horizon

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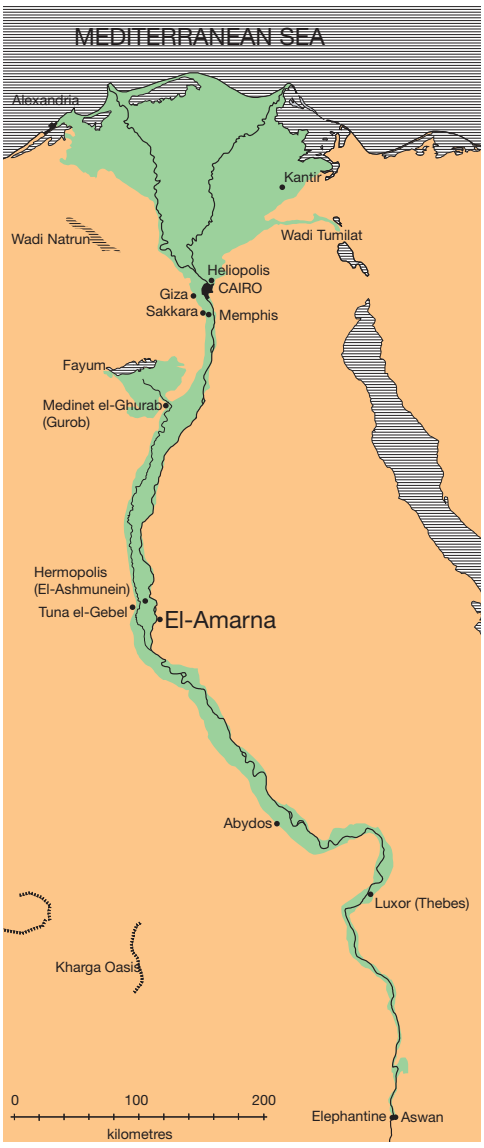
The Amarna Project and Amarna Trust newsletter



Time and place

Akhenaten, Pharaoh of Egypt for seventeen years from around 1350 BCE, has a place in the history of ideas. He introduced a religious cult that recognized only one god (the power of the sun, the Aten) whilst at the same time not preventing the population of Egypt from continuing to honour gods and goddesses of the home and of the locality. In our own age of intolerance his attitude is unexpected. But the way of thinking of the times did not see the need to apply ideas consistently across the board.

Amarna, the 'Horizon of the Aten', was the place in Middle Egypt where he tried out his experiment. It drew in a population of several tens of thousands of people. They built a city, occupied it busily until shortly after his death, and then went away again. They left a record of their presence that is unique in its scale for ancient Egypt.

The Amarna Project seeks to document all that is at Amarna and to understand primarily through archaeology the intentions of its founder and the life of his people.

Horizon is the newsletter of the Amarna Trust that supports the work of the Project.

Pharaoh Akhenaten, here dispensing rewards from his palace at Amarna. Scene in the tomb of the God's Father, Ay (no. 25 at Amarna).

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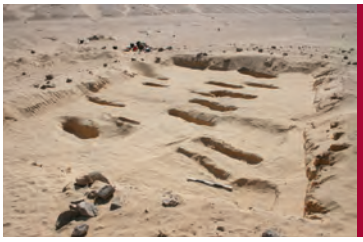
Notes from the field

The cemetery of Amarna's people – expanding the excavation

We resumed excavations at the South Tombs Cemetery in February. With an enlarged excavating team we were able to open a new area as well as continuing where we have dug in previous years. The aim is to explore how uniform the cemetery is. The new area lies across the other side of the *wadi* and much further down towards its mouth.

The lower site lies on the sloping side of the *wadi* not far from its mouth.



The lower area of excavation at the South Tombs Cemetery at the end of excavation. Viewed to the east.

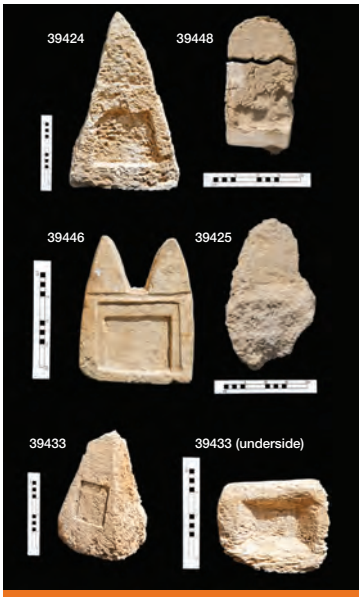
The graves exposed in the new part had a much more orderly layout than is the case at the upper site, most being oriented perpendicular to the *wadi*, with the head to approximately south-west. This might reflect simply that this is the most comfortable way to lie down on a piece of sloping ground (with the head upslope) rather than a desire to orient in relation to cardinal points or landscape elements.

