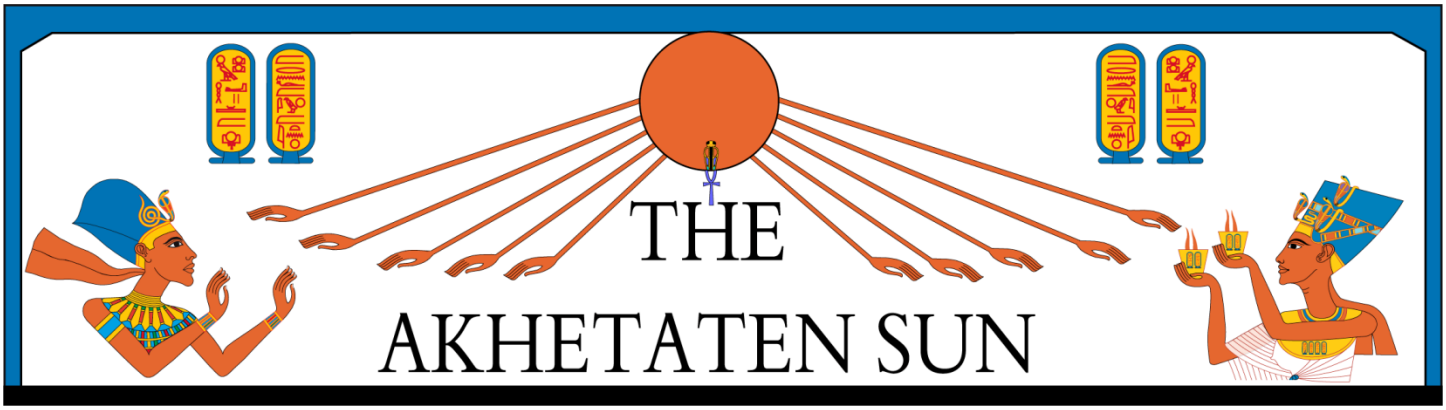

Volume 18, Number 2, December 2012

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Officers and Directors

The President's Papyrus

Greetings fellow Amarnaphiles,

September was an exciting month for the Foundation. As you all know, TARF has its annual meeting every year during September. Once again, Dr. Bill Petty and Nancy Petty were our gracious hosts and allowed us to have the TARF annual meeting in their beautiful home. Many local members were in attendance and brought lots of wonderful food for everyone to enjoy.

This year, we had the great pleasure of having Barry Kemp and Kristin Thompson present. Thanks to your participation as members, TARF was able to give Barry six thousand dollars for next seasons work at Amarna.

Following the TARF board meeting, we held a reception for Barry and Kristin, after which, Barry gave a lecture and slide presentation updating us about the status of the Amarna project. Overall, we had a great annual meeting at which everyone had a great time.

In closing, I hope that you are happy with our new website. We plan on adding more content to it as time goes along and we would love to hear any ideas you may have for its improvement.

Our new website address is:

www.TheAmarnaResearchFoundation.org

Thanks again for your continuing support.

Wishing you all the best,

Floyd Chapman
President

Bioarchaeology: Interpreting Life from Skeletal Remains at Tell el-Amarna (Akhetaten)

By Rebecca Hodgin & Heidi Davis (University of Arkansas)

This summer, skeletal material excavated during the 2011 archaeological season from the Tell el-Amarna South Tombs Cemetery was examined and analyzed between May 21st and June 9th 2012. The bioarchaeology project was led by Dr. Jerome Rose (University of Arkansas) and Dr. Gretchen R. Dabbs (Southern Illinois University, Carbondale) in addition to eleven University of Arkansas Bioarchaeology field school students: Scott Allan, Alissa Bandy, Heidi Davis, Rebecca Hodgin, David Martin, Ashley Shidner, Teresa Wilson, Robin Wineinger, and Frances Wise. Three Ministry of Antiquities employees: Ahmed Mohamed Gabr, Zeinab Said Hashesh, and Afaf Wahba Abd El-Salam, requested to join the field school for training and were full participants in the field school from May 26th to June 7th.

Research goals for the season involved the continuation of data collection on age and sex estimation for each recovered individual in order to study the demography of the South Tombs Cemetery. In addition, data was collected on types of diseases and trauma observed on the skeletal remains. Particular attention was paid to skeletal indicators of extensive labor activities carried out by the citizens of Akhetaten to build the new capital. Previous seasons have shown that high rates of injury and poor nutrition were common problems at Akhetaten.

The skeletal data were collected by teams of two students working from start to finish on one skeleton. Team members were frequently rotated upon completion of analyses in order for students to learn new techniques from each other. Each team conducted the entire analysis from laying out the skeleton in anatomical position, cleaning the remains, determining age and sex, analysis of pathologies to determine incidences of injury and diseases, taking of x-rays and photographs of unique skeletal elements, measuring bones and teeth, assessing the development of muscle attachments, and entering everything into a comprehensive database containing research from all years of study. Craniometrics and scoring of teeth occlusion were undertaken by Dr. Dabbs and Dr. Rose.

In total, 41 skeletons were analyzed this season. Eighteen (44%) individuals younger than 15 years of age were given an indeterminate sex because they were too young to show sexual variation of the pelvis and skull. Thirteen (32%) adult males, 9 (22%) adult females, and one adult who could not be sexed made up the remainder of the analysis. An isolated male skull 45 years of age or older and an isolated skull of an adult of unknown sex were additionally included in the research.

