

Saqqara: research 2018



Abstract: The paper presents the exploration, by a mission of the University of Warsaw, of the eastern bank of the Dry Moat extending south from the section unearthed in 2001. The team also uncovered a previously unknown Old Kingdom funerary complex in the area south of the tomb of Merefnebef. Burials of the Upper Necropolis were found in both sectors. Field conservation, an important part of the program, is discussed in the appendix.

Keywords: West Saqqara, Old Kingdom, Lower Necropolis, Third Dynasty, Netjerykhet, Djoser, Dry Moat, Step Pyramid, rock-hewn tombs, Upper Necropolis, mummies

The earliest traces of human activity in the area under investigation are related to the construction of the funerary complex of Netjerykhet. However, the evidence of different stages of the work inside the complex (Kuraszkiewicz 2006; Welc 2008; Kuraszkiewicz 2015), as well as of an extensive quarry (Welc 2011), is fragmentary and inconclusive. The areas explored in 2018 were chosen specifically to address this issue.

Despite a shorter season (due to a delayed start) and reduced staff, the major points of the program, encompassing both archaeological excavation and conservation activities, were fully accomplished, yielding results both interesting and promising.

One of the most enigmatic elements of the funerary complex of Netjerykhet is the so-called Dry Moat, an enormous trench cut in bedrock, up to 40 m wide and approximately 20 m deep, enclosing an area of about 750 m by 600 m, around the temenos (Swelim 1988; 2006;

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Team

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Photographer: Jarosław Dąbrowski (freelance)

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Myśliwiec 2006; Herbach and Jagodziński 2008; Kuraskiewicz 2011; 2018; Myśliwiec 2018) [Fig. 1]. Sections of the Dry Moat un-

earthed near the Unas causeway and pyramid in the 1940s contain unusual elements (dividing walls with doorways, niches and

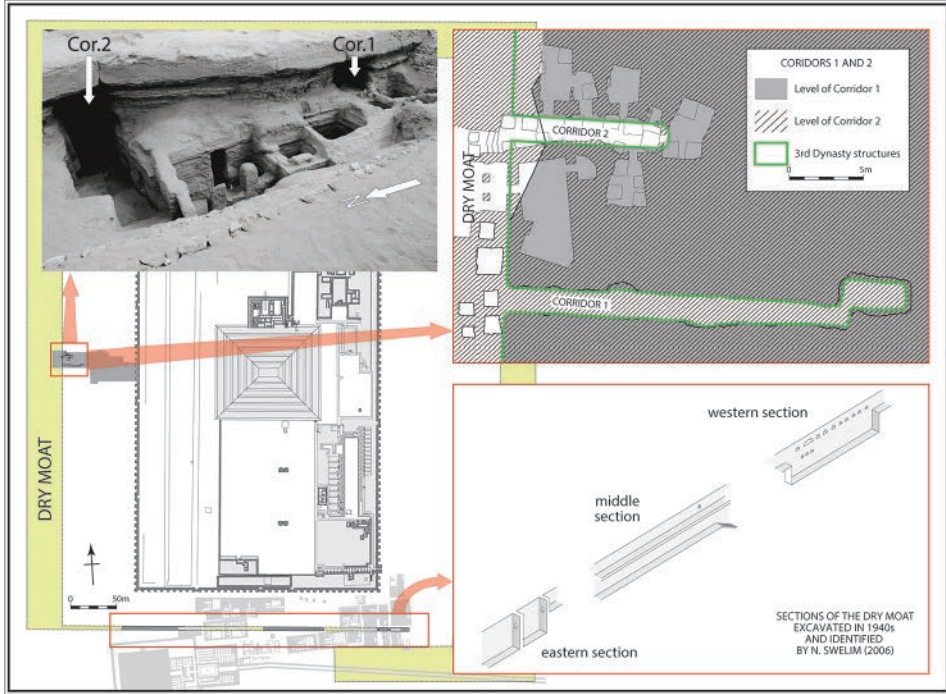


Fig. 1. Plan of the Step Pyramid complex with the outline of the Dry Moat and its excavated sections (PCMA UW Saqqara Project/drawing K.O. Kuraskiewicz)