Little survives to show how the graves were marked above ground. We guessed early on that the scatters of rounded stones on the surface, that sometimes form clusters (especially in the area of the lower site), are the remains of cairns. In 2006 two carved limestone grave markers with pointed tops were found, in one case the points being three in a row. This year the lower site produced five more markers, each one different yet again emphasizing a triangular shape.

Each, in its own way, gives a sense of being more than a two-dimensional representation, but an actual model of a rock-cut tomb, the small niche of 39424 lending the impression of a tomb entrance dwarfed by a looming mountain peak, and the double-recess of 39446 invoking both tomb entrance and internal niche, in the setting of a multi-peaked landscape. The triangular representation on 39425 reinforces the central importance of the mountainside tomb; perhaps a small representation of the deceased was also shown within it. The mountain-tomb-model is taken to the next step with another object from the lower site, a narrow limestone pyramidion (39433), provided with a faceted socket on the underside for attachment to a lower layer of building materials that could have developed the shape of a small pyramid.

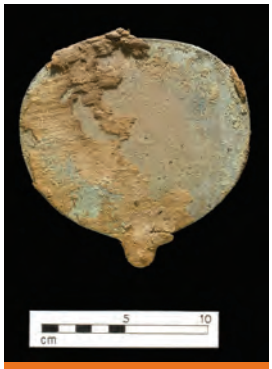
One of the markers (39448), in the shape of a round-topped stela, had been made from a local clay mix, cast in a mould. Traces of red paint remained around the base, but any painted decoration on the face had been lost to erosion. Pieces of mortar from the base also survived and they bore, on the back, the impression of the surface of a rounded stone. So this one was perhaps fixed to a cairn of natural unworked stones.

From the start the cemetery has been sparing in grave goods. One can blame ancient robbery, but the lack of objects in intact burials also speaks of choice in the matter, in individual cases perhaps compounded by poverty. Nevertheless, we have a growing catalogue of pieces that are primarily personal and utilitarian. Two from this year are in metal: a copper-alloy mirror (wrapped in cloth) from the burial of an adult woman, and a small ring of gold alloy from the grave of a child, decorated with an image of an ibex-like animal. One loosely associated group of broken vessels found scattered in the sand in one part of the lower site might represent the contents of a single burial, of slightly greater wealth than average. The group comprises three travertine (alabaster) vessels, and one or more pots imported from Mycenae and perhaps Cyprus. From their breakage one

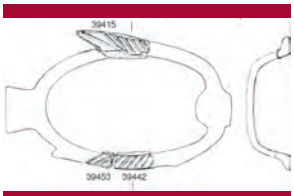


The group of stelae or grave markers found at the lower site during the 2009 season.

Small stela (39448) cast from a local clay mix, with some of the plaster remaining that had attached it to a cairn of rounded stones.



Copper alloy mirror (39460) found on the stick coffin of Individual 120.

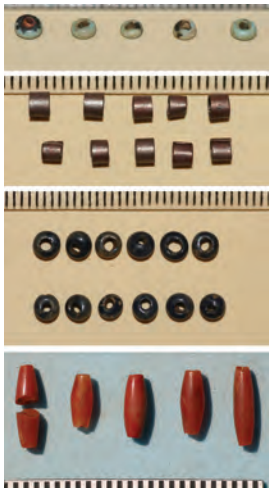


Fragments of travertine (alabaster) dish carved in the shape of a fish.

Mycenaean sherd 39401 from the lower site.

Double-sided plaque 39419 made from steatite, showing a striding king on one side and various designs including a baboon on the other.

Small gold alloy ring (39447) from the grave of a child (Individual 98), depicting an ibex-like animal in foliage.



Tiny but exquisite: a selection of loose beads, made from carnelian, blue glass and a gold alloy, from group 39458, the armlet of Individual 100 (photos by B. Kemp).

can judge that some objects that seem attractive to us held no interest to the robbers, who might have been attracted only to metal.

