

DENDARA SETTLEMENT SITE

Grégory Marouard and Nadine Moeller

The third season of the Oriental Institute (OI) archaeological program on the settlement site at Dendara took place twice this last year: from November 19 to December 18, 2016, for the main excavation program; and from January 7 to January 27, 2017, for a study season. Fieldwork operations have been conducted under the direction of Grégory Marouard, Research Associate in Egyptian archaeology at the OI. The team consisted of Nadine Moeller (Professor of Egyptian Archaeology at the OI/NELC, University of Chicago), Valérie Le Provost (Ceramicist, Research Associate at the IFAO), Claire Newton (Archaeobotanist, University of Quebec at Rimouski), Aude Simony (Ceramicist, University of Poitiers), Sasha Rohret, Emilie Sarrazin, and Oren Siegel (PhD students, NELC department). The work was conducted under the supervision of Rais Yasser Mohamed Hassan with Egyptian archaeologists from Gurna and local workers from the Dendara area. The Ministry of Antiquities (MoA) was represented by inspectors Abdallah Ahmed Osman Hassan and Mohamed Abdel-Rahil Mohamed Atitu.

Since 2014, the Oriental Institute has investigated the evolution of the settlement site at Dendara, particularly for the period between the mid-fourth to the late third millennium BCE, until the early Middle Kingdom (ca. 2000 BCE). Focusing on urban archaeology, this project is welcomed on the eighty year old archaeological concession of the French Archaeological Institute in Cairo (IFAO), which allowed the OI to work on the settlement remains situated inside and outside of the main sanctuary enclosure wall. The cemetery area, located south, is also under investigation by a team of the Macquarie University, Sydney.

The specific focus of the OI team lies on the extensive study of the urban vestiges from the origins of the settlement to the early Christian period and the interconnections between the civic and administrative spaces with the religious structures. This research is combined with the excavations conducted by the Oriental Institute under the direction of Nadine Moeller (see Tell Edfu report) of another provincial capital of Upper Egypt at Tell Edfu, the “sister site” of Dendara. In this regard, the current project is an exceptional occasion to examine on a deeply comparative level the archaeological data from two major settlements with the aim to better characterize the multiple facets and long-term development of the urban phenomenon in addition to the dynamics and resilience of Upper Egyptian agglomerations over more than 3,000 years.

Work on the Extramural Settlement Area (Zone 4)

This season, as part of our ongoing questions about the evolution of the ancient town during the third millennium BCE, an extensive excavation was undertaken in the extramural urban area (Zone 4) focusing on a large residential neighborhood. Identifiable over an area measuring 450 m in length and covering nearly 80,000 sq m, Zone 4 is located about 330 m outside of the Hathor sanctuary enclosure wall (figs. 1–2) and it is mostly characterized by domestic installations which date back to the First Intermediate Period (ca. 2200–2050 BCE),



Figure 1. Location of the OI work inside (Zone 1) and outside (Zone 4) of the precinct of Hathor and Isis sanctuaries in 2016 and 2017 (photo: ©Google Earth 2016)



Figure 2. Aerial view of the settlement area (Zone 4) excavated by the OI team at the end of the 2016 campaign, now protected by a new mudbrick wall along the modern road (photo: G. Marouard)



Figure 3. Orthophotography by UAV of Zone 4 area, showing the OI excavation in red and the French-polish excavation in yellow (photo: G. Marouard)



Figure 4. Corridor, stairs and central room of an early Middle Kingdom domestic unit, from the East (photo: G. Marouard)

most probably from the second part of this period, until the very beginning of the Middle Kingdom (ca. 2050–1950 BCE).

This sector has been very little investigated by archaeologists before, only between 2001 and 2004 by a French-Polish team of the IFAO directed by François Leclère. The attention of this previous fieldwork focused on a single domestic unit located in the southeastern part of Zone 4. In order to get an encompassing vision of this part of the settlement, the Oriental Institute project has opened an extensive area which measures about 60 m north-south to 50 m east-west, ca. 3,000 sq. m (fig. 3). In several locations, the destruction made by the sebakhin activities in the early years of the twentieth century reached the natural sand levels on which the settlement was originally established.

Several new houses have been excavated. Most of them are founded directly on a thick layer of natural sand, indicating an ex-nihilo installation and an expansion of the late Old Kingdom and First Intermediate Period settlement towards the east into an area previously occupied only by light installations and gardens. In the actual state of the work, about ten new domestic installations or groups of installations (house and adjacent courtyard) have been identified. The main part of the remains investigated this season corresponds to late First Intermediate Period and early Middle Kingdom (late Eleventh and early Twelfth Dynasties, ca. 2000 BCE) constructions and reoccupations.

