

Abelle Vinel and Jacques Pialoux

# **Ancient Egyptian Medicine and Traditional Chinese Medicine**

Conference given at the R.E.F.S. Congress  
(*Registre Européen et Français de Sinergétique*),  
on 31 October 2005 in Aix-en-Provence

## ***Contents***

	Page
Introduction	2
Principal sources: Papyri and bas-reliefs	3
- The Ebers Papyrus	5
Status of doctors	7
Training of doctors	8
Myths, Incantations and Magic	10
- Protective incantations for the W'ab priest of Sakhmet	11
Anatomo-physiology I: Energetic medicine, the <i>Metou</i>	15
Anatomo-physiology II: Denderah, allegories	21
Anatomo-physiology III: The <i>Haty</i> and the <i>Ib</i>	24
Pathogenic factors	28
Therapy	31
Bibliography	34

## *Introduction*

The medicine of the Ancient Egyptians is a domain for which we possess authentic documents that go back more than four millennia. It enjoyed immense renown and, like the lighthouse of Alexandria, illuminated the ancient world: the doctors of the Pharaoh were summoned to the court by Cyrus and Darius; Homer, Herodotus, Strabo, Diodorus of Sicily all refer to it; Theophrastes and Galen quote Egyptian therapeutic formulas.

In the course of this presentation of Egyptian Medicine, we shall first see what sources are available to us on the subject, and then look at the training and status of the physician in Ancient Egypt.

With this information, we shall address anatomo-physiology and the parallels with Egyptian “energetic medicine”.

Lastly, we shall explore the main pathogenic factors and the remedies applied to ailments as described in the medical literature of the period.

We shall not however deal with the surgical side of Egyptian medicine, for this would require further more specific study based essentially on the content of the Edwin Smith Surgical Papyrus.

## ***Principal sources: Papyri and bas-reliefs***

When we embark on a study of Egyptian medicine, the only written sources available to us are the medical papyri, most of which are written in Hieratic, the mode of writing of the priests. There exist however a number of mural paintings, the possibility of studying mummies, some ostraca and a certain number of bas-reliefs, in particular those on the ceiling of the hypostyle room of the temple of Denderah, which provide some details or corroboration with respect to the knowledge of Egyptian physicians.



*The Ebers Papyrus*

The original source can in all likelihood be traced back to 42 books by Thoth Djehouty, the Greek Hermes Trismegistus. Residing in the libraries of the “*Houses of Life*”, centres of scholarship located close to the great temples, they comprised a sort of cosmology, an official religious encyclopaedia, a “*philosophy*” grouping the three knowledges, Theology, Astrology and Medicine. To these Houses of Life flocked scientists, learned men and scholars, scribes, physician-priests, all philosophers devoted to reflection, research and meditation.

According to Clement of Alexandria, the last six of the 42 works of Thoth dealt with medical science; these bore the following titles:

- *On the constitution of the human body*
- *On diseases*

- *On the organs*
- *On medicines*
- *On diseases of the eyes*
- *On diseases of women*

The works in this library have long disappeared from view, apart from the famous “Emerald Table” of Hermes Trismegistus and perhaps the *Shaï-en-sinsin* (Book of Respirations)<sup>1</sup> dealing with reincarnation. The Book of the Dead itself doubtless also had its origins here, as well as a Latin translation of the Logos *teleios* (The Perfect Discourse), of which the original Greek work cited by Lactantius (Div. Instit. VII. 18) is no longer extant: *Asclepius or Hermetis Trismegisti Asclepius, sive de natura deorum dialogus*.

Attributed to Apuleius of Madaurus, this translation of a dialogue between Hermes and his disciple Asclepius deals in particular with the nature of God: “None of our thoughts,” says Thoth-Hermes to his disciple, “are able to conceive God, nor can any language define him. That which is incorporeal, invisible, formless, cannot be perceived by our senses; that which is eternal cannot be measured by the short yardstick of time: for God is ineffable. He is the absolute truth, absolute power; and the absolute immutable cannot be understood on earth...”<sup>2</sup>. This text provides evidence that the “*Neterou*” which we classically consider to be the Egyptian “gods” are in fact not gods as such, but attributes or expressions of the unique God; thus they would be regarded as Powers of Nature able to influence the health of man.



*Thoth Djehouty*

<sup>1</sup> Text, translation and analysis by P.J. de Horrack - Ed. Klincksieck Paris 1877 and Arbre d’Or – Geneva 2005

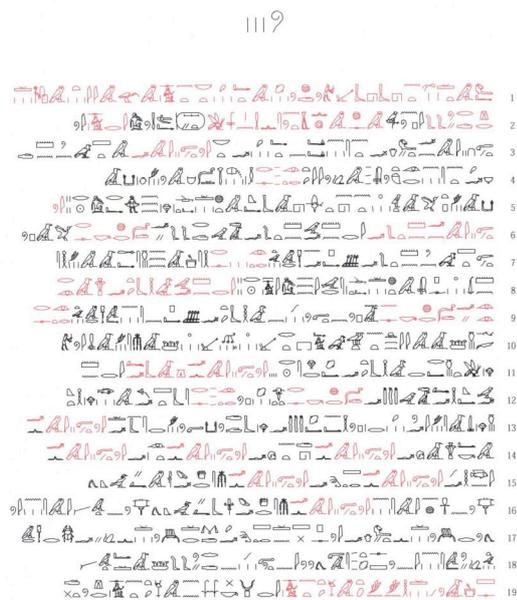
<sup>2</sup> Cited by Ernest Bosc in *Isis Dévoilée ou l’Egyptologie sacrée* – Nice 1891 and Arbre d’Or – Geneva 2005

## The Ebers Papyrus

It is reasonable to suppose that certain of the papyri in our possession correspond to fragments of the books of Thoth-Hermes. This certainly was the opinion of Ebers, a great Egyptologist of the nineteenth century, in respect of the medical papyrus that he bought in 1873 from an Arab who claimed to have found it ten years earlier between the legs of a mummy.

Some fifteen such medical papyri are in existence, the most ancient of which is **the Kahoun papyrus** written around 2000 B.C. The most important of these scrolls are **the Berlin Papyrus, the Edwin Smith Surgical Papyrus and the Ebers Papyrus**<sup>3</sup>.

Now housed in Leipzig, the Ebers Papyrus dates back to 1550 B.C. and is the most complete scientific text known to us, containing copies of treatises going back at least to the beginning of the third millennium B.C.



Papyrus Ebers - Transcription Bernard Lalanne 2003

### *The Ebers Papyrus (see note 3)*

These papyri generally bear the name of the person who “discovered” them, or their place of origin or where they are kept. The actual authors of the medical papyri are never cited<sup>4</sup>. The writing of the papyri is most often attributed to a divine transmission, to which each of them refers.

<sup>3</sup> Transcription, transliteration and translation of the Ebers Papyrus: Dr. Bernard Lalanne and Sylvie Griffon 2003. The "Ebers Papyrus" citations below are taken from this work.

<sup>4</sup> La Médecine au temps des pharaons – p. 216 – Bruno Halioua 2002

This honour is very often attributed to Thoth Djehouty, messenger of Re, **“that excellent scribe, pure of hand, master of purity, who drives away evil, who writes that which is exact<sup>5</sup>...”** Or again to Imhotep, **“great doctor of the gods and of man”**, who lived around 2700 B.C., no doubt in Memphis, the residence of King Djoser, second Pharaoh of the Third Dynasty. Imhotep was deified, today we would say canonised, sixteen centuries later. Vizier, high priest of Heliopolis, he was also the architect of the Step Pyramid at Saqqara. The patron of scribes, magician, healer, he was head of the clergy and the physicians of the time.

