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Understanding the human brain in ancient Egypt

SOFIA AZIZ

THE brain is the most complex organ in the human body and probably the most remarkable. It allows a person to think, feel and store memories. So why did the ancient Egyptians remove the brain during the mummification process? Did they understand the function of the brain? The purpose of mummification was to preserve the body in its entirety for the afterlife, so was the brain simply discarded?

CT SCAN: A 2 400-year-old mummy about to be CT scanned.

We haven't yet found any symbolic significance for the brain in ancient Egyptian writing. Even the word for brain in hieroglyphs "Ais" is very rare and has only been found written down in one source – the Edwin Smith Papyrus. Research suggests that in ancient Egypt most of the brain's functions were assigned to the heart. Egyptian physicians believed that from the heart, "metu" linked all parts of the body together. Metu can best be described as a series of afferent ducts connecting to each of the body's organs. From some of those organs a second set of efferent metu carried those organs' respective products such as air, saliva, mucus, sperm and excrements to the surface. No metu travelled to or from the brain.

It has been suggested that to the ancient Egyptians the brain was mainly a source of mucus. The two main reasons for this argument are that firstly the hieroglyph for brain includes the determinative "discharge" and consequently could be something worth ignoring or even actively removed to improve the afterlife. The second reason is that it was extracted via the nasal cavity.

The ancient Egyptians left no written description of mummification procedures. The only available papyri talk about what happens to the mummy after the embalming process.

The main ancient source we have is the Greek historian Herodotus of Halicarnassus who visited Egypt around 450 BCE. He states: "The most perfect procedure is as follows. As much of the brain as it is possible is extracted through the nostrils with an iron hook, and what the hook cannot reach is dissolved with drugs."

His account does have some truth in it. The absence of the brain, for instance, has been confirmed by modern autopsies of mummies and indeed natron was used for drying and preserving the body.

Did the ancient Egyptians understand the function of the brain or was it regarded as just a source of mucus or even a packing for the skull? Were the functions of the brain thought to be carried out by the heart? The main sources which provide an insight into ancient Egyptian medicine are the Edwin Smith Papyrus and the Ebers Papyrus.

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EGYPTIAN SOCIETY
PATRON: Keith Grenville

DIARY

UNLESS otherwise stated, meetings are held at THE JENNY MALLETT HALL at St George's Grammar School, Richmond Road, Mowbray, Cape Town, starting at 7.30pm. Entrance for members is free and is R20 for non-members.

Tuesday, April 28, at 7.30pm:
Gillian Russell-Johansen – "Sound – the Forgotten Force?"
Members' platform: TBA.

Tuesday, May 26, at 7.30pm:
Dr Heinz Rüther – "The use of geomatics in archaeology"
Members' platform – Professor Anthony Humphreys: "Rock Art, a Neglected Aspect of Egypt's Heritage"

Tuesday, June 23, at 7.30pm:
John Lombard – "Breaking News, June 2015"
Members' platform: Jean Smith – "The Imhotep Museum at Sakkara"

Saturday, July 25, at 10am:
The TESSA Day School now takes place at the Belmont Conference Centre, Rondebosch **(Please note new venue).**
10am: Welcome and opening address
10.15am: Keith Grenville – "Symbolism in Ancient Egyptian Art"
11.15am: Refreshments
11.45am: ProfAnthony Humphreys – "Art and nature thus allied: Physical Beauty in Ancient Egypt"
1pm: Buffet lunch
2.15pm: Prof Sakkie Cornelius – "Emotions in Ancient Egyptian Art"
3.30pm: Close
Cost: Members pay R190, guests R220, students R100. For bookings and information, email Jean at scarab@telkomsa.net or call 021 557 5082. Bookings close July 20.

WE WELCOME NEW MEMBERS
Amyot, Wendy
Du Sautoy, Monica
Ferera, Elizabeth
Gill, Pam
Losper, Roelien
Metcalf, Emma
Nijeboer, Eddy
Nijeboer, Jannie
Zeiler, Pam

FROM THE TREASURER

When making electronic payments to TESSA, please use your name as a reference in order for it to be captured correctly. NB: If you are not making an EFT into TESSA's bank account – with immediate effect, all cheque deposits are to include an extra R15 deposit fee per cheque.

