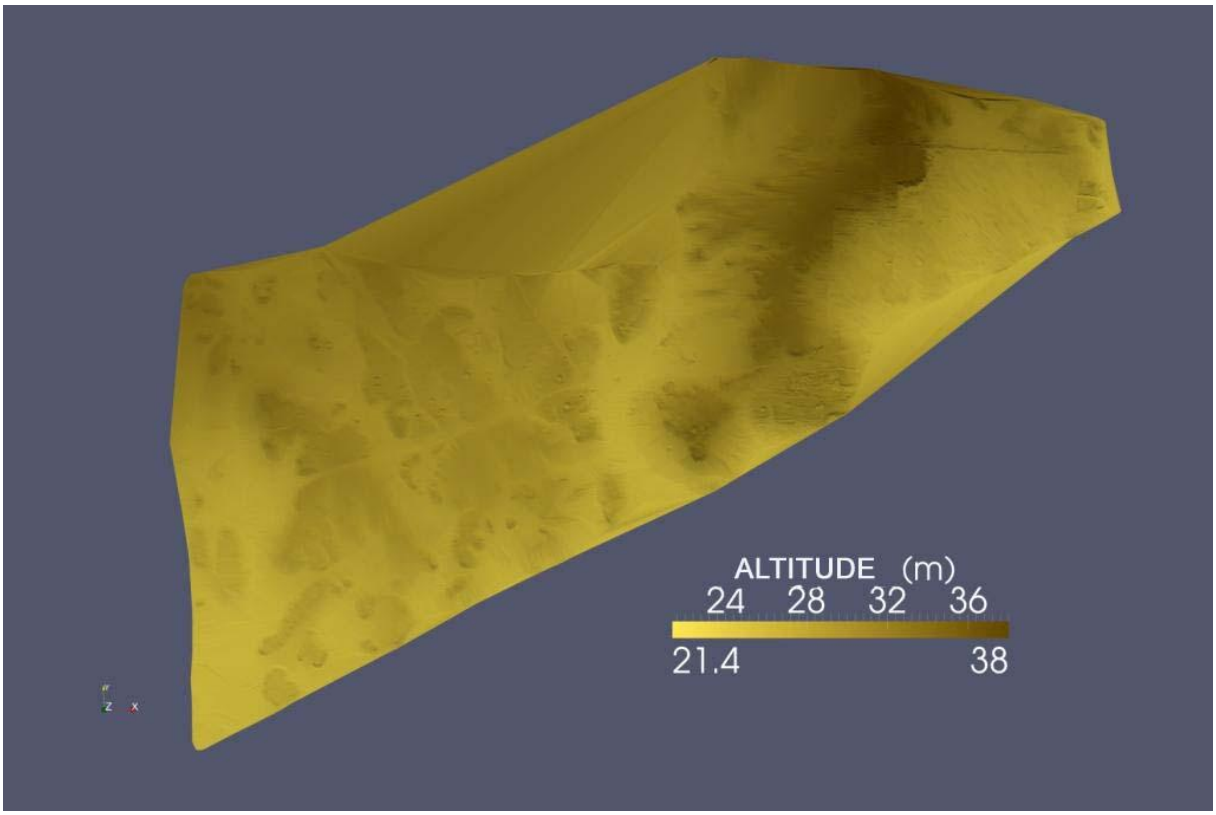
[20] Arnold, D., *The Temple of Mentuhotep at Deir el-Bahari*, New York 1979, 6-7, pls. 2-3; Arnold, *Amenemhet III*, 82, Abb. 40; De Morgan, J., *Fouilles à Dahchour, Mars-Juin 1894*, Vienna 1895, 49, fig. 110.
[21] Petrie, *KGH*, 22, pl. 14.

regular size domestic pottery ware (model dishes and jars), a pair of model bricks made of mud, a white-painted wooden plate of rather poor state of preservation (in Pit A), a complete head of a ritually slaughtered ox accompanied with his intentionally broken foreleg, an extremely fine flint blade and semi-precious beads once belonging to a necklace. These items beautifully illustrate closed contexts of objects offered ritually just prior to the beginning of the temple construction, yet further study and restoration of the finds is required in the future (figs. 26,27).

