

CyberScribe 189 – May 2011

Let's start off with something out of this world...literally. There has been a discovery of a well-preserved meteorite crater in the Egyptian desert. Unfortunately, looters are there, as they so often are in Egypt, and many of the pieces have been stolen away. They are turning up for sale in various places, including the ubiquitous eBay...for high prices. The report below came from the "New York Times" (<http://snipurl.com/27thwb>) and gives a nice overview of the finds and of the problems (abbreviated here):



'The ads are for chunks of meteorites, bits of asteroids that have fallen from the sky and are as prized by scientists as they are by collectors. As more meteorites have been discovered in recent years, interest in them has flourished and an illegal sales market has boomed — much to the dismay of the people who want to study them and the countries that consider them national treasures.



“It’s a black market,” said Ralph P. Harvey, a geologist at Case Western Reserve University who directs the federal search for meteorites in Antarctica. “It’s as organized as any drug trade and just as illegal.”

‘The discovery of a rich and historically significant meteorite crater in southern Egypt, just north of the Sudanese border, has shown the voracious appetite for new fragments. Just as scientists appeared to be on the cusp of decrypting the evidence to solve an ancient puzzle, looters plundered the desolate site, and the political chaos in Egypt seems to ensure that the scientists will not be going back anytime soon.

‘The mystery began thousands of years ago with Egyptian hieroglyphs, which refer to the “iron of heaven.” Archaeologists have long debated whether the Egyptians made artifacts from iron meteorites that fell to Earth in fiery upheavals. The main evidence came from ancient knife blades of iron that had high concentrations of nickel — a rare element in the Earth’s crust that was considered a signature of extraterrestrial origin.

‘But doubts grew as investigators found terrestrial sites rich in nickel that ancient peoples could have mined. And scientists in Egypt never found an impact crater and a nearby lode of meteorites.

‘Then in June 2008, Vincenzo de Michele, an Italian mineralogist and former curator at the Natural History Museum of Milan who had explored the Egyptian desert for nearly two decades, was scanning the area on Google Earth when he saw something unusual.

‘A few months later, in June, meteorites from the crater were for sale at a show in Ensisheim, France. In a review, the International Meteorite Collectors Association called them arguably the world’s “most fascinating new iron find.” The Egyptian rocks, it added, “received a lot of attention.”

‘Popular or not, the meteorites were taboo. In Egypt and elsewhere, scientists say, it is illegal without a permit to remove meteorites from a country. Yet scavengers have disseminated them widely: on Star-bits.com, one of many sites that sell a variety of meteorites, the 10 fragments with rich patinas are said to be from Gebel Kamil. The costliest of the 10 — a two-pound rock, just large enough to cover the fingers of a man’s hand — is priced at \$1,600.

‘The black market has exploded in size mainly because of a rush of new meteorites arriving from North Africa and the Arabian Peninsula. Starting in the late 1980s and 1990s, explorers and nomads discovered that dark-colored meteorites stood out against flat, featureless areas covered by sand and small pebbles. And dry desert air helped preserve the rocks from space.’

The CyberScribe supposes that everyone heard how the Bronx Zoo lost its Egyptian cobra...not a trivial thing, indeed. They didn’t seem all that worried, and figured that as soon as it got hungry, she’d show up...and so she did. There were many notes in the press, but the one below by Madeleine Cody (<http://snipurl.com/27u9l3>) seems to be the most pleasant.

It seems that there was a contest to name the vagrant cobra, and the item discusses one viewpoint (abbreviated here):

‘Last Friday, my husband came home with a New York Post article announcing that the young female cobra who escaped from the Bronx zoo, thus becoming probably the most famous snake in the New York area, if not the whole country, had been found and that a contest to name her is now being held. Distractedly looking up from my work, I replied: “That’s silly. It is perfectly obvious that her name should be Wadjet, after the cobra goddess of Lower Egypt!” and proceeded to tell him why at length.



‘Since then the naming contest has made the pages of The Wall Street Journal and The New York Times and I see that other “Egyptologically-minded” readers have already suggested the name Wadjet. Unfortunately, this name does not appear to be a “front-runner” among suggestions so far, at least according to the Times.

‘As it happens, last year I was invited to write an entry on the goddess Wadjet for a forthcoming Encyclopedia of Ancient History, which naturally required lots of enjoyable research. I would therefore like to point out why the name of Wadjet seems so entirely appropriate to me.