The northern limit of the 2016 area revealed a set of four symmetrical installations located on the southern side of the Nord-South Street. Each one measures about 13 m in length and 5 m in width and shows an alignment of five to six rooms with a simple straight staircase in the central part, probably used for access to the roof (fig. 4). For each, the plan is marked by a larger room located in the center of the house. Those installations are the latest constructions found in Zone 4 so far with a date that can be estimated around the second part of the Eleventh Dynasty.

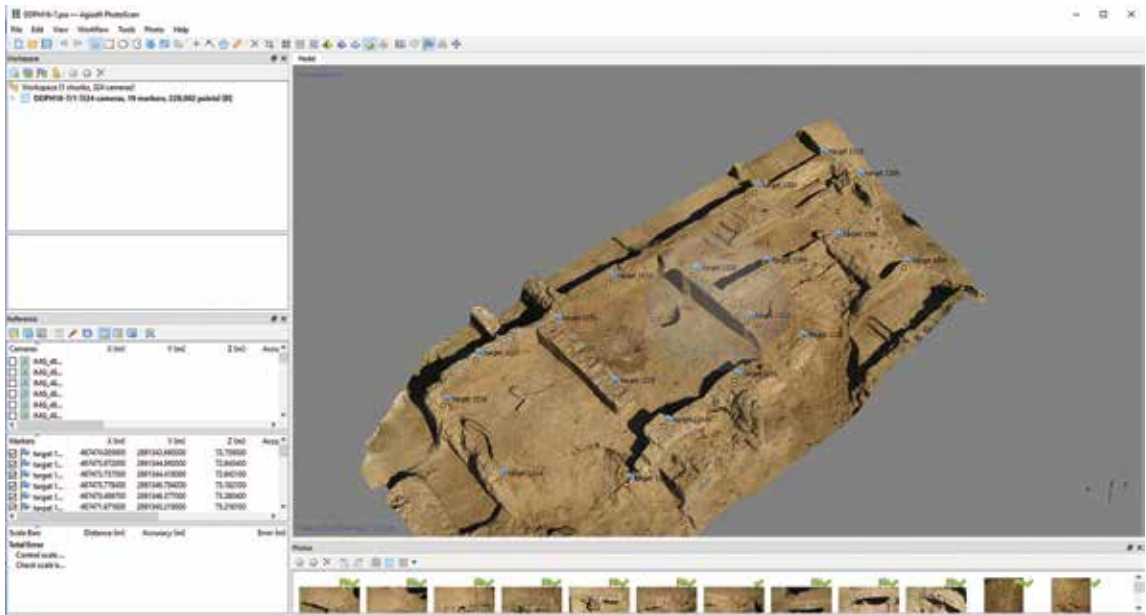


Figure 5. 3D reconstruction of the early Middle Kingdom domestic unit 3 made with Agisoft PhotoScan Pro (image: G. Marouard)

Almost two to four larger installations similar to the domestic unit excavated by the IFAO in the early 2000s have been identified on the north and the east side of the 2016 excavations. Earlier (ca. mid- to late First Intermediate Period), their plans seem to be still influenced by the tradition of the Old Kingdom; four rooms as a central core unit with courtyard and peripheral outbuildings sometimes encroached on public/collective spaces such as the street.

Most of the archaeological remains have been recorded with the traditional use of a total station Leica TS06, but the OI mission has also used new innovative technologies, thanks to the support from the Fund for Innovative Research in Egypt (FIRE). This season it was possible to operate an Unmanned Aerial Vehicle (UAV) DJI Phantom 4 in order to model and precisely map the urban remains newly exposed with unparalleled accuracy. The use of UAV (so-called drone) is strictly controlled in Egypt. However, the OI team at Dendara received permission in 2015 to use this type of aircraft in the field, an exceptionally rare authorization received by very few archaeological missions in Egypt to date.

In conjunction with the photogrammetry software Agisoft Photoscan Pro, it was possible to model the mudbrick remains in a short time and to produce 3D views (fig. 5) and orthophotography, which is a geometrically rectified image without perspective that corresponds to a planar photography (fig. 3).