All of which brings us quite naturally to the status of physicians and their training in Ancient Egypt.

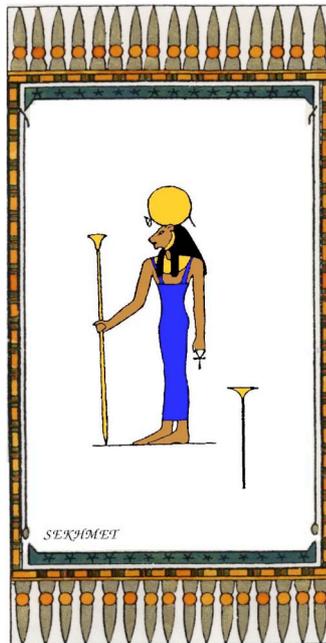
---

<sup>5</sup> Le Livre des Morts des Anciens Egyptiens (chap. 182). Transl. Paul Barguet. 1967

## *Status of the physician*

Three principal types of practitioner coexist in Ancient Egypt:

- **w'abu, physician-priests, doctors at the Court**
  - **zuwnu, doctors of the people**
  - **zauwty, magicians, sorcerers, bone-setters**
- The **w'abu**, exorcist-priests attached to the cult of Sakhmet or of Thoth, ministered to the aristocracy and the Pharaoh himself. The medicine practised by the *w'ab* was based on both religion and the sacred medical texts, for his healing powers were God-given, by Re and his Avatars, and also by his Neterou, the Powers of Nature.



*Sakhmet*

- The **zuwnu**, doctors of the people, “barefoot doctors”, practised their art among the more humble and drew their knowledge from books and their empirical practice.
- The **zauwty**, disciples of Serqet the Scorpion Goddess, at once magicians, sorcerers and bone-setters, combated the invisible powers at the source of inexplicable ailments or scorpion or snake bites, etc. They ministered with the help of magic formulas, incantations, amulets, etc.

## *Training of physicians*

In the words of Herodotus<sup>6</sup>:

**“Their medicine is divided into specialities: each doctor attends to one disease and one alone. Thus the country is full of doctors, specialists for the eyes, the head, the teeth, the abdomen, or again for diseases of uncertain origin.”**

Diodorus of Sicily, for his part, wrote:

**“They establish the treatment of diseases according to fixed written precepts, transmitted by a great number of famous ancient doctors. If, when following the precepts of the sacred book, they do not succeed in saving the patient, they are declared innocent and exempt of all reproach. If they act contrary to the written precepts, they may be accused and condemned to death.”**

While incantations and amulets such as *Ankh*, the cross of Life, constitute an important aspect of medicine, it is also based on the use of precise therapeutic formulas using minerals, plants and animal products in particular. We shall come back to this subject in a moment. Generally speaking, the medical approach is purely symptomatic. It comprises a diagnosis, a prognosis in the case of a curable condition, with the indication of a therapeutic formula, or, in the case of an incurable one, a list of the incantations and amulets to be employed.



*Ankh, the Cross of Life*

A set of rules already existed for the medical profession at this time: under the aegis of Thoth-Djehouty, the personal physician of Pharaoh, “greatest of the palace physicians”, was the chief of all the doctors (as well as the priests) of Upper and Lower Egypt, as we have already seen in the case of Imhotep. Today he would be styled “president of the medical council”.

---

<sup>6</sup> Herodotus II, 84: Herodotus - translated by Andrée Bargout 1964

A particular duty of the physicians at Pharaoh's Court, the *w'abu*, was to write medical books for teaching purposes in the "Houses of Life" and the training of the doctors of the people, the *zuwnu*, by referring to the ancients texts.

The transmission of medical knowledge is performed in the first instance orally, from father to son. In the case of the *w'abu*, the physician-priests, the training can then be completed in the "Houses of Life", veritable universities of the time, which, in addition to practitioners of a high level, employed copyists, scribes able to decipher and transcribe the ancient texts on papyrus.

The principal houses of life were always situated in the shadow of the great temples: for example at Heliopolis, Sais, Memphis, Thebes, etc. Treatment of the students was rough: according to the adage "the boy's ear is on his back, he listens when he is beaten"<sup>7</sup>, there was frequent use of the stick!

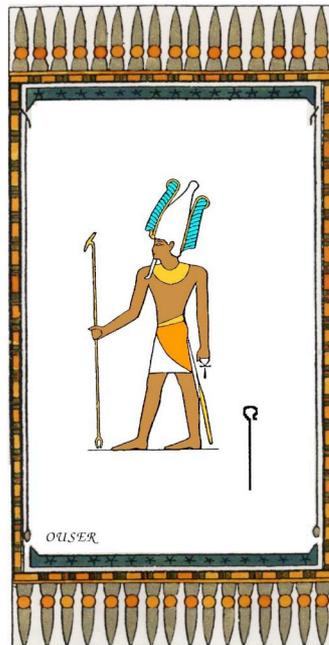
Nevertheless, for the categories of therapists, whether they be physician-priests, "barefoot doctors" or magicians/bone-setters, the religious myth remains present as the background to any approach to disease.

---

<sup>7</sup> La Médecine au temps des pharaons – p. 31 – Bruno Halioua 2002

## *Myths, Incantations and Magic*

The religious myth is in particular based on the theme of “the quarrel between Horus and Set”<sup>8</sup>, between good and evil, a quarrel that followed the death of Osiris.



*Osiris*

Osiris was the son of the Virgin Nout, fecundated by the Divine Spirit, Toun. According to the legend, Osiris was assassinated by his half-brother Set, who then put Osiris’s body in a coffin and cast it into the sea, which carried it to the shores of Lebanon. This is where Isis, his sister-wife, found it, caught in the roots of an acacia, and brought it back to Egypt.

Set however, taking advantage of the absence of Isis, succeeded in getting hold of Osiris’s body, and in order to be rid of him once and for all, cut it up into fourteen pieces which he spread over the delta of the Nile. Isis managed to find all the pieces except one, the phallus which had been devoured by the oxyrinchus, the phagrus and the lepidotus, three fishes allied to Set. She reassembled the fragments of Osiris’s body and, with the help of her sister Nephthys, brought it back to life through magic. Osiris then became the Master of the Douat, the resting place of the dead.

Isis and Osiris had a son, Horus, who in the course of nine labours attempted to avenge his father and reconquer the throne usurped by Set his uncle. Horus, the archetype of the man on the path of evolution, with

---

<sup>8</sup> Chester Beatty Papyrus No 1, XXth Dynasty, reign of Ramses V. Gustave Lefebvre: *Romans et contes égyptiens de l'époque pharaonique*. 1982.

the help of his mother Isis, thus proved the supremacy of the spirit over matter.

## **Protective incantations for the w'ab priest of Sakhmet**

This is the mythical canvas on which the magical incantations for the physician are built. The Ebers Papyrus begins with three of these formulas. In the first, the doctor addresses Re, the Divine Principle itself:

Ebers 1, 1 to 11:

“Beginning of the incantation concerning the application of a remedy on all parts of the body of a man:

“I went out from Heliopolis with the Great Ones of the Great Temple, the possessors (of means) of protection, the sovereigns of eternity, and yea, I went out from Sais with the mother of the gods. They gave me their means of protection...

