

***De Medicina Aegyptiorum* by Prospero Alpini (Venice, Franciscus de Franciscis, 1591)**

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INTRODUCTION

Prospero Alpini (1553-1616), born in Marostica (Republic of Venice), studied at the university of Padua during the years 1574-1578 and became a doctor in philosophy and medicine (Fig. 1). In 1580, at the suggestion of Antonio Morosini (an illustrious member of the powerful Venetian merchant family), he was appointed to be the physician of Giorgio Emo, the consul of Venice in Cairo. Alpini worked in Egypt from March 1581 to October 1584. The time spent in Cairo was stimulating and inspired his first published work, *De Medicina Aegyptiorum Libri IV (On the Medicine of Egyptians 4 Books)*; published in Venice in 1591, by the publisher Franciscum de Franciscis) (Fig. 2), dedicated to Antonio Morosini, senator of Venice “as a small gift of a small man” and describing “medicine as he had observed personally and presented in 4 books” (1). His stay in Egypt also allowed the publication of *De Balsamo Dialogus* (Dialogue on Balm) dedicated to the reformers of the University of Padua (1591), and of *De Plantis Aegypti* (Egyptian Plants) (1592), dedicated to Giovanni Morosini, the son of Antonio Morosini. These books led to his selection by the University of Padua as reader in simples on May 2, 1594. From 1603 until his death in 1616, he was

also prefect of the Padua Botanic Garden, the first in Europe.

On the Medicine of Egyptians is a work in 4 books (see section “Contents of *De Medicina Aegyptiorum*”), written in easy Latin and structured as a dialogue taking place in the Botanical Garden with his mentor Melchior Guilandinus (Wieland, c1520-1589), prefect of the Padua Botanic Garden from 1561 to 1589. The book opens with a description of the status of Egyptian medicine and of its decline due to Turkish domination, and ends with a description of many drugs, including the Egyptian version of theriac.

CONTENTS OF *DE MEDICINA AEGYPTIORUM*

Book I - 18 chapters

1-4: medical profession; 5-8: geography and climate; 9: body constitution; 10-12: alimentation, drinkables and longevity; 13-18 environmental diseases.

Book II - 16 chapters

1, 3-16: bloodletting alone or in combination with cupping; 2: body constitution.

Book III - 19 chapters

1-11: scarification; 12: on burns; 13: on draining dropsy



Fig. 1 - Portrait of Prospero Alpini aged 31, in a painting of Leandro da Ponte (currently in the Staatsgalerie, Stuttgart).



Fig. 2 - Frontispiece of *De Medicina Aegyptiorum* (1591) by Prospero Alpini.

and pus; 14: extraction of bladder stones without lancet; 15-19: bathing and baths.

Book IV – 15 chapters

1: alternative medicine; 2: drugs for dream visions; 3: decoctions; 4: syrups; 5-7: purgatives; 8-12: theriac; 13: compound medicines; 14: enemas; 15: drugs for fever.

TRANSLATION AND RESEARCH

Fifty years ago, the book was translated into Italian at the University of Rome by Angelo Capparoni, who also edited its Italian translation (1). The long-lasting interest of Giuseppe Ongaro in Prospero Alpini has nurtured the rediscovery of one of the most important physician scientists of those days (2-5), regarding whose literature he has published as a historian of medicine and president of the Prospero Alpini Study Center at Marostica (6-8).

The aim of this present study is to discuss the nephrological aspects of the book – specifically (i) the use of Nile water for renal stones, (ii) the cure of dropsy, (iii) the removal

of bladder stones without incision, (iv) Egyptian nutrition, (v) Egyptian longevity and (vi) bloodletting – in order to expose the status of medical thought at the end of the 16th century in Egypt and in Padua. The final goal is to stimulate other specialists to analyze the chapters on theriac, clysters and bathing.

1. “Ad vitae conservationem aquae Nili fluminis usu, num vino sit utilior necne” (To preserve health Nile water is preferable or not to wine; Book I, Chap. XII)

Alpinus: *All visitors after their arrival in Cairo because of the use of that water (Nile water), develop loose bowels. However, I used to excrete that water either as urine or with sweat. [...] I will not omit to tell you how making use of that water I was cured of agonizing and acute kidney pains caused by stones. Since at the same time I was thirsty, having seen on the windowsill of my room many vases of that cold and pure water open to the air, I avidly took one of them, and then a second and immediately a third one*

and drank all the water contained therein, which was not less than six pounds. Having drunk that water, consumed by pains, I fell asleep. Later I woke and passed a great quantity of water along with five stones of the size of a bean and the pains disappeared.