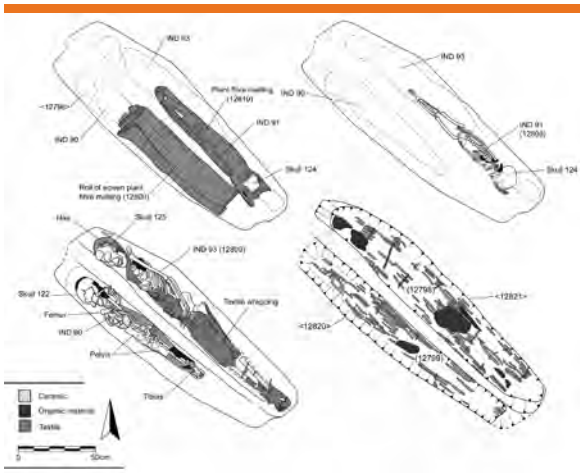
Graves inevitably mark long-lost personal stories. When first revealed, grave pit <12796> at the upper site was wide enough to accommodate two burials side by side. Further digging showed that one half of the pit had actually been dug separately and probably later than the other. It contained the bones of a 20–25 year-old woman (Individual 90), but although all the bones were present, they were not all in their proper positions. Some parts of the body seemed to have been still partially held together by tissue so that elements remained articulated; other parts had been carefully put back together in rough order and piled on top of the legs, possibly to help keep the burial together while it was moved. Traces of textile suggest the burial was wrapped in cloth. The odd shape and shortened length of the body were then disguised using a roll of reed matting to make more of a normal shape before the remains were wrapped in an outer plant-stem matting coffin. The evidence points to reburial. Perhaps the individual died somewhere else and had to be transported back to Amarna for final burial. Perhaps this is a burial which was robbed during the life of the cemetery and so was reburied with the other two individuals (an adult woman and child). Other scenarios can be imagined.

The cemetery as a whole is long and narrow. Did it grow lineally, so that the lower part is earlier than the upper, or did different groups develop family plots spaced along the *wadi* so that only the first burials in each plot would reflect an early–to–late sequence? Was being buried closer to the mouth of the *wadi* something of a privilege, for people more closely connected to the high officials whose rock-cut tombs were in the vicinity? Much more evidence is needed to provide a sounder basis for assessments of this kind, that are crucial to explaining any noticed variability in the human population buried in the cemetery.

Most of the object photographs are by Gwil Owen.

Beads (object group 39458) from Individual 100, strung in the order found on the arm (photo by Joe Lewis).

Beads found in place on the arm of Individual 100.

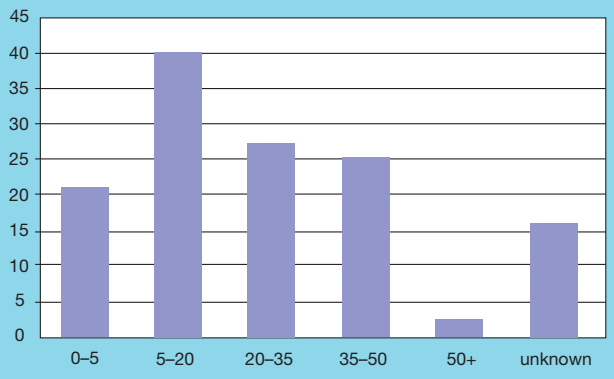


The strange case of Individual 90 in pit <12796>: a complete skeleton in a family grave, but the bones jumbled (plans by Mary Shepperson).

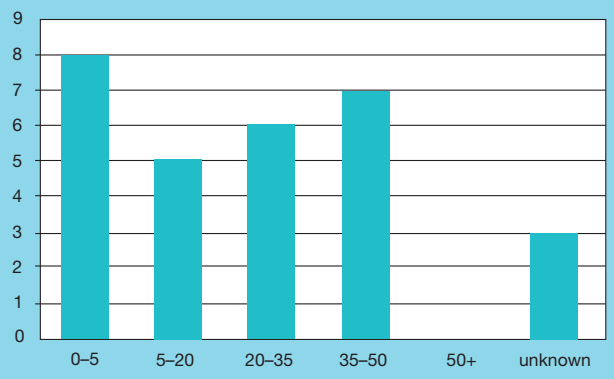
The bioarchaeology field school

For the second year running the bones were the focus of a month-long field school run by the University of Arkansas, Department of Anthropology, led by Prof Jerry Rose, assisted by Melissa Zabecki and Gretchen Dabbs. A group of thirteen university students participated.

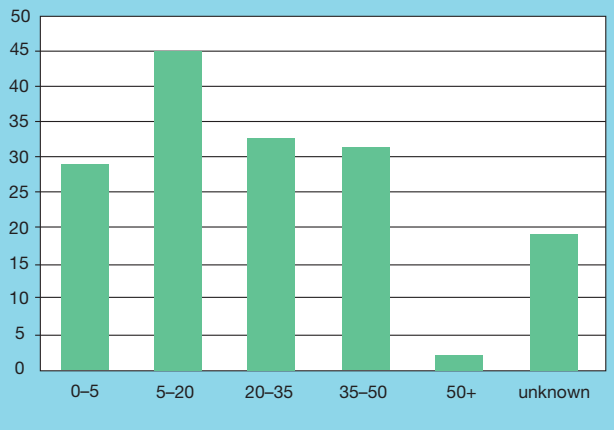
Frequencies of individuals in age groups from the upper site at the Amarna South Tombs Cemetery (2005–2009)



Frequencies of individuals in age groups from the lower site at the Amarna South Tombs Cemetery (2005–2009)



Frequencies of individuals in age groups from the entire Amarna South Tombs Cemetery (2005–2009)



The enlarged excavation produced more material than in past seasons. Study involves reassembly, of parts of individuals scattered by robbers. By the end 62 individuals had emerged, whole or in part, with 13 isolated skulls and four isolated mandibles. Stress markers that suggest poor childhood nutrition and injuries sustained over the course of life continued to appear regularly amongst the new material. Not only were these new bones studied in full, but the entire collection from previous seasons was checked through to enlarge the scope for matching.