The pottery study of this area has been conducted by Valérie Le Provost who underlined four main phases. Phase 1 is the oldest phase and can be dated to the First Intermediate Period with some traditional characteristics that belong to the late Old Kingdom and end of the Sixth Dynasty. The main characteristics of Phase 2 are the cylindrical bread molds with a flat base coated on the inner surface, cups with red painted rims and irregular scraped bases, large carinated bowls with lines on the external rim, bottles or small jars, some of which are blackened on the outer surface. Phase 3, still presents the First Intermediate Period features, but some changes clearly appear. The bread molds are still those of the First Intermediate



Figure 6. Large abandonment layer with complete pottery vessels (Phase 3) on floor Fl. 2050 (photo: G. Marouard)

Period, but some have a smaller and less flat base. Most of the same open ceramic forms are found (cups, bowls) but the vessel walls are thinner, the surfaces are less irregular, and the large bowls with flat bases and two incised lines beneath the rim are now less frequent. Some decorations, mainly the so-called “wavy lines,” appear on large carinated bowls. The quality seems to increase a little, surfaces are less rough, and the scraping on the bases is less deeply marked. This phase, at the current point of study, dates from the end of the First Intermediate Period to the mid-Eleventh Dynasty.

Phase 4, is visibly different from the previous phases. Hemispherical cups appear along with very characteristic tubular bread molds. These two specific features of the Middle Kingdom pottery allow assigning Phase 4 to the beginning of the Middle Kingdom and the transition between the late Eleventh and the early Twelfth Dynasty. In all four phases the many pottery types are made with so-called Marl clay “Qena Ware” and include open vessels as well as jars and bottles. This repertoire offers a new perspective for the Marl A pottery production found in the settlement of Dendara.

Several objects of the daily life have been discovered in the abandonment and/or occupation layers directly excavated on the domestic floor layers. It should be mentioned that several sealings with scarab-seal impressions from the early Middle Kingdom (US 4059), a small donkey figurine in unfired clay (US 4023), a private cylinder seal in faience (US 4049, fig. 7), game pieces in limestone (US 4046) and a complete cosmetic palette in gray-blue shale (US



Figure 7. Private cylinder seal in turquoise faience discovered on the entrance floor of a First Intermediate Period domestic unit (photo: G. Marouard)

4057) have been excavated. The last four objects have been transferred for study to the MoA's magazine in Quft.

Work Inside the Hathor and Isis Sanctuaries Area (Zone 1)

In order to complete the investigations of the substructures from the Naqada II period discovered during the 2015 season, the excavations on the southern and eastern side (Trenches 1 and 2) of the Isis temple have been slightly extended to January 2017 (fig. 8).

The area formed by Trenches 1 and 2 in 2015 was assembled in a much larger area of about 17.00 m and 15.50 m in



Figure 8. Areas cleaned this season next to the Isis and Hathor temples and the Middle Kingdom enclosure wall (photo: G. Marouard)

length and 5.00 m wide, surrounding the east and the south sides of the eastern entrance terrace of the Ptolemaic phase of the Isis temple. This terrace, entirely cleared last season, has revealed the existence of an earlier building, made of thick mudbricks walls and limestone blocks, which is now well-dated to the early Middle Kingdom (end of Eleventh Dynasty–early Twelfth Dynasty, ca. 2000 BCE). This monument was built directly on the top of much earlier levels of occupation. Several layers can be found here and two successive phases were clearly exposed during our study season, corresponding to the Naqada/Predynastic period.

The most recent of the two sequences is marked by several muddy surfaces corresponding to three successive floors (US 1061, 1064, and 1066). The floors have fireplaces, ash concentrations, numerous flakes of flint (not necessarily connected to debitage residues of production but to sharpening operations of large blades), and significant traces of brewery activities — as evidenced by the discovery of several big fragments of fire-bars, so-called “fire-dogs,” which are long retaining elements made with coarse fired clay and placed all around the cooking vats used for beer production (fig. 9).

Despite some fine ware ceramic fragments such as Black-topped Ware, Red-polished Ware and marl clay open forms (fig. 10a), the pottery is widely dominated by a large quantity of Rough Ware vessels (fig. 10b), large containers and big parts of vats with burned coarse mud mortar attached to their outer face. Those pottery assemblages clearly emphasize a date from the Naqada IIC–D period (ca. 3600–3350 BCE), most likely from the end of this period.