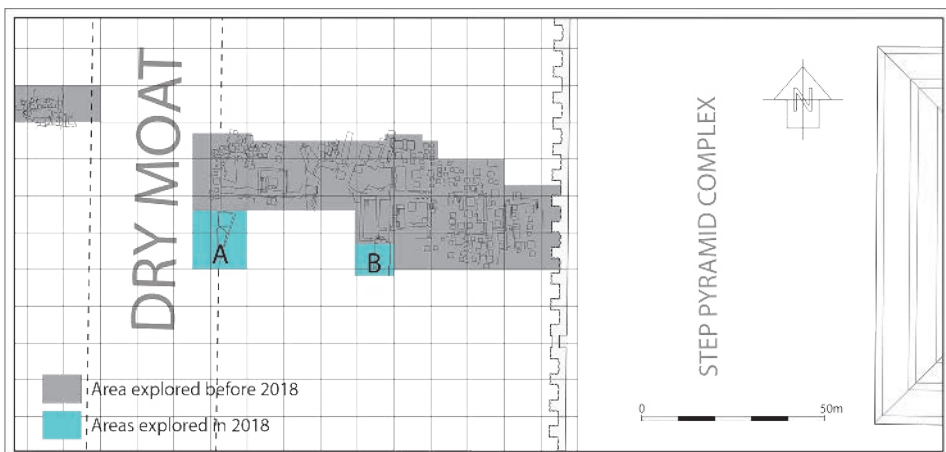


Fig. 2. General plan of the site showing areas explored in 2018 (PCMA UW Saqqara Project | drawing K.O. Kuraskiewicz)

corridors, see Swelim 2006), suggesting that the function of this enormous structure could not have been restricted merely to separating the sacred (that is, the royal tomb) from the profane. Previous research not only confirmed the existence and position of the western section of the Dry Moat, but also brought to light additional features resembling those found in the southern section, augmenting the understanding of the

structure (Kuraszkiewicz 2011; 2018). The sequence of interconnected underground compartments with niches, which probably were intended to house statues or ritual objects (like the wooden harpoon found in Corridor 1, see Myśliwiec 2001a), brings to mind regions of the Netherworld that the king had to pass on his way into the Afterlife (Kuraszkiewicz 2011). It would complement the sacred landscape encoded