A special point of interest is comparison of results between the two sites. The average age of death for all 154 people studied from the South Tombs Cemetery is 22 years. The average age of death of the 88 people who survived to adulthood is 32 years. Adult women lived to an average age of 34 years, if they lived beyond 18 years. Men reaching adulthood only lived to be 30 years of age. However, the death statistics from the two sites are not quite the same. The chart of age categories at death for the lower site reveals many deaths from birth to five years of age, which is normal in ancient societies. The death rate falls to a low between 5 and 20 years of age, which is again normal for all populations. Finally the death rate begins to rise after age 20 with only a few old adults dying after 45 years of age. Although the length of life for the people in the lower cemetery location is relatively short, their distribution by ages at death is normal for ancient human populations. In contrast, the upper cemetery location has fewer deaths after birth than would be expected in a normal population, but the death rate of later childhood (5–20 years of age) remains high. The rate climbs in the 15 to 20 year age group, when death rates should be at their lowest. The adult rate of death after 20 years continues to increase as expected. This is an abnormal age distribution with a large number of deaths between 5 and 20 years of age, when they should be the lowest.

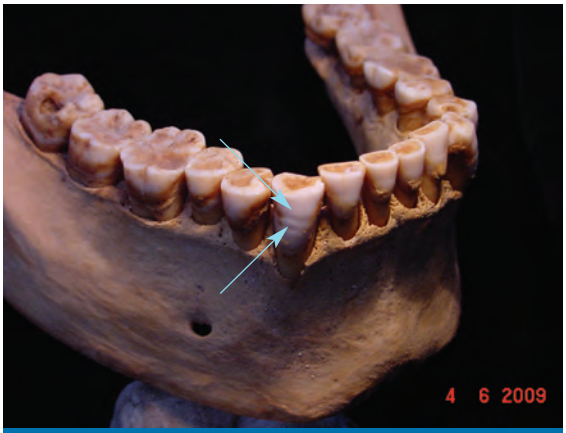
The sample from the lower site is small. If future work substantiates the difference between the two sites, it becomes imperative to understand better whether the passage of time or social standing dictated where in the cemetery individuals were buried.

The team selected two skulls, one of an adult and one of a child, and submitted photographs and other data to the University of Louisiana, Forensic Anthropology and Computer Enhancement Services (FACES) Laboratory (the skulls remaining at Amarna). Thanks to the good offices of Mary Manhein, the Laboratory returned facial reconstructions based on a computerized method that 'drapes' tissue and hair over skull data. The adult skull and its reconstruction are illustrated here.

Individual 114 was a woman of between 40 and 50 at her death and so, for her time, a survivor. She was between 161–2 cm tall (around 5 ft 3 ins). She had broken her left upper arm but it had healed to a shorter length. She had suffered a blow to her head that had depressed her skull slightly and brought infection, but that had healed, too. She had been buried face downwards, and this had preserved her long hair plait. She took to the grave a single item of jewellery: a round bead with a flat surface and a domed back that she wore on a thread around a finger of her left hand. The design is that of the Eye of Horus (illustrated on the cover of *Horizon* issue no. 5). In the reconstruction of her profile, we have given her a decorated ear-stud of the kind worn at the time.

Stature is another way of profiling a population. Since last season, a revised formula for calculating adult stature specifically for ancient Egyptians has been published. The average male stature of all South Tombs Cemetery skeletons is now calculated at 163 cm (5' 4"), while that for females is 153 cm (5' 0"). As the size of the sample grows, it offers increasing scope for testing ideas. We can, for example, divide the adult population into those older than 35 years at death and who would have grown up before the Amarna period, and those younger than 35, who could have completed all or some of their growth just before and during the Amarna period. Mean height for the males in the first group was 165 cm, while for those in the second group it was 162 cm. Females experienced a similar decline of 3 cm. Does this mean that childhood nutrition and health declined during the Amarna period?

Prof Jerry Rose, University of Arkansas, leads the Amarna bioarchaeology field school at Amarna.