BEHIND THE SCENES

WITHOUT the following people, monthly TESSA meetings wouldn't run quite as smoothly...
A very big THANK YOU to...
Colleen Cox – Librarian (021 797 3497)
Jackie Weitsz – Assistant Librarian
Mireille Farah – Press and Publicity

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MONTHLY TALKS

THE Western Cape Branch of the SA Archaeological Society offers monthly talks on topics of archaeological interest on the second Tuesday of the month at 6pm at the Astronomical Observatory Auditorium. Guests are welcome, fee R10. See www.archaeologysa.co.za or call 021 689 5921 or 021 788 5620.

TESSA COMMITTEE

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Dianne Norman – Treasurer
John Lombard – Organiser
Bill Weckesser – Coordinator
Elaine Weckesser – Catering

IN MEMORIAM

WE regret to announce the passing of Dr Aart Roukens de Lange. He had been a member of TESSA for the past two years. We extend our sincere condolences to his family and loved ones.

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The Edwin Smith Surgical Papyrus probably dates from the 17th century BCE. Although incomplete, the papyrus provides substantial insight into Egyptian medicine. It demonstrates a structured approach to clinical problems, especially trauma. Most interestingly, case six of the papyrus refers to a number of important characteristics of the brain. The word brain occurs eight times in this papyrus. It describes the symptoms, diagnosis, and prognosis of two patients, wounded in the head, who had compound fractures of the skull. It describes 27 cases of head trauma. Of these four are deep scalp wounds whereby the skull is exposed, and 11 are skull fractures. Great detail is given of the symptoms and signs of head injury. Three traumatic head injuries mentioned are so severe that the brain is actually exposed.

Knowledge of the meningeal membranes surrounding the brain is apparent from the extract, as are brain convulsions. The hieroglyphic word for meninges is *ntnt* with an animal skin determinative. The convolutions are described as ripples which form on molten copper. From the papyrus it is also evident that the role of the spinal cord in the transmission of information from the brain to the lower part of the body is understood.

James Henry Breasted, who translated the Edwin Smith Papyrus, was convinced that the ancient Egyptians knew that the brain was the source of the control of movements of the body. This is because the papyrus discusses a severe head injury which may have affected the limbs. One of the symptoms of this is seen to be a limp. However, the papyrus only acknowledges that a severe trauma to the head could affect the limbs. Furthermore, it states that the limb on the side of the trauma is affected. It should be the opposite limb that is affected since the left side of the body is controlled by the right side of the brain. It is possible of course that mentioning the incorrect limb is merely a scribal error since evidence suggests that the scribe copying the text did not have any medical knowledge.

A CLOSER LOOK: An endoscope was inserted into the mummy for a closer look at the brain tool before attempting removal. PICTURE: DR MISLAV CAVKA

However, if the ancient Egyptians understood that the brain was the most important organ, surely they would not have mutilated and discarded it during the process of mummification. Research suggests that they believed that the heart managed the body. Egyptian medicine was highly specialised, with experts in eye ailments and more, but there seem to have been no brain specialists – which would be surprising if Egyptians understood that the brain was the most important organ. The reason for this could be because of the way the heart reacts to emotions. It has been argued that Biblical phrases such as "pharaoh's heart was hardened" attests to the fact the ancients attributed to the heart a crucial role. However, even contemporary literature uses imagery of the heart to express emotions and the ancient Egyptians did differentiate between the emotional heart "ib" and the anatomical heart "haty".

The Ebers Papyrus is a 110-page scroll written in hieratic around 1500 BCE. It is believed to be a copy of earlier texts and is one of the oldest ancient Egyptian medical documents. It contains 700 magical formulae and remedies with incantations to expel demons that cause disease. "The Book of Hearts" chapter in this papyrus discusses mental disorders such as depression and dementia. This fact is interesting because it demonstrates that some functions of the brain were conceptualised as that of the heart.

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TOOLS OF THE TRADE: This fragile 9cm long brain-removing tool, made of plant material, was discovered in the mummy's skull. PICTURE: DR MISLAV CAVKA.

The focus in the 20th century was to understand and find out how the ancient Egyptians extracted the brain. In 1994, Dr Robert Brier and his team undertook the first mummification of a cadaver in modern times. To remove the brain, the body was placed lying on its back. The experiment revealed that the brain could not have been removed piece-meal with a hooked instrument and had to be broken down in a liquefied form. Furthermore, the cadaver had to be placed head downwards and be gravity assisted to allow any remaining fluid to drain.