Head of Hatshepsut or Thutmose III, ca. 1479-1425 B.C.E. Granite, 10 3/8in. (26.3cm). Brooklyn Museum, Charles Edwin Wilbour Fund, 55.118. Creative Commons-BY-NC

The goddess Wadjet (also called Wadjyt, Ouadjet, Uto, and Edjo in Egyptological literature) appears in ancient Egyptian mythology from the earliest times. Her name means something like “The Green or Fresh One” or “She of the Papyrus Plant.” Associated with Lower Egypt, she is often paired with the goddess Nekhbet of Upper Egypt; together they are the Two Ladies in the second title of the king, representing the crowns of Upper and Lower Egypt. In her earliest form, as a cobra, Wadjet is also the uraeus snake that appears on all Egyptian royal headgear, performing a protective function.



Statue of Wadjet, 664 B.C.E. – 332 B.C.E. Bronze, 20 1/2 x 4 7/8 x 9 1/2 in. (52.1 x 12.4 x 24.1 cm). Brooklyn Museum, Charles Edwin Wilbour Fund, 36.622. Creative Commons-BY-NC

‘Wadjet’s embodiment as a fierce, spitting cobra leads to her inclusion in a group of goddesses, who are all variously identified with The Eye of Re in ancient Egyptian religion. Many of the other goddesses in this group are often depicted with lion heads and therefore Wadjet too could be shown with a lion head from the New Kingdom period on; we have a fine example of this here at The Museum.’

There are loads of really neat do-it-yourselfer type projects that one hears about, but the one below is both wonderful and topical. An article in the 'SunTimes' (<http://snipurl.com/27u9n4>) (abbreviated here, relates how a local man has built a very good-looking copy of a famous ancient Egyptian sarcophagus.

'A (local) man is building a 6-foot-2-inch sarcophagus in his basement, a replica of burial box for the wife of an ancient Egyptian high priest.

"At first, the neighbors and my family thought I was crazy," Jeff Kulesus said.

'An actuary by day, Kulesus said he got the idea to build the sarcophagus as a child. Completing it became part of his list of things to do before he died, along with writing a novel and learning to play the piano.

"When I reached 50, I thought, I'm not getting any younger and haven't done the mummy thing yet," Kulesus said. "So I'm doing this one and it's extremely elaborate. It's also a lot of fun."

'Kulesus said it is trying to make a historically accurate replica of the sarcophagus of Neshkhons, a wife of the high priest Amun Pinedjem II. She lived from 1060 to 949 BC, according to The British Museum.

'The high priest of Amun, the Egyptian king of the gods, had authority equal to that of the pharaoh. Neshkhons was the favorite wife and had authority to act in his name.







Jeff Kulesus paints hieroglyphics on a replica of the coffin of Neshkhons, the wife of a high Egyptian priest

“I’ve learned a lot by doing this project, like how do colors work together,” Kulesus said. “I’m trying to use colors similar to the vibrant color scheme that they (ancient Egyptians) used. These people were really masters at what they did. The art is just fantastic.”

‘His design efforts are complicated because the original sarcophagus was defaced in some areas. Every inch is covered with a hieroglyphic or design, but it is difficult to determine what all the original images are, Kulesus said.

“This is taking me years to make, but it’s really shaping up. It’s stunning,” Kulesus said.’

One of the iconic modern treatments of the Cleopatra meets Antony story has been the wonderful painting by Sir Lawrence Alma-Tadema, painter of many ancient themes. His major painting almost never come up for sale, so it was a major event when this piece appeared on the list to be auctioned off by Sotheby’s in New York.

The article presented here (abbreviated) appeared in 'Art Daily' (<http://snipurl.com/27u9p3>). While the art world expected it to sell for a large sum, in the millions, no one was prepared for what actually happened at the auction! The estimated price was \$3-5 million, but the final price turned out to be a staggering \$29,202,500!



The Meeting of Antony and Cleopatra, 41 B.C. at Sotheby's sale of 19th Century European Art in New York on May 5. Photo: Sotheby's.