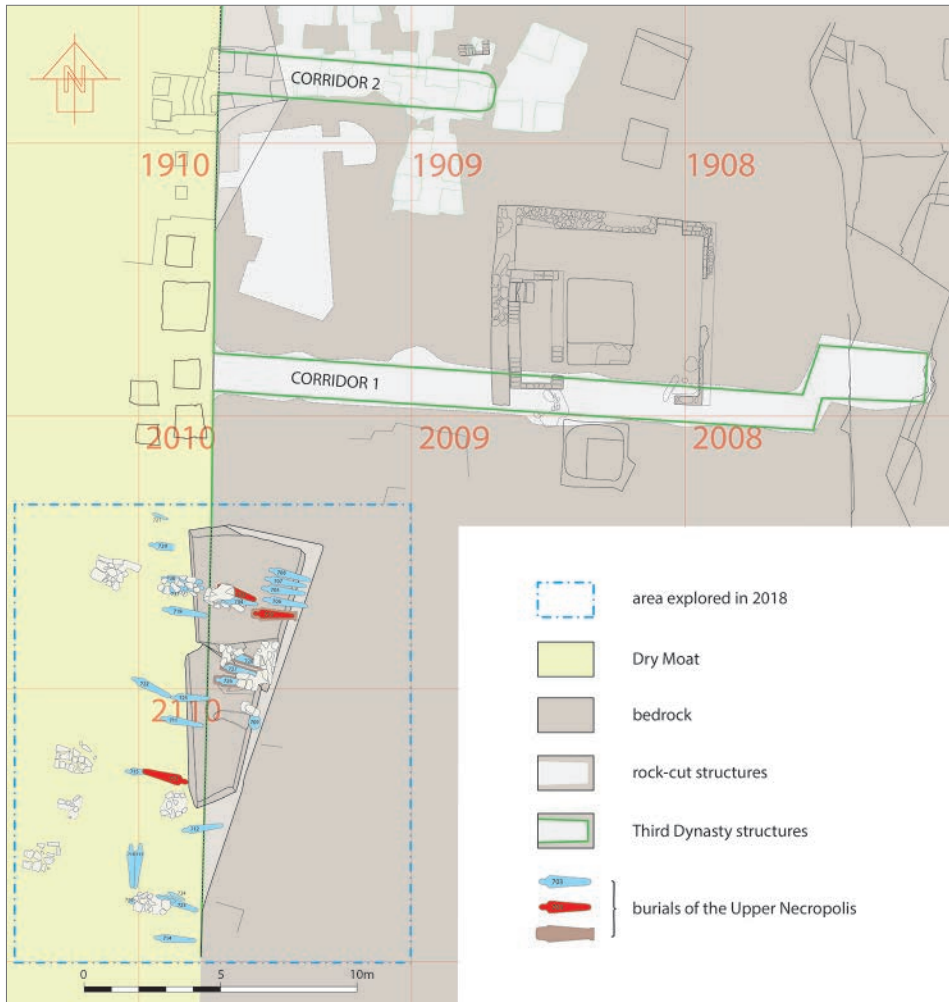


Fig. 3. The eastern bank of the Dry Moat with the section excavated in 2018 (marked A in Fig. 2) (PCMA UW Saqqara Project | drawing K.O. Kuraszkiewicz)

in the temenos (see Friedman 1995; 1996). Moreover, the depth of the Dry Moat in its southern section (where the bottom has

been reached, see Saad 1947: 66–67) corresponds to the level of the burial chambers in the South Tomb and under the Step