A brain-removing probe was actually discovered in 2012 by a Croatian team of researchers led by Dr Mislav Cavka of the University Hospital Dubrava in Zagreb. The tool was not made of metal but of material from plants in the group Monocotyledon which includes types of palm and bamboo. It had been left behind by the embalmers in the skull of an ancient Egyptian mummy dating back 2 400 years. Only one other such tool has ever been found. It was made of the same material and that mummy dated from about 2 200 years ago. This material could have been used as a cheaper alternative to metal.

The focus in the 21st century has to challenge commonly held views on mummification procedures of the brain. Dr Wade's research in 2010 showed that brain extraction did not always take place. He and his team used scholarly literature of 150 mummies dating from various periods in ancient Egyptian history. Additionally, they performed CT scans and produced 3D reconstructions of six mummies. The research was made possible thanks to the development of the Impact radiological mummy database which is devoted to the scientific study of mummified remains.

Regarding the mummification of the brain, the study looked at radiological indications and variations with time and status. A sample of 125 mummies was used. Ninety-two were found to have craniotomies, the method by which a tool is inserted into the nasal passage to break the ethmoid bone in order to extract the brain; six had transforaminal craniotomy which is the removal of the brain via the foramen magnum; and twenty-seven had intact brains.

Brain removal was initially reserved just for the king, and later for members of his family and the highest officials. Eventually it became accessible to the middle class with the earliest signs of their brain removal dating to the Middle Kingdom. For kings it had been as early as the Fourth Dynasty. During the Ahmoside period, King Seqenenre did not have his brain removed and neither did Queen Ahmose Henettmehu. X-rays show similar cranial contents in Amenhotep II and Thutmose IV, suggesting that brain removal was not practised during this period.

Furthermore, the surviving brains were found to be impregnated with natron, which was effective in shrinking and preserving the brain. Regarding the later 18th Dynasty, X-rays show that resin had been poured into the cranial cavity of Yuya, Amenhotep III and Tutankhamun. During the Late Period to the Roman Period the emphasis shifted to external aesthetics of mummification rather than internal mummification.

We have never found a brain that has been removed, so the assumption has been that it was discarded. We don't actually know what was done with the brain once it was removed. In conclusion, a larger-scale study and examination of mummies is needed to understand the variations and complexities of the mummification process in the history of ancient Egypt. Despite all these variations, interestingly, for the ancient Egyptians all that was needed for the deceased to survive in the afterlife was the memory of their names.

Further reading

Brier, B & Wade RS (June 2001) *Surgical Procedures during Ancient Egyptian Mummification, Chungara, Revista de Antropología Chilena, Vol 33*, No 1. Published by Universidad de Tarapaca, Chile.

Nunn, JF (1997) *Ancient Egyptian Medicine*, British Museum Press.

Wade AD, Nelson, AJ (Feb 2013) Article: *Radiological evaluation of the evisceration tradition in ancient Egyptian mummies, HOMO* – Journal of Comparative Human Biology, Vol 64, No 1. Department of Anthropology, University of Western Ontario.

Biography

SOFIA Aziz has a first class Honours degree in human sciences and holds the University of Manchester Certificate in Egyptology. She has visited Egypt more than 15 times. She writes articles on ancient Egypt for magazines and journals, including the magazine *Ancient Egypt* in the UK. Her main areas of interest are ancient Egyptian medicine and bio-medical and forensic studies in Egyptology.

LETTERS FROM SILSILA:

Gebel el Silsila – 2014 synopsis

DRS MARIA NILSSON
AND JOHN WARD

WITH time passing so quickly, combined with an ever-increasing work load on site at Silsila, we need to write a letter that summarises the past season before we can continue to this season's exciting discoveries – which we hope to present to you in the next issue of Shemu.

During the 2014 autumn season it was as if at every corner we turned and in every new wadi we explored, Silsila revealed new and sensational material: from the well-preserved Palaeolithic rock art to the hieroglyphic inscriptions of past generals and workmen, as well as intriguing quarry marks that had never before been interpreted.

Last year was definitely a year of exploration for the team as we continued the systematic approach with the aim to understand Silsila's relationships not only with the ancient quarries for which "she" ("Madam Silsila") was so well known, but also with her surrounding environment.

