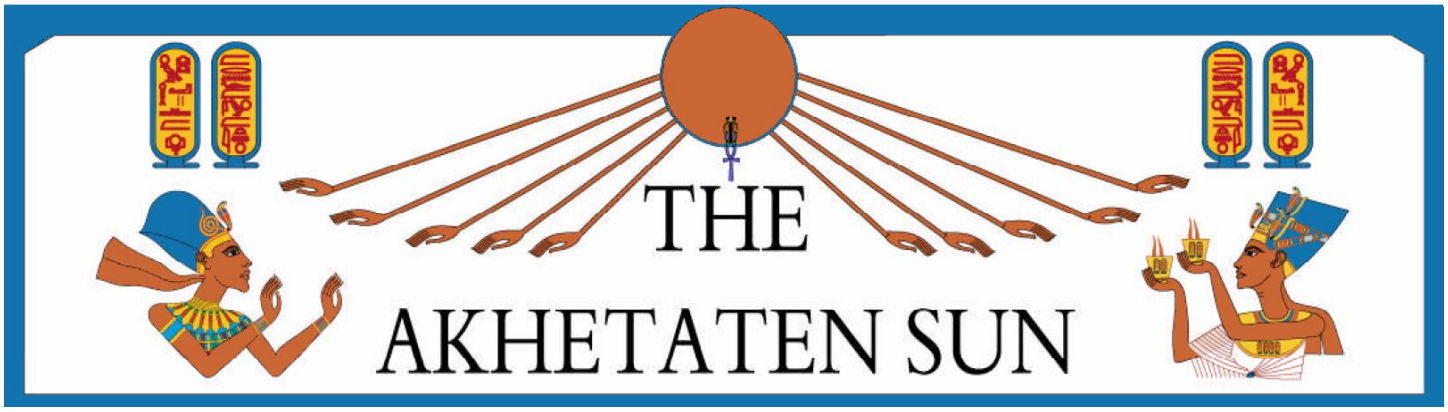

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Officers and Directors

The President's Papyrus

I want to wish a happy and prosperous New Year to all of the Amarna Research Foundation membership. With this issue of the Sun, in addition to the wonderful contributions by Barry Kemp and Kristin Thompson, we have contributions from two new researchers at Amarna who we have not written in this publication before, Anna Stevens and Tony Legge. I think that you will find their articles very interesting.

On January 9th, the Tut exhibit ended at the Denver Art Museum after a six month run here in Denver, Colorado. This exhibition was a great success with huge crowds in attendance right up to its closing. David and Jill Pepper and I were asked to be guides at a very exclusive private showing of this exhibit during its stay. This only reinforces the fact that ancient Egypt is truly one of the most popular ancient cultures in the world. As our readers know, Tutankhamun was probably the son of Akhenaten and was born at Amarna (Akhetaten), where he grew up.

We may never discover the full details about the dramatic events leading up to and surrounding the demise of Akhenaten, Nefertiti, Tutankhamun, and Ankhesenamun. Your contributions and support, however, of our Foundation is making it possible through its funding grants of the continuing work of Barry Kemp and many other scholars, to reveal the true nature of daily life at Amarna during this very fascinating period of Egyptian history.

I want to thank you all for your continuing support of the Amarna Research Foundation, and wish each and every one of you a most prosperous 2011.

Floyd Chapman

THE AMARNA STONE VILLAGE SURVEY

By Anna Stevens

The ancient city of *Akhetaten* incorporated two small villages on the low desert plain to the east of the riverside settlement: the Workmen's Village and Stone Village. The Workmen's Village was excavated by the Egypt Exploration Society in 1921–22 and again from 1979–86 and is one of the most intensively studied parts of Amarna. The Stone Village, in contrast, has long been one of the least understood elements of the city. Only recently subject to survey and excavation, the task of integrating this site into the story of urban life at Amarna – and understanding its relationship with the Workmen's Village – is just beginning.