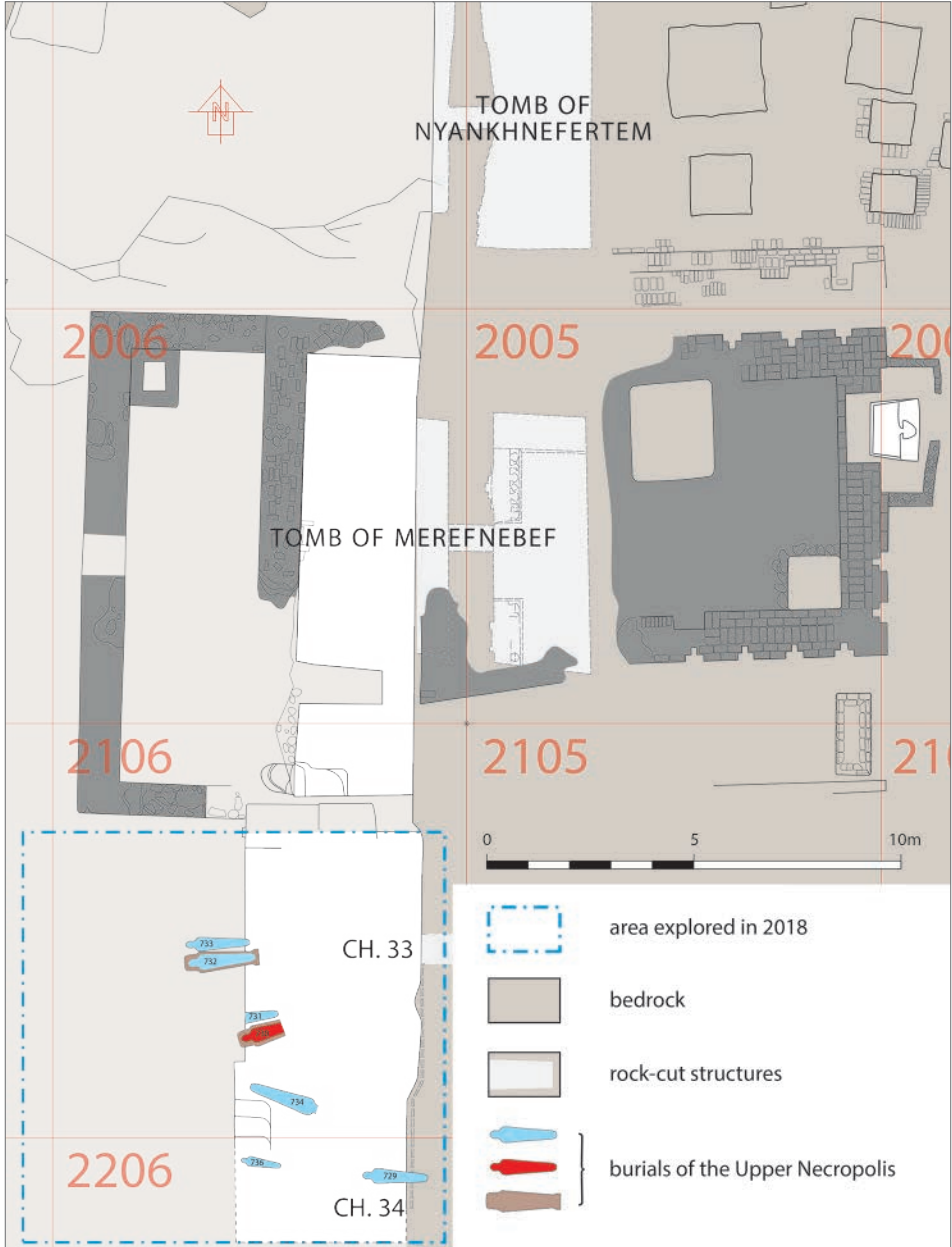


Fig. 4. Central part of the cemetery with the area excavated in 2018 (marked B in Fig. 2) (PCMA UW Saqqara Project | drawing K.O. Kuraszkiwicz)

Pyramid, where the king would have started his journey. Unlike Corridor 1, Corridor 2 had not been finished (Kuraszkiewicz 2011: 141), suggesting that the work within the moat may have progressed from south to north and that the northern part had not been completed (the same is true of the northern part of the temenos itself). If so, then more structures could be expected in the Dry Moat, at least between the hitherto excavated sections. The exploration of this possibility was at the forefront of the current work.

It follows from the analysis of late Old Kingdom cemetery development that the first non-royal tombs between the Dry Moat and the temenos wall would have been constructed in the three north–

south rows running northward, beginning with the Unas cemetery (Kuraszkiewicz 2013: 275–284). The tombs of the middle row, which included those of Merefnebef (Myśliwiec et al. 2004) and Nyankhnefer-tem (Myśliwiec et al. 2010), seem not to have been modified in subsequent developmental phases of the cemetery, in contrast to structures situated to the east and west of it. Moreover, evidence of a Third Dynasty open quarry has been identified west of the Merefnebef and Nyankhnefer-tem tombs (Welc 2011). Thus, the area south of the tomb of Merefnebef, which had not been previously explored, was chosen for investigation as the area most likely to yield information on the earliest period of cemetery development.

EGYPTOLOGICAL RESEARCH

Two areas between the Dry Moat and the Step Pyramid enclosure were investigated [Fig. 2]: 1) western section, along the eastern bank of the Dry Moat, to the south of Corridor 1 (grid squares 2010 and 2110: Fig. 3), and 2) eastern section, south of the tomb of Merefnebef (grid squares 2106 and 2206: Fig. 4).