How did she provide shelter for the workers? How was life for the nomadic tribes and what was their relationship with the wildlife that would have migrated to her shores during the yearly inundations? What was her role as the main boundary between Egypt and ancient Nubia? Was there a cataract that served as a natural boundary between the two? These were all questions that drove the team forward in their work.

Also, it was a year of revisiting the previous publications on Silsila. Ever since the Napoleonic expedition arrived at the shores of Silsila, scores of scholars and early European travellers had walked amongst Silsila's monuments and remarked upon its grandeur and spectacle. But alas, much of the published material is merely a regurgitation of previous excerpts and journal entries, and little information is actually to be found in those original publications to which the others refer. For this reason all monuments are double-checked and re-documented, including the well-known speos and cenotaphs.

During last year, the team discovered not only new and exciting material, but entire infrastructures, such as a Roman road, complete with two bridges. The one bridge is still completely intact, whereas the other had been washed away by an ancient flash flood.

This Roman road provided us not only with a whole new area to explore and investigate, but it also shed new light on Silsila's important role within the overall Roman occupation of Upper Egypt. The road provided the quarrymen with a useful, all-important embarkation and disembarkation point on the far western boundaries of Silsila, complete with its own quay system which is still viewable and traceable today.

Those of you who have followed the latest archaeological news on Silsila will know that the Roman road and its associated infrastructure were not the only great discoveries during last year. The main media focus turned to a small, rock-cut stela located on the east bank of Silsila.

The official press release read as follows: "The team is currently working on the stela (photogrammetry and other digital forms) in order to retrieve more information, but the area of the figure and title of the pharaoh is poorly preserved and eroded due to wind and sand, and a natural fracture in the rock. The stela depicts an unidentified pharaoh presenting offerings to the gods Amun-Ra and Thoth, a combination rarely depicted as a pair. The combination may be due to a lunar aspect of the cult at Gebel el Silsila, a topic which is currently studied by the team. All three figures are rather poorly preserved, but some details can be made out, including the characteristic double feather crown of Amun-Ra, and the moon disc of the ibis-headed Thoth.

The item presented by the pharaoh is no longer discernible. The readable inscriptions are merely titles of the gods, 'Amun-Ra, King of the Gods, Lord of [-], and Thoth, Twice Great, Lord of [-]'. Just below the winged solar disc, adorned with two uraei, the text reads 'Lord of the Two Lands, Behedet (Horus of Edfu)'. The personal text of the pharaoh is limited to 'Lord of the Two Lands' followed by a cartouche and short epithet.

The royal titles and the single cartouche are poorly preserved. The preliminary study suggests a later dynastic date, presumably para or post Third Intermediate Period (1069 to 664 BC)."

This important stela possibly relate to a cultic aspect which is also emphasised within a series of super-imposed relief scenes within the rock-cut temple of Horemheb, which, in accordance with current epigraphic work of Egyptologist Philippe Martinez, changes the history of the most well-known monument of Silsila, and brings it back chronologically to the time of the female pharaoh Hatshepsut.

But for this and many other new interesting things Egyptological you will have to wait until the next issue of Shemu.

Revival for Cairo's Egyptian Museum

THE recent damage to Tutankhamun's gold mask when his beard was accidently broken off then incorrectly reattached by museum staff, symbolises all that is considered not up to professional standards at the Egyptian Museum. As a cluttered, gloomy and visitor-unfriendly space, it is generally regarded these days as no more than a worn-out version of its original splendour when it first opened its doors in 1902.

The museum's new director, Mahmoud Halwagy, who was appointed in October last year, recently announced that big changes are about to happen.

A programme of refurbishment and rejuvenation, generously funded by the state, will in his words, "return the museum to its original status". It is clearly also aimed at showing the world that Egypt is entering an era of stability after several years of political turmoil.

The only changes so far may be improved labels and freshly painted galleries, but future plans include touch-screen computers and audio headsets for visitors, reinforced glass display cases and the latest climate control equipment. There are also outdoor plans: former president Mubarak's burnt-out political headquarters next door will be razed to make way for a tranquil museum garden.

A young curator at the museum, Dr Mohamed Gamal, represents the aspirations of a new generation of Egyptologists. He was allowed to create a small but well-planned exhibition on the second floor.