Guilandinus: *I was pleased to hear from you this example and its outcome, which I value as true, so that everyone must be convinced that the water contains very minute particles, is not very cold and cooked since the Nile waters in that part of the world is [sic] – as referred [to] above – very hot and is made of very fat earth, and does not know the cold.*

Our Comment

Although the Nile water may cause diarrhea, when it is drunk in great quantity within a few minutes, it causes a tremendous increase in urine volume which carries along even stones of the size of a bean. For Guilandinus, the reason for the diuretic effect is to be linked to the particles added to water during the passage of the river through the warm lands of the many countries crossed by Nile before reaching Cairo. However, Alpini, who during his years in Cairo underwent an increase in body weight, wrongly attributed nutritive characteristics to the water, which was in opposition to what was already known (9).

2. “De sectione, qua in hydropsicis et suppurates Aegyptij utuntur” (About incisions used by Egyptians to cure dropsy and suppuration; Book III, Chap. XIII, pp. 102r and 102v)

Here Alpini starts with a synopsis of what was already known on the topic and quotes various authors including Hippocrates (*Aphorism 20*, 6th book, *De affectibus*, *De compositione medicamentorum*), Galen (comments on Hippocrates’ aphorism 26), Celsus, Paulus Aegineta, Aetius, Avicenna, Albucasis, Haly and Rhazes and finally speaks about Egyptian practices:

Alpinus: *In Egypt the most frequent incision is made near the heel, or the ankle, both for ascites and edematous phlegmasia. In both diseases they keep the small wounds open, thus all humour is drained, and being the cause which gave origin to dropsy removed, I saw many persons healed without cutting on the abdomen, although I learned that the latter [operation] also healed many patients. However, many affirm that the scarification at the malleolus is safer as it is that below the heel, thus they make two incisions, one internally and the other externally, thus even the most humid body can*

be dried, as once I personally was able to observe. [However, the risk of gangrene is imminent. In fact Hippocrates advised that after water comes out:] one must anoint the site which allowed fluid emission with warming drugs. He also established to cure ulcers with a warm drug in order to preserve the natural warmth and to prevent it from being extinguished by the cold flow. However, Egyptians neglect the advice, thus many, having their dropsy healed, die for other diseases.

Our Comment

Dropsy can be cured by incisions above the ankle or below the heel. The operation allows all retained fluid to come out and to drain the affected body. Care is needed in avoiding that the small incision remains open. Specific warm drugs are applied. This may minimize the risk of gangrene which may even kill people drained of their dropsy.

3. “Lapides e vesica absque incisione extrahere” (On the extraction of bladder stone without incision; Book III, XIV)

Alpinus: *Their way to extract bladder stones is very useful, since it is achieved without the knife. They extract stones from the bladder by blowing in the penis thus dilating and relaxing the mouth of the bladder so it can allow the transit of the stones forced by the pressure of the air.*

Guilandinus: *I have difficulties in accepting that the mouth of the bladder can be dilated to the extent of letting the passage of stones within, which sometimes are like nuts. So I have doubts about such extraction.*

Alpinus: *At the time I was in Egypt, a certain Arab named Haly was famous for the capability to extract bladder stones without incision, and I had occasion to see him removing various stones from a Turkish condottiero named Horam Bei. He used to take a wooden tube, “longitudine octo difitorum, et latitudinem digiti pollicis,” eight fingers long and one thumb large and, having introduced it in the orifice of the penis, started blowing strongly. Then he closed the opening of the cannula so that the channel was kept inflated and enlarged. At the same time his assistant moved, through a finger in the anus, the stone to the internal orifice of the penis towards the prepuce. At that time the tube was removed from the channel of the penis and because of his dexterity a calculus of the size of an olive stone was blown out. I was near the Turkish leader and in two additional occasions assisted to [sic] the operations, the first on a child*

from whom eight small stones were removed, the other on an adult from whom he extracted a stone of the size of an olive. [...] There were other physicians who adopted this method.

[...] In addition I have learned from a letter of Octavius Roveretus, who has been after me in Egypt for the Republic of Venice, about the method used from Christianus Sajeticus on a certain Christianus Coftus. He used some tubes, made of cartilaginous matter which are easily dilated. He started by introducing the thinnest in the channel of the penis and moved it into the bladder, and by blowing introduced air therein. At this time he introduced a larger and more robust tube and continued to blow air. Subsequently he passed a third and a fourth tube of increasing size. Having dilated the penis and the bladder neck, he moved – with a finger in the anus – the stone to the internal orifice of the penis and forced it into the tube. Finally he aspirated the air and the stone, which sometime breaks, as it happened with Christianus Coftus. In this case a very strong part of the stone remained in the bladder and it was impossible to move it out. The method is however simple to learn and in the hand of a more experienced and more intelligent physicians may lead to better and more useful results.