OLD KINGDOM STRATA

Western section

The eastern bank of the Dry Moat was traced in grid squares 2010 and 2011, under a layer of sand no thicker than 0.50 m [Fig. 5 top]. This section of the bank, which is a continuation of the part discovered earlier, runs in a straight line parallel to the north–south axis of the Step Pyramid complex. The total length of the eastern bank of the Dry Moat is almost 40 m now, confirming the theoretical work of

Nabil Swelim as well as the earlier Polish results. Moreover, the structure of the rock indicates the presence of a rock-hewn structure running parallel to Corridors 1 and 2, most likely elements of the funerary complex of Netjerykhet [Fig. 5 bottom]. However, this section is obscured by two huge fragments of rock that collapsed at some point between the Old Kingdom and the Late Period (as they lie on the layer of sand that accumulated on the site after the destruction of the Old Kingdom structures, and burials of the Upper Necropolis were found above the rocks, see below). Because of this, the *dakka* layer, that is to be expected at a deeper level based on the results of earlier excavation in the neighboring area (Myśliwiec 2001b: 111–119), was not reached this season. The stones will have to be removed before any further research can be done.

Eastern section

In the eastern section (grid squares 2106 and 2206), the area adjoining directly the tomb of Merefnebef, remains of Old Kingdom structures were found,

partly covered with accumulated *dakka*, under a layer of loose sand, which contained several burials from the Upper Necropolis. In the western part of the excavated area, a mud-brick wall deline-



Fig. 5. Eastern bank of the Dry Moat with the section excavated in 2018: top, view of the section from the southwest; bottom, rock-hewn structure blocked by a collapsed rock (PCMA UW Saqqara Project | photos J. Dąbrowski)

ates a sunken courtyard, measuring at least 10 m N–S (its southern limit lying outside the excavated area) and roughly 4 m E–W. Access from the upper level was possible by means of a small stairway in the southwestern corner of the courtyard, where the remnants of three steps have been preserved. Two Old Kingdom funerary chapels (Nos 33 and 34) were hewn in the rock shelf on the eastern side of the courtyard, the arrangement similar to that of the tomb of Merefnebef [Fig. 6

top]. The upper parts with the lintels were unearthed. The lintel of Chapel 33 was decorated with at least three lines of inscription in sunken relief [Fig. 6 bottom]. The lintel must have been exposed for a prolonged period of time before the first burials of the Upper Necropolis were made, making the inscriptions illegible due to severe erosion in the upper part as well as at both ends. Remnants of a standard offering formula are preserved in the middle section of the



Fig. 6. The courtyard of Chapels 33 and 34: top, view from the west; bottom, fragmentary inscription on the façade of Chapel 33 (PCMA UW Saqqara Project | photo J. Dąbrowski)

inscription, but there is no trace of the name or titles of the owner. The chapel itself is filled with sand up to the ceiling, which was not removed to ensure protection of the interior until proper

excavations can be carried out. The other chapel (No. 34) bears no trace of decoration on the façade. To protect the unearthed parts of the façades until they can be excavated in a future campaign,