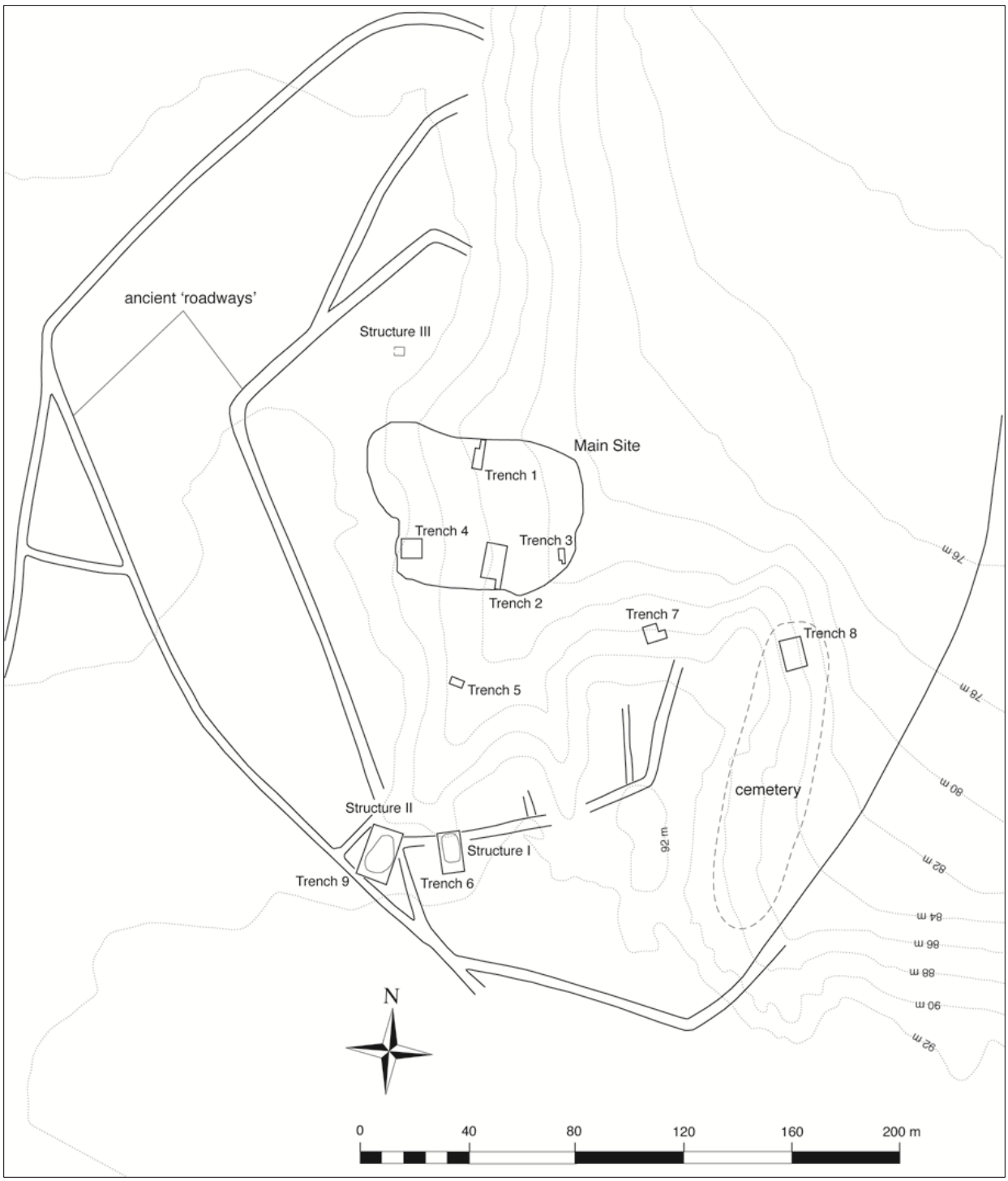

Figure 1: The Stone Village

The Workmen's Village

The Workmen's Village is situated in a shallow bay on the south face of a low plateau that extends across the desert plain, around 1.2 km beyond the riverside city. The hub of the site is a village surrounded by a perimeter wall containing 73 equally sized plots, most of which contain houses of uniform ground plan. The regularity of the village and the use, especially in the perimeter wall, of bricks made of alluvial clay brought in from the riverside city, suggest state involvement in its initial laying out. Thereafter, using mostly local materials, building progressed in a less orderly way, with the villagers modifying their houses, and building chapels, animal pens, garden plots and tombs around the adjacent banks of the plateau (Kemp 1987).

In commenting on the purpose of the site at the close of his excavations, Kemp (1984a: 1–4; 1987: 43–9) identified two likely functions. One was that the village housed workers involved in the preparation of elaborate rock-cut tombs carved into the eastern cliffs, an interpretation that is usually given the most weight. The second is that the site was a base for police involved in patrolling the riverside city's perimeter, possibly during the latter part of the occupation of the village, including a period of time after the rest of the city had been abandoned. Kemp (1987: 44, note 17) also stressed, however, that any interpretation was complicated by the existence of the Stone Village: "clearly much smaller than the Workmen's Village, and apparently lack[ing] the extensive peripheral activity areas which are such a conspicuous feature of the latter".

The Stone Village

The Stone Village occupies a shallow, broad bay on the north side of the same plateau that shelters the Workmen's Village, a distance of around 1.2 km separating the two sites (Figure 1). The Stone Village Survey ran from 2005–9 and saw a record made of the surface remains and selective excavation in nine trenches. The decision to stop fieldwork after five seasons arose mainly from the need to address the growing mass of data requiring publication, and a full excavation monograph is currently being prepared. The site is far from exhausted, however.

The Main Site

The Stone Village is now dominated by a roughly rectangular scatter, some 65 x 80 m, of limestone boulders, mounds of crumbled orange marl clay and sherds and other material culture (Figure 2). This represents the remains, heavily disturbed by looters, of a dense area of construction and the living deposits it contained. This was clearly the hub of the site in antiquity, covering an area of ground comparable to that occupied by the walled settlement at the Workmen's Village. The looting of the site seems to be relatively modern, probably taking place within the past century.

Figure 2: The Main Site

Despite the disturbance, a reasonable sample of the ground plan of the Main Site was recovered in four trenches. The largest exposure, Trench 2, measured 13 x 7.5 m, and lay along the southern edge of the Main Site (Figure 3). Here were exposed the remains of a structure comprising two small back rooms, the easternmost with a transverse partition, fronted by three narrow chambers that bore the remains of gypsum plaster on their walls. The mortared-stone walls survived up to 60 cm in height. This group of spaces appears to form a single structural unit, accessed probably from the northwest corner of the building. The spaces were certainly roofed, with many roofing fragments found in the fill.

Figure 3: Trench 2, facing east.

The south wall of the building continues beyond the eastern and western baulks and seems to mark the southern edge of the Main Site. A further group of walls exposed along the immediate western sector of the trench may represent a separate building or buildings, but it is also possible that the chambered-structure is part of a larger complex that extends in this direction. Much of the northern third of the trench was covered by a thick layer of dark trampled ash-rich debris that was, in part, probably an exterior surface. A curving wall in the northeast quadrant defined part of a small chamber, also with gypsum-plastered walls, probably entered from the north. Several of the walls in the northern end of the trench had been built on top of the dark ashy surface, and spreads of sherd-rich refuse were also encountered beneath some of the walls in the southern part of the trench.

Trench 4, a 7 x 7 m exposure in the southwest corner of the site, yielded walls preserved up to 1 m high (Figure 4). It also revealed further evidence of the expansion of the site during the Amarna Period. The trench incorporated, at surface level, a prominent north–south alignment of boulders, in which there was a distinct break, and one of the main aims of working here was to check whether this gap formed an entranceway into the site.

Figure 4: Trench 4, facing northwest.

The line of boulders emerged as a mortared-stone wall that extended into the north and south baulks. It contained no entranceway, but formed the western edge of a group of small spaces belonging to one or more buildings internal to the Main Site. The central room contained a gypsum-lined bin abutted by a probable emplacement for a quern. In the immediate northeast corner of the trench, there survived the remains of a gypsum-plastered floor, a possible oven and two large storage vessels built into the walls, the latter, at least, conceivably from an earlier construction phase. Most of the walls were well-built from mortared boulders, but some appeared to be made from rubble that included pieces of broken brick and chunks of mortar, including pieces of roofing plaster. A thick layer of rubble had also been laid as a foundation for one of the floors, whilst the mortar used within most of the walls seemed to incorporate re-used flooring material. Presumably, once the supply of boulders and clean marl ran out, the residents turned to rubble and existing surfaces to supplement building materials. It is impossible to identify the exact source of the rubble. If it was from buildings located within Trench 4 itself, there was little trace of their foundations. Regardless, this rubble indicates that, by the time the standing building/s were constructed in Trench 4, somewhere at the Stone Village there had already been substantial, roofed constructions that had come to the end of their use. Additional evidence of earlier activity in this part of the site came from the area immediately west of the main north–south wall, where there was a sequence of undisturbed deposits that included a thick layer of ash-rich rubbish that had been truncated during construction of this perimeter wall.