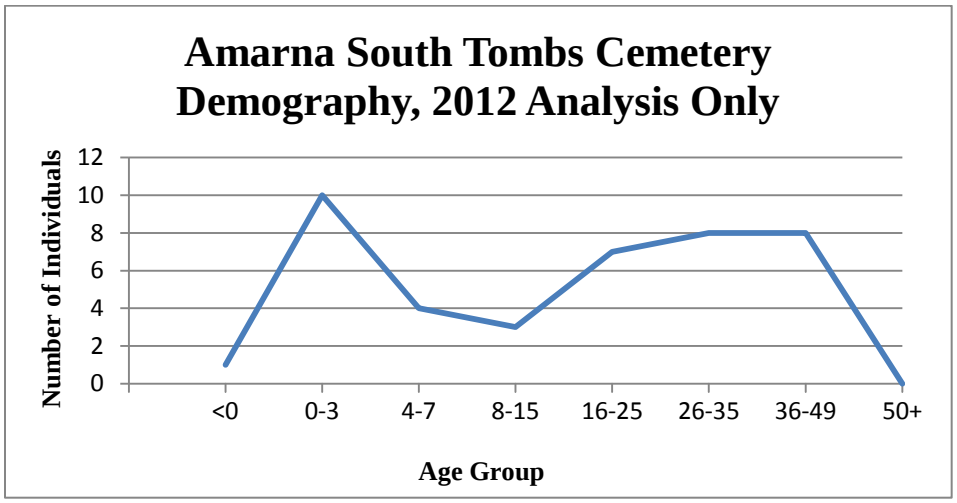

Figure 1: Number of individuals by age at death analyzed this season

Subadult mortality continued to be high with 0-2.9 years at 27%, 3-6.9 years at 10%, 7-14.9 years at 7%, 15-24 years at 17%, 25-35 years at 20%, 36-50 years at 20%, and none over 50 years. This mortality curve shows a high rate of death between the years seven to 20, a time when individuals should normally not be dying (see Figure 1). By looking at only skeletons that could be sexed, there are slightly more males (59%) than females (41%).

Figure 2: Individual 233 049
Scapula showing healed piercing wounds

Traumatic injuries and metabolic problems are commonly found in the individuals excavated from the South Tombs Cemetery. Cribra orbitalia, an indicator of metabolic problems such as iron deficiency anemia, bacterial or parasitic infection, and nutrient deficiencies, was observed in 27% of all individuals including 24% that also showed signs of infection. Individuals older than 15 years often showed healed fractures including 5% of the skulls, 26% of the vertebrae, 12% of the arms, 4% of the hands, 48% of the ribs, 9% of the leg, and 43% of the feet. Three adult males also showed healed piercing wounds to the scapulae bringing the total number to eight males with these injuries (see Figure 2).

In general, many of the adult injuries corresponded to work related accidents or occupational hazards, which would be expected at an archaeological site involving a high extent of building construction, particularly involving the lifting and transportation of talatat blocks. To fully understand the extent of traumatic injury present at the site, a few examples of individuals analyzed this season are presented. These individuals show evidence of spinal trauma, extensive muscle use, and injuries to the ribs and extremities (see Figure 3).

Figure 3: Individual 216 075
Lumbar vertebrae with compression fractures

Individual 233 is a 30-57 year old male with traumatic wounds from a sharp instrument to both scapulae. The individual has 15 fractures (with two additional possible fractures) of the 24 ribs (see Figure 4). The 24 vertebrae show extensive degenerative joint disease, also termed osteoarthritis, and stress markers including compression fractures and a Schmorl's node. Schmorl's nodes are ruptures of fluid in the cartilage between the vertebrae producing cavities in the vertebral body due to an excessive bearing of weight on the vertebral column (see Figure 5 and Figure 6). This individual has extensive growth asymmetry in the skull causing a severe right mandibular cross-bite. In addition, the individual has a nasal infection and a possible nasal fracture. Both femora (thigh bones) show heavy muscle attachments and the tibiae show extra bone growth on the shafts due to the extreme muscle use. The left fibula has a healed fracture indicating potential ligament destruction and an ossified hematoma. Both feet and hands show evidence of degenerative joint disease.

Individual 219 is a 25-40 year old female. This skeleton demonstrates bone growth into the soft tissue or cartilage on the first left rib and a possible traumatic incidence causing abnormal bone growth of the left hand. The 24 vertebrae contain seven Schmorl's nodes. The third and fourth lumbar vertebrae show Diffuse Idiopathic Skeletal Hyperostosis (see Figure 7). This condition involves the ossification of the spinal ligament resulting in a smooth-surfaced bony bridge in adjacent vertebrae which creates a dripping candle wax appearance and welds the vertebrae together preventing movement. The vertebrae also exhibit a compression fracture and arthritic lipping. The left hand and both feet show degenerative joint disease, as do both acetabuli (sockets) of the hips where the femur forms a joint with the pelvis.

Figure 5: Individual 233 012
Twelve left ribs showing multiple fractures

Figure 4: Individual 219 004 T4
Vertebra with a vermiform Schmorl's node

Figure 6: Individual 200 007:
Vertebra with a round Schmorl's node

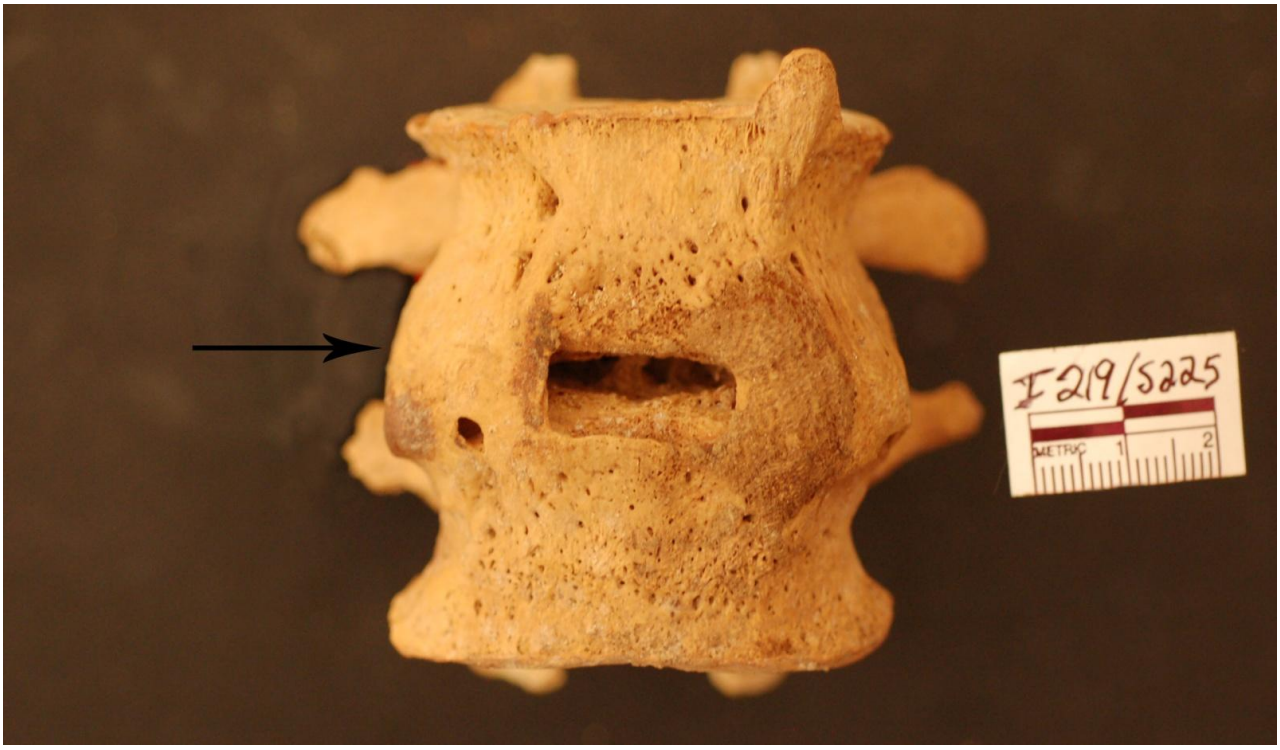

Figure 7: Individual 219 018
Lumbar vertebrae showing Diffuse Idiopathic Skeletal Hyperostosis