Those remains associated with important assemblages of pottery clearly indicate the presence of contexts in relation to a domestic occupation and, in no case, can these contexts be regarded as funerary in nature. Those early phases at Dendara also offer a link and a continuity to the later Naqada IIIC–D/Early Dynastic (ca. 3100–2685 BCE) levels discovered in 2014 and 2015 by the OI team under the Middle Kingdom enclosure wall, and they help us to identify



Figure 9. Surface of the Naqada IIC–D occupation US 1061 with detail of the fire-bars found in situ concentrated in a small pit (photo: G. Marouard)



Figure 10a–b. Selection of Naqada II C–D pottery vessels from Trench 2: Black-topped and Red-polished Wares (left); Rough Ware open and closed forms (right) (photo: G. Marouard)



Figure 11. Aerial view of the early Nagada occupation discovered east of the Isis temple, with the earliest phase ever discovered in the foreground (photo: G. Marouard)

the heart of the oldest occupation of the settlement site to the southeast of the Hathor and Isis complexes.

The continuation of the excavations in Trench 2 also led to the discovery of a much older occupation, deeply sealed under a 60 cm thick layer initially formed with coarse wadi gravel and sand covered by windblown sand, a deposit that precedes the Naqada IIC–D levels. This occupation phase is characterized by a series of circular piles made of medium and large limestone pebbles (fig. 11). They could correspond to the reinforcement of postholes, since they are arranged in a regular alignment, or more likely they belong to destroyed hearths, although the larger pebbles do not show any visible signs of exposure to fire. Several concentrations of ashes and charcoals can be observed, with the occasional faunal and fish remains. The lithic pieces are mostly composed of coarse size flints and flakes, with no bifacial or sickle blades, and the ceramic material is very fragmented and eroded with a predominance of very coarse Rough Ware. Only briefly investigated at this point, this phase, which is the oldest one unearthed on the site so far, presents in aspect and stratification many points of comparison to the seasonal Badarian occupation (ca. 4400–4000 BCE) discovered at Mahgar Dendara 2, about 5 km west of the main site at Dendara.

Trench 3. Botanical Samples in Predynastic and Early Dynastic Contexts (Claire Newton)

On the western side of the early Middle Kingdom enclosure wall, two archaeological layers excavated during the 2015 season have been re-opened in order to take several botanical samples. The stratigraphic Unit US 1055, well-dated since last season to the Naqada IID period, was partially re-excavated in order to collect carbonized remains of wood charcoals and grains. Those samples have been sieved, sorted with a binocular lens by Claire Newton, and collected for further analysis (fig. 12). Floor Fl 125 of the pig-pen from the Second or Third Dynasty, previously discovered in 2015, was also partially cleared of its protective backfill in order to obtain two samples on the floor and inside the feeder, with the aim to look for the possible remains of phytoliths.

Bulk soil samples were taken from Predynastic (Trenches 2 and 3) and the Old Kingdom (Trench 4) contexts. Most samples were sieved through a column of mesh sizes from 0.5 mm to 6.0 mm. The sieve refuse was sorted on site with the naked eye and under a low power microscope. Charcoal was sorted only from the largest fractions (over 4 mm) and sorted separately for further investigation. A total of 66 liters of soil from six Predynastic and three Old Kingdom contexts were processed in this way, yielding over 6,000 plant remains other than charcoal. Additionally, soil from contexts 1055 and 1059 (Predynastic, sondage 2), was sieved with a large mesh in order to retrieve only large fragments for charcoal analysis.

The density of material is highly variable, between 5 and almost 1,000 identifiable items per liter of soil. The most abundant plant remains are cereal processing products (grains) and by-products (straw and chaff). For both periods, hulled barley and emmer wheat are well represented, as they are in general present on all Predynastic and pharaonic sites. Flax/linseed is the third annual crop represented in the form of seeds and capsule fragments, representing flax processing residues for the production of linen textiles. Lentil may be present in Predynastic contexts, and cucumber/melon in Old Kingdom contexts.

A range of field weeds is associated with these cereal processing remains. Fruits are not very well represented, except in one deposit where the sycamore is present in the form of fruits and leaves. Other tree remains include: Nile acacia seeds, pods, flower bases, leaf fragments and spiny twigs, and a few tamarisks remains in the form of young leafy twigs and bark fragments. All three were used as fuel for the activities represented in the contexts concerned.

An additional source of fuel was ovicaprid dung (sheep and/or goat), but it always appears secondary to fuelwood.