A 7 x 3 m trench (Trench 1) was opened over the very northern edge of the Main Site, where there was a prominent east–west ridge of boulders, and a series of plastered and trampled surfaces, the lower parts of two walls, and traces of at least two circular ovens exposed. All had been badly damaged by robbing, but belonged to at least two intercommunicating spaces that may have been open to the sky or lightly roofed. The source of the stone ridge on the surface was probably an east–west wall passing through the center of the trench, preserved only to its foundation course. To its north was a thick silty surface, covered by ash- and sherd-rich deposits that were probably ancient rubbish that had accumulated around the perimeter of the site.

Excavations along the eastern edge of the site in Trench 3 revealed a somewhat different set of constructions: a group of at least six probable oven emplacements and two buried storage vessels set into a thick horizon of black ash, chaff and charcoal. Again, a layer of earlier sherd-rich refuse was noted beneath some of the ovens. No obvious manufacturing debris was found within the trench, suggesting that the ovens were used in cooking, rather than in industrial processes. A preliminary assessment of the ceramic suggests it is not strongly indicative of cooking (Boris Trivan, personal communication 2010), but analysis of the assemblage is ongoing.

The excavations demonstrated, therefore, that the Main Site has a different internal arrangement than the walled area of the Workmen's Village. It is not an area of uniformly laid-out residences separated by narrow alleys and enclosed by a thick perimeter wall. The excavations instead exposed a series of small spaces, sometimes cells or narrow chambers, and less regular spaces, occasionally with curving walls. The Main Site lacks the thick boundary wall that is such a conspicuous feature of the Workmen's Village, although it does seem to have been surrounded by a thinner perimeter wall, at least along its southern and western sides.

Although it is difficult to resolve the exposed lines of walls into clear house plans, the exposed architecture gives the impression of being, at least in part, residential. It may be that the houses had plans that differed from the very regular tripartite design seen at the Workmen's Village. The most house-like construction was that partially exposed in Trench 4, having regular, small, square to rectangular spaces and clean floors, the latter suggestive of living/activity spaces for people. The probable quern base here is an installation that is well-known from Amarna houses.

The narrow chambers exposed in Trench 2, some of which bore patches of gypsum wall plaster, are less immediately residential in their character. A tentative parallel can be drawn with a group of gypsum-plastered chambers in one of the extramural buildings at the Workmen's Village (Building 350) that might have been connected with a group of nearby animal pens (at Building 400; Kemp 1983: 10–12; 1984b). The small chamber in the northeast corner of Trench 2 is reminiscent of possible "butchery chambers" at the Workmen's Village (Kemp 1984b; 1986). In any case, this small space is likely to be a chamber opening off a courtyard or open space rather than a room of an enclosed building proper. This raises the possibility that the Main Site incorporated substantial areas of open or courtyard spaces at ground-floor level, an aspect that would set it apart from the Workmen's Village, where external ground-floor space was confined usually to thoroughfares.

Trench 3, with its concentration of ovens, lies toward the southern end of a distinctive spread of dark ashy sand that continues along much of the eastern margin of the Main Site. It may be that the ovens in Trench 3 are part of a complex, perhaps for food production; if so, this is also unparalleled at the Workmen's Village. The grouping together of food production facilities could indicate activity on a communal level, and perhaps on a scale that exceeded the needs of the villagers themselves.

Most of the trenches at the Main Site yielded evidence for over-building, with walls built on top of sherd- or ash-rich refuse. This seems to imply that the site changed quite considerably over time, at least in appearance. We might envisage the site, perhaps, as a collection of simple huts that developed into a more substantial settlement. It also seems clear that the kind of piecemeal construction that typified secondary modifications at the Workmen's Village, with a reliance on local materials, was probably undertaken from the outset at the Stone Village.

The peripheral remains

The clearest signs of human activity beyond the Main Site occur on and around a prominent spur that projects northwards from the plateau to the southeast of the Main Site. In several places here, robbers have dug quite large pits and created spoil heaps that can contain materials such as brick, mortar, sherds and bone. They were clearly targeting ancient features that must still have been partly visible at the time of the looting. In 2008, two large sand-filled robbers' pits with associated spoil heaps on the eastern face of the spur were investigated (Trench 8), the pits gradually resolving into Amarna Period tombs cut into the crumbly marl.

Each comprised a vertical shaft, in one case with a set of steps cut in the side, with a horizontal chamber projecting into the hillside at its base (Figure 5). Each tomb seems designed to accommodate one individual, and skeletal material from both tombs was recovered: one was a child, around 8–10 years old, and the other a male aged at least 50. These two tombs seem to lie at the northern end of a cemetery that spread across the eastern face of the spur (Figure 1), although without further excavation, it is impossible to know how concentrated the graves are here.

Apart from tombs, the villagers were cutting small quarries in the edges of the plateau to obtain marl for mortar and bricks. In 2008, one quarry was investigated on the northern side of the eastern spur (Trench 7). In this case, a pit had been cut initially as a quarry and subsequently cut to a more regular shape, walled at its northern end with brick, and roofed, but for an unknown purpose. Otherwise, signs of human activity beyond the Main Site are limited largely to a few very denuded stone features that seem mostly to have served as vessel emplacements or something similar, and scatters of sherds and other debris. There is certainly no sign of the animal pens, garden plots and chapels that are such conspicuous features of the terraced plateau edges around the Workmen's Village.

Figure 5: Wendy Dolling clears one of the shaft tombs in Trench 8.