Individual 216 is a 45-60 year old male who shows extensive bone remodeling consistent with increased activity levels, especially in the lower limbs as evidenced by bone spurs. The arms and feet show evidence of degenerative joint disease and fractures to the left hand, foot, and one rib. Schmorl's nodes were observed on nine vertebrae, along with compression fractures to one cervical (neck) and two lumbar vertebrae (lower back) and osteophytic lipping of all vertebrae (cervical, thoracic, and lumbar). Finally, this individual survived several blows to the head as evidenced by three healed, depressed skull fractures (see Figure 8).

Figure 8: Individual 216 001
Cranium with three healed depression fractures

Individual 200 is a 25-40 year old male who has seven Schmorl's nodes on the thoracic vertebrae. Osteophytosis, or arthritic lipping of the vertebral body, is present on the fourth lumbar vertebra, along with possible compression fractures to both the fourth and fifth lumbar vertebrae. This skeleton exhibited degenerative joint disease of the feet, as evidenced by metatarsal arthritic lipping of the pedal and distal surfaces and corresponding lipping of the first proximal pedal phalanges. Additionally, the right forearm shows a healed fracture and the right side of the body shows greater bone development in the ribs and sacrum (see Figure 9, 10, and 11).

Figure 9: Individual 200 030
Osteophytosis (arthritic lipping) on the vertebral body

Figure 10: Individual 200 047
Arthritic lipping of first metatarsals and phalanges

Figure 11: Individual 200 055
Healed fracture of the distal right ulna

The other adult individuals analyzed this season show similar patterns of trauma and pathology. Degenerative joint disease and injuries to the vertebrae due to the lifting of heavy weight, exhibited as Schmorl's nodes and compression fractures, are often present. As is apparent from the examples above, many of the injuries observed in the Akhetaten population can be explained by occupational hazards in construction of the new city.

The above case studies shed new light on the skeletal sample from the South Tombs Cemetery. First, high levels of traumatic stress as indicated by specific skeletal markers, injury, and degenerative joint disease have continued to be present in the Akhetaten commoners, along with fractures of the limbs. This pattern is seen to affect both males and females. Further analysis of the injuries might show if the trauma from extensive weight bearing were from the same types of materials and activities in both sexes, providing insight into potential divisions of labor within the community. While a high mortality is seen for ages seven to 20 years of age, those individuals surviving to adulthood show evidence of a physically demanding life.

Extensive construction activities must have taken place in Akhetaten because this was a new city and construction is known to have occurred over a short time period. This would have called for a large labor force to construct the city and support the inhabitants. The movement of talatat blocks may be an important source of spinal injuries. Schmorl's nodes often occur when compressive forces are placed on the intervertebral discs which can occur from jumping from high places or tripping with a heavy load. Compression fractures of the lumbar vertebrae can result from the transferring of heavy loads. Injuries to the hands, feet, and limb bones are also consistent with activities related to heavy workloads and activity. As muscles build, the muscle attachment areas on bone respond and increase in size. High frequencies of spinal trauma, injuries to the extremities, degenerative joint disease, and high degrees of musculoskeletal involvement have all been evidenced by this season's Akhetaten skeletal sample. These patterns continue to correspond to the results from previous seasons, but were discovered in greater number this season.

It is apparent from the above discussion that life at Akhetaten required hard work among the common people. Men and women were the bearers of heavy loads and often suffered from fractures and arthritis. Many must have experienced back pain and other discomfort from the physically demanding lifestyle. Nevertheless, these individuals frequently survived, as many of the traumas found this season were healed, having taken place long before death.

As many archaeological samples are derived from cemetery samples spanning many years, excavations at Tell el-Amarna have a unique opportunity to answer questions of drastic changes to the past and what it means to the common people to move and build an entirely new home. This relocation involved many thousands of individuals, all with various roles to play. For answers outside of historical texts, we must turn to archaeology and the bioarchaeological analysis of skeletal material. Our lives are recorded in our skeletons and this is true for both readers and the people of Akhetaten we have been fortunate to study. Excavations next year are expected to add to the current perspectives on Akhetaten life, as gleaned through careful skeletal analysis and interpretation.

The authors would like to thank the Ministry of Antiquities and particularly Barry Kemp for allowing us to participate in this fascinating research. In addition, we would like to graciously thank all individuals who have donated their time and money into the continuing research at Tell el-Amarna.

Looking up the wadi containing the Tell el-Amarna South Tombs Cemetery (Photo by D.Pepper)

More at the Great Aten Temple: the site of the free-standing stela and statue of the king

By Mary Shepperson (University College, London)

The stela site stands in front of the Sanctuary of the Great Aten Temple in the eastern half of the temple enclosure. The modern cemetery lies to the north and west, extending into the centre of the enclosure and approaching to within 35 m of the stela site. The site was excavated in the 1933–4 season by the Egypt Exploration Society under John Pendlebury, who found a large T-shaped depression to the north-west of the entrance to the sanctuary. The EES expedition excavated within this depression down to gypsum plaster foundations about 50 cm below the surface level. The area around the depression was only examined at the surface, without excavation. It was concluded that this was the foundation for a stone platform, which held a large round-topped stela and possibly a seated statue of the king, both depicted in Amarna tomb scenes (Figure 1).