The grooves across the right mandibular canine, shown by the two blue arrows, are enamel hypoplasias. Enamel hypoplasias are deficiencies in enamel thickness resulting from a combination of stress (e.g. disease) and nutritional deficiencies during the formation of the teeth. Fifty-eight percent of the individuals examined from the cemetery at Amarna have at least one hypoplasia. In other words, over half of the adults at Amarna had suffered from and survived at least one very serious incident of childhood disease during a time of under-nutrition.

Meretaten's bathroom

Aided by a generous grant from the Amarna Research Foundation of Denver the programme of repairs to the North Palace was resumed between April 8th and May 7th, supervised by conservation architect Surésh Dhargalkar, working with SCA engineer Nabil Ishak Armanios.

The original excavation in 1924 by the Egypt Exploration Society uncovered a full domestic suite for its royal owner who, at the end, was Meretaten, Akhenaten's eldest daughter who reigned as queen for a short time. Hers was the name found on the surviving stonework elsewhere in the palace. In the centre of the domestic suite stood a bathroom, found in an unusually good condition, as photographs taken at the time show. The front part had a conventional brick floor running from a sandstone door threshold. The rear part was a slightly raised bathing area. The sides had been thickly plastered with gypsum to a height of around 1.5 metres, the floor was slightly raised and also plastered white, and the entire rear part was separated by a low wall or curb of whitewashed brick interrupted by a low stone step. A hole in the low wall allowed water to drain into a square sandstone basin sunk in the ground. In the years following 1924 all of the parts in the rear bathing area were removed by villagers or destroyed by weathering, except for the sandstone tank that remained in position.

Limestone doorway into the side of the animal courts at the North Palace, as found in 1923 (EES copyright, negative 23/121).

The original 1924 photograph of the North Palace bathroom. (EES copyright, negative 24/139).

The bathroom newly refurbished.

The plan for this year was to replace the rear parts similarly, using the 1924 photograph as a guide. After discussion and experimentation, it was decided to plaster the walls of the rear part using local materials: desert marl (*heeb*) and sieved sand. Following the ancient design, the plaster was applied at an angle to the vertical, thicker at the bottom. Within a day the plaster had dried and become very hard, without significant cracking. It also appeared to be firmly bonded to the brick walls behind. The next step was to lay a brick floor within the space defined by the plaster. We cannot be sure if the original floor was brick or stone, but a thick layer of *heeb*-plaster was also spread across its surface, increasing its height. Two limestone blocks, set closely side by side, were laid in the correct position for the step. To re-create the low wall or curb, a few bricks were made that were thinner than normal, and these were set on their narrow edge. A space was left for the drain hole above the sandstone tank, and this was made in *heeb*-plaster. The rest of the floor of the bathroom was then laid with a new floor of bricks. The final act was to cover all of the *heeb*-plaster surfaces with coats of lime-wash. In choosing the materials, especially *heeb*-plaster and lime-wash, it has to be remembered that the original bathroom was roofed and therefore subject to a more controlled local climate, whereas the bathroom now lies open to the elements, including extreme temperature variations. The materials we have used are more likely to withstand the environment.

Meretaten's bathroom is a slightly larger version of a style of bathroom several times found in the larger houses in the city. They have no source of water of their own, and the small drainage sumps are intended to be emptied by hand. They must have depended upon servants. Meretaten's is situated quite close to the kitchen area where there were several ovens. Did they provide her with hot water in the winter months?

The original report is T. Whittemore, 'The excavations at El-'Amarnah, season 1924–5.' *Journal of Egyptian Archaeology* 12 (1926), 7, Pl. II. The EES archive photographs are 24/138, 139.

Builder Mohammed Ali Kamel applies plaster to the bathroom side.

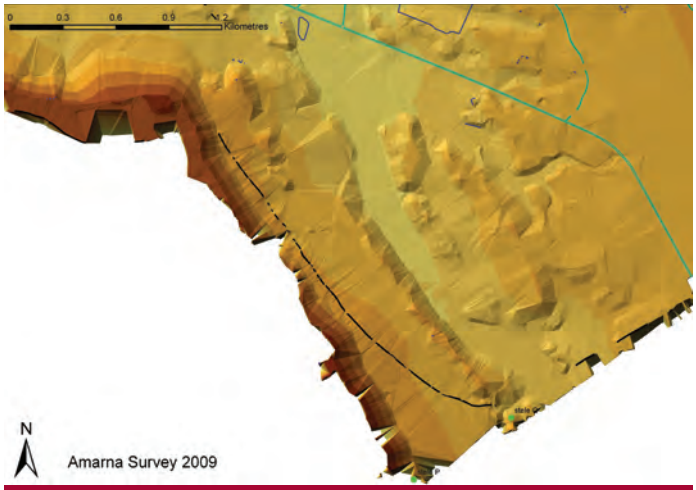
The 2009 season also saw repairs to the animal courts, here the doorway shown also in the 1923 photograph and subsequently destroyed.