The site is ringed by a double-circuit of Amarna Period roadways (Figure 1) that were probably subject to foot patrols by police. The only remnants of human activity beyond the roadways are washed-out material in the desert to the northeast of the Main Site, and a probable marl quarry around the plateau edge to its southeast; even the scatters of sherds on the surface of the site are contained by the roads. It seems, therefore, that the roadways were designed not only to set a boundary for construction at the site, but to contain the activities of the villagers generally, and that they were effective in achieving this.

In two places on the surface of the plateau south of the Main Site, the roadways interact with structures, Structures I and II (Figure 6). Both were excavated fully. Structure I is a simple rectangular mortared stone construction some 12 x 7 m, sunk at least partially into the floor of a very shallow *wadi*. Spans of roadway lead directly up to its walls on either side. It is not clear how the structure was accessed, or if the walls were ever built much higher than they currently stand, around 40 cm. Nor was any trace of roofing material encountered. The structure yielded very little material culture, a sign perhaps that the activities undertaken within or around it did not generate much on-site detritus, at least not of a durable nature, or that the structure itself did not see intensive human activity. Some 20 m to the west lies Structure II, in a triangular piece of land defined by three intersecting roadways. Structure II has been extensively damaged by looters, but seems to have comprised several small rooms or chambers that clustered together to form a building or set of spaces some 10 m long, and probably around 5 m wide. Trampled floor debris showed clearly that these chambers were activity spaces. A relatively large number of small pieces of copper-alloy was recovered here, including finished objects such as needles, and what appear to be solidified droplets, suggesting that small-scale metalworking might have been undertaken there. Structure II also provided the only evidence of alluvial silt as a building material at the Stone Village, indicating perhaps that it had links to the central administration. It is difficult to understand the purpose of these two constructions, but their association with the roadways may have lent them a degree of official status. Was Structure II a guard post and/or entry port for goods coming into the site and Structure I an associated storage depot perhaps?

Figure 6: Structures I and II (the latter in the foreground) on the plateau to the south of the Main Site.

The residential nature of the Stone Village

Overall, the Stone Village gives the impression that it supported a permanent population. It had suitable facilities, including food-preparation emplacements and fairly substantial roofed buildings, and whilst there is no sign of a well, water was presumably brought in from the riverside city, as occurred at the Workmen's Village. The cemetery goes some way towards confirming the residential nature of the site, especially since the two excavated tombs are relatively elaborate – we might imagine that basic pit graves would have been favored had these individuals died at what was simply a work site. The artifact assemblage is also broadly consistent with those from domestic contexts elsewhere at Amarna, and includes jewellery items (Figure 7) with images of divinities connected with the protection of women and children, sometimes in small sizes best suited to children. Enough "domestic" vessels have also been encountered within the ceramic assemblage to support the idea that the site served, at least in part, a residential role. For now, it can be assumed tentatively that the Stone Village had a mixed population of men, women, and children, although there is no way of determining the size, exact make-up or organization of the population.

Hammerstone Production

A striking feature of the artifact assemblage from the Stone Village is the large number of basalt waste flakes it contains. Basalt seems to have had a fairly limited range of uses at Amarna. Small boulders were often used as hand-held pounders and grinders, but usually with little modification. Its other main use was for much larger hammer stones, one end shaped to a point, that were used as stone-quarrying tools. Much of the basalt debitage from the Stone Village seems consistent with that which would be generated by fashioning the ends of small boulders into points for use as hammer stones of this kind. The implication is that the villagers were engaged at least in the production of quarrying tools, if not also in the use of the tools themselves.

Interestingly, basalt hammer stones seem to have been in fairly restricted use at Amarna. By far the largest assemblage comes from the Royal Wadi, where there are very few flakes from the actual shaping of the stones (Marc Gabolde, personal communication 2008). Otherwise, the limestone quarries at the site, and the officials'

tombs, all bear scars from the use of metal chisels, with seemingly no sign of basalt hammer stones in the vicinity (Owen and Kemp 1994; Harrell 2001). Indeed, most quarrying of limestone in the 18th Dynasty seems to have been done with metal chisels (Aston et al. 2000: 7). The stone in the Royal Wadi is of very poor quality, and it was probably the case that when the limestone was so soft and crumbly that it was impossible to quarry out in blocks, basalt pounders were used.

The basalt chips at the Stone Village are an invaluable pointer, therefore, to a connection between the site and stone quarrying, and perhaps the cutting of tombs within the Royal Wadi itself. It is very likely, however, that metal tools were taken from the village when it was abandoned, and we cannot assume an exclusive connection either to quarrying/tomb sites where the stone is especially soft, or to phases of work preliminary to the dressing of the stone with metal tools. Nor, in fact, can we assume that the only role of the site was that of stone cutting, or the preparation of tools for this task.

Figure 7: A selection of artefacts from the site. Clockwise from top left: part of a wooden spindle whorl, pendants in the shape of Hathor and Bes, two ground-glass beads, a faience *wedjat*-eye from a finger ring, and a flint blade.

Conclusions

Recent fieldwork at the Stone Village has confirmed that the site probably had a permanent population, and in this respect the label "village", which has long been attached to it, is a reasonable one. At the same time, areas of the site so far exposed lack easily recognizable house plans and a well organized ground plan, in contrast to the Workmen's Village. A mixed population of men, women and children is hinted at in the very small sample of excavated burials and the artifact assemblage; the latter has also produced the clearest signature of a prominent activity type at the site – the chipping of basalt, most likely into quarrying tools. This, in turn, suggests a connection between the site and stone quarrying/tomb cutting (which could be one and the same). Another important outcome of the work has been to suggest that the Stone Village was further removed from institutional support than the Workmen's Village community. Whilst it is unrealistic to imagine it functioning in a location so distant from basic commodities such as food and water without being tied into centralized supply chains, at the same time a sense of "making do" pervades the site, with the inhabitants having limited access to building materials from the riverside city, and probably enjoying little support in the construction of the site.

