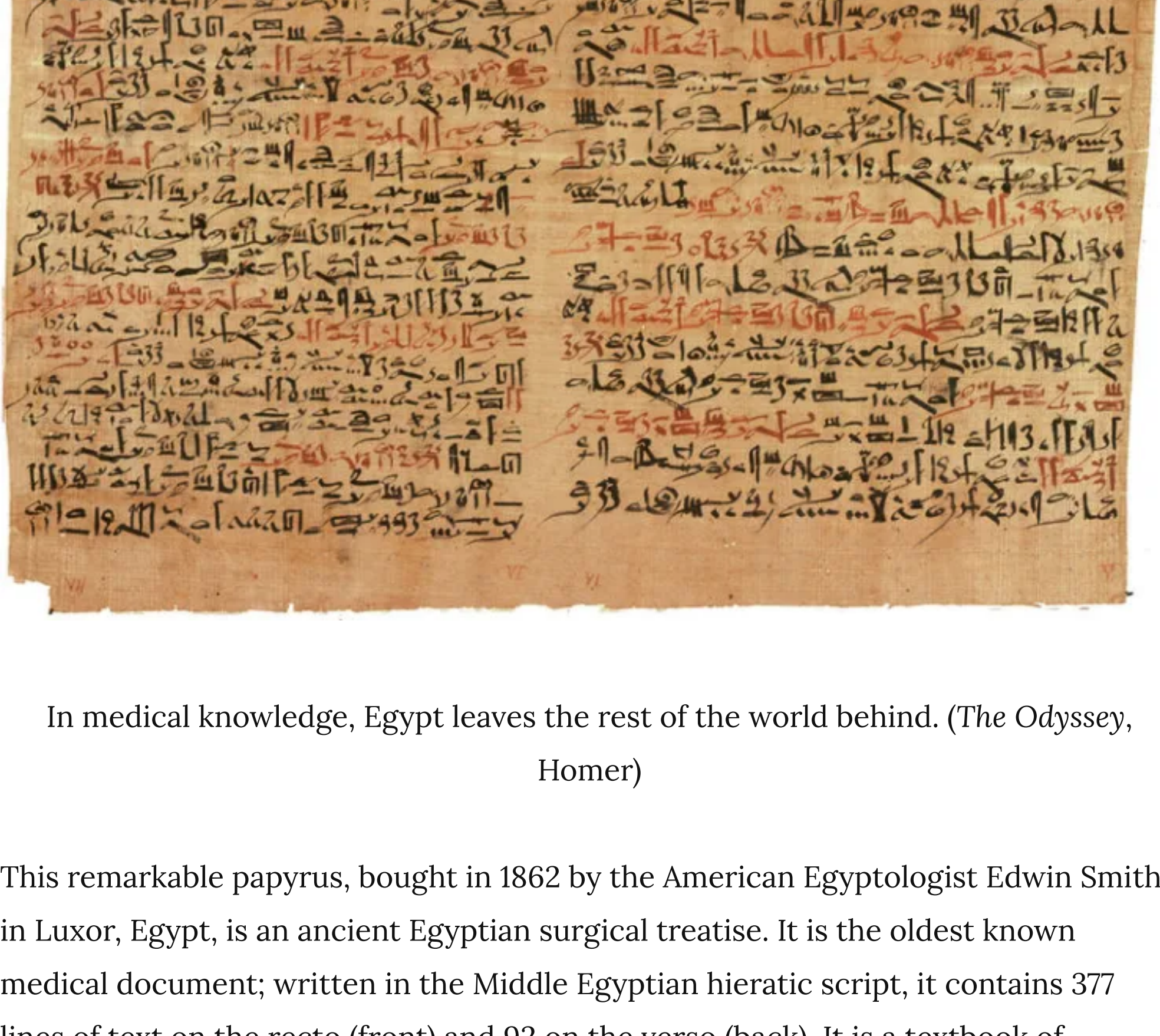


# PHARAONIC NEUROSURGERY: THE EDWIN SMITH SURGICAL PAPYRUS

Posted on Monday, July 10, 2006 by [Mo Costandi](#) under [Archaeology](#), [History of Neuroscience](#), [Neuroscience](#)



In medical knowledge, Egypt leaves the rest of the world behind. (The Odyssey, Homer)

This remarkable papyrus, bought in 1862 by the American Egyptologist Edwin Smith in Luxor, Egypt, is an ancient Egyptian surgical treatise. It is the oldest known medical document; written in the Middle Egyptian hieratic script, it contains 377 lines of text on the recto (front) and 92 on the verso (back). It is a textbook of surgery, containing systematic and highly detailed descriptions, diagnoses, treatments and prognoses of 48 neurosurgical and orthopaedic cases. The papyrus, which is named after Edwin Smith, is now housed in the New York Academy of Sciences.