Surveying on and under the ground

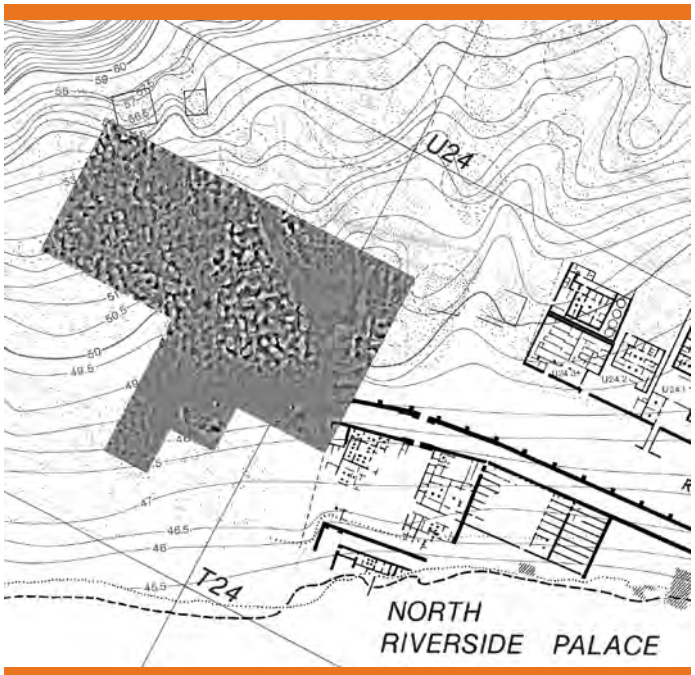
In Akhenaten's vision recorded on the Boundary Stelae the sacred place for the Aten, Akhetaten, was the whole desert plain of which the city was only a part. Recording the desert through survey is an important part of the expedition's work.

Begun in 2000, the mapping of the surface of the desert plain at Amarna by Helen Fenwick (University of Hull) this year reached a successful conclusion. Using a differential GPS system she has collected digital information from which a series of contour maps of the Amarna plain — to the top edge of the cliffs — will be created, maps upon which archaeological features will be displayed. These include the complex network of ancient roadways and boundary lines that helped to define the nature of Akhetaten. The new maps will come with a written explanation and commentary, and are intended to complement the survey of the city itself, *A survey of the ancient city of El-'Amarna*, by B. Kemp and S. Garfi, published by the EES in 1993.

A third stage of survey remains to be done, using equipment that can record features that lie beneath the surface. During March the Center for Advanced Spatial Technologies (CAST) of the University of Arkansas supplied a team (Christopher Goodmaster and Stephanie Sullivan) who conducted a pilot survey over parts of the North City using a magnetometer and a ground-penetrating radar unit. The principal results were magnetometry maps of two areas that reveal the shadowy outlines of unexcavated houses and, in the corner of one map, what looks like a pattern of tree pits from a garden. Using the experience gained, the plan is to develop a geophysical survey of the major unexcavated portions of the city, planned to start in the early part of 2011. This will be a joint venture with the University of Arkansas and with the University of California Los Angeles.



The last portion of the GPS surface survey of the Amarna plain, shown as an unsmoothed digital landscape model. Survey by Helen Fenwick.



One of the magnetometer plots at the North City, superimposed upon Sheet 1 of the Amarna city survey.

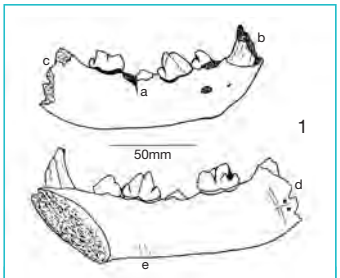
Christopher Goodmaster assisted by Mohammed Ali Kamel working within a magnetometer grid at the North City.

Stephanie Sullivan calibrating the magnetometer at the North City, in front of the old EES northern dig house.

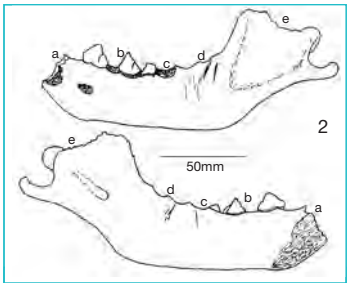
Hyaenas at Amarna

Prof. Tony Legge of the McDonald Institute for Archaeological Research describes one result of a recent examination of animal bones at Amarna.