This leads to the question of why the eastern plain of Amarna accommodated two villages in the first place, both of which show signs of being involved in the cutting of stone. One key issue is whether the two sites were contemporary with one another. Perhaps the Stone Village served as a kind of base-camp for workers engaged in laying-out the eastern boundaries of the city and cutting the boundary stelae here, a task that was probably finished within a few years of the city's founding. An argument against this is the impression, despite its relatively underdeveloped extramural area, that the Stone Village was a busy, changeable place for the time it was settled, pointing perhaps to a period of occupation of more than just a few years. If the two villages instead overlapped in their period of use, the question is how closely their roles were entwined. At Deir el-Medina, the walled settlement for the tomb-builders lay some distance from the Valley of the Kings, so to reduce travel time and perhaps to help regulate the workers' access to metal tools, a second settlement of stone-built huts seems to have been established on the mountain ridge bordering the valley for occupation when the workmen were rostered-on (Bruyère 1939: 345–364). This model does not seem to suit the two Amarna village very well, however, at least in the sense that the Stone Village offers little advantage in terms of travel time to the quarry/tomb sites.

The Deir el-Medina texts also refer to a group of service personnel, the *smdt*, who included potters, coppersmiths, gardeners and other laborers (Janssen et al. 2003). They were attached to the workers' village, but based beyond the settlement itself. Did the Stone Village house such personnel for the Workmen's Village? One problem here is that the Deir el-Medina texts imply that the *smdt* were not living in a single community but

were dispersed amongst the city of western Thebes (Shaw 2004: 19–21). The location of the Stone Village, further removed from the resources and infrastructure of the riverside city than the Workmen's Village itself, also seems an illogical place for a supply centre. We know, in fact, that commodities such as water and pottery were being brought in directly from the riverside city to the Workmen's Village – and it may be this group of suppliers who offer a better parallel to the *sdmt*. Nor is there any sign of either a roadway proper or a less formal path, such as a trail of sherds, between the two village sites. Overall, therefore, the model of the *smdt* represented in the Deir el-Medina texts also does not fit the Stone Village particularly well, when it is paired with the Workmen's Village.

This does not, however, rule out the possibility that the Stone Village was a source of services and supplies on their way to other desert-based work sites. Perhaps it served as a kind of depot and processing point for goods sent out from the city to support such sites, including basalt tools and food. Were pieces of equipment and perhaps clothing in turn sent back to the Stone Village from the work sites for repair? The Stone Village could have served directly to house desert-based workers, such as quarry laborers. But did it also serve as a kind of service center for desert-based work sites where the workers (army personnel, tomb-builders or quarry-workers) did not have the immediate support of a household, and were not part of the Workmen's Village community? This is a model that we now need to test against the full range of data from the site. For now, the exact function of the Stone Village may remain elusive to us, but through the Survey we have taken a giant step forward in re-integrating this intriguing, but almost forgotten, site back into the story of Amarna.

Acknowledgements

The Stone Village Survey was supported by the British Academy, Egypt Exploration Society Centenary Fund, G. E. Wainwright Fund; Thomas Mulvey Fund, Michella Schiff Giorgini Foundation, H. M. Chadwick Fund, Seven Pillars of Wisdom Trust, and the Robert Kiln Trust. The Amarna Research Foundation has recently provided much-needed funding towards the write-up of the excavation monograph, for which we are extremely grateful. The monograph is due for publication in late 2011.

More information on the Stone Village Survey can be found at
http://www.amarnaproject.com/pages/recent_projects/excavation/stone_village/

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NEW TREASURES FROM THE NORTH HOUSE DUMP

By Kristin Thompson

As many members of The Amarna Research Foundation know by now, the North House Dump is the name given to an area around the North Expedition House where the Egypt Exploration Society's team reburied stone and pottery finds during the 1936-37 season. Many of these were pieces of granite and quartzite colossi from the Great Palace, often large themselves but not easily recognizable and not considered suitable for museums. Apparently there was also a hope that, if kept together, the statues might someday be at least partially reconstructed. Certainly many joins have been found among the pieces discovered so far. Nevertheless, the greatest number of pieces joined into a single unit so far is four, and reconstruction in any real sense of the word is not possible.

The precise locations of the reburials were apparently not recorded, or if they were, the information has been lost. The process of clearance took place in stages, beginning in 1981. At that point just over 200 fragments of statuary and relief visible on the surface were gathered and sent to the Egyptian Museum (these were returned to Amarna in 2002 when it became apparent that they might join onto pieces found subsequently). Hundreds more were excavated in 1992 and were awaiting me when I joined the current team in 2001 to register the stone finds. Two small clearances in subsequent years seemed to empty the dump.

Since then, occasional visits to the area of the North Expedition House invariably have led to surface finds. These have been scattered over a large area around the house, tantalizing us with the possibility that other caches lay in the vicinity. In 2009, a geophysical survey was carried out over large portions of this area, partly in the hopes of turning up evidence of the precise location of possible pieces (see Barry Kemp's "Current Work at Amarna 2009, in the Autumn 2009 issue). During the process of dragging the equipment back and forth over the surface, we picked up dozens of pieces of statuary, finds which suggested even more strongly that the area was far from exhausted.

Thus encouraged, in the spring of 2010, the original dump and the area around it were excavated (as described by Kemp in "Current Work at Amarna 2010" in the Spring issue of the *Sun*). The work revealed that the original dump had been far from exhausted. Around 300 additional pieces were discovered. Many of these were typical stretches of body surface with pleats or borders of back pillars, but there were also some recognizable body parts. Some pieces clearly came from "new" statues, that is, those from which we previously had found no other pieces. Among these were an earlobe and thumb tip of a hitherto unknown yellow quartzite colossus. Happily, a surprising number of other pieces fit onto ones that had been in the magazine for years. A lower part of a granite thigh from a small statue of a princess fit neatly onto the upper part of the thigh, which had a hand resting against it.