Figure 12. Archaeobotanist Claire Newton (University of Quebec at Rimouski) sorting plant remains and grains with a binocular lens (photo: G. Marouard)

Trench 4. Completion of the Profile East of the Middle Kingdom Enclosure Wall

Already started in 2015, an extensive stratigraphic profile of about 25 m in length has been completed during the January 2017 study season with the excavation of multiple layers of floors and trash deposits dating back the Fourth and Fifth Dynasties (fig. 13). Located under the enclosure wall of the early Middle Kingdom, this area has preserved in situ the first archaeological evidence for an Old Kingdom occupation and underlines the existence here of an administrative area since the early Fourth Dynasty.

All the pottery from the contexts excavated last season and most of the Old Kingdom contexts of this season have been studied and counted. About eighteen stratigraphic layers and 120 fragments of pottery have been drawn by Aude Simony. The study of some important layers of the dump from the Old Kingdom (US 1041, 1063, and 1065) continues next season.

Study Operations on the Middle Kingdom Enclosure Wall

Several operations related to the site's enclosure walls were conducted in four distinct areas during the main campaign of November–December 2016, under the supervision by Oren Siegel. In the first of these areas, cleaning was continued along the eastern face of the early Middle Kingdom enclosure wall that stands to the east of the Hathor temple. Just to the south of the foundation trench excavated during the previous season, the cleaning revealed intact



Figure 13. Profile on the Old Kingdom level in Trench 4 at the end of the study season in January 2017 (photo: G. Marouard)

stratigraphy below the wall itself in addition to several small walls. A second operation was conducted farther to the north, along the eastern face of the Middle Kingdom wall. Here, the clearing of seabkh debris behind the modern outpost of Dendara’s guardians exposed the foundations of the Middle Kingdom wall as well as its external face on a length of about 5 m. Judging from the excavations in the two areas mentioned above, it is clear that the foundation of the Middle Kingdom wall follows the irregular and convex surface of the Old Kingdom tell itself and is thus much lower in this area than it is farther to the south. The so-called “Shabaqa Wall” was built directly on top of the remnants of this Middle Kingdom wall, but with a slightly different altitude and following a more accurate north–south orientation.

In a third trench made during the cleaning near this Late Period wall (to the north of the Old Kingdom enclosure wall discovered during the 2015 season) it was possible to get a glimpse of the internal (western) face of the Middle Kingdom enclosure wall. The most complex portions of the Middle Kingdom and Late Period walls in these three areas were mapped using the photogrammetry technique.

Support to the Geomorphological Initiative

Between December 7 and December 12, a geomorphological program conducted by the Macquarie University, Sydney, investigated the geological formations and sediment deposits under and near the settlement area. Geologist Tim Ralph (Senior Lecturer at the Environment and Geography Department at the Macquarie University) conducted a survey and drilled several soundings in order to reconstruct with a long-term perspective the ancient landscape across the Dendara territory and to track the capricious developments of the Nile River and its branches and canals along the lower desert zone.

The OI team provides the workforce during all those geomorphological operations and several drilling spots on its archaeological areas. Tim Ralph mostly focused his work on Zone 4 and drilled three soundings about 6 m in depth directly inside the settlement area, on the border of the small road that delineates Zone 4 and in the surrounding fields (fig. 14a–b). Another drilling about 3.3 m in depth was conducted near the remains of the Naqada II period discovered in 2015 in order to investigate the formation of thick sand and gravel deposits and the possible existence of slight Nile flood deposits under the actual surface.

With the support of the CAMEL Lab, the OI team also contributed to this joint project by providing sev-



Figure 14a–b. Geologist Tim Ralph (Macquarie University) conducting drillings on the settlement area (Zone 4) and in the surrounding fields (photos: G. Marouard)

eral maps, older aerial and satellite views of Dendara (declassified Corona images from the US Geological Survey), and we bought a high resolution and georectified WorldView 2 image (DigitalGlobe's QuickBird) of the wider Dendara region, which was made available to Tim Ralph in order to be used in a future geomorphological GIS project.

Support to Conservation, Site Protection, and Site Management

In order to protect the extra-mural archaeological area at Zone 4, a low mudbrick wall was erected on the eastern and northern sides of the excavated area, about 120 m in length along the modern road (fig. 2). This totally reversible fence, built with local materials and the help of local workers, constitutes a visible limit and an effective protection in order to avoid the daily circulation and above all the occasional dumping of trash deposits on the newly exposed settlement remains (at the beginning of the 2016 season, we had to remove nearly 2 m of modern trash in some parts of Zone 4 before starting our excavation).