**“I belong to Re and he said to me: ‘It is I who protect him against his enemies, Thoth is his guide, he who makes it possible for the writing to speak, who makes (medical) books, he who gives the power to the learned ones and the doctors in his retinue, to deliver (from disease). He who is loved by God, him he will keep alive.’ I am a beloved of God, thus he will keep me alive.**

“Words to be recited when applying a remedy to all parts of a man’s body who is suffering, a truly effective method a thousand thousand times.”

Here it must be understood not that the doctor is sick, but that the powers of evil have assailed him and entered his body, thus putting his health in danger. The incantation exists in order to protect him.

The second text concerns the placing of a bandage and the dangers caused by the taints evoking the poison seed of Set. The magic formula, a different incantation, consists in obliging Isis to intervene in favour of the doctor placed in a given condition, similar to that of her son Horus, and to make him believe that she will defend her son. A direct supplication is addressed to her:

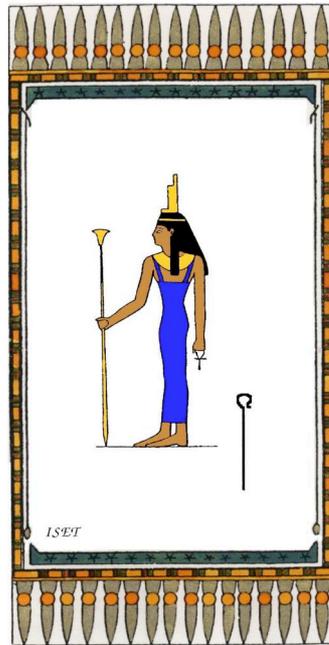
Ebers 2 (1, 12-20) and 2 (2-1):

"Another incantation for the removal of all bandages, so as to be continually delivered by Isis:

**“O Isis, great one of magic, may you deliver me of all that is malignant, bad, red, caused by the maleficent schemings of a god, the maleficent schemings of a goddess, caused by a dead man or woman, by an opponent, man or woman, who comes within me to scheme against me, just as you delivered and just as you released your son Horus and because I entered into the fire and from the water I came out, I cannot fall into the trap of this day.**

“A truly effective method, a thousand thousand times.”

It seems that the fire and the water of which it is question here refer just as much to the desires of the seething Set and his baleful seed as to the fire of the disease and to its secretions that only the help of Isis can overcome.



*Isis*

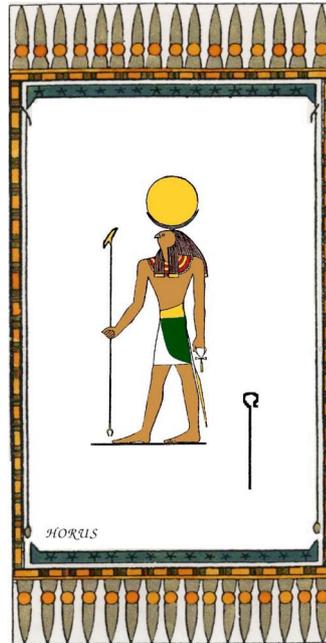
A third text entitled “**Incantation for drinking a remedy**” (Ebers 3 [2, 1-6]), accompanies the taking of medicine. Here too, the doctor is assimilated to this “acting Horus” we found in the previous magic formula and whom Set sometimes manages to mistreat. For preventive magic can be inadequate, and the evil may sometimes assail the doctor, in which case the use of medicine is justified. Such medicine is spiced with threats against Set, reminding him that he was condemned by the Grand Tribunal of Heliopolis and that Horus was acquitted and washed clean of all suspicion of wrong...

In certain texts, the patient is compared to Horus. This is then Horus as a very small child hidden by his mother, unable to protect himself, the “submissive Horus”. Only later in life will he be able to stand up against the forces of disorder. There is thus a similarity of circumstances between the doctor and his patient, they are combating side by side, but the physician never takes his patient’s disease upon himself.

Other texts show the particular relations that bind the patient and his doctor in the face of a common peril; for example the following passage from the Hearst Papyrus (160) intended to ward off a skin disease, which is entitled: “*mechepent*-substance incantation”:

“Flow out! Get out! You that shall have no fruit, get away, you that shall have no arms in your possession, keep yourself (also) away from me! I

am Horus. So back, (for) I am the son of Osiris and my mother's magic formulas are the protection of the different places of my body. (Thus) nothing malignant will develop in my superficial flesh, no *mechepent*-substance will be in the various places of my body. Flow out!"  
 "(Say) seven times. Words to be recited on "*conyza*". (This) is boiled, ground and applied to it."



*Horus*

This incantation is followed by a paragraph entitled "its remedy (i.e. against the *mechepent*-substance)", proposing a series of products with which to anoint the diseased part: "fermented honey, dry oliban, coriander seeds. (This) is ground with the lees of *pa-our*-liquid. Anoint with (that)".

Thus these incantations are designed first and foremost to protect the doctor. Only when he has been protected and immunised by the use of *conyza*, in all probability a plant intended to cast out the evil from the patient's body and thus to keep it away from the doctor, can he put his hand on the taint to be treated<sup>9</sup>; our modern asepsis you might say!

Another formula makes it possible to drive away the *breath-winds* belonging to the morbid breaths of the massacres and incendiaries, those messengers of Sakhmet (Smith 18, 11-16):

**"Back, massacres! No breath will reach me, such that those (the demons) who come in anger against me shall be cast out. I am Horus who passes through the wandering demons of Sakhmet!"**

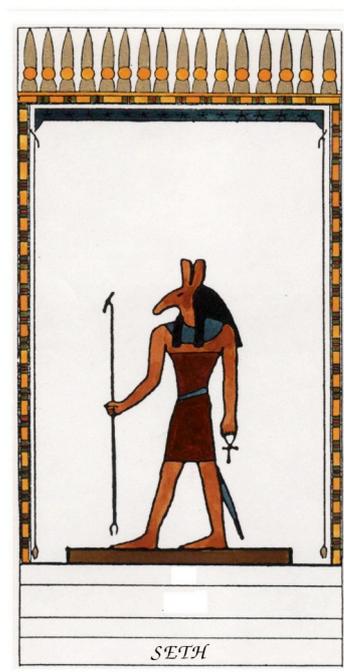
**"O Horus, *ouadje* (sceptre) of Sakhmet, I am the unique one, the son of Bastet. I shall not die because of you (*Sakhmet*)."**

<sup>9</sup> Bardinnet p. 51

“(These) words (are) to be spoken by the man (to be protected) who will hold in his hand a branch of the *khed-des* tree. He will then go out and walk around his house. He will not die as a result of the annual disease.”

The Brooklyn Papyrus for its part gives a very detailed description of serpents, both in respect of their appearance (Brooklyn 28: horned viper ...47a: black-collared cobra ...) and the manifestations of their bites (Brooklyn 60: skin changes ... 72a: swelling... 76: drowsiness, etc.) with the following incantation:

"Remedy to restore the health of one who has been hurt by any serpent: *itjerou* plant (*Capparis decidua*)... Recite upon it the incantation: **“O *itjerou*-plant that grows on Osiris’s side, coming from the bodily secretions of those who are in the Douat, kill the venom of the abominable one (the Red One, Set). May Set fall! May the cat (*Bastet*) cut him up!”**



*Set*

# *Anatomo-Physiology I: Energetic medicine*

## **The *Metou* or *met* ducts**

According to Lefébvre (1952 p. 7), the word *met* has several meanings:

- Primarily it designates the bundles of fibrous tissues that we call ligaments, and the contractile ones that form the muscles.
- Another (the most frequent) meaning of *met* is “vessel” in the sense in which the Egyptians understood this word<sup>10</sup>...