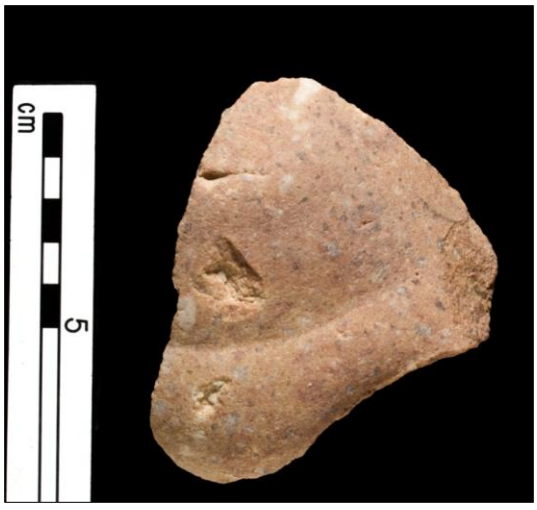

Figure 1: A quartzite princess stomach found on the surface near the North Expedition House (Photo by Gwil Owen)

It's hard to choose only a few pieces to represent this new wealth of material, but here are a few samples:

One surface find that I picked up during the 2009 geophysical survey was part of a princess' stomach (Figure 1), in light brown quartzite, with the exaggeratedly large pubic mound typical of such depictions of Akhenaten and Nefertiti's daughters. We have a more complete stomach and hip section of a princess statue from the South House Dump, in a distinctive pinkish orange quartzite, but that one is unfinished (it probably came from the Thutmose workshop). This new little stomach was finished to a smooth, matte surface that is well preserved, despite the breakage. It has the usual horizontal Amarna navel.

Apart from the fact that it was exciting to find such a recognizable piece of what was undoubtedly a beautiful sculpture, I believe it is the first piece we have from this particular statue.

Thus we can add one more item to a future list of the statues that probably stood in the Great Palace. As with many of the pieces of quartzite among the statuary, the marks of the blows that destroyed the statue are still very evident. Quartzite isn't brittle, so the workers assigned to break up Amarna sculptures had to work pretty hard at their tasks (in contrast, granite, granodiorite, and travertine, also in common use at Amarna, shatter easily). A small blow on the pubic mound failed to do the job, a harder one on the stomach may have been more effective, but the dent at the right of the piece looks like it probably represents the blow that knocked this piece off the statue. It split away just below the groin at the top of the thigh, a tiny, narrow surface of which survives.

Recognizable body parts are unfortunately fairly rare among the pieces from the dump. The 2010 excavation yielded a nipple from a colossal granite statue of Akhenaten, what I have tentatively identified as the side of a nostril from a quartzite colossus, and the earlobe and thumb tip mentioned above.

Another find was the upper half of a right earlobe from a granite colossus. I was particularly surprised by this piece, since bits of ears are rare, and yet the batch of fragments excavated in 1992 contained a very similar piece (Figure 2). Apparently granite earlobes tend to break off the parent statue in similar ways, since these two pieces were nearly alike. Both sheared off horizontally right across the middle of the depression representing the pierced hole in the lobe. Interestingly, though, the new lobe is distinctly larger than the original one, as the accompanying photograph may suggest. Evidence indicates that several of the granite colossi from the North House Dump were statues of Akhenaten in a so-called Osirid pose, with crook and flail crossed on his chest. They were probably very like the better-preserved colossi from East Karnak. Yet the East Karnak sandstone colossi were all of roughly the same size. These two earlobes, as well as the different widths of the fingers on several surviving fists, indicate that the granite colossi that apparently lined the sides of the Broad Hall of the Great Palace varied in size.

Figure 2: Two granite earlobes from the North House Dump. The one on the right was excavated in 1992, the other in 2010.

Apart from statuary, the North House Dump also contained hundreds of fragments of travertine (often called "alabaster"). Among these was a particularly charming piece that had been found during a clearance of the dump in 2003. It was clearly the top of a fan of Aten rays from an offering scene in a relief. In the middle of the rays was the ankh that is usually depicted as hanging from the uraeus at the lower center of the sun's orb. Although the collection of travertine contained portions of two small Atens (the more complete one looking rather like an old-fashioned white porcelain doorknob), neither joined with the ankh-and-rays piece. I simply assumed that I would never be able to match that particular fragment.

Amazingly, however, the 2010 excavation team brought in a very large Aten orb that joined onto it (Figure 3). The resulting piece is 14.3 centimeters high, a very large Aten for a relief. Recent joins made among some of the travertine pieces have revealed that they originated from one or more balustrades. These probably lined the long ramps that formed the entrances to the Broad Hall from the north and south.

Small pieces of relief came from the offering scenes that lined the sides of these balustrades (these were probably similar to familiar offering scenes from balustrades now found in the Egyptian Museum in Cairo and the Petrie Museum in London). We have portions of larger cartouches that came from the top, and the large Aten may have also been on the broad top surface, or perhaps on the end of one of the balustrades.

Figure 3: Two fragments from a travertine balustrade, joined after being excavated in 2003 and 2010

Although several other matches have been made among the travertine pieces, there are not enough fragments for a reconstruction of the balustrade(s) to be made. Some of the larger pieces from these reliefs were sent to museums around the world during the divisions in the 1930s. Many fragments undoubtedly still lie buried somewhere in the vicinity of the North Expedition House.

Unfortunately we have little indication as to where other dumps may lie. At the end of the 2010 season, test excavations in likely spots near the original North House Dump yielded almost nothing. The grounds around the old expedition house are extensive. (Figure 4)

Since they include unexcavated buildings, further digging in the area would need to be full-scale excavations with detailed records kept and eventual publication. Perhaps someday such a project would be possible, but currently there are others with higher priority. Unless we find new clues as to precisely where Pendlebury's team buried other material, it will have to remain missing.

Figure 4 : Excavating the North House Dump in 2002. The ruins of the Egypt Exploration Society's expedition house is in the background, with one of the workmen taking trays of fragments in a wheelbarrow to the road.

ANIMAL BONES AT AMARNA

By Tony Legge

Animal bones are found widely at Amarna and are well preserved in the arid desert environment, and even with horn and hoof sheaths, which decay in wetter environments. These bones can tell us a huge amount about the nature of ancient Egyptian society, as a person's food is closely related to their wealth and status, as well as reflecting their religious and other beliefs.

All of the familiar domestic mammals are there; cattle, goats, sheep, pigs, asses, with cats and dogs. Wild mammals are found, though rather rarely; hyenas, occasional antelopes and a good deal of birds and fish.