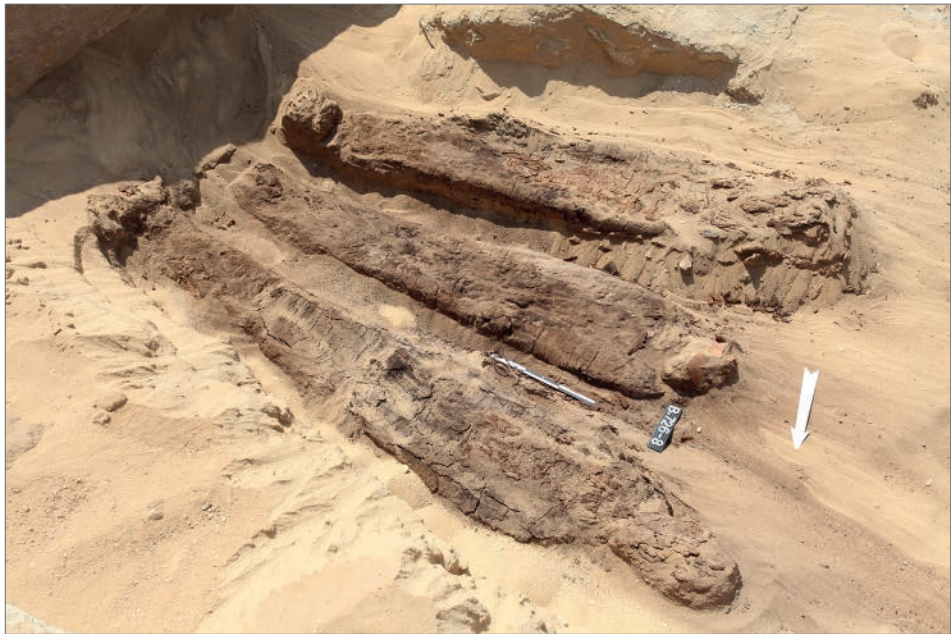
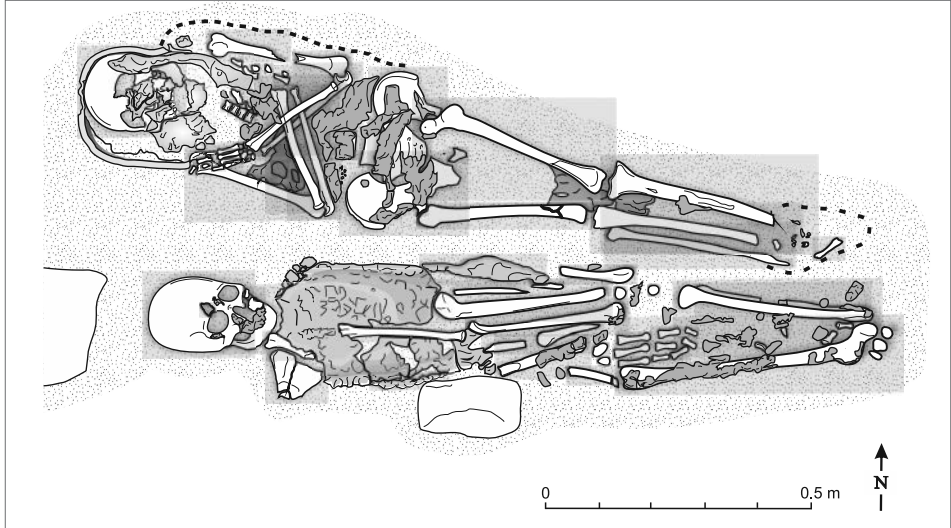


Fig. 7. Burials of the Upper Necropolis found within the Dry Moat: top, Burials 703 and 704; bottom, Burials 726–728 (PCMA UW Saqqara Project | photo J. Dąbrowski, drawing D. Karst)



Fig. 8. Burials 732 (in wooden coffin) and 733 of the Upper Necropolis found in front of Chapel 33 (PCMA UW Saqqara Project | photo J. Dąbrowski)



Fig. 9. Blue jackals painted on the coffin of Burial 732 (PCMA UW Saqqara Project | photo J. Dąbrowski)

a stone wall was constructed in front, and the space between the rock and the wall was subsequently filled with sand. The upper surface was covered additionally with plastic foil, a layer of sand and a stone construction.