For Jonckheere (1947 p. 17, n 9):

- *met* is an omnibus anatomical word, for the Egyptians referring as much to the vessels, tendons or muscles as to “canalicular” formations in general.

For Bardinet (1995 p. 64, 65)

- The Egyptian word *met* refers to the various ducts and vessels of the body.
- These are not solid cords, but are there only to transmit the dynamic current (that is to say the source of movement, i.e. as a system of conduction). Through the body’s *met*-ducts pass all the nourishing elements, the different bodily fluids and *the breath of life*.

The Ebers and Berlin Papyruses give a number of different descriptions of these *met*-ducts, their locations and their courses.

In Ebers, firstly, we find a description of the *met*-channels relating to the mucous and the blood in particular. Thus there are:

- 12 or 14 *met*-channels for the body fluids:

- Ebers 854b: **There are four *met*-channels in his nostrils: two of these give the *nechat*-secretion, and two give the blood.**
- Ebers 854c: **There are four *met*-channels in his two temples which then give the blood of both eyes.**
- Ebers 854d: **Four *met*-channels divide for the head, course into the nape of the neck and then create a reservoir, a source of *aaa* (doubtless *sebum* and *sweat*), this is what they form on the crown of the head.**
- Ebers 854e: **As to that through which the ears are deaf, there are two *met*-channels which give rise to it and which lead to the root of the eye. A further formulation: as to that through which the ears are deaf, it is this: the temples of man are assailed by a breath as a result of a leak.**

This would suggest that in 854e we are dealing with two of the four channels of the temples described in 854c. We thus have 12 *met*-

---

<sup>10</sup> Might this not also be the one described by the Chinese: the duct for life energy!

channels for the organic fluids, a figure that is redolent of the 12 meridians in Chinese energetic medicine.

However, if the two channels in 854e are distinct from the other twelve, that would then make fourteen *met*-channels in all, having an analogy with the “14 kau of Re”, the fourteen spiritual aspects, the expressions of God in the Universe<sup>11</sup>. With which we are reminded that Chinese energetic medicine also speaks of fourteen meridians: twelve main meridians and two marvellous vessels, *Du Mai*, the governing vessel, and *Ren Mai*, the conception vessel<sup>12</sup>. This then is the hypothesis of choice.

Secondly, staying with Ebers:

- 1 central *met*-channel

- Ebers 855c: ...**a *met*-channel whose name is *the “receiver”* ... gives the fluid to the heart-haty...**

It is tempting to find analogies here, in traditional Chinese medicine, with the marvellous central vessel *Chong Mai*, analogous to “*the receptive*” Earth trigram, but also in connection with the Spleen giving the “fluid” to the heart, according to “the Way of water and cereals”.

**1 central met-channel**  
**Ebers 855c:**  
**a met-channel whose name is**  
***the “receiver”***  
**give the fluid to the heart-haty**



*The “Earth” Trigram, the Receptive,  
the Spleen (Sp), Chong Mai and the Marvellous Vessels of  
Chinese medicine*

Thirdly, Ebers gives a further description, this time concerning the breaths of life and death. Eight channels are described here:

<sup>11</sup> Book of the Dead. Chap. 15 op. cit.

<sup>12</sup> For full details of Chinese energetics and acupuncture, see the “Guide to Acupuncture and Moxibustion” published by *Acupuncture sans frontières Switzerland* for its teaching missions in developing countries.

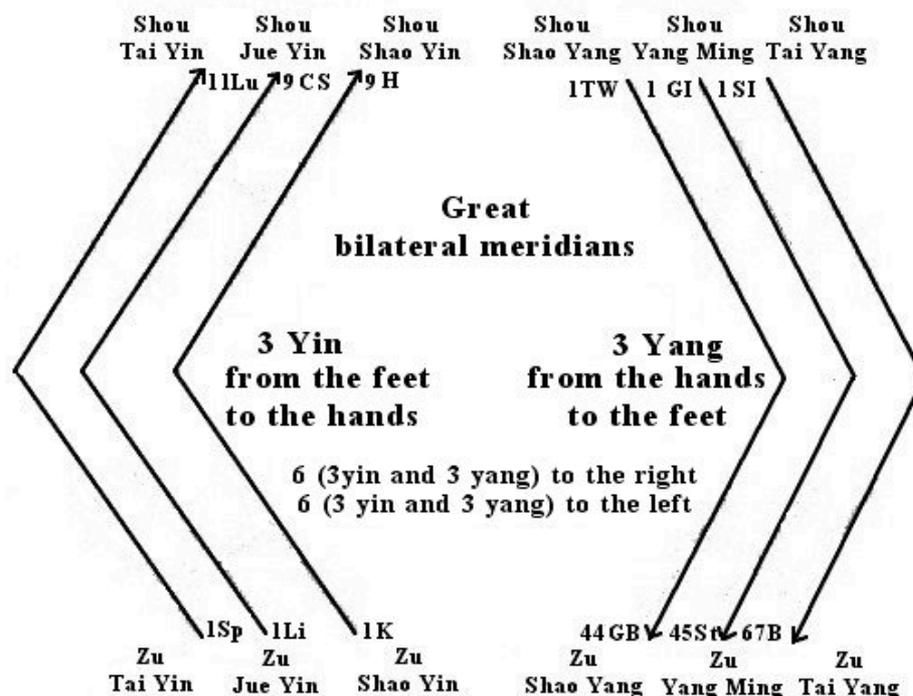
- 8 *met*-channels for the breaths of life and death:
  - Ebers 854f: **There are four *met*-channels for his two ears, and two *met*-channels for his right shoulder and two for his left shoulder. In his right ear enters the breath of life, and in his left ear enters the breath of death. *Another formulation*: in his right shoulder enters the breath of life, in his left shoulder enters the breath of death.**

Here the eight marvellous vessels of Chinese energetic medicine find a curious analogy with the eight *met*-channels of the shoulders and ears for the “breaths of life and death”, 4 yin to the right and 4 yang to the left.

All the more so since the text continues thus:

- 12 *met*-channels for the arms and for the legs:
  - Ebers 854g: **Six *met*-channels lead to the arms, three at the right, three at the left, and then lead to his fingers.**
  - Ebers 854h: **Six *met*-channels lead to the legs, three for the right leg, three for the left leg, down to the soles of the feet.**

Legs and arms, *Yin* and *Yang*: a simple way of describing *the three great bilateral yin meridians*, which in traditional Chinese medicine course from the legs to the arms and the hands... *and the three great bilateral yang meridians*, which course from the hands to the legs and the feet.