Our Comment

This passage attracted the interest of Robert Masters Kerrison who read it before the Royal Academy in London on January 7, 1823 (229 years after the publication of *De Medicina Aegyptiorum*) in a paper titled “On the Dilatation of the Male Urethra by Inflation for the Extraction of Calculi From the Bladder, as Practised in Egypt, Near 250 years ago,” which was published in the same year in the *Medico-Chirurgical Transactions* (10).

Kerrison starts by pointing out that the use of air-inflated tubes made with the intestines of animals was not well accepted; however, in the transactions of the society, Sir Astley Paston Cooper (1768-1841), a pupil of John Hunter, had published an extractor superseding all those on the market. However, he felt it interesting to introduce the method described by Prospero Alpini in *De Medicina Aegyptiorum*, a method developed at a time of scanty anatomical knowledge, and when one considers “the severity of the operation of lithotomy, as described by Albucasis and other Arab surgeons, whose writings were a model for the best informed native practitioner in Egypt” (10).

Kerrison points out that he could not get information about the times the distension was introduced, since “I have met with no allusions to it in the writings of the

early Greeks and Romans; nor do Rhazes, Albucasis, Alzarhavius, or Avicenna, record it” (10). Since at that time all medical knowledge was available in books printed in Italy, certainly Alpini had not traced a record before 1591 (the year of publication of *De Medicina Aegyptiorum* in Venice), thus he, for teaching purposes, described the novelty he had seen in Cairo.

Kerrison also reports that Hildanus (Gulielmus Fabricius Hildanus, Wilhelm Fabry von Hilden [1560-1624] in 1646, in “De lithothomia vesicae liber” in *Opera quae extant omnia*, Francofurti ad Moenum, sumptibus Johannis Beyereri, chap. XXVI, p. 755) wrote about inflation of the urethra and quoted Prospero Alpini. Kerrison finally mentions that Hildanus used a forceps, an instrument invented by Marianus Sanctus, an Italian lithotomist, and known as early as 1555. A primacy recognized even by Haller (*Bibliotheca Chirurgica*, Vol. II. 9.181). Finally Kerrison, before concluding, stresses that his presentation before the members of the society of Alpini’s work “is not proposed for imitation in all its parts, it is merely noticed as a point of early surgical practice, which seems to have been forgotten, and is now submitted for the consideration of the profession, at a period when the anatomy of the parts is better understood and when manual dexterity is possessed by many of its members to a degree which has never been surpassed” (10).

Perhaps it should be noted here that Santorio Santorio published in his *Commentary on Avicenna* (1625) a description of an extractor he had devised and the use of which he illustrated to his students, among whom, as he remarked on various occasions, his German students introduced it into clinical practice on their return to Germany (11).

4. On Egyptian nutrition (Book I, Chap. X)

Alpinus: *They prepare their meals using milk, and eat all dairy products. They eat very simple foods. Many of them at lunch and dinner may eat a watermelon or corn bread, which is utilized by everyone. They also use broth made of roots of colocassia, of the bammia fruit, or barley corn or lentils or other legumes or with the green part of the sugar cane, or they feed themselves with grapes, figs, cucumbers and similar. As [a] beverage, the Egyptians, followers of Mohammed, use Nile water, which for its quality is to be preferred to all others.*

Our Comment

Egyptians eat bread, vegetables, fruits and milk or dairy products and drink water, lemonade and coffee. So in *De Medicina Aegyptiorum*, we find one of the roots of the modern Mediterranean diet.

5. On the causes of Egyptian longevity (Book I, Chap. XI)

Alpinus: *Therefore I think that the main reasons which grants [sic] long life to Egyptians is their sobriety and abstention from the abundance of meat [...] the water of the Nile. In fact in Europe by much eating and drinking excessive quantity of wine, inhabitants of Germany and Poland live less.*

Guilandinus: *You say that our life is shorter than that of Egyptians who consume a small amount of meat and drink small quantities of wine and use mainly water as beverage. I think that this is a paradox.*

Our Comment

Egyptians ate what we call a typical Mediterranean diet rich in vegetables and fruit but scarce in meat, and abstained from alcohol and drank water. Since the Egyptians Alpini met were long-lived, he drew the conclusion that a frugal nutrition was the reason for long life. He, indeed, did anticipate many concepts of our present understanding of safe alimentation.

6. On bloodletting (Book I, Chap. I)

In Book I, Chap. I, Alpini explains that practicing physicians, not expert in science, may possess knowledge not yet codified in the healing art, methods perhaps used by physicians of antiquity and passed to subsequent generations of physicians, as is the case for the practice of blood evacuation.