'Following the record-shattering price of \$35,922,500 achieved at Sotheby's New York in November 2010 by Sir Lawrence Alma-Tadema's *The Finding of Moses* (est. \$3/5 million), Sotheby's announced that the 5 May 2011 sale of 19th Century European Art in New York would be led by another masterpiece by the artist. In *The Meeting of Antony and Cleopatra, 41 B.C.* Alma-Tadema draws inspiration from Shakespeare's play in depicting the memory of Antony's first encounter with Cleopatra (est. \$3/5 million). Beautifully rendered in the artist's distinctive style, the image took on an iconic status soon after its completion in 1883, and has since served as inspiration for theatrical and filmed versions of the famed story.

'In *The Meeting of Antony and Cleopatra, 41 B.C.*, Alma-Tadema depicts one of the most storied moments in Roman-Egyptian history. Rather than using translations of ancient texts as source material, the artist instead draws

inspiration for his composition from William Shakespeare's Antony and Cleopatra, which was regularly staged in London's theaters at the time.

'Renowned for his expansive knowledge of ancient artifact, the chief sources for the objects that Alma-Tadema illustrates in *The Meeting of Antony and Cleopatra*, 41 B.C. appear to be either from the collections of European museums—where the artist spent countless hours—travels to ancient Greco-Roman sites, or from published surveys of Egyptian culture, art and archaeology that served as source material for many artists. For example, the barge gleams with gold inscriptions in Egyptian hieroglyphs that translate to "The (Female) Ruler", with the name 'Cleopatra' written in cartouche. The Queen herself lounges seductively on her throne holding the traditional crook and flail of a pharaoh, rendered in carnelian and silver.

'Soon after leaving Alma-Tadema's studio, the artist's interpretation of this 'historical' meeting assumed an iconic status. It was published widely in world history books, and later served as important inspiration for theatrical and filmed versions of this famous story, including the legendary 1963 movie starring the late Elizabeth Taylor.'

The next report deals with the presence of coronary heart disease in ancient Egypt. Findings released recently showed a set of findings that suggest that the disease was not that much different than the ones we treat today. The article below from 'Medical News Today' (<http://www.medicalnewstoday.com/articles/221204.php>) (abbreviated) tells us that:

'Coronary heart disease is not a modern ailment, said researchers who after scanning more than 50 Egyptian mummies concluded atherosclerosis was commonplace in these preserved ancient bodies.

'These were the conclusions of a study presented in New Orleans on Sunday at the annual scientific session of the American College of Cardiology (ACC). A report of it also appears in this week's online issue of *Journal of the American College of Cardiology Imaging*.

'Coronary heart disease (CHD), also called coronary artery disease, is a narrowing of the small blood vessels that supply blood and oxygen to the heart. It is commonly caused by atherosclerosis, a disease where plaque builds up inside arteries, making it harder for oxygen-rich blood to get to the heart and other parts of the body.

'The plaque that furs up the inside of the artery wall is made up of fat, cholesterol, calcium and other chemicals in the blood. Over time, as it hardens and narrows the artery, it can lead to serious problems, such as heart attack, stroke, and even death.

'For years, we have assumed atherosclerosis is a modern problem, due to our fast-food diet, sedentary lifestyle, and other environmental risk factors associated with the developed world.

'But it would appear that ancient Egyptians also had this ailment, and they weren't exactly sedentary.



'For the study, on several visits to Egypt, Thomas and colleagues performed whole body CT (computed tomography) scans of 52 ancient Egyptian mummies, including one of an Egyptian princess that lived over 3,500 years ago, between 1580 and 1550 BC, and other mummies from the Middle Kingdom to the Greco-Roman period.

‘On the CT scans they looked for cardiovascular structures and signs of arterial calcifications. To ensure reliable results, the images were interpreted by getting 7 physician to agree on the readings. They also collected demographic data from historical and museum records and estimated age at time of death "from the computed tomography skeletal evaluation".

* 44 of the 52 mummies had identifiable cardiovascular structures, and of these, 20 had either definite (12 subjects) or probable (8 subjects) atherosclerosis (definite meant they could see the artery and its calcification evidence, probable meant they could see calcifications where they expected an artery to be).

* Calcifications were present in a number of arteries throughout the bodies: including the aorta, the coronary, carotid, iliac, femoral and peripheral leg arteries.

* The 20 mummies with definite or probable atherosclerosis were on average older at time of death (average age 45.1 years give or take 9.2 years) than the mummies where they could see the cardiovascular structures but not signs of atherosclerosis (average age 34.5 years give or take 11.8 years).

* Two mummies showed signs of "arterial atherosclerosis with calcifications in virtually every arterial bed".