The description of the *met*-channels continues with a group related to the bodily products:

- 22 *met*-channels (10 + 12) form a group connected with the liquid and solid products of the body:

- Ebers 854i: **There are two *met*-channels for his testicles: it is they that give the sperm.**
- Ebers 854k: **There are two *met*-channels for the buttocks, one for one buttock, the other for the other buttock.**
- Ebers 854l: **There are four *met*-channels for the liver: it is they that give the fluid and the breath.**
- Ebers 854m: **There are four *met*-channels for the trachea-lungs and for the spleen (also four [*thus eight in all*])<sup>13</sup>: it is they that give the fluid and the breath.**
- Ebers 854n: **There are two *met*-channels for the bladder: it is they that give the urine.**
- Ebers 854o: **Four *met*-channels open up for the anus: it is they that give that which produces the fluid and the breath for it.**

Still in Ebers, but this time with regard to the circulation and the treatment of the *oukhedou*-“perverse energies”, we find another description:

12 *met*-channels for the heart, 22 *met*-channels to distribute the “breath”:

- Ebers 856b: **Twelve *met*-channels are in him (the man) for his heart-*haty*. It is they that give the breath to each place in his body.**
- Ebers 856c: **Two *met*-channels are in him on the surface of his breast.**
- Ebers 856d: **Two *met*-channels are in him for his thigh.**
- Ebers 856e: **... There are the *met*-channels (2?) for the neck that have sustained a hurt...**
- Ebers 856f: **Two *met*-channels are in him for his arms.**
- Ebers 856g:
  - **Two *met*-channels are in him for the nape of the neck**
  - **Two *met*-channels are in him for his forehead.**
  - **Two *met*-channels are in him for his eye**
  - ***Two met-channels are in him for his eyebrows***<sup>14</sup>
  - **Two *met*-channels are in him for his nostril**
  - **Two *met*-channels are in him for his right ear. Into them enters the breath of life.**
  - **Two *met*-channels are in him for his left ear. Into them enters the breath of death.**

The Berlin Papyrus, for its part, confirms this description, still in relation with the *oukhedou*-perverse energies, but with one omission, that of the *met*-channels of the neck, thus reducing their number to 20. In addition, an important modification – twenty-two *met*-channels for the heart, instead of twelve – appears to indicate an error of transcription in Ebers 856b:

- Berlin 163b: **His head (*of the man*) is concerned by twenty-two of the vessels of the man. They draw the breath to his heart-**

<sup>13</sup> See Bardinnet 1995 p.99

<sup>14</sup> Translation of this line omitted in Lalanne, 2002.

***haty* and (thus) it is they that give the breath to each place in the body.**<sup>15</sup>

Thus the twenty-two *met*-channels described in the detail of the Ebers Papyrus<sup>16</sup> would indeed appear to correspond to the twenty-two channels (or vessels) which “**draw the breath to his heart-*haty*...**” and “**give breath to each place in the body**”.

By analogy with what we have discovered above, we are directly reminded, in Chinese energetic medicine, of the 10 functions/organs and viscera and 12 meridians (6 great double bilateral meridians)... i.e. a total of twenty-two functions in all!

However, the contradictions found in both Ebers and Berlin require us to ask the following question: does knowledge progressively fade as time goes on, becoming in part lost, so that only scraps of it subsist, preventing us from completely knowing what the *met*-ducts correspond to: 10 + 12 or 8 + 12?

In effect, looked at from another viewpoint, both Ebers 856b et seq. and Berlin 163b et seq. show a different configuration for the *met*-channels, which is in conformity with **Ebers 854f-g and h as defined above: 8 + 12**. In Berlin there is no mention of *met*-channels of the neck; Ebers, which does speak of them, does not specify their number (we have supposed that there were two as for the other localisations). Are they perhaps synonymous with those of the nape of the neck? In this case their number is indeed reduced to twenty.

In passing we may note a further correspondence with traditional Chinese medicine, when Ebers 856e states: “**The *met*-channels (2?) for the neck have sustained a hurt ...**”. It is common knowledge that the “windows of heaven” acupuncture points located on the neck are the privileged site for penetration by disturbed external energies.

To complete this description of the *met*-channels, both Berlin (163h) and Ebers (856h) draw the same particularly interesting conclusion regarding these channels:

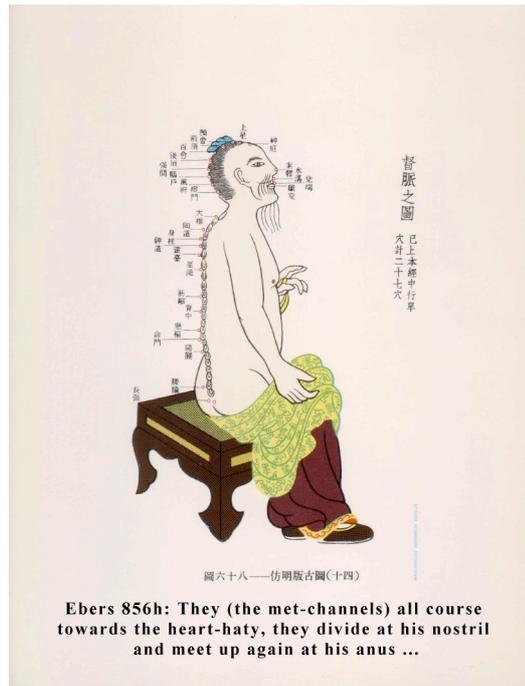
- Ebers 856h: **They (the *met*-channels) all course towards the heart-*haty*, they divide at his nostril and meet up again at his anus ...**

This seems to be an reference to the **marvellous Governing Vessel** of Chinese energetic medicine, *Du Mai*, as the source and estuary of the *met*-channels, whose course in the reverse direction runs from the tip of the coccyx and the anus to the upper gum, to the nose, gathering and **governing, together with the heart**, all the breath-energies of the body!

---

<sup>15</sup> Berlin 163b: Translation by Thierry Bardinet 1995

<sup>16</sup> Ebers 856c to 856g



*Du Mai: The Governing Vessel*

Thus the papyri transmit a global vision of the *met*-channels. But they do not go into detail, neither as far as their description is concerned nor the therapies employed: the only details are certain regions mentioned in passing, interior-*ib*, heart-*haty*, nose, anus, fingers, toes, etc. in relation to two major systems, one for the circulation of the organic fluids, the second for that of the “breaths”.

In the case of the channels for the breaths, their organisation, according to various points of view, indeed seems to be the same, as we have discovered, as that of the energies in traditional Chinese medicine:

- Eight *met*-channels for the breaths of life and of death, analogous to the eight marvellous vessels.
- Six great bilateral *met*-channels, three going to the hands and three to the feet, the same as the six great bilateral meridians.
- Twenty-two *met*-channels for the whole body, analogous, in this case too, to the ten internal functions of the organs and the viscera, and to the twelve external functions of the meridians.

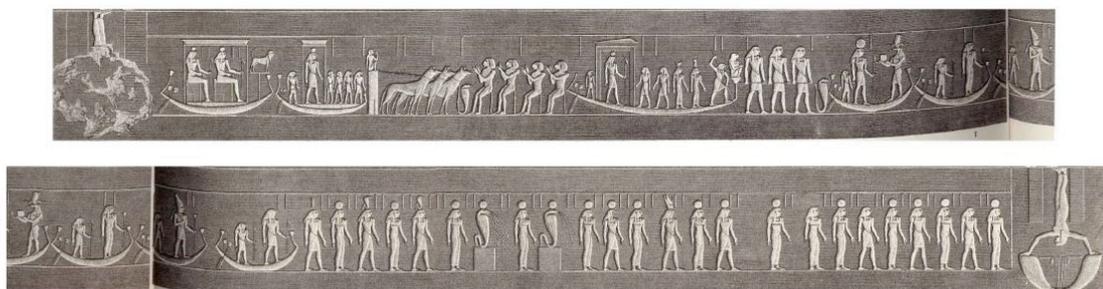
Did the Egyptian doctors have more detailed knowledge of the functions pertaining to each of these ducts? A priori, this does not seem to be the case. But the discovery of new papyri could of course provide a whole new playing field.