27 of the cases documented in the Edwin Smith papyrus are head injuries, and 6 are spinal injuries. Each of them is investigated rationally and deductively, with only one of the 48 cases being treated with magic. Although ancient civilizations are generally regarded as primitive, the Smith papyrus demonstrates that the ancient Egyptians had highly advanced knowledge of medicine. Many of the surgical procedures and concepts described in the document are still in use today, and it seems that the ancient Egyptians had knowledge of neuroanatomy that was as detailed and advanced as that of modern medicine. The papyrus even contains a prescription for a wrinkle remover containing urea, an ingredient of modern anti-wrinkle creams.

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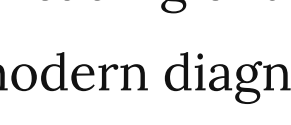
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The cases documented in the Smith papyrus are presented in a format that is very similar to that used by modern physicians. Each case begins with a medical history and physical investigation of the patient, whose wound is categorized as “an ailment I can treat”, “an ailment I shall contend with”, or “an ailment which not to be treated”. Patients with untreatable ailments were given palliative care by the surgeon. Case 25 describes the treatment for a dislocated jaw, in exactly the same way that medical students today are taught to treat the injury:

“ If thou examinest a man having a dislocation in his mandible, shouldst thou find this mouth open and his mouth cannot close for him, thou shouldst put thy thumbs upon the ends of the two rami of the mandible in the inside of his mouth and thy two claws [meaning two groups of fingers] under his chin, and thou shouldst cause them to fall back so they rest in their places.

Analysis of the writing style reveals that the papyrus is a copy made by a scribe around 1,600 BCE (17th Dynasty). The original document was written circa 3,000 BCE (3rd Dynasty), and has been credited to Imhotep, the real father of medicine, who lived some 2,000 years before Hippocrates. (In fact, it is believed that the ancient Greeks knew of the contents of the Edwin Smith papyrus, and used them as a basis for their writings on science and medicine.)

The Smith papyrus was translated into English in the 1920s by [James Henry Breasted](#), who noted that it contained the earliest known use of the word ‘brain’.

 Hieroglyph meaning ‘brain’

A reading of the Smith papyrus reveals the similarity between ancient Egyptian and modern diagnostic procedures. During an examination, the patient was asked questions by the surgeon, who then counted the patient’s pulse and inspected wounds for inflammation. This was followed by careful observation of the patient’s general appearance, during which the surgeon noted the colour of the eyes and face, the condition of the skin, the quality of nasal secretions and the stiffness of the limbs and abdomen.

The papyrus also contains the first descriptions of the cerebrospinal fluid, meninges and the surface of the brain, including the gyri and sulci, as well as a description of sciatica. Breasted writes about how the author of the papyrus described his observations:

“ Like the modern scientist, he clarifies his terms by comparison of the things they designate with more familiar objects: the convolutions of the brain he likens to the corrugations on metallic slag, and the fork at the head of the ramus in the human mandible he describes as like the claw of a two-toed bird; a puncture of the cranium is like a hole broken in the side of a pottery jar, and a segment of the skull is given the name of a turtle’s shell.

He also notes that the author was well aware that damage to certain parts of the brain could affect the function of the body:

“ The observation of effects on the lower limbs of injuries to the skull and brain, noted by the ancient surgeon with constant reference to that side of the head which has been injured, shows an astonishingly early discernment of localization of function in the brain.

Thus, the author associated aphasia with fractures of the temporal lobe, and recognized that quadriplegia, priapism and urinary incontinence could occur as a consequence of cervical spinal cord injury.

Head injuries were characterized in much the same way as they are today:

“ In discussing injuries affecting the brain, we note the surgeon’s effort to delimit his terms as he selects for specialization a series of common and current words to designate three degrees of injury to the skull indicated in modern surgery by the terms ‘fracture,’ ‘compound fracture,’ and ‘compound comminuted fracture,’ all of which the ancient commentator carefully explains.