Inside the Hathor and Isis complex on the north side of Trench 3, extensive cleaning of the western face of the Early Middle Kingdom (possibly rebuilt during the reign of king Shabaka, Twenty-fifth Dynasty) has been conducted in order to remove the modern garbage, the sebbakhin dumps, and the remains of the guardian house that had been dismantled in this area in 2013 (fig. 15). Two solid supportive pillars made with mudbricks have been con-



Figure 15. View of the western face of the early Middle Kingdom enclosure wall after cleaning (photo: G. Marouard)

structed in order to consolidate a section of the enclosure wall that had become unstable due to gradual degradation of its foundation, which was exposed about a century ago by the sebbakhin activities.

In collaboration with the MoA and the IFAO, all the blocks preserved in the northern and southern chapels of the Roman mammisi have been removed under the supervision of the OI team during the study season of January 2017. This operation was funded by the IFAO and conducted by the Rais Abdallah Khalil (fig. 16a-b). Most of the small pieces of blocks were relocated

in the mammisi of Nectanebo. The main pieces, mostly fragments of statues, have been placed on the new benches built for that purpose by the IFAO in December 2016.

On one of the benches that was still entirely empty at the end of this operation, the OI team decided with the agreement of the local MoA inspectorate, to move several other inscribed blocks of significant interest in addition to some architectural blocks such as sculpted capitals that had been stored on the ground outside of the Roman mammisi. A group of Middle Kingdom blocks in red granite and fine limestone which date back to the reign of king Amenemhat I, first ruler of the Twelfth Dynasty, have been removed considering their historical interest for the site and their esthetic value for the visitors (fig. 17a). The red granite blocks, a lintel broken into two parts, and a fragment of doorjamb (fig. 17b), belong to a significant



Figure 16a-b. Northern chapel of the roman mammisi before and after the removal of the blocks (photos: G. Marouard)



Figure 17a-b. One of the Amenemhat I's blocks during its moving (left), and the mastaba which now receives the granite pieces from the monument of Amenemhat I (right), with other Ramesside blocks and Roman capitals (photos: G. Marouard)



Figure 18. The colossal statue of Mutemwiya from the mid-Eighteenth Dynasty pulled out of the muddy and wet location where she had been resting for too many years (photo: G. Marouard)

Middle Kingdom building at Dendara and were left for decades lying directly on the ground. All these blocks were discovered on the floor of the Hypostyle Hall of the Hathor temple during its clearance at the end of the nineteenth century and were only succinctly published by A. Mariette in 1880. Another important piece found in the early twentieth century at the southeast corner of the Hathor temple was a fragmentary but very elegant colossal statue of Mutemwiya, mother of Amenhotep III, from the mid-Eighteenth Dynasty. It was pulled out of a muddy and wet location and placed in a more suitable position in order to avoid imminent risks of cracks (fig. 18).

The OI team also renewed all the white gravel around the benches built by the IFAO in order to limit the risk of rising moisture and to better highlight the new open-air museum (fig. 19). At the end of the study season, we also conducted a full cleaning operation of the external entrance of the temple area, on the eastern side of the gate of Hathor.



Figure 19. The new open-air museum in January 2017 with new gravel (photo: G. Marouard)

Support to the MoA and IFAO Training Programs

For about two weeks in December 2016 the Oriental Institute team took care of the training program of two MoA inspectors from the Qena inspectorate, Abdelrahman Said Abu el-Hassan and Heba Hassan Kamel (fig. 20a). The mission also received the two MoA inspectors, Ahmed Helmy Zeyada and Ahmed Masoud, who participated in the fieldwork training program organized by the IFAO (fig. 20b).

During the three weeks of the study season in January 2017, the OI project welcomed Said Abu el-Hassan and Mohamed Samah Mohamed from the Dendara inspectorate. They were trained in the drawing of ceramics, pottery restoration, and clay fabric analysis by Aude Simony. They particularly focused their work on the study of a well-preserved assemblage of early Byzantine pottery discovered in 2016 inside the silo Si 112. We also organized at the end of the study season an introduction to the use of photogrammetry and the application of the Agisoft PhotoScan Pro software in order to reconstruct 3D views of inscribed blocks from the blockyard.



Figure 20a–b. MoA inspectors trained in December on the fieldwork excavation (top, Abdelrahman, Heba, and Ahmed) and on the techniques of pottery drawing (bottom, Ahmed Helmy and Ahmed Masoud) (photos: G. Marouard)

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