Epigraphy (Zoltán Horváth)

During his two fieldwork seasons working at the valley temple area, Petrie managed to retrieve only a low number of decorated limestone fragments from the heavily ruined temple area, although he claimed that his workers had explored all dumps in search for pieces of sculpture and relief fragments. By now, the careful treatment and analysis of the decorated fragments from the mortuary complex of Sesostris III in Dahshur and South Abydos has opened up new perspectives for research on the iconography of Late Middle Kingdom cult establishments including the temple at El-Lahun, especially since developments that we can see under the reign of Sesostris III appear to have been rooted in the reign of Sesostris II.[22] For this reason, and also to test the archaeological potential of the old debris mounds, the heaps in the southern temple area have been systematically investigated. The number of decorated fragments collected from the surface of these heaps amounts to around a hundred; most of them carved in high relief, a few chips just painted. With a few exceptions, each has a yellow-brown patina caused by the long exposure to elements, especially the direct sunshine and the constant wind. Unfortunately the majority was too small to be of any value and would hardly contribute to the reconstruction of the temple's iconography, other pieces of modest size may contain diagnostic elements that helps to identify motifs like representations of the king (the vulture goddess Nekhbet holding a *shen*-ring, feathers of the Horus falcon surmounting the royal name panel, a part of a palace façade), or bands with ceiling pattern and several parts of middle-scale hieroglyphic inscriptions – just to name a few (fig. 28). Nevertheless, the high number of these surface finds serves well to demonstrate that these heaps are still rich in finds and their thorough re-investigation may be rewarding in the future.

[22] See esp. the excellent study of Oppenheim, A., Three Deities in procession: A Relief Block from the Pyramid Complex of Senwosret II at Lahun in the Metropolitan Museum of Art, in Hawass, Z.A. – Richards, J., (eds.), *The Archaeology and Art of Ancient Egypt. Essays in Honor of David B. O'Connor II*, CASAE 36, Le Caire 2007.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21.4
38

Fig. 1

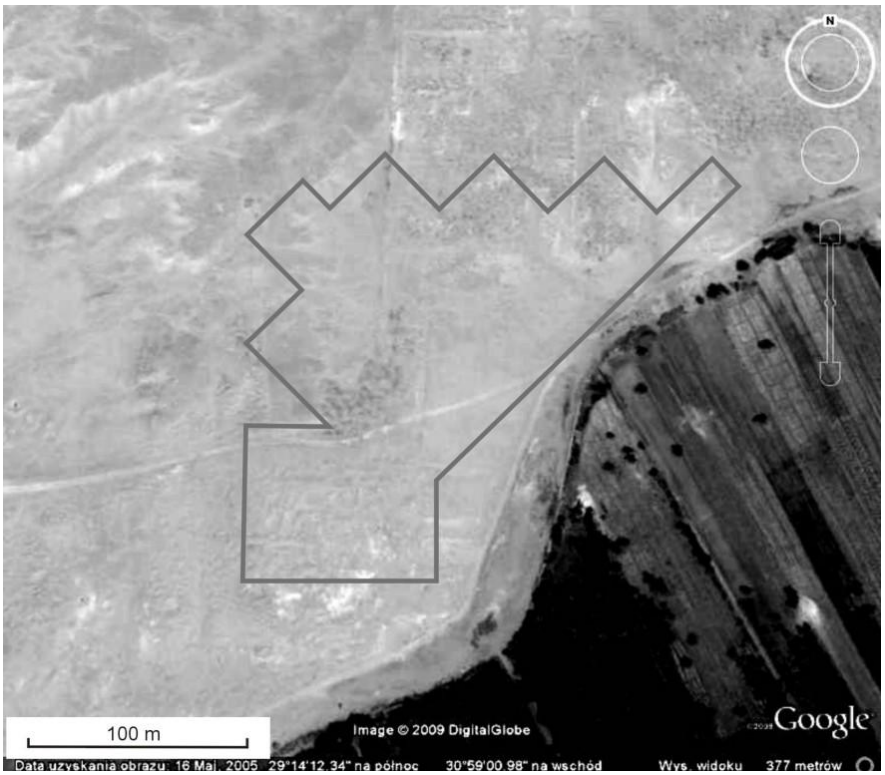
100 m
Image © 2009 DigitalGlobe
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Fig. 2