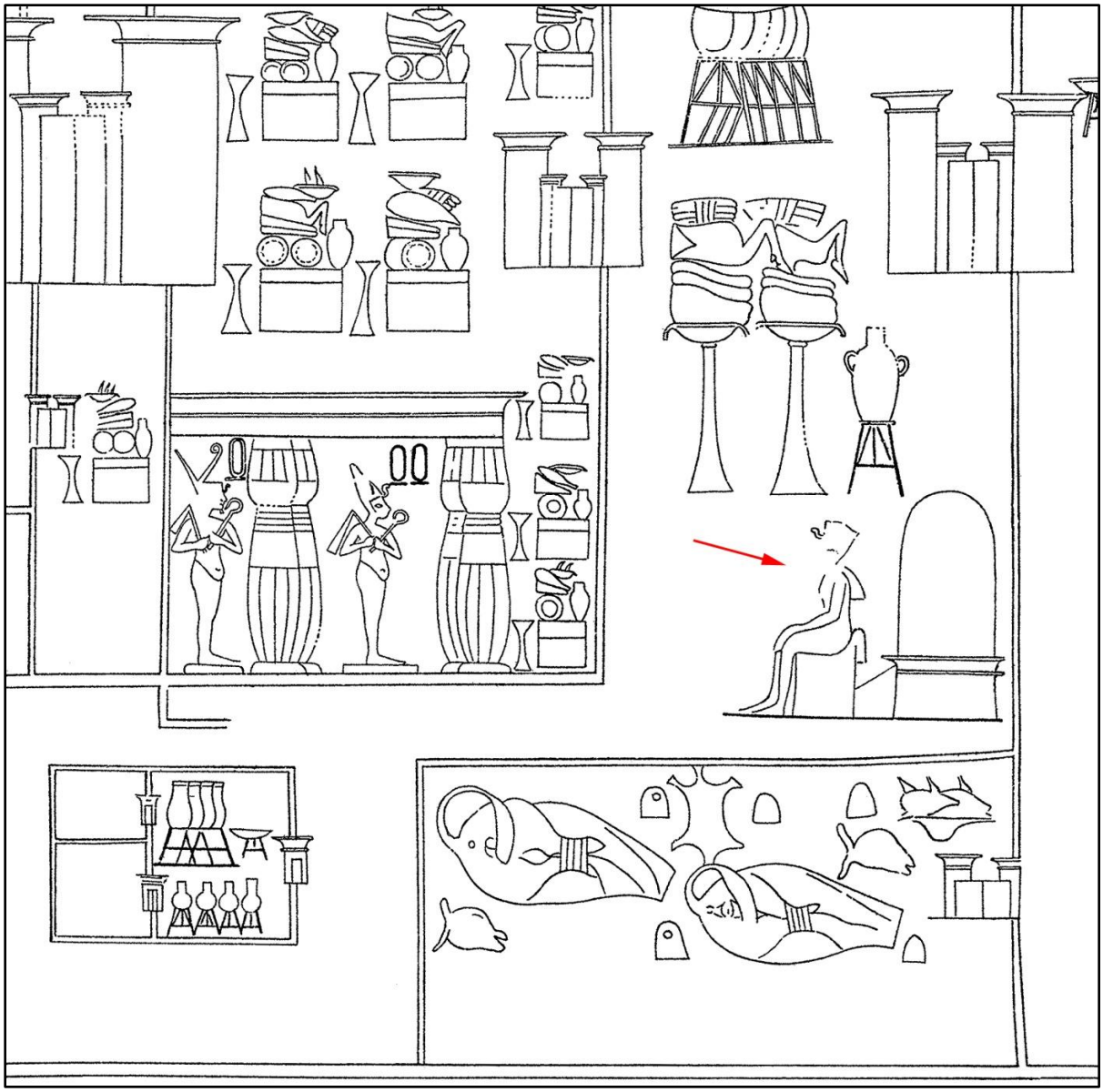

Figure 1: Round-topped stela and royal statue shown in the tomb of the high-priest Meryra as part of a composition depicting the Great Aten Temple. After N. de G. Davies, *The Rock Tombs of El Amarna* I (ASA 13; London, 1905), pl. XXXIII.

During the 2012 season, I supervised re-excavation of the stela depression so that these foundations, which are only shown as a basic outline in Pendlebury's report, could be more fully recorded. In addition, the area around the edges of the depression, enclosing an area of 25 x 25 m, was excavated in order to gain further evidence for the use of this area within the temple (Figure 2). A further aim was the recovery of pieces of the stela, identified by Pendlebury as the source of the fragments of distinctive purple quartzite which litter the area around the stela depression. Marsha Hill, of the Metropolitan Museum of Art, New York, was present on site throughout the season, collecting and assessing these fragments in relation to those already held by the Metropolitan Museum from the 1891–2 excavations of Flinders Petrie and Howard Carter.

Figure 2: The stela site from the air after excavation.
(The full northern extent of mud-brick paving was not exposed at this point.)
Photo by Gwil Owen.

The excavation has revealed two phases of architecture: an early phase (Phase I), consisting of a small mud-brick platform surrounded by large posts and other ephemeral architecture, followed by the main temple phase (Phase II), for which the architecture of Phase I was levelled and replaced with a stone platform sunk into a foundation pit. To what extent these two phases correspond to the phases established for the front of the temple cannot at present be ascertained. In the following account, the numbers in brackets (for walls and layers) or underlined (for surfaces) refer to the two plans, Figures 3 and 8.