* The princess was one of two mummies that showed signs of definite coronary atherosclerosis.

‘The researchers said this study is the earliest documented evidence of coronary atherosclerosis in a human, and shows definite or probably atherosclerosis existed in mummies who lived in ancient eras covering a time span of more than 2,000 years.

‘While the CT scans did not enable them to establish the cause of death, the researchers noted that ancient Egyptian scrolls do describe symptoms similar to cardiac chest pain.’

The CyberScribe suspects that many of us watched the TV special where Hawass and his teams of DNA workers revealed the results of testing on royal mummies. His results were widely published and debated, but the followup

was not all that happy. Many DNA workers have pointed out major flaws in both the methodology and the interpretation of results. In fact, some say that nearly all of the findings were bogus.

The report below from 'Nature' magazine (<http://snipurl.com/27udm1>) gives the standings of both sides of this momentous debate (abbreviated here):

'Featured in the Discovery Channel documentary King Tut Unwrapped last year and published in the Journal of the American Medical Association (JAMA), their analysis — of Tutankhamun and ten of his relatives — was the latest in a string of studies reporting the analysis of DNA from ancient Egyptian mummies. Apparently revealing the mummies' family relationships as well as their afflictions, such as tuberculosis and malaria, the work seems to be providing unprecedented insight into the lives and health of ancient Egyptians and is ushering in a new era of 'molecular Egyptology'. Except that half of the researchers in the field challenge every word of it.

'Enter the world of ancient Egyptian DNA and you are asked to choose between two alternate realities: one in which DNA analysis is routine, and the other in which it is impossible. "The ancient-DNA field is split absolutely in half," says Tom Gilbert, who heads two research groups at the Center for GeoGenetics in Copenhagen, one of the world's foremost ancient-DNA labs. "I don't understand people's harshness. This is pioneering work."

'The disagreement stems from the dawn of ancient-DNA research. In the 1980s, a young PhD student called Svante Pääbo worked behind his supervisor's back at the University of Uppsala in Sweden to claim he had done what no one else had thought was possible: clone nuclear DNA from a 2,400-year-old Egyptian mummy. Soon researchers realized that they could use a new technique called polymerase chain reaction (PCR) to amplify tiny amounts of DNA from ancient samples.

'Then came the fall. It turned out that PCR, susceptible to contamination at the best of times, is particularly risky when working with tiny amounts of old, broken-up DNA. Just a trace of modern DNA — say from an archaeologist who had handled a sample — could scupper a result. Once researchers began to adopt rigorous precautions⁴, including replicating results in independent labs, attempts to retrieve DNA from Egyptian mummies met with little success.

"Preservation in most Egyptian mummies is clearly bad," says Pääbo, now at the Max Planck Institute for Evolutionary Anthropology in Leipzig and a leader

in the field. Ancient-DNA researcher Franco Rollo of the University of Camerino in Italy went so far as to test how long mummy DNA might survive. He checked a series of papyrus fragments of various ages, preserved in the similar conditions to the mummies. He estimated that DNA fragments large enough to be identified by PCR — around 90 base pairs long — would have vanished after only around 600 years.

‘The skeptics are unmoved. Without highly stringent controls in place, it's impossible to show that any microbial sequences are from ancient DNA and not from related modern microbes, says Gilbert. "How do you know you've got TB and not some other bacterium with a similar DNA sequence?" He and other critics believe that this entire body of research is based on wishful thinking.

‘After the JAMA study on Tutankhamun and his family, however, the arguments resumed in force. Studies of human DNA from Egyptian mummies are the most controversial of all. One reason is the high profile of the claims. Another is that contamination from modern human DNA is excruciatingly difficult to detect, because its genetic make-up is almost identical to that of a human mummy's. On top of that, restricted access to samples makes it hard to check any claims in an independent lab.

‘The whole episode has only raised eyebrows in the other half of the community. "I'm very skeptical," says Eske Willerslev, director of Copenhagen's Center for GeoGenetics, who co-authored a letter to JAMA disputing the results⁸. His major concern, shared by others, was the method of DNA analysis used. Rather than extracting and sequencing DNA, the team used a technique called genetic fingerprinting, which involves measuring the size of the DNA products that have been amplified by PCR. It is rarely used in ancient-DNA studies, say critics, because without sequence data it is especially difficult to rule out contamination. And on a well-handled mummy such as Tutankhamun, say skeptics, contamination could be rife.