Fig. 3

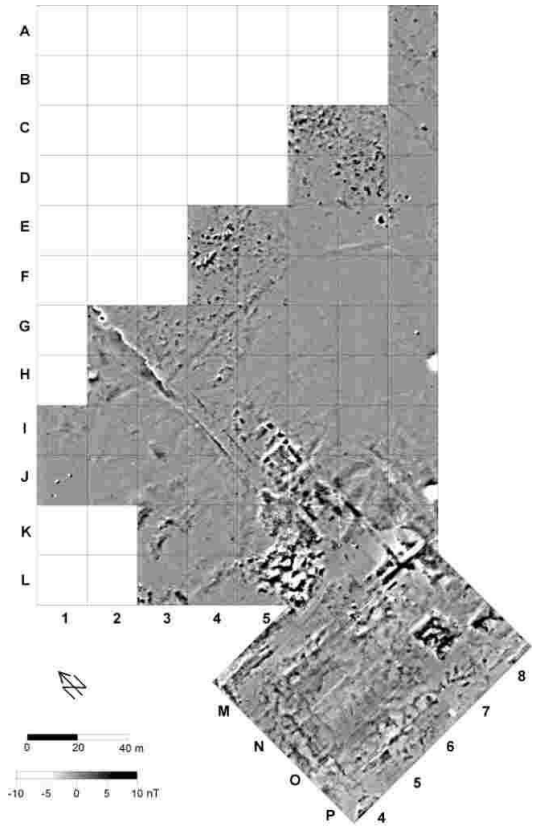

Fig. 4

Fig. 5

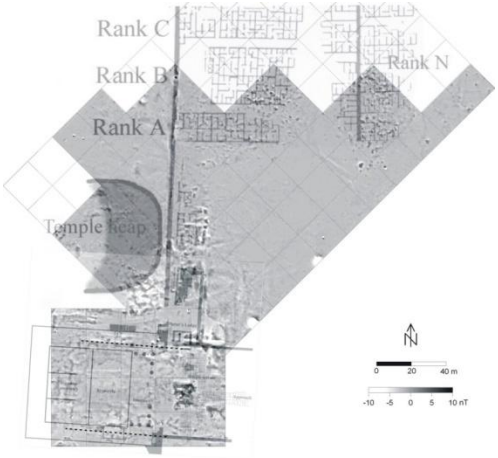

Fig. 6

Fig. 7

Fig. 8

Fig. 9

Fig. 10

Fig. 11

Fig. 12

Fig. 13


station 17
station 16 large depression
station 15
station 19 shaft and scarab
station 14
station 13
station 12
station 11 "wady" flints microlits
station 10 Marl C zir
station 09 Nile B jar ba
station 08
station 07 pit
station 06 pit
station 05 pit
station 04 pit
station 02 flints
station 204 shaft, pits, udjat-amulet, faience pieces
station 203 pit, Nehebkau amulet
station 00
station 202
station 201
1220_120
1219_119 compound with pottery coffin
1221_121
1217_117
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Fig. 14

Fig. 15

Fig. 16

Fig. 17

Fig. 18

Fig. 19a

Fig. 19b

Fig. 20

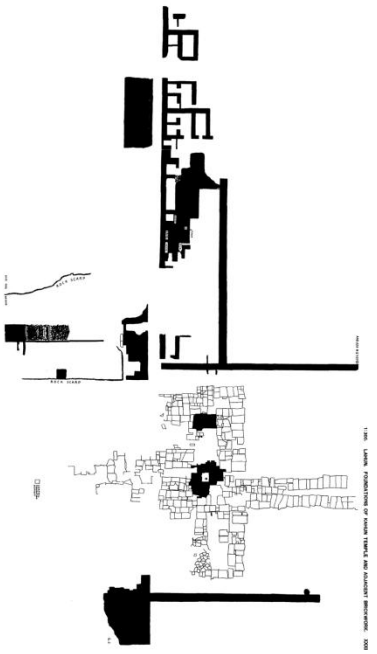

Fig. 21

Fig. 22

Fig. 23

Fig. 24

Fig. 25

Fig. 26

Fig. 27

Fig. 28