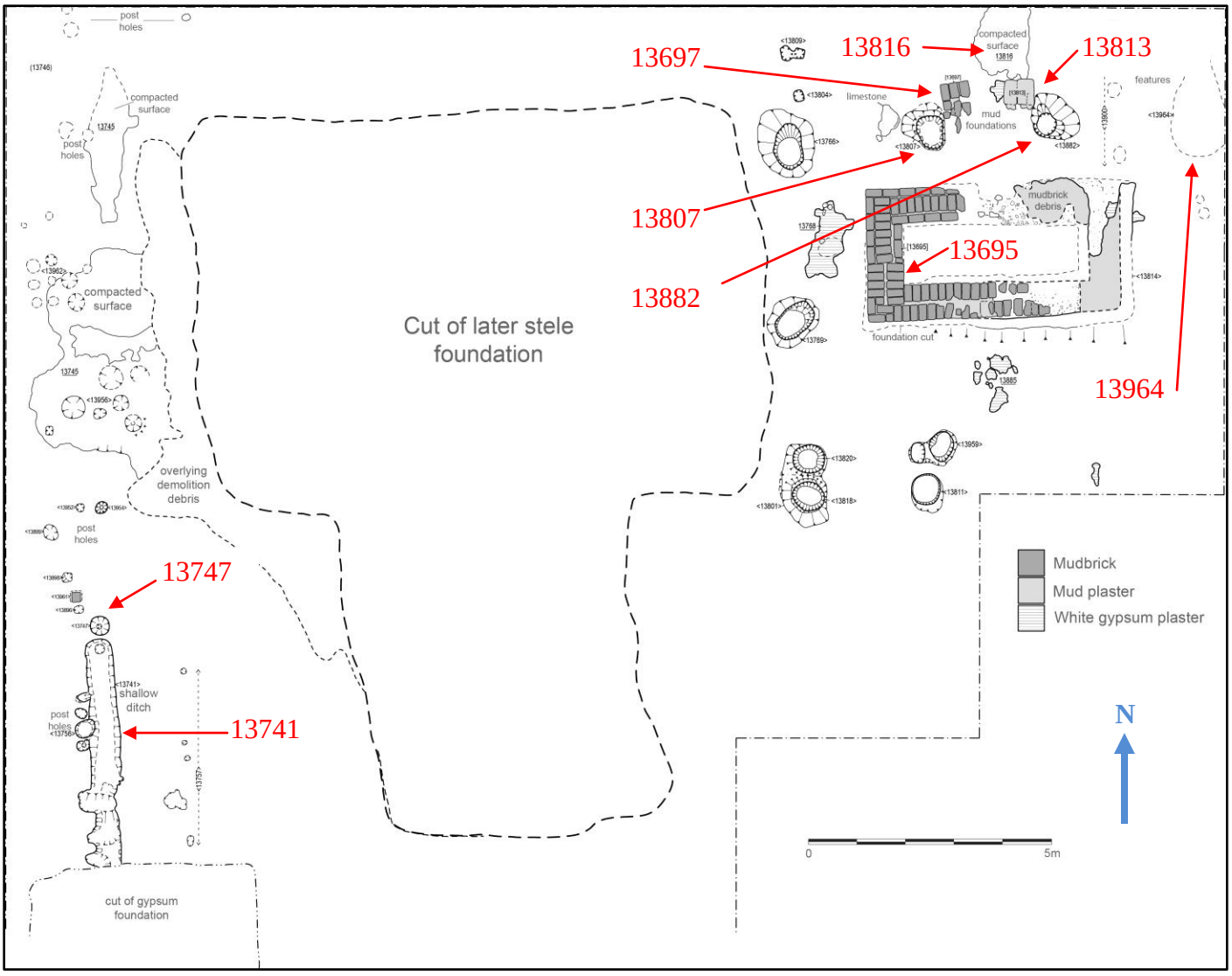

Figure 3: Plan of the Phase I features at the stela site, by Mary Shepperson.

Phase I (Figure 3).

A rectangular mud-brick foundation (6.30 x 4.50 m) lay on the eastern side of the stela depression, preserved at its western end as a single course of bricks [13695] and at the east end as just a foundation cut (Figure 4). This mud-brick structure had been noted, although not fully excavated, by Pendlebury, who interpreted it as the base for a ramp leading up to the stela platform from the east. This is clearly not the case, as the structure does not reach the edge of the stela foundation but stops more than 2 m short. Instead, this appears to be the foundation of a free-standing mud-brick platform. The remains of a pair of mud-brick bases [13697], [13813] mid-way along the long north side might belong to the ends of a ramp or steps approaching the platform from this side, with a hard-packed floor surface 13816 preserved at the foot of this.

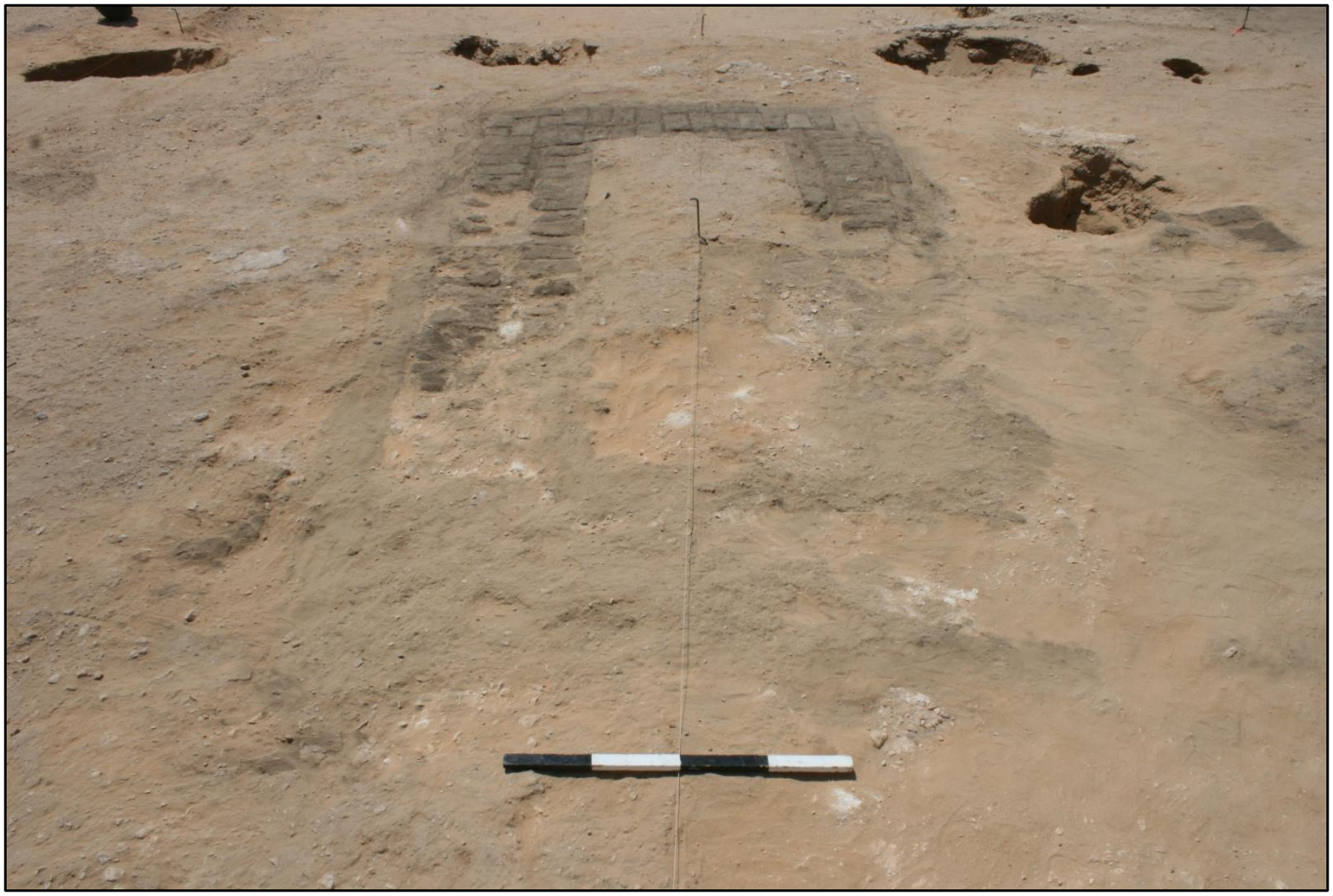

Figure 4: The Phase I mud-brick platform, viewed to the west.