Many scenes in Egyptian tombs depict the fauna of Egypt. Among the more improbable creatures shown under husbandry was the striped hyaena. The Old Kingdom tombs of Mereruka (above) and Kagemni at Saqqara contain enigmatic scenes of hyaena handling and feeding. The process of feeding begins with the animals waiting to be fed in turn, tethered by collar and lead. The feeding then takes place with the hyaena held on its back, its feet secured, while food is pushed into its mouth in a process of stuffing perhaps more familiar with geese. Benches beside the hyaenas carry the dressed carcasses of ducks or geese, suggesting food of the very best for the hyaenas. Finally, the replete hyaenas are gently shepherded away by their human attendants.



1. Right mandible:
a, b, c – damage from chopping;
d – cut marks and some probable dog gnawing;
e – scrape marks.



2. Left mandible:
a, b, c – broken by percussion;
d – missing from socket;
e – ascending ramus broken;
f – cut marks.

Hyaena mandible 984A, as shown in line drawing 1.

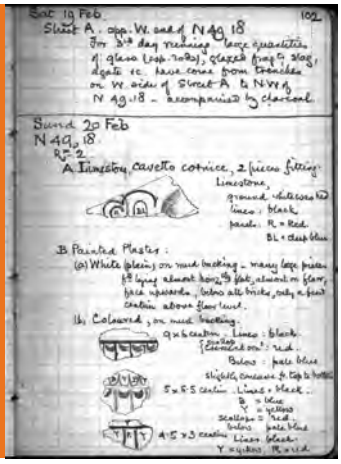
Hyaena pelvis 1733, showing cut marks from a blade.

But were these scenes real, and were the hyaenas truly 'domesticated'? 19th century AD records from Egypt include stories of hyaena capture using traps, or even by intrepid huntsmen seizing the animal in its lair. It is also possible to tame the striped hyaena, and there are exceptional records in recent times of these being maintained even as household pets. But was it ever necessary to force-feed hyaenas? This species, and its spotted cousin from southern Africa, are by-words for gluttony.

Yet while we cannot yet say if hyaenas were captured or captive-bred in ancient Egypt, it is now evident that their meat was eaten. At Amarna, hyaena bones have now been identified from the Workmen's Village. Thirteen bones include mandibles, limb bones and pieces of pelvis. Each one carries multiple cut marks where the muscle groups have been stripped from the bone by severing the tendons. Such careful butchery strongly implies that the meat found favour in the human diet there. Certainly the hyaena was eaten into recent times, as was recorded by various observers who describe the meat in a variety of ways, from having a repulsive smell to tasting 'sweet.'

One aspect of eating hyaenas would have been risky in ancient Egypt, as now. Carnivorous and omnivorous mammals commonly carry a dangerous parasite called *Trichinella spiralis* which causes the disease trichinosis. It is often found in pigs though many other mammals can be hosts to this species. This parasite has a simple life cycle, lying encysted in muscle tissue and waiting to be eaten, within a suitable host. When this falls victim to a predator — human or otherwise — the cysts develop into mature worms and reproduce, filling the muscle of the new hosts with encysted larvae. Only lengthy cooking at or above 70ºC will kill the larvae, so that undercooked meat is a potent source of infection. While the infection is seldom fatal in modern times, for earlier peoples with little or no understanding of healthcare, it would be a dangerous infection.

Page 96,
on which are the details of the eastern painted false door of Ranefer's house (N49.18). Copyright Egypt Exploration Society.



Page 102,
illustrating loose fragments of carved stone and painted plaster found in the rubble of Ranefer's transverse hall (Room 2). Copyright Egypt Exploration Society.

From the archives
Mr Hayter's notebook

'To few of us is it given to produce, in spite of wind, sand, heat and flies, note-books so neat that they can be referred to as easily as a printed volume.'

The words appear in a footnote in *City of Akhenaten* I, the record of the EES excavations of 1921 and 1922 that included a report on the house of Ranefer. The keeper of the notebook was Angelo George Kirby Hayter (1863–1927), schoolmaster, linguist and archaeologist, equally at home on Roman sites in Britain and on sites of all kinds in Egypt. As archaeologist he was one of those who blur the distinction between professional and amateur. His Amarna notebook, part of the EES archive, reveals a sharp enquiring mind and eye for detail, a natural neatness and orderliness, and skill in drawing. He covered some of the days when Ranefer's house was being excavated, and the pages where he does so have proved very valuable whilst writing up the re-examination of Ranefer's house that took place between 2002 and 2004.

Sadly his 1921 season at Amarna, working under T.E. Peet, was his last in Egypt. After his death Peet commemorated his talents in words that ring just as true today: '*Those studies which are supposed to be without direct application to the needs of modern life lead in these days a precarious existence, and they only survive at all by the enthusiasm and devotion of those who profess them*.' Quote from *Journal of Egyptian Archaeology* 14 (1928): 324.