As he explains: "Rather than just showing object after object, I wanted to tell a story using only certain objects, so that you won't forget everything when you leave."

Gamal would like to let tourists take photos of the artefacts, get curators to tweet about the museum's treasures, and put the entire collection online for browsing.

Some of his colleagues are more concerned about how many items the Egyptian Museum will lose to the two new museums being built in the city, and how this will affect visitors' numbers. The entire Tutankhamun collection will go to the Grand Egyptian Museum (GEM) near the Giza pyramids, while the royal mummies are destined for the National Museum of Egyptian Civilisation (NMEC) in southern Cairo.

The GEM is not yet completed, but it's already a dynamic, stylish space. It is clearly well funded. By comparison, the Egyptian Museum seems like the older, less loved sister.

Dr Tareq Tawfiq, director of the GEM, offers an optimistic view: "I think we have guaranteed that the Egyptian Museum will continue to be a magnet. It has to be relieved of its ballast. Once it has lost the objects that are crowding its halls, it will start to breathe and appear in new glamour. I think then will come the moment when more money will be made available to change this museum into a really fantastic gallery of ancient Egyptian art." – www.theguardian.com.

Donkey milk in ancient times and today

DONKEY milk was hailed by the ancients as an elixir of long life, a cure-all for a variety of ailments, and a rejuvenating skin tonic. These days there is a renewed interest in it, with people suffering from conditions such as psoriasis, eczema and asthma reporting a remarkable improvement in their health after regular use.

Legend has it that Queen Cleopatra VII (60 to 39 BCE), the last active pharaoh of Egypt, took a daily bath in asses' milk to preserve her beauty and youthful looks.

As asses (or donkeys) do not produce much milk, 700 of them had to be available to provide the quantities she required.

The ancient Greek physician Hippocrates (460 to 370 BCE) was the first to write of the medicinal virtues of donkey milk, and prescribed it as a cure a diverse range of ailments, including liver problems, infectious diseases, fevers, nose bleeds, poisoning, joint pains and wounds.

When in Rome...

According to the ancient Roman historian Pliny the Elder (23 to 79 AD), Empress Poppaea Sabina, the second wife of the Roman Emperor Nero, was also an advocate of bathing in ass milk and would have whole troops of donkeys accompany her on journeys.

Centuries later, Napoleon's sister, Pauline Bonaparte was also reported to have used ass milk for her skin care.

Pliny the Elder wrote extensively about the health benefits of asses' milk. In volume 28 of his encyclopaedic work *Naturalis Historia*, he claims that fatigue, eye strain, weakened teeth, facial wrinkles, ulcerations, asthma and certain gynaecological troubles were all afflictions that could be treated with asses' milk.

Over the centuries, donkey's milk continued to be recognised for its medicinal properties.

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During the 19th century, donkeys were used at a hospital in Paris to aid in the recovery of new-born babies with congenital or contagious diseases who did not have access to human breast milk. Stats were kept for six months: of those given cow's milk from a bottle, only 15% survived. Of those nursed at the teat of a goat, 19% recovered. Of those nursed at the teat of an ass, 74% survived.

Donkey milk is the closest known milk to human breast milk, with a high lactose ratio and low fat content. It is rich in vitamins, anti-bacterial agents and anti-allergens. Clinical tests proved that 90% of people who are allergic to cow's milk can drink donkey milk.

These days, donkey milk, milk powder and cheese are scarce and expensive world wide. A female donkey produces an average of only 0.3 litres of milk a day for only half of the year. By comparison, commercial dairy cows deliver 30 times as much throughout the year. A donkey won't produce milk unless it's stimulated by the presence of its foal, and milking has to be done by hand. But then, it is said that drinking 60ml of donkey milk a day is enough to benefit from its health properties. – https://ancient foods.wordpress.com

PICTURE: PATRICIO MENA VÁSCONEZ / WIKIMEDIA COMMONS

Findings at ancient cemetery in Sudan

IN 2002 an ancient underground cemetery was discovered by labourers digging a ditch in the village of Dangeil in northern Sudan. Since then, the site has yielded some interesting ancient artefacts. The archaeological excavations were undertaken jointly by Sudan's National Corporation for Antiquities and Museums (NCAM), and the British Museum. Their findings have recently been published in an ebook titled *Excavations in the Meroitic Cemetery of Dangeil, Sudan*.