## *Anatomo-Physiology II: Denderah*

Let us now see what we can learn from the bas-reliefs of the ceiling of the hypostyle room in the great temple of Denderah<sup>17</sup>. One of the soffits or panels of this ceiling shows, in an allegorical form, but with certain additional details, the constitution of man such as we have seen it described in the medical papyrus texts.

Traditionally, these bas-reliefs have been read from right to left, going backwards from the effects to their causes, from the statement of the apparent to the discovery of that which is hidden in the shadow of the origins. But for a better understanding in line with our present mode of thinking, we chose to read them from left to right, in a development going from the origins of things to their outcome.

In one part of the second panel, (a part represented below on two lines, for greater visibility), *Horus and Hathor*, under a naos, and in a second boat, *Ihy*, their son, Master of music, harmony, the cosmic scale, preside over the creation of Man. With the help of the two rudders, *Sia* of discernment, knowledge and science, and *Hou* of practical application, the Neter who is helmsman of the second boat ensures the application of the laws and the rules of the universe. The male Neter crouching on a column confirms that it is indeed a question of the genesis of Man.



**Ceiling of the hypostyle room - temple of Denderah**

A part of the second panel

Description de l'Égypte - A vol. 4 pl. 19 - Imprimerie Impériale - Paris 1809 - Institut d'Orient - Paris 1988  
© Institut d'Orient / Naguib-Michel Sidhom - e.mail: orient@club-internet.fr

### *Second line of the second soffit*

In a first phase, four primordial powers, four Neterou, are applied in a pattern analogous to the three warmers and the three burners of Chinese energetic medicine:

- Three Jackals chained to a column, from which group emerges a Serpent, are the three Powers of digestion and transformation, to which the four Cynocephales that follow submit, divine Powers

<sup>17</sup> Jacques Pialoux: Denderah – Sept soffites du plafond de la salle hypostyle du grand temple, 2003

governing Thoth, the Messenger of Re, (*analogous to the original, alimentary, respiratory and ancestral energies of the Chinese tradition*).

- Further on, the three male Neterou holding the body of a second Serpent are the three Powers that serve to transmute the four powers already partly digested by the three Jackals, “*in order to make man*”. The two Serpents are his quintessence; *nourishing and protective* Powers of the Being becoming incarnated, they are also analogous to the two primordial serpents, *Kem Atef*, “One whose breath is accomplished”, and *Ir Ta*, his son, the “Creator of the Earth”. In the middle boat, the Neter helmsman, *Thoth* the Ibis, Master of scribes, recalls that science, the knowledge of laws and rules, is applied here to Man in the process of becoming, represented by Horus under a naos, with four Powers, the Neterou that follow, two male and two female, represented by *Isis* and *Maat*, Divine Mother and Consciousness. A ferryman with his pole and the Cynocephalus of Thoth, at the prow, guide him under the aegis of Celestial Law.

There follow four boats and eight intermediate Powers:

- The Neter helmsman in the first of the four boats is present with his two rudders – discernment and practical application – to affirm and direct the application of the Cosmic Law: the eight Neterou that follow are the symbols, archetypes of “*the four met-ducts for the Breaths of Life and the four met-ducts for the Breaths of Death*” of the Ebers Papyrus, but also of the eight marvellous vessels of Chinese acupuncture. As fractals of the eight Frogs and Serpents, the children of *Kem Atef* and *Ir Ta*, Masters of the “Eight Celestial Places” of Egypt, honoured in the city of Khmunu, later to become Hermopolis, these eight Neterou transmit the two Primordial Powers of the two serpents, the *nourishing* and *protective*, *yin* and *yang*, *centrifugal* and *centripetal* energies.
- In the prow of the first boat, too, may be noted the presence of Thoth himself, Messenger of Re, Master of Divine Words, holding in his hands the Cubic Stone, symbol of the Earth and terrestrial incarnation.

Lastly, the 22 Neterou appear, 22 Powers, 10 + 12:

- These constitute the twenty-two Powers, the twenty-two Breaths, through the intermediary of which the two Primordial Powers of the two serpents that we find here again, each on its respective column, express themselves. These are analogous to the twenty-two *met-ducts* that we discovered in the Berlin Papyrus and the Ebers Papyrus:
  - The first ten, nine male and one female, this last giving life as the heart distributes it, are the symbols of the *internal*

*met-ducts* of Man, the functions of the organs in Chinese energetic medicine.

- The other twelve, female, with the solar disc as head-dress, symbolise the *peripheral met-ducts*, analogous to the meridians in acupuncture.

Further pursuing the analysis of the vital breaths, another soffit on the ceiling of the temple of Denderah then deals with their application in the transmission of life: there are 64 breaths, like the 64 parts of the eye of Horus, *Oudjat*, like the 64 codons of the genetic code, and also like the 64 hexagrams of the Chinese I Ching. With this we have ventured from the field of medicine to that of genetics, all the while remaining in the domain of universal mathematics.

## ***Anatomo-physiology III: Haty and Ib***

Part of the Ebers Papyrus constitutes the “Treaty of the Heart” and concerns the relationship between “*Haty*” and “*Ib*”. But what do these two terms signify?

As far as the *haty* is concerned, it appears to correspond to a relatively precise anatomical reality, that of the cardiac muscle, but also to what is described as “in front of the heart”, and to possess perceptible autonomous movements.

In Ebers 854a (99, 1):

**“Start of the physician’s secret: get to know the movement of the heart: Get to know the heart.”**

As regards the *ib* and its relationship with the heart-*haty*, our knowledge of “the way of water and cereals” of Chinese energetic medicine will permit a particular light to be thrown on the content of the Ebers Papyrus.

Some Egyptologists such as B. Long chose to translate *ib* by epigastrium.<sup>18</sup> According to Ebell’s interpretation, as Stracmans points out<sup>19</sup>, the term *ib* designated the stomach. In effect, the *ib* receives the food (Ebers 284 [50, 21]); this is confirmed by a text cited by Piankoff<sup>20</sup>, **“Food for the interior of my body, water for my *ib*.”**

For Bardinet, in conclusion (p. 71): “The *ib* is a whole system. It includes the totality of the body parts located behind the heart-*haty*, in that great hollow of the body forming what the Egyptians call the *Shet*.” This “totality of the body parts...” would appear to indicate the totality of the organs and the viscera.

In this connection, Bardinet raises the problem of the four “*canopic jars*” found in Egyptian tombs in the vicinity of the sarcophagus. In these four jars are placed certain organs or viscera of the deceased which could constitute the *ib*. These organs are entrusted to the four sons of Horus, Imsety, Hapy, Duamutef and Qebekh-sennuef:

- To Imsety, with a human head, was attributed the liver
- To Hapy, the cynocephalus, the lungs
- To Duamutef, the jackal, the spleen and (or) stomach
- To Qebekh-sennuef, the hieracocephalus, the intestines

---

<sup>18</sup> B. Long: Le “*ib*” et le “*haty*” dans les textes médicaux de l’Egypte ancienne p. 483 § Q

<sup>19</sup> Stracmans: BdE 32 (Melanges Mariette) p 125 to 135.

<sup>20</sup> Piankoff: Le “cœur” dans les textes égyptiens depuis l’Ancien jusqu’à la fin du Nouvel Empire, p. 43



To Imsety, the liver  
 To Hapy, the lungs  
 To Duamutef, the spleen or stomach  
 To Qebekh-sennuef, the intestines

A particular detail concerning the liver, lungs and heart is found in Ebers 855d (99, 21-22):

**“As regards anger, which arises in the heart-*haty*, it is a twisting (of the *met*-channels) towards the limit of the trachea-lungs and the liver.”**

This statement, it seems to us, is revelatory of the Egyptian understanding of the “psyche of the organs” such as it is described in traditional Chinese medicine: we know the role of the liver in anger, in connection on the one hand with the lungs (inverted cycle of victory of the 5 Chinese elements), and on the other hand the heart (cycle of generation of the 5 Chinese elements).