Amarna displayed
Rebuilding Ranefer

The Amarna Visitor Centre progresses. Rising from the floor of the central space is a full-scale partial rebuild of the house of Ranefer. It is still in only rough cement bricks, but the final stage will be to clad it with realistic surfaces. The present ruins of Ranefer's house reach only to around shoulder height. They do not prepare you for the towering scale that comes from rebuilding it to a two-storey height. In its rough initial form the replica already succeeds in conveying Amarna's city-scale aspect.

The full rebuild is only partial. Other parts are to be presented in the condition of a modern ruin or rebuilt to only a token height.

View across the transverse hall. Its rear wall contains the outline of one of the false doors and the wide space into which the replica of Ranefer's main internal door will fit.

The house is surrounded by ample space for panels that will explain the city and the life of the people who lived there. The gaps in the metal side bridges will be filled with glass.

Inaugurating the new vehicle ferry at El-Hagg Qandil on a cold, windy day in March.

Amarna today
THE NEW FERRY

The vehicle ferries at Amarna, one at El-Till and one at El-Hagg Qandil, have struggled to keep going for some time. The latter has also been the scene of a tragedy. In late December 2007, before dawn, a minibus taking relatives of villagers back to Cairo after a celebration plunged into the Nile whilst attempting to drive on to a small privately-owned supplementary ferry at El-Hagg Qandil. Over a dozen women and children drowned, and the ferry boat was immediately impounded.

On March 23rd of this year, a brand-new vehicle ferry was introduced at El-Hagg Qandil. Larger and swifter, and fitted with safety gates on its ramps, it can take even the large tourist buses. It also represents a late triumph of Amun at Amarna, for Amun is its name. Ironically, its sister ferry at El-Bersheh is named the Akhnaton.

The new ferry in action, offering a safer, faster crossing.

Exploring the ruins of Achoris (Tehneh el-Gebel).

Birkbeck College with the Amarna Trust

Between 26 March and 6 April, Lorna Oakes brought a group from Birkbeck College, London, to Egypt for a study tour centred on Middle Egypt. The Amarna Trust, working with Gateway to Egypt Tours, arranged the itinerary, Dr Rawya Ismail guided, Barry Kemp lectured. We began in Cairo, ended in Luxor, and managed a safe journey and packed itinerary in between.

At El-Ashmunein, Dr Rawia Ismail explains the terrain.

Ours was the very first tour bus to board the new ferry at Amarna.

Recent pictures of Amarna taken by the Danish Egyptological Society during their visit on 27 September are viewable at http://tinebagh.wordpress.com

One of the building teams at work in the North Palace, repairing the front part of one of the animal courts on the north side.

The Amarna Trust

The Amarna Trust is registered with the Charity Commission as no. 1113058. Its registered address is

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The Amarna Trust submits an annual set of accounts to the UK Charities Commission. None of its income is used in the furtherance of raising funds. Its overheads are modest.

The objectives of the Trust are:

To advance public education and to promote the conservation, protection and improvement of the ancient city of Tell el-Amarna, Egypt and the surrounding area for the benefit of the public in particular but not exclusively by:

i) creating a permanent facility for study (the research base – The Amarna Centre);

ii) undertaking and supporting field research (and publishing the useful results of such research);

iii) promoting training in archaeological field skills;

iv) providing, and assisting in the provision of, lectures and publications in furtherance of the stated objects;

v) developing displays and exhibitions at a site museum for the benefit of the public and an educational outreach programme for the benefit of pupils at schools; and

vi) working in partnership with the Supreme Council of Antiquities of Egypt to maintain the ancient city for the benefit of the public.

Blown to pieces by explosives early in 2004, Boundary Stela S has been returned to a semblance of how it was when photographed at the end of the 19th century (right). As an exhibit intended for the Amarna Visitor Centre, the model-making firm of Eastwood Cook has taken casts from the surviving fragments and set them into a backing that reproduces the now missing parts, using archive sources (left).

The Trust invites donations from individuals or from corporations. Donations can be earmarked for particular purposes or they can be allocated by the Trust in pursuit of the stated objects of the Trust. The Trust is able to benefit from the present UK tax legislation by reclaiming tax on donations from UK tax-payers under the Gift Aid scheme, which increases the value of the gift by nearly a third. For this it is necessary to accompany each donation with a Gift Aid declaration form or a similar letter. There are further tax advantages for donors who pay at higher rates.

For residents of the USA, donations can be made either to the Amarna Research Foundation or to the Cambridge in America Foundation (both 501(c)(3) tax-exempt organisations) with the request that the donation be made into a grant for The Amarna Trust.

Further information, including downloadable forms, are available at www.amarnatrust.com where you can also donate on-line.

Amarnatrust

Amarnaproject

Horizon is currently distributed free of charge. Should any recipient not wish to receive future issues please email bjk2@cam.ac.uk

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