Even a slight familiarity with ancient Egyptian art shows that cattle were the animals of high status, frequently depicted in the art of tombs and temples as the objects of sacrifice. These sacrificial cattle were specially prepared with headdresses and other ornaments and were specially fattened for the pleasure of the gods. Tethered cattle are shown being hand-fed, probably with round loaves of flat bread, usually with gross body proportions. The tomb art at Amarna commonly shows such scenes, and notably the cattle are depicted with very overgrown hooves, a condition known to veterinarians as 'Turkish slipper.' (Figure 1)

Figure 1: Processional scene of sacrificial ox (from Luxor Temple)

This arises from a condition known as 'bovine laminitis' in which the foot becomes inflamed and painful, so that the animal stands on its heels and immobility allows the hoof to grow excessively long. Among the bone remains at Amarna are the hoof sheaths of cattle, which show exactly this condition (Figure 2). Overfeeding with carbohydrate promotes this laminitis, which helps to explain the enigmatic feeding scenes; the cattle were indeed being fed loaves of bread in excessive quantity, to produce the massively fat animals that were so pleasurable to the gods.

Figure 2: Abnormal hoof growth (top) Normal hoof (below)

After these animals were killed, the carcass was jointed and doubtless displayed upon the offering tables in the temple. After the appropriate ceremony the meat would have been distributed to the people, the remains to become part of the household bone waste, along with the bones of more humble creatures (figure 3).

This diagram shows the proportions of bones found in five different areas at Amarna. Bone waste associated with the priest Panhesy is almost entirely of cattle bones, probably signifying his privileged access to food of the highest quality. At the other extreme of the social spectrum, the inhabitants of the Main City areas used mainly pig meat. This animal is seldom represented in ancient Egyptian art, and very likely was of lower cost and social status, though mainly from young animals.

The outlying Stone Village and Workmen's Village had a more varied diet, with rather more meat from pig and caprines (sheep and goat). Bones from the house of Ranefer reflect the diet of an important official in Akhenaten's court, though the proportions of the animals found are not very different from those encountered in the rather more humble village sites. These are preliminary results, and a more refined analysis is needed before the meat diet of the Amarna people can be fully understood.

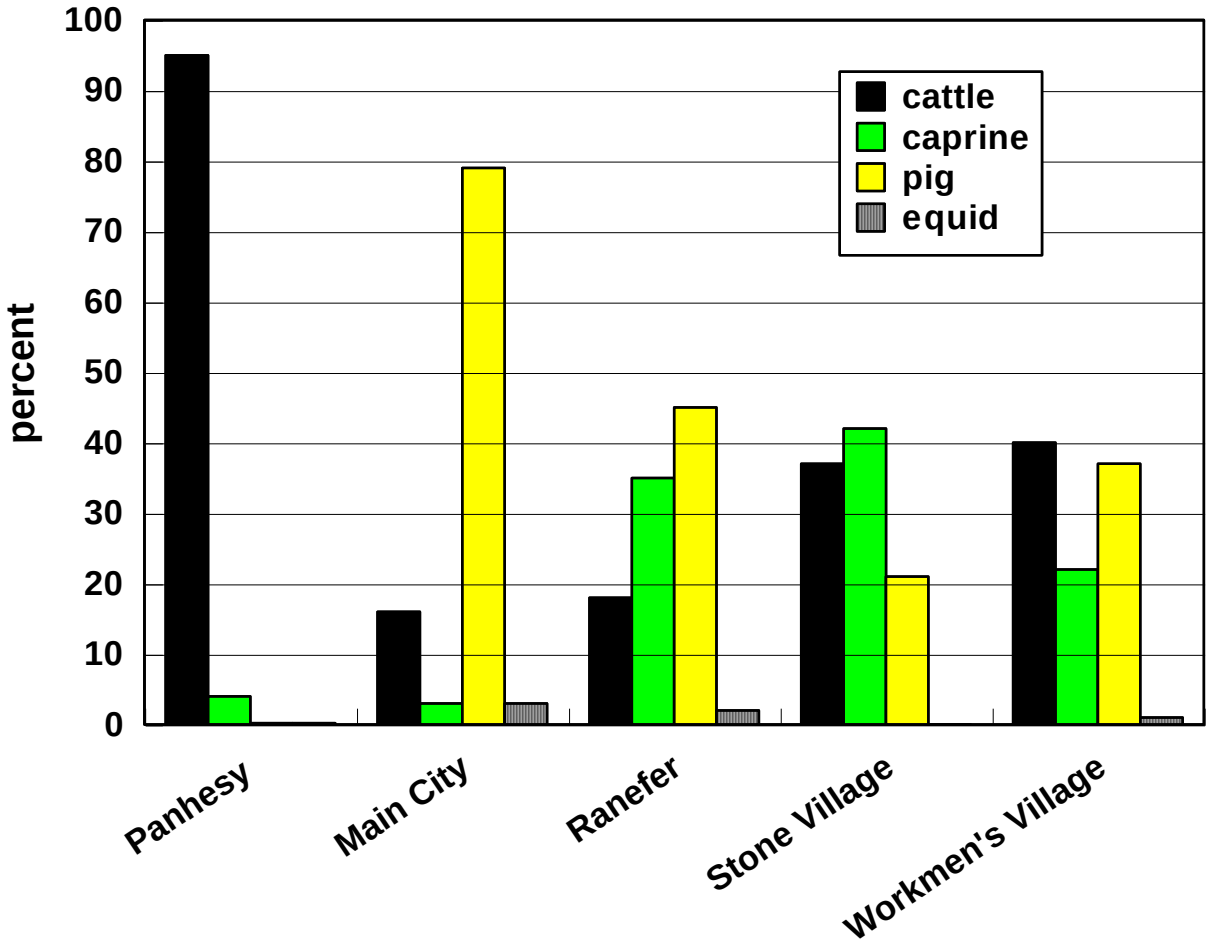

Figure 3: Proportions of identified mammal bones at Amarna, from five sites

Among the bones from the Workmen's Village were some hyena bones, first identified there by the late Dr Howard Hecker. More work since has revealed more of these bones, all bearing multiple cut marks from the stripping away of the meat. This is very good evidence that this was being eaten, though never more than a minor part of the diet (Legge 2010).

There are tomb illustrations at Saqqara and elsewhere of hyenas under restraint being force fed, even with the carcasses of whole birds, probably ducks. This could be interpreted as the preparation of fancy food for the aristocracy, although these bones are found in a rather more humble setting at Amarna. The tomb scenes are intended to display the power of the person buried there, and do not necessarily represent reality.