Dangeil lies south of the fifth cataract of the Nile River. The cemetery dates back to the kingdom of Kush. Based in the ancient city of Meroe, just south of Dangeil, Kush controlled a vast territory. Its northern border stretched to Roman-controlled Egypt.

Although the Kushites built hundreds of pyramids, this particular cemetery contains no structures on the surface and the tombs are all underground. Its exact size is still unknown.

Like the ancient Egyptians, the Kushites believed in life after death. Goods and foods were usually buried with the dead to sustain and provide for them in the afterlife. At this cemetery, for example, archaeologists found several large jars containing traces of sorghum beer.

DECORATIVE: A faience box decorated with protective udjat eyes, from the Meroitic Cemetery of Dangeil.

PICTURE: BERBER-ABIDIYA ARCHAEOLOGICAL PROJECT

An unusual item discovered was a serving dish consisting of a central bowl with six surrounding bowls attached to it. Similar to a modern-day party tray, it was a convenient way of presenting different foods together.

In another tomb they found a silver ring with an image of a horned deity, thought to be the god Amun. In the kingdom of Kush he was often depicted with a ram's head.

Such rings were used to create seal impressions in pottery, and silver examples were rare. A temple to Amun dating to the same time period as the cemetery is located in Dangeil.

Other finds include a faience box, decorated with what the ancient Kushites and Egyptians called "udjat" eyes. These painted eyes had a ritual role to protect the user from the Evil Eye.

Another tomb yielded arrowheads and the remains of a man wearing a stone thumb ring. In Kush, archery played an important role in society, with its kings and queens depicted wearing stone rings on their thumbs. These rings were used to draw back the bowstring.

The ongoing excavation project by Sudan's NCAM and the British Museum is supported by the Nubian Archaeological Development Organization, a Qatari initiative to promote the cultural heritage in the Republic of the Sudan. – Owen Jarus, www.livescience.com

USEFUL: A bed of papyrus plants. PICTURE: WIKIMEDIA COMMONS

Papyrus plant has modern-day ecological benefits

USA ecologist Dr John Gaudet, one of the world's leading experts on papyrus, has published a new book in which he writes that this ancient aquatic plant can help African countries overcome many of their current ecological and environmental problems.

Gaudet's research on papyrus spans several decades, partly funded by the National Geographic Society. It has taken him to many parts of Africa, including Egypt, Sudan, Ethiopia, Uganda and Kenya. South Sudan is home to the "Sudd", the largest protected freshwater papyrus swamp in the world.

In his book *The Plant that Changed the World* he argues that papyrus is one of the most valuable plants on earth. The largest member of the sedge family of plants, papyrus grows in mats over water where it forms a floating matrix strong enough to support huts, cattle and even small villages. It is a fast-growing plant and can be harvested twice a year.

Its quick growth rate was valuable to ancient Egypt. Papyrus from the Nile Delta provided not only paper and rope, which were also important export items, but it was used for food, fuel and boats as well. Papyrus motifs are found in pharaonic paintings, temples and tombs, as well as in amulet and jewelry designs.

"Papyrus was deeply embedded in their culture, art and architecture," Gaudet explains. "The 25m tall columns of Karnak, based on bundles of papyrus stems, and a temple plan that mimics ancient reed shrines, reveal how close papyrus was to their soul. It was indispensable, well-loved and appreciated."

According to him, papyrus still has a significant role to play today and he is optimistic about its future. It is one of the most effective and efficient natural pollution filters known to mankind. In its cheapest form, natural papyrus swamps can filter wastewater, as in the present case of Lake Victoria. Such swamps also provide habitats for millions of birds, which contribute to eco-tourism in Africa.

More advanced are the methods where a maze of canals and ponds are dug out to allow wastewater to meander slowly. The prolonged passage gives the reed beds more time to filter out pollution.

In his book, Gaudet refers to the success of the Lake Manzala Engineered Wetlands Project near Port Said in northeastern Egypt. This project with its constructed filter beds was started in the 1990s. The goal is to have 2 000 to 5 000 acres of reed beds or sedimentation ponds established along Egypt's coast. It will also see small constructed reed beds in villages and towns all along the Nile to reduce pollution and promote desert reclamation.

See www.fieldofreeds.com. – Rana Khaled, Daily News Egypt