Furthermore, Yoyotte<sup>21</sup> cites a complementary text from the canopic jar of Mendes concerning Qebekh-sennuef and the intestines:

**“Qebekh-sennuef... you enrich those that are within you (the intestines)... They are full of that which has come from you. You cause your brothers to live and the flow of the rising of your water does not cease, for the benefit of Osiris-Mendes for ever and ever.”**

Here too, we are reminded of “the way of the water and cereals” in traditional Chinese medicine, with the separation of the pure and the impure by the stomach and the small intestine... the transmission of the pure to the spleen, and also the relationship with the heart, the lungs, and the liver.

In a word, while bearing in mind the primacy of the stomach and the intestine for their role in “the way of the water and cereals”, we can agree almost completely with Bardinet (p.81) when he says:

<sup>21</sup> Yoyotte: Tanis, l'or des pharaons p. 172

“The interior-*ib* is prolonged in all the members, animating them and bringing them the vital force... The *haty*, ‘our cardiac muscle’, is in fact the operating element of the will that is seated in the depths of the interior-*ib*. By virtue of its own power the heart-*haty* sends the dynamic currents to the *met*-ducts, transmits the thought elaborated in the depths of the interior-*ib* and executes it... The interior-*ib* and the *haty* are indissociably linked, and any damage to the one must have repercussions on the other.”

All that is lacking is for the vision of the *haty* as “cardiac muscle” to be specified as the “Blood” function and “*Chen*” function of the heart, the physiological and mental functions. Indeed, Bardinet seems to be implying this when he speaks of the *haty*, “the operating element of the will (*the kidneys* in traditional Chinese medicine) which is housed deep in the interior-*ib*” .

The Ebers Papyrus can then specify the method to be used for examination of the *ib* and the *haty* (Ebers 854a [99, 2 to 5]):

**“As regards the fact that every doctor, every *w’ab*-priest of Sakhmet, every magician, places his hands, his fingers, on the head, on the neck, on the hands, on the place of the *ib*, on the legs, on all (places of the body), the object of his examination is the heart-*haty*, because there are *met*-channels for each his (man’s) body parts, and it is a fact that it (the heart) expresses itself before the *met*-channels (“before” in the sense of on the surface, at the apparent, controllable, level, of the *met*-channels) of each place of the body.”**

A variant of the preceding is given in the Smith Papyrus 1, 12, beginning as follows:

**“If thou proceedest to the examination of a man...”**

Gloss A (Smith 1, 3-9):

**“As to the expression ‘*thou examinest a man*’, this means to perform a general examination on someone, to obtain an overview of (different) things with the *oipé*-measure<sup>22</sup>...”**

Here it is a question of taking the pulses in various places of the body. Did the Egyptian therapists count the pulse rate (63/64 of *oipé*!?) with the help of the clepsydra, the water clock invented under Tutmosis III (18<sup>th</sup> Dynasty: fifteenth century B.C.), and did they establish a quantitative and qualitative account of these pulsations? It is probable, despite the fact that Herophilos, of the Alexandria school (fourth century B.C.), is traditionally considered to be the first to have used the clepsydra for this purpose. But at the present time, we cannot be sure of the facts.

---

<sup>22</sup> The *oipé*-measure is related to the Oudjat eye and its fractions from 1/2 to 1/64.

This very naturally brings us to look at the pathogenic factors and therapy as presented in the medical papyri of Ancient Egypt.

## ***Pathogenic factors***

Four major pathogenic factors are described in the various medical papyri:

- ***Aaa*: bodily secretions – sebum... sweat... cerumen... promote the development of perverse energies**
- ***Setet*: pathogenic beings causing hieratic pain**
- ***Oukhedou*: Demons, “perverse energies” that gnaw at the tissues**
- ***Ouhaou*: secondary to the oukhedou: concretions, pus, tumours...**

The *aaa* are body fluids that may be dangerous in this sense that they can promote certain pathologies.

In Ebers 854 d (99, 10-22):

**"Four *met*-channels divide for the head, course to the nape of the neck and then create a reservoir, a source of *aaa*, which they form on the crown (of the head)."**

According to Ward (1978, p. 108) cited by Bardinnet (p. 121), this would be the sebum.

All in all, it seems that the *aaa* corresponds to various bodily secretions such as sebum, sweat, cerumen, etc. and that these secretions promote the development of parasites or vermin, and also of specific “perverse energies” such as the *oukhedou* of which we shall have more to say later.

According to Ebers (62), in respect of a treatment for parasites:

"Reeds: 1; pyrethrum: 1, (This) is ground finely, boiled in honey. (To be) ingested by the man who has *hererou*(-vermin) within his body. It is the *aaa* fluid that causes that, and it (the vermin) cannot die by any other medicine.

The *setet* are “pathogenic beings”, perverse energies that circulate in the body. Ebers 102 or 296:

**“If thou examinest someone who is under (the effect) of the *setet*, (these acting) as (though he had eaten) un-notched figs of the sycamore, his abdomen is hard as a result of that (the *setet*), he suffers from the entrance of his “*ib*”, and the *setet* that are inside his body cannot find a way out... This should not be transformed into vermin... (If) this is evacuated by him, it becomes comfortable for him.”**

The *setet* thus move around and cause pain: They simply need to be expelled from the body.

In Berlin (142-143). **“Remedy for driving out the *setet* in the affected places... Another remedy to remove the *setet* (from the body) when defecating.”**

As for the *oukhedou*, these are demons that gnaw away the body substance, the same substance that is elaborated by the *blood* (by blending the various elements ingested with the food). “Tainted blood” may however act in the same way as the *oukhedou*.

This gnawing action will give rise to concretions, to obstacles that themselves may be transformed into “*ouhaou*-pus” or local inflammation.

From the therapeutic viewpoint, one can either kill the *oukhedou*, or smash them with the aid of *Nekhbet*, the vulture, symbol of vigour:



*Nekhbet*

Ebers 86: **“Remedy to smash the *oukhedou* that are in the body: fresh (literally, ‘alive’!) bovine meat: 5 *ro*; resin of turpentine: 1/64; melilot: 1/8; juniper berries: 1/16; fresh bread: 1/8; sweet beer: 25 *ro*. Filter and then take for four days.”**

As regards the *ouhaou*, concretions or pus caused by the *oukhedou*, these need to be expelled, extirpated, or killed.

Ebers 91-92: **“Another (remedy) to expel the *ouhaou*, when there is a weight on the surface of the body (the menace of the *ouhaou*) and to kill them truly within the body... Another remedy to extirpate the *ouhaou* that are in the body or (to) kill them: figs: 1/32; salt of the**

Delta: 1/8; fresh bread: 1/8; sweet beer: 25 *ro*. (This) is boiled, filtered, then taken over the day.”

Thus while the *ouhaou* appear as a result of the gnawing action of the *oukhedou*, the latter develop from the fertilising action of the *aaa* fluids, which, as we have seen, are also at the origin of the vermin.