‘The Tutankhamun team carried out many controls, including replication of the tests by different teams in the two labs and comparing the mummy DNA fingerprints with those of the research team to cross-check for contamination. Zink and Pusch add that the samples were taken from within the mummies' bones where, they say, contaminating DNA should not have reached.

‘The Tutankhamun study has left the field more divided than ever, with clear frustration on both sides. "I don't understand people's harshness," Pusch says. "This is pioneering work." He and Zink say that they are sequencing

DNA from the mitochondria and Y-chromosomes of the mummies, and plan to publish these results this year.

‘Zink and Pusch are now negotiating the complex political path towards using next-generation techniques on Tutankhamun and his kin. "We would love to do this," says Zink. "It would absolutely make sense. The problem is to do it in Egypt." With no samples allowed out of the country, they would have to take the sequencing machines to Cairo, an expensive proposition. And there is concern, says Zink, that such work might yield politically sensitive information about the genetic origin of the pharaohs, and whether any of their descendants are alive today. "This goes right to their history."

‘Still, Zink is optimistic that next-generation sequencing will help to bring the fractured field back together. "I think it is really time to bring together the different sides and stop arguing about each other's work," he says. "With next-generation sequencing, people can't just say 'I don't like it'. People have to discuss the work based on the data themselves." Willerslev agrees, offering a rare olive branch. "I think we will find that the believers have been too uncritical," he says. "But the skeptics have probably been too conservative." ‘

One final medically related report dealt with what seems to some to be a wart on the forehead of Queen Tiye, Chief Wife of Amenhotep III. In an article that appeared in ‘Discovery News’ (<http://snipurl.com/27uebf>), it was reported that the venerable Queen might have had an unpleasant facial problem.



The mummified face of King Tut's grandmother, Queen Tiye. A high-resolution image of her face reveals what may be a wart on her forehead.

'King Tut's grandmother, the powerful and beautiful Queen Tiye, might have had an unattractive flat wart on her forehead, according to a mummy expert. Located between the eyes, the small protuberance was found on the mummy of the so-called Elder Lady (KV35EL). Boasting long reddish hair falling across her shoulders, the mummy was identified in February 2010 by DNA testing as Queen Tiye, the daughter of Yuya and Thuya, wife of Amenhotep III, and mother of Akhenaten.

'The skin growth had gone unnoticed until Mercedes González, director of the Instituto de Estudios Científicos en Momias in Madrid, spotted it looking at the mummy during a visit to the Cairo Museum.

"I got a high-resolution image of the mummy's face from the Egyptian museum. From the enlargement, the small growth appears compatible with a flat wart or verruca plana," González told Discovery News. Slightly raised, flat and smooth, these harmless bumps of various colors are hyperplastic epidermal lesions produced by papilloma viruses (HPV). They usually occur on the face, neck and back of hands.

'Described by her husband as "the lady of grace, sweet in her love, who fills the palace with her beauty, the Regent of the North and South, the Great Wife of the King who loves her," she was the most influential woman of Amenhotep III's 38-year reign. Tiye sat by the king as an equal when portrayed in statues -- an achievement unparalleled in that time -- and appeared to be much loved by her husband.

"It has been quite a surprise to find a flat wart between the eyes of such an Egyptian queen," González said.

'According to Frank Rühli, head of the Swiss Mummy Project and Center for Evolutionary Medicine at the University of Zurich, Switzerland, the protuberance is intriguing.

"It could be a flat wart, but we can't tell for sure. Pure fibroma [a fibroid tumor] would be also possible. It would be very interesting to take a sample for histology and DNA," Rühli told Discovery News.

'Although the mummy undoubtedly has a small growth on the forehead, Salima Ikram, professor of Egyptology at the American University in Cairo, is more cautious about labeling the growth -- or even the mummy. "I call her the possible Queen Tiye, as there is some debate as to the attribution. And I think that without further study one should not dismiss the idea that it was a mole that got flattened during mummification," Ikram told Discovery News.'

Well, muses the CyberScribe, even though he has much more material that needs to be discussed, the space allotted for this month's column has been filled.

But wait! There is something else that all of the readers need to check out.

Go to this site: [Google Exodus](#)

<http://www.youtube.com/watch?v=BlxToZmJwdI>

And get a very different take at the Moses and the Exodus story...and try not to laugh too hard.