Another peculiarity has been found among the pig bones at Amarna. These include three complete scapulae which have been pierced through with great violence, breaking the bone and even breaking the scapula neck (Figure 4: specimens A and B from Workmen's Village and specimen C from Ranefer House). The width of the wounds (arrowed in figure) indicates the use of a metal spear or short dagger blade rather than an arrow. In specimen B (medial view), the bone is quite clearly split and is overlapping at the margins, and the neck of this specimen was broken by the impact too. The width of the blade can be measured in two specimens at about 30-40 mm wide. While this in itself is a remarkable finding, it is even more strange that each scapula was completely healed, a process that would take many months. A pig femur from the Workmen's Village had also suffered severe injury, with the bone shaft shattered as by a severe blow. Even this severe trauma was followed by complete healing, though after some infection. While we cannot know how this wound was inflicted, this animal and those with the stabbed scapulae had all been maintained through a lengthy healing process.

Figure 4: Pierced and healed pig scapulae, Tell el Amarna

At some later time these animals were killed for food, and the bones have typical cut marks for disarticulation and the filleting of the meat. These specimens were at first interpreted as bearing hunting wounds, from which the animal escaped to make a slow recovery. This is now unlikely, as it can be seen that some of the wounds were inflicted with the animal on its side rather than from above. More bone injuries have now been identified. Six skull fragments, all from rather small and juvenile pigs have deliberate wounds on the fontal bone, just above the eyes. Four of these have healed stab wounds, shown by deep pits with evidence of healing. Two further fragments of frontal bone also show depressed and healed fractures, apparently arising from blows. In one specimen, the outer bony layer was depressed by a blow, with evidence of healing, the wound inflicted with a flat-ended implement about 8 mm in diameter, akin to a small hammer. From the Main City excavation there was also a frontal bone with unhealed stab wounds on both right and left sides, the left 5.2 mm long and 2.5 mm deep, and on the right side, six smaller stab wounds, each with a slightly different orientation, two of these being delivered at an oblique angle. The narrow stab marks were evidently from a metal blade, each penetrating 2-3 mm into the frontal bone.

These wounds were not delivered to cause death, as in all but one instance there is complete healing, as with the wounded scapulae and limb bones. Why were these pigs the subject of cruel and punitive treatment? The lower status of the pig perhaps explains its rarity in Egyptian tomb art, the animal not desired in the afterlife of the wealthy, when compared to the abundant images of cattle and wild mammals. Was this lowly status in ancient Egypt caused by the association of the pig with the god Set, not altogether popular in Ancient Egypt for his assault on his brother Osiris? It seems perfectly possible that these unfortunate pigs were tortured in rituals intended to punish Set. Whatever happened, the number of specimens is indicative of a systematic pattern of cuts and blows that would not be associated with the killing and butchery of these animals in the normal preparation of food.

CURRENT WORK AT AMARNA

By Barry Kemp

A new venture: a geophysics field school at Amarna

Between January 8th and February 18th, 2011, the Amarna expedition is hosting a field school devoted to geophysical survey. The institution providing accreditation is the Cotsen Institute of Archaeology of the University of California (Los Angeles); it is represented on the ground by archaeological surveyor Hans Barnard. The specialist instructors (Jason Herrmann and Stephanie Sullivan) are from the Center of Advanced Spatial Technologies of the University of Arkansas. Their work is supplemented by Gwil Owen from Cambridge (UK) who is providing instruction and hands-on experience with aerial photography. Eight of the eleven students are from the USA, Canada and Australia, and three are inspectors from the Supreme Council of Antiquities of Egypt.

Figure 1: Jason Herrmann explaining the workings of the magnetometer

Sun readers should know that TARF donations have provided two of the key pieces of kit that are in use as I write: the Sokkia Total Station purchased last year, that is used to locate the areas in which the geophysics instruments are run; and the replacement helium balloon that Gwil is using for aerial photography.

The purpose of the field school is to continue the subsurface mapping of unexcavated parts of Amarna, building on the pilot project run in 2009 at the North City. Three separate instruments are in use: a magnetometer, ground-penetrating radar and a conductivity meter. Each instrument works differently, one often performing better in some conditions than another. At the end, the three sets of results can be combined to produced a composite plot.

For the time in the field, the school will work over three areas. The first, near the dig house and therefore ideal for breaking in the team and the equipment, is the area around the house of Ranefer and the patch of small houses (Grid 12) close by, dug in 2004 and 2005. The idea here is to see how the excavated buildings run on under the adjacent ground. Moreover, as I write, Jason tells me that the work, especially with the magnetometer, is proceeding so fast that he hopes to complete a strip westwards, all the way to the edge of the cultivation.

From here the plan is to move to the South Tombs Cemetery, site of the current excavation which is due to resume late in February. Jason considers that the ground-penetrating radar unit has a fair chance of picking up the outlines of graves on the flattish wadi floor. The possibility that the cemetery runs under the wadi arose only late last season, when one excavation trench encountered graves beside the wadi floor at a deeper level than expected.

The third site is the North City, where the magnetometer is again expected to take over. Here the aim is to pick up from 2009, and cover as much ground as possible, perhaps starting at the north end.

Figure 2: Setting up a magnetometer grid beside Ranefer's house

This is the scientific rationale behind the field school, and all participants have quickly picked up the rudiments and are busy, working together as a team. But it is also an opportunity to become closely acquainted with Amarna and its archaeology. The daily contact with different parts of the site is supplemented with a program of weekly visits, to different parts of Amarna and to other sites in the area. The afternoon periods are partly given over to processing the data, but also partly to discussions and talks. These provide the opportunity for everyone to examine selections of objects from the excavations that are held in the site magazine. 'Teaching Amarna' is therefore central to the course.

One thing that I like about this field school and its companion, devoted to human remains and run at the end of the season, is that they do not destroy anything. If mistakes are made, the source material is still there to be visited again. This is not the case with excavation, where mistakes often cannot be corrected and lead to loss of information.

Within a few days of the field school ending, the excavating team arrives in Cairo. This year we plan to extend the digging season to two months, and to maintain work at the same three parts of the cemetery as last year. The season rounds off with the anthropology field school, and somewhere in between come the repairs to the North Palace.

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