Case 48 describes Lasague’s sign, a neurological test for lumbar root or sciatic nerve irritation:

“ Thou shouldst say to [the patient]: ‘Extend now thy two legs and contract both again.’ When he extends them he contracts them both immediately because of the pain he causes in the vertebra of his spinal column in which he suffers.

From the Smith papyrus we can see that ancient Egyptian doctors also had knowledge of antiseptic technique and antibiotics. Wounds were bound in fresh meat, which has haemostatic properties. Honey, which has antibiotic properties, was applied to wounds, and opiates were administered as analgesics.

“ “Thou shouldst bind [the wound] with fresh meat the first day [and] treat afterwards with grease, honey [and] lint every day until he recovers.”

More than four millennia before William Harvey ‘discovered’ circulation, the ancient Egyptians were aware that the blood circulated around the body in vessels. They had names for all the major blood vessels and knew of their distribution throughout the limbs. They also knew that the heart was at the centre of the cardiovascular system.

The full extent of the medical knowledge of the ancient Egyptians will never be known. They probably wrote tens or hundreds of thousands of medical texts; only about 10 remain, providing us with a mere glimpse of the medical knowledge of this civilization.

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3 thoughts on “Pharaonic neurosurgery: the Edwin Smith surgical papyrus”

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**Rosemary**  
Wednesday, September 27, 2006 at 6:14 am

I was born in Cairo & spent much of my childhood in the Museum where at that time, I could handle the piles of artifacts on their shelves, which now are sparsely exhibited in cases.

When I grew up and experienced the world in different countries, it shocked and dismayed me to hear the opinions of the “cognicenti” who downplayed the civilizations of the past, without a shred of understanding how they accomplished things beyond the ability of modern man. I thought it stupid beyond belief that modern man should assume that he is the pinnacle of achievement & that nothing of any real value has gone before.

Even in my lifetime, I observe pthat eople have forgotten the fundamental wisdom of how to live in exchange for the seductive novelty of concentrating in the latest technology. In that sence, I see “progressive” as a concept that exists only in our minds, and our performance is a cyclical return to relearn what we have just forgotten.

So I was delighted to read that some have experienced the dawn of intelligence in that they acknowledge previous civilizations may have well achieved levels of knowledge superior to that of our modern world’s. I also think that what will remain of our civilization 4,000 years hence will be of little consequence because we worship money to the extreme, and because everything manufactured is designed to disintegrate, it wouldn’t last as long as a potshard. Imagine what the archaeologists will deduct from the millions of “ritual objects” they discover we left in huge piles everywhere...our old tire dumps will attest to what we truly valued.

Your website is intriguing. Thank you for it. I was delighted to see on the ‘About Me’ page that you were also born in Cairo. My Mother worked with archaeologists who were researching the Coptic guides and translators.

I’m fascinated by how the mind works & observe the amazing animals I have on my farm in the wilderness of Canada. Yaks, highlands, horses, sheep, goats, guanaco, emu, geese, ducks and hens, all have phenomenal thought processes. We are so smart that we cannot speak any of their languages but they can learn ours without effort. Very interesting.

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Pingback: [Neurophilosophy](#)

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**Rosario Basurto**  
Wednesday, August 8, 2007 at 5:29 pm

Dear Madam / Sir,

It has been extremely interesting for me the reading of this article, as it provides a great deal of information in an accessible way. But I want to tell you that my main interest was the image of the papyrus, ait is this what I was looking for, through a google website on egyptian papyrus, and I selected this one because of the subject it is about, and of course, the meaning in terms of historical importance, etc., etc.

The purpose of my search is to find images to illustrate a book about traditional medicine and plants in Latin America, that has educational and cultural promotion aims and will be distributed, free of charge, in America, Europe and Asia, a bilingual english spanish edition. So So, I want to ask for your kind assistance in our task of getting, purchasing this papyrus image for our publication. I mean how cpuld we get the image in high resolution: 300 dpis, A3 size, and to get the permission to be published. This includes information on procedures, conditions, etc. I have already written to the New York Academy of Science, where you say this image is housed, but I have not gotten an answer so far.

We would really appreciate it if you could help us with this.

Congratulations for the blog and the article, again, I say, very interesting and valuable.

I hope you can answer me as soon as possible.

Best regards

Rosario Basurto C.

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