Ebers 138: **“Another (remedy) to drive out the *aaa* that are in a man, kill the *oukhedou*, drive out the injuries (*ouhaou*) that befall the man, tend to the anus and freshen it: *sam* (plant): 1/8; juniper berries: 1/16; honey: 1/32; sweet beer: 10 *ro*. Filter, take for four days.”**

## *Therapy*

“With few exceptions, the difficulty of interpreting most of the drug names proposed by the texts prevents us from speaking of the presumed modes of action of the various substances included in the pharmacopoeia<sup>23</sup>.”

The Egyptian pharmacopoeia is based on minerals, vegetables, and animal and human products or by-products.

Among the animal or human products and by-products, we find: fat and bile of bull or goat, tortoise scales, cow's milk, viscera of fish and crustaceans, animal, insect and reptile droppings, animal and human urine, fly blood.

Several dry or fresh vegetables are included in the pharmacopoeia. Some, such as peas, acacia, juniper, valerian, melilot, barley, dates and figs, turpentine, castor oil, garlic, coriander, mucilages, varieties of rubber, vegetable tar, and so on, are familiar to us, while others are more exotic: the “notched” fruit of the sycamore, oil of moringa, origano, cumin, etc.

In addition, there are numerous plants for which we have no description, and thus cannot be translated: the *sam* plant, the *djaret* plant, the *cheny-ta* fruit, the *peret-cheny* fruit, *sa-our* resin, and so on.

The minerals most commonly used are ochre, alabaster powder, clay, salt of the north, salt of the south and also sea salt, natron, malachite, galena, minium<sup>24</sup> and others.



*Nekhbet*

Ground, kneaded, boiled or raw, almost always mixed with honey or sweet beer, some of these products are left exposed to the dew overnight

---

<sup>23</sup> Bardinet 1995 p. 157

<sup>24</sup> Galena: natural lead sulfide; Malachite: copper carbonate; Minium: lead oxide; Natron: sodium carbonate.

and, filtered or not, are then applied or taken internally, for four days on average.

Various remedies concern internal diseases of the body. These are “emetic” to remove concretions, purify and “cause to fall away all the malignant substances on the surface of the body”:

Fruits and plants are prepared with honey and sweet beer, or composed of fresh paste, fat, honey, wax, etc., to “retain”.

- To relieve ankylosis in old age: natron, beans, oil, fat of hippopotamus, crocodile, mullet or catfish; turpentine, sweet oliban, honey, etc, which are boiled and applied over several days.
- Reed and pyrethrum are preferred for all that is “vermin” (boiled in honey and eaten).
- Headaches are treated with seeds of coriander, bryony, pyrethrum, *sam* plant; natron (ground in fat, honey and wax), resin of turpentine. Pine, juniper, lotus, ochre and malachite are also very much employed (applied externally).
- For dental conditions: ochre, malachite, notched fruit of the sycamore and honey, etc.
- For bruises and swellings, honey may be sufficient, but also clay, resin of turpentine, bull fat, human urine, date wine, malachite, natron, etc. (applied externally).
- For the bones: natron, *ouchebet*-mineral, black flint, bull fat, honey, etc. (applied externally).
- Simple dislocations and fractures are first reduced manually, then splinted and treated by application of fresh meat on the first day, and then fat, honey and vegetable dressings until healed.
- Abscesses are treated with “cautaries”, and then in the same way as for wounds. The latter are stitched and then treated by application of fresh meat, without a dressing or medicine, until the painful period has passed.
- Burns may be treated with black mud, the droppings of small bovines, resin of acacia, barley, etc. (applied externally).

Ricin was particularly prized, the root or seeds being ground and used in multiple ways, to treat the intestines or headaches, skin ailments, disorders of the hair, etc.

A number of texts deal with fumigation. The Egyptians believed that every individual could readily be impregnated by a great variety of nefarious breaths and by the demons and pathogenic substances to which they give rise. The new air with which they are impregnated appears to be intended both to expel them and intoxicate them.

- Fumigations are thus included in the ministrations to be given to the interior-*ib* of a man wounded by a **snake** or a **scorpion**. Here, fumigation is above all directed towards the symptom (abdominal pain) and is intended to restore the breath to the victim’s body.

- For coughs in children: fumigations of “*realgar*”, *men*-resin and of *aaam*-plant, which are ground and placed on hot stones.
- Regularly used in gynaecological treatment, fumigations are then based on turpentine, fat and fresh oil.

Ebers 852 (98, 12-14b): “A fumigation prepared render the odour of the house or clothes pleasant: dry myrrh; *peret-cheny*(-fruit) ; resin of turpentine; rush-nut; wood of *ti-chepes*; *chebet*; reed of Phoenicia; *inketoun*; *djemeten*; *genen* (-part) of the *meniben* (-tree). Grind finely, prepare in a homogeneous mass. Put it on the fire.”

This same preparation with the addition of honey, boiled, mixed and made into pastilles will make the mouth odour pleasant.

Finally, we may note that there is also a recipe against parasites and other undesirable house guests (fleas, snakes), by spraying water of natron.

The application of this pharmacopoeia will however be of value only if the recitations and incantations have been correctly performed.

**All this, of course, constitutes a truly effective method, a thousand thousand times!**

**Abelle Vinel and Jacques Pialoux**

R.E.F.S. Congress, Aix en Provence, 31 October 2005

*Translation : Brian Levin*



## ***Bibliography***

- **Acupuncture Sans Frontières** : Guide d'Acupuncture et de Moxibustion – Ed. Cornelius Celsus Foundation – Vatseret – 1976 Erde (CH) 2001
- **Bardinet T.**: Les Papyrus médicaux de l'Égypte pharaonique – Ed. Fayard Paris 1995
- **Barguet A.**: Hérodote – Ed. Gallimard Paris 1964
- **Barguet P.**: Le Livre des Morts des Anciens Égyptiens – Ed. du Cerf Paris 1967
- **Halioua B.**: La Médecine au temps des pharaons – Ed. Liana Levi Paris 2002
- **Jonckheere F.**: Le Papyrus médical Chester Beatty (La médecine égyptienne n° 2) Ed. Fond. Egyptologique Reine Elizabeth – Bruxelles 1947
- **Lalanne B. et Griffon S.**: Papyrus Ebers. Nouvelle transcription, translittération, traduction – Ed. Association égyptologique de Gironde – 33600 Pessac (France) 2003
- **Lefebvre G.**: Tableau des parties du corps humain mentionnées par les Égyptiens. Supplement to Annales du Service des Antiquités, No. 17 – Cairo, IFAO 1952
- **Lefebvre G.**: Romans et contes égyptiens de l'époque pharaonique. Ed. Maisonneuve Paris 1982.
- **Long B.**: Le "*ib*" et le "*haty*" dans les textes médicaux de l'Égypte ancienne, in *Hommages à François Daumas*, Université de Montpellier 1986
- **Pialoux J.**: Denderah – Sept soffites du plafond de la salle hypostyle – Ed. Fondation Cornelius Celsus – Vatseret – 1976 Erde (CH) 2003
- **Piankoff A.**: Le "cœur" dans les textes égyptiens depuis l'Ancien jusqu'à la fin du Nouvel Empire. Ed. P. Geuthner – Paris 1930
- **Sidhom N. M.**: Description de l'Égypte. (Imprimerie Impériale – Paris 1809) Ed. Institut d'Orient – Paris 1988
- **Stracmans M.**: Les termes *ib* et *haty* considérés sous l'angle métaphorique dans la langue de l'Ancien Empire, in BdE 32 (Mélanges Mariette) p. 125-135 – 1961
- **Yoyotte J.**: Tanis, l'or des pharaons. Ed. Association française d'Action Artistique – Paris 1987