These platform steps were flanked by a pair of roughly circular pits <13807>, <13882>, around 0.5 m in diameter and 1m deep. These pits were two of a series of six deep, narrow pits which formed three sides of a rectangle around the mud-brick platform, with at least one further pit <13964> left unexcavated (Figure 5). The dimensions of these pits were unusual, being only 50–70 cm wide but up to 1.9 m deep, with smooth vertical sides. They were all cut through clean sand and contained a distinctive fill consisting of sand and fine gravel mixed throughout with mud plaster fragments, grass, feathers, charcoal and date stones. All pits also contained incense, mostly in a processed form of small red glassy rods or filaments (Figure 6), but the two pits flanking the platform steps also contained a substantial amount of raw incense in lumps.

The dimensions and distribution of these pits suggest that they must have held posts of some considerable size, possibly of the magnitude of the flagstaffs found on temple pylons. The later removal of such posts would explain the damage to the upper parts of the pit cuts while the lower parts were undisturbed. The erection of tall posts or flags around the temporary structure may have been a fast and easy way of lending an idea of scale and monumentality to the site while this was yet lacking in the nascent temple. This arrangement of a platform surrounded by free-standing posts or flags is hard to parallel in Egyptian temple architecture of historic times.

On the west side of the stela depression, a compacted surface was uncovered into which numerous circular depressions and a long shallow ditch <13741> had been cut (Figure 7). This surface and its features certainly predated the main stone stela platform as it was overlaid by limestone debris from the platform's construction. Efforts then seem to have been made to level these features – some had been packed with lumps of mud-brick – before the Phase II mud plaster and gypsum floor was laid above. The north–south running ditch was cut at its southern end by the foundation cut for the Phase II rectangular gypsum base, suggesting it was out of use by the time this base was built. The ditch at least can be tentatively linked to the deep pits described above, as the ditch fill was more or less identical to that of the pits.

Figure 5: One of the Phase I pits, this one showing two attempts to cut it into the desert. The scale is 1 m long.

Figure 6: Fragments of incense recovered from one of the deep pits at the site of the stela in the rear part of the Great Aten Temple. The filament shapes probably resulted from pouring viscous incense through a strainer (an explanation provided by Margaret Serpico). Photo by Teresa Wilson.

Some features appear to be postholes for both round- and square-sectioned posts, while there were also many clusters of shallow circular depressions which are most likely to have been emplacements for round-bottomed bowls or jars. One clear example was a perfectly circular pit <13747> at the northern end of the ditch, which contained the greater part of the blue-painted jar which it almost certainly had held. Some of the postholes formed lines suggestive of a fence or screen, such as the holes along the western side of the ditch or those running parallel to the ditch's eastern side, but it is difficult to interpret the function of many of these features. In general, they seem to represent an activity area associated with the use of the Phase I mud-brick platform, possibly for the dedication or preparation of offerings.

The mud-brick platform and associated features described above appear to be part of Pendlebury's 'First Period'; preliminary mud-brick structures which allowed the performance of cult practices at the temple before the monumental buildings were completed. The mud-brick platform seems to have been completely levelled and the deep pits filled in before the construction of the main stela platform; no limestone or purple quartzite debris was found in the pit fills, and construction debris overlies the top of at least one of the filled pits. Along with the ditch, postholes and pot emplacements, the whole area appears to have been levelled in preparation for the construction of the stela platform.

Figure 7: Phase I ditch before excavation, looking south.

Phase II (Figure 8).

The stela depression remained much as it was described by Pendlebury. The sides were somewhat irregular and seem to have suffered considerable erosion since they were exposed in the 1930s. The heavily fragmented gypsum plaster (or concrete) foundations remained at the bottom of the cut in thin strips along the east and west sides of the main rectangular section. In the southern extension – the upright of the T shape – the foundations were better preserved, possibly because they were originally thicker than the main section or perhaps because the gypsum plaster here seems to have been mixed with more limestone fragments. In any case, the foundation material in the southern extension appears to be slightly different from that of the main section, suggesting the two parts may not have been built quite at the same time.

As was normal for other areas of the temple, the foundations seem to have been made by digging out a trench, spreading a layer of plaster mixed with stone fragments onto the sand at the bottom, and then laying the stone blocks onto a layer of wet gypsum mortar. The impressions of block edges could be clearly seen in the mortar layer along the eastern side of the depression (Figure 9). Over the rest of the foundation cut, only a few patches of gypsum plaster debris could be found. The centre of the depression was deeper than the plaster foundations and completely bare, suggesting that, at some time in the past, digging has removed most of the foundation debris no longer *in situ* and excavated below the original level of the foundation cut. This could have been done by the Petrie-Carter excavation, which produced many fragments of the stela, or even before that.

Pendlebury's interpretation of the T-shaped structure was that it represented two adjoining stone platforms, the larger holding the round-topped stela and the smaller bearing the statue of the king depicted in the tomb scene. Kemp and Garfi, in their Survey volume, and Spence, in a separate study, considered it more likely that the main body of the foundation was for a single stone platform, with the southern extension representing a ramp or staircase by which it was approached. This seems by far the more convincing interpretation, as this configuration is very common, not only at Amarna but in New Kingdom temple architecture in general.

To the north, careful cleaning exposed a rectangular expanse of mud-brick paving [13966] abutting the edge of the stela depression, retaining a few traces of a white gypsum plaster coating. Mud-brick paving is an unusual feature at the Great Aten Temple and suggests that this area on the north side of the stela platform saw an unusually large amount of traffic to require such reinforcement. It is possible that a statue or feature of some kind stood against the stela platform here where the paving is broken. A round socket was preserved in a mud brick at the centre of the paved area.