POST-OLD KINGDOM STRATA: UPPER NECROPOLIS

In both areas, burials dating to the Late and Ptolemaic periods have been found, thus extending the previously recorded limits of the so-called Upper Necropolis (Radomska et al. 2008; Kowalska, Radomska, and Kozieradzka 2010; Myśliwiec 2017). In total, 36 burials of the Upper Necropolis (seven in the area south of the tomb of Merefnebef and 29 within the Dry Moat, see *Figs 3, 4*) were examined and documented in the 2018 campaign. The bulk of the burials was found without coffins or any funerary equipment. With a few exceptions, the bodies, deposited directly in the sand, were oriented east–west, with the head toward the west. The state of preservation of the burials found within the Dry Moat was much poorer than of the remaining ones [*Fig. 7*]. Evidently, a higher level of humidity in the lower-lying area was the cause of accelerated decay of organic material. Eight of the burials examined in the present campaign contained traces suggesting ad-

ditional elements, corresponding possibly to a slightly higher social status of the deceased. Six of them, found within the Dry Moat, had been severely damaged by natural factors and the presence of coffins (Burials 710 and 726–728) and/or cartonnages (Burials 703, 710 and 713) could be established, but not their form or decoration.

Two bodies found to the south of the tomb of Merefnebef (Grid Square 2106) were buried in wooden anthropoid coffins. Burial 730, damaged in ancient times by tomb robbers and only fragmentarily preserved, contained scanty remains of a wooden coffin and cartonnage. Burial 732 was in an anthropoid wooden coffin with the decoration painted on a white background [*Fig. 8*]. The decoration consists of a polychrome *wesekh* collar, a black pseudo-inscription along the body axis between the collar and the feet, and two figures of jackals on their feet. Noteworthy is the unusual blue color of the jackals [*Fig. 9*], which may be related to the blue color of divine hair and wigs (see Kees 1943: 465). The coffin was subject to protective treatment (as described in the relevant section of the present report) that will continue in the next campaign. The coffin cannot be opened and the human remains inside examined before the treatment is completed.

APPENDIX CONSERVATION ACTIVITIES

Each campaign commences with a detailed inspection of the state of preservation of the monuments, including the funerary chapels of Merefnebef, Nyankh-

nefertem and Ikhi/Mery. During the present campaign, restoration work took place both on site and in the storerooms of the Imhotep Museum.

CHAPELS OF MEREFNEBEF, NYANKH-NEFERTEM AND IKHI/MERY

Salt efflorescence in the chapel of Merefnebef was insignificant. Increased humidity had caused numerous detachments of the polychromy in various parts of the chapel, but without posing any danger to its preservation. A 2-cm-deep layer of salt was observed in Chapel 15 (of Nyankhnefertem) on the surface of the southern part of the west wall, that is, to the right of the entrance. No increase of salt efflorescence and no mildew was observed on the ceiling. Lastly, no salt concentration was detected on the facade of Chapel 14 (Ikhi/Mery). It seems that the construction of a shelter has stabilized the climatic conditions inside the chapel.

Daily fluctuations of humidity and temperature in the chapel of Merefnebef have diminished considerably. Conditions inside the chapel will be monitored also after the end of the present campaign.

Salt efflorescence on the upper part of the walls and ceilings was removed with hard brushes and scalpels, while the high concentration in their lower part required water compresses on lignin. The hardly soluble salt layer was thus softened and removed with scalpels. The efflorescence on the facade and lintel was removed with brushes.

Some detachments of the polychromy layer and gypsum fillings were mounted with Primal E-330 in an approximately 8% water solution. The affected areas were first softened with a 1:1 mixture of water in ethyl alcohol. During the present campaign the facade of Merefnebef was consolidated and cleaned. Reinforcement procedures in both chapels were also applied on other surfaces.

Work continued on the reconstruction of the north wall of Chapel 15 (Nyankhnefertem), which had been severely damaged in antiquity. Pieces of rock and gypsum mortar bearing fragments of offering lists were reinforced and then mounted using a solution of Primal E-330 (as above). Many small fragments were connected and glued together using Mowilith 50 in acetone. The work should be continued.