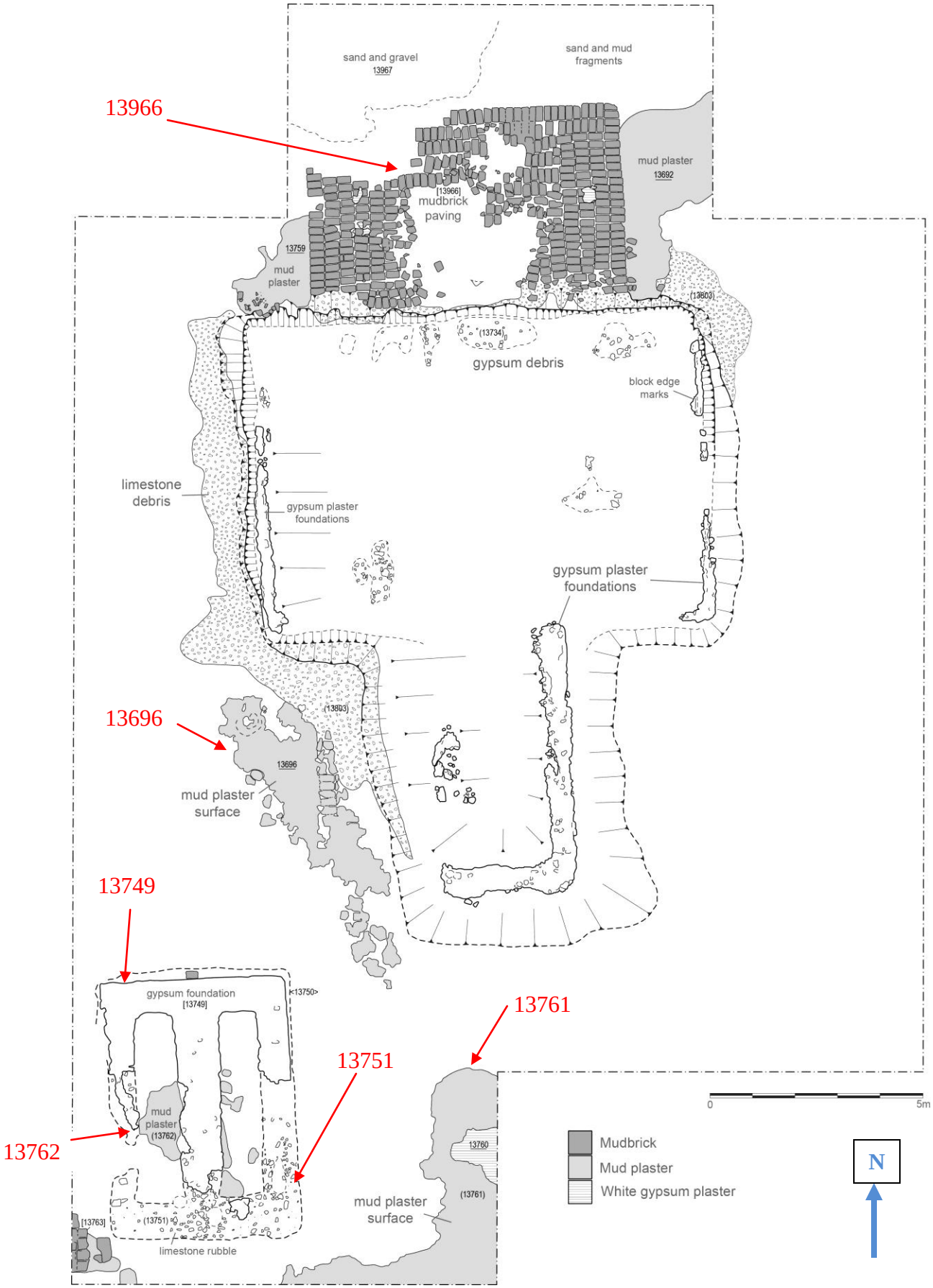

Figure 8: Plan of the Phase II features at the stela site, by Mary Shepperson.

Figure 9: The Phase II stela site: the impression of part of a limestone block is preserved in the layer of mortar laid over the bed of gypsum concrete. On the far side of the ridge that marks the edge of the block is the surplus mortar that has been worked with fingers.

On investigation, the traces of gypsum plaster to the south-west of the stela platform noted by Pendlebury resolved themselves into the foundation of a rectangular structure [13749], measuring 6.10 x 4.30 m (Figures 10, 11). The northern end was composed of gypsum plaster mixed with limestone fragments and resembled the gypsum foundations of the temple's major buildings. The southern end was only preserved as a foundation cut lined with limestone chippings (13751). The rectangular perimeter of gypsum was reinforced with a central strip of foundation and the voids between were levelled with mud plaster (13762), suggesting that a stone surface was laid directly above to make a low platform. The remains of a mud plaster floor 13696, 13761, coated with traces of white plaster, were found to the north and east, which probably originally extended over the whole stela area. The gypsum foundation seems most likely to be the base for the statue of the king pictured in tomb reliefs.

A seated statue of the king is pictured next to the round-topped stela in two of the four tomb scenes (Figure 1), and the occasional black diorite fragments recovered this season around the stela site have been identified by Marsha Hill as probably originating from a male royal statue. The association of such a statue with the stela site seems fairly certain. Pendlebury suggested that the southern extension of the stela footprint was a base for this statue but, as discussed above, this structure is almost certainly a ramp providing access to the stela platform. Spence suggests that, as the stela platform is very large, it could easily have held both the stela and the statue, but the tomb depictions go some way to refute this, as both show the king's statue at ground level and not on the platform with the stela. In presenting a foundation for a low base beside the stela platform, the rectangular gypsum foundation excavated this season would seem to fit very well in form and position for the statue pictured in the tombs and would be of about the right size to hold the slightly larger than life-sized statue indicated by the diorite fragments.

Figure 10: The rectangular gypsum foundation in the process of being cleaned, viewed to the south.

Figure 11: The rectangular gypsum foundation, viewed to the north.

It is interesting to note that two small fragments of purple quartzite were found embedded in the limestone chippings lining the foundation cut for the statue base. This suggests that construction debris from the erection of the stela was present at the time of the base's construction, and that it therefore probably post-dates the stela platform. If the statue was a later addition, this could explain why two tomb scenes show the statue by the stela and two just show the stela.

Figure 12: Fragments of stela from the Great Aten Temple discovered in 1933/4. EES archive photograph 1933/4, no. O 74.

Finds

One of the aims of this season was the collection of fragments of the stela which sat on top of the Phase II stone platform. Some had been found by the Pendlebury expedition (Figure 12). All fragments of purple quartzite within the excavation area were examined and those with worked faces were retained for future study. Many small inscribed fragments were recovered; generally these had small hieroglyphs in registers, as seen on the larger fragments held by the Metropolitan Museum, but some figurative elements were also found, including a very small fragment with a carved eye, possibly of a royal princess (Figure 13). The fragments show variations in the red quartzite and in the quality of the inscription that, at the least, indicate more than one person or period of inscription and, at most, could point to more than one stela. Small fragments of the diorite royal statue discussed above were also found. In addition, there are fragments of typical Amarna balustrades and parapets, and relief and statuary elements that point to a considerably more crowded and varied area than the simple, if impressive, installation suggested by the tomb depictions. Some part of this sculpture collection could well be a manifestation of donations made by those who saw the area – that included the rectangular podium as well as the platform – as a focus for donations on the king's behalf.

Other manufactured objects were few, but included pieces of mud jar stopper (Figure 14). Incense was a common find, however, and fragments were found in almost all the ditches, pits and postholes of Phase I. Some was in a raw form as lumps, but it was more commonly found in a processed form as tiny curving rods or filaments resembling red glass (Figure 6). To produce this shape, the incense had probably been passed through a strainer (an idea suggested by Margaret Serpico).

The work in this area is far from finished. Beside the foundations just described is the enclosure defined by Pendlebury as the 'Butchers' Yard', whilst the northern axis of the stela leads to an enigmatic building that straddles the north enclosure wall, identified in the past as the 'Hall of Foreign Tribute' but more likely an entrance provided with emplacements for cleansing rituals. Both need to be re-examined.

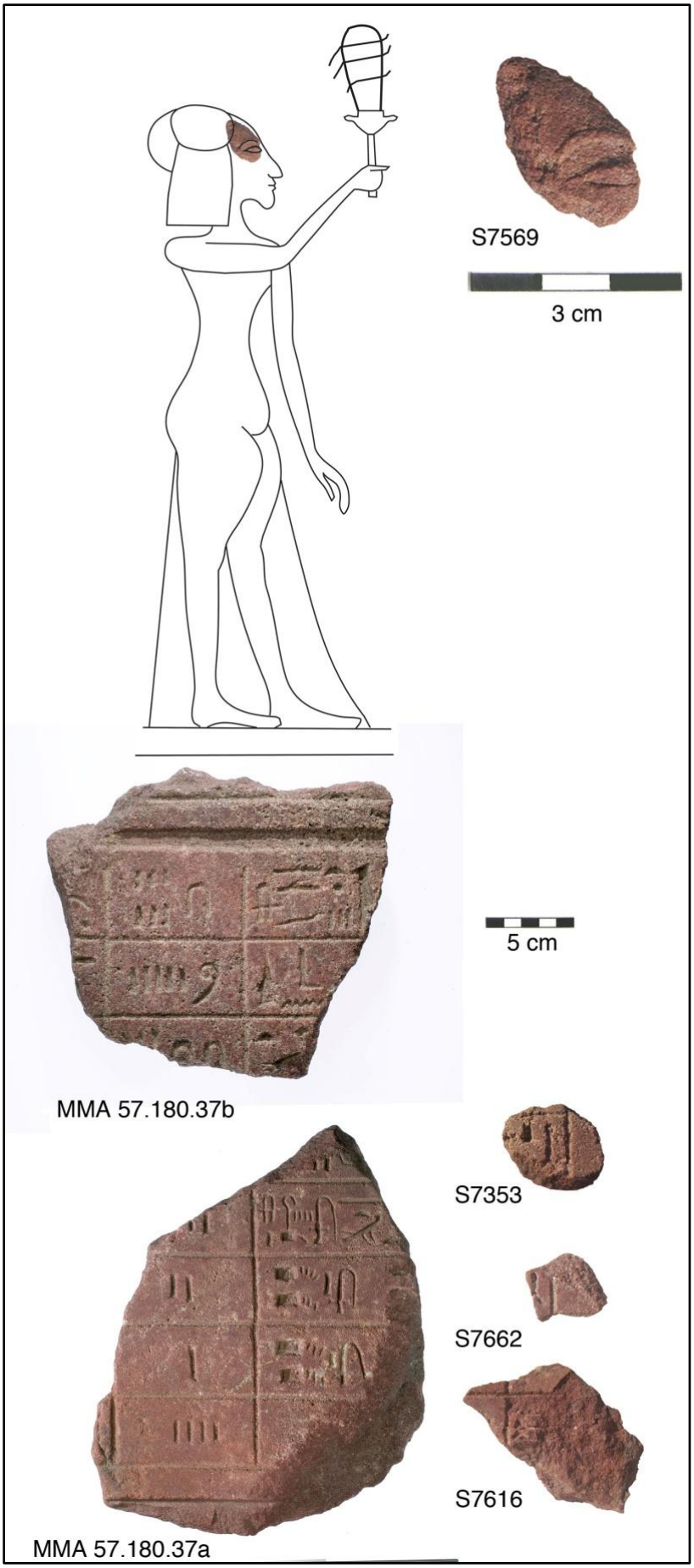

Figure 13:

Lower left: two fragments of quartzite stela in the Metropolitan Museum of Art, Harrris Brisbane Dick Fund. Photographs by William Barrette.

Lower Right: three small fragments from the 2012 excavations. Photographs by Marsha Hill.

Top: fragment (S7569), from the 2012 season, that seems to be part of a face, perhaps of a princess. On the left it has been placed within the outline of one of the princesses depicted on Boundary Stela S.

Figure 14: Mud jar stopper, as found at the stela site.

Further reading

- J.D.S. Pendlebury, *The City of Akhenaten* III. (London,1951), Chapter 2, especially pp.11–12; B.J.
- Kemp and S. Garfi, *A Survey of the Ancient City of El-'Amarna*. (London, 1993), 50–3;
- K. Spence, 'The "Hall of Foreign Tribute" (S39.2) at El-Amarna.' In S. Ikram and A. Dodson, (eds), *Beyond the Horizon: Studies in Egyptian Art, Archaeology and History in Honour of Barry J. Kemp*. (Cairo, Supreme Council of Antiquities, 2009), 498–505.

Prof. Barry Kemp standing in the ruins of John Pendlebury's Amarna Dig House of the 1930s (Photo by Jill Taylor, 2010)

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