The facade of the Chapel 14 (Ikhi/Mery) is in very poor condition. It is built of white limestone blocks, some of which are decorated with representations and inscriptions partly in relief and partly painted. Multiple cracks of the rock mass, as well as disintegration of the ceiling and its progressive collapse, have caused serious damage to the limestone blocs. There are many rifts, displacements and detachments of the blocks that were crushed under the pressure of the overlying rock. The structure of white limestone blocks has partly deteriorated in spite of the conservation treatment in 2012, due to the subsidence of the rocky massif. Detached stone and whitewash layers were mounted, using the above-described solutions of Primal E-330 and Primal AC-33 (3–7%). Larger disintegrated limestone fragments were mounted with Mowilith 50 in acetone. Some gypsum seals were installed on the most endangered rifts as tests. Some fragments of limestone found on the floor were preserved and prepared for reassembly.

Small finds

Treatment of the wooden coffin of Burial 732 [Figs 8, 9] entailed cleaning and structural consolidation of the polychromy and

wood by impregnation and mounting. Materials were chosen according to tests preceding their application: 3–7% solution of Paraloid B-72 in acetone for structural impregnation; 3–7% alcohol solution of Paraloid B-82, Primal AC33, Primal E-330 in water dispersion (3–10%) depending on the absorptiveness of the background in the case of impregnation and structural consolidation, as well as a 2–25% solution of Mowilith for impregnation and mounting in specific cases. Klucel GF, 3–5% solution in alcohol, for structural reinforcement by impregnation.

Burial 710 contained only fragments of cartonnage in very bad condition. The polychrome layer was cracked and the degraded binder in both the painting and mortar layers caused disintegration of these technological strata. These objects are preserved fragmentarily with numerous cavities, a fully unfolded base of canvas bandages and a very thin, fragile layer of plaster. In this case, once the dissolvent has evaporated, Paraloid B-72 was used (2–10 % solution in acetone) for impregnation and structural consolidation (concentration depending on the porosity of the material). The cleaning and gluing of the fragments will be done in the future.

Conservation of artifacts in storage

A group of eight artifacts currently housed in the Saqqara Storeroom No. 2 was chosen by the MoA committee for restoration by Polish conservators in preparation for museum display. These objects had undergone a series of conservation treatments (including cleaning, consolidating, strengthening and preserving, as described in detail in the Mission's

previous excavation reports) immediately after discovery and before transport to storage, making them suitable for long-term storage.

Four of these artifacts are wooden headrests. Work on the headrest S/03/37 was completed restoring it to its original form through structural reinforcement (using Paraloid B-82 in alcohol), and by connecting individual fragments of the headrest (Mowilith 50, 2–20% in acetone). The other three headrests were reinforced only partly (using a Paraloid B-82 solution in alcohol), but the process is bound to take more time, because the structural condition of these artifacts is much worse compared to the first one. More pieces are to be consolidated and connected and some of the original missing fragments must be reconstructed, in close with archaeologists to ensure accuracy.

The other four artifacts are large stone architectural elements. They were found in fragmentary state and are expected to be reconstructed and mounted. However, it must be stressed, just like in the case of the headrests, that all the fragments had been properly cleaned, consolidated and reinforced before transfer to the storeroom.

Two of the artifacts are jambs of a false door niche in the tomb of Ikhi (Chapel 14) that were transferred to the storeroom against the opinion of the Mission's conservators. They should be returned to their original location inside Chapel 14, on both sides of the false door, once the archaeological work in the chapel is completed.

The remaining two objects are an inscribed limestone jamb (Exc. no. S/01/20) and a fragment of the limestone false door inscribed for Teti-anekh (Exc. No.

S/98/29.P). Originally, these were long and very thin stone slabs (110 x 30 x 12 cm and 179 x 60 x 10 cm, respectively) but they were found broken into many small pieces. Both are severely damaged with many displacements and detachments of small fragments. To reassemble and reconstruct them to their original shape and form, it is recommended to carry out the process of conservation treatment in the place of their final exposition in order

to avoid more damage and fragmentation due to unnecessary transport of the objects. Another reason would be the complexity of the conservation process, which will involve not only many tests on the best way of consolidation and strengthening, but also installation of some gypsum seals for the most endangered rifts; the work will have to be conducted by a team of conservators.

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