Alpinus: *Should not maximally be praised Egyptians who practice bloodletting through numerous veins never incised by our physicians [in the Republic of Venice]? [Egyptians cut] jugulars, the veins in the nose, in the corner of the eye, on the front and behind the ears, those in the popliteal region and in many other parts of the body. What kind of physician will be the one neglecting that the cuts of those veins is very useful to cure numerous diseases?. [...] What to say about the cutting on the arteries which is practiced not less than that on veins to evacuate with certainty blood in many diseases? [...] And what to say about scarifications of ears, neck, occipital region, lips, nostrils, and malleolus?*

Our Comment

This is just an introduction to this topic. Alpini was very impressed by the many sites for bloodletting used by the Egyptians: sites, which were unknown in the territory of the

maritime Republic of Venice, but which allowed physicians to achieve the goals that bloodletting was prescribed for. This is just a small example of the many pages Alpini devoted to bloodletting, a practice which he later imported into the Republic of Venice.

DISCUSSION

Firstly, *De Medicina Aegyptiorum* is a great report on a country visited over the centuries by generations of voyagers, including Italians, in whom the book revived an interest. As indicated in the dedication, Alpini had written the book at the request of, and in obedience to, his mentor Melchior Guilandinus, and reported on “the region, sky, climate, lifestyles and character of the inhabitants, physicians and diseases which are numerous over there, the popular medicine and the plants.”

The book was epochal in many respects. For example, one should consider that Alpini had learned at the world’s best university and from the most famous teachers of that time – which is to say that he was at the forefront of medical knowledge at the time, where a few years later Santorio Santorio introduced measurements in medicine. Alpini had been a brilliant student and was pleased to acquire experience in Cairo, a place where medicine was in a declining phase following Turkish domination (started in 1517), which did not care about the level of medical training in the past. Alpini had a great interest in botany, since in Padua, the university had developed the first botanical garden for research, teaching and cures. His natural curiosity regarding plants and their curative properties was nurtured by observing plants unknown to him and by learning about the local use of their parts for medical purposes. He acted not as the arrogant laureate of Padua University but as a clinician–scientist capable of observing and understanding the novelties and the richness of medical traditions. For example, in bloodletting he was pleased to learn about the many sites used by practitioners in Egypt, sites which surpassed in number those used in Padua, and which proved useful to drain the quantity of blood to be evacuated for particular diseases. The chapters on urinary stones are unique. One should notice the quantity of Nile water he drank to treat the colic, which was “not less than six pounds.” But also to meditate on the inflation of the male urethra to remove bladder stones without the knife, a practice of great importance as attested by the presentation of the paper of Kerrison (10) and also by the quotation in Hildanus’s book on stones.

The book is also “the opera prima” (first work) of a man who impressed his name on the halls of the Gymnasium Pa-

tavinum, the most important university of that time, where thousands of students came from other countries to study, attracted by the prestige of the Paduan curriculum and tolerant religious atmosphere. A university which continued to flourish even at the time that Venice's power on the sea had started to decline after losing at the battle of Famagusta against the Turks (August 4, 1571) due to the intelligent politics of reformers who supported the university through a citizenship tax and a tax on any cart entering the city.

Alpini has been defined as a precursor of medicine practiced in embassies (12) in a paper where Alpini's date of death is wrong. One might even adhere to this hypothesis, however, keeping in mind that this and his subsequent books indicate that this is at least a limited view of the work of a great scientist who flourished in Padua when measurements were just being started in medicine. The fact that he started as a physician for the consul Emo in Cairo was merely due to chance. Indeed Alpini had a considerable interest in curing patients and throughout his life looked for novelties, utilizing the opportunities provided by his academic role.

De Medicina Aegyptiorum was praised by Herman Conring (1606-1681) who demonstrated that there was no ancient Egyptian medicine, but just a medicine derived from Greek roots. He used Alpini's *De Medicina Aegyptiorum* to support this view and wrote "as abundantly established from the outstanding work of Prospero Alpino" (13). Indeed Alpini therein emerges as a supporter of the tradition of antique Egyptian medicine and its mythical roots.

However, it is important that Alpini was also interested in the Egyptian medical practice of his time, being very much intrigued by bloodletting, purging and theriac.

In 2007, Nancy Siraisi (14) wrote extensively on *De Medicina Aegyptiorum*, Alpini and his relations to Mercuriale, Wieland, Gian Vincenzo Pinelli and Giovanni Tommaso Minadoi from Rovigo, in her attempt to outline an innovative history of Renaissance medical learning. Siraisi links historical works from doctors with those of historians of the 15th and 16th century, during the birth of medical humanism. For example it should be noted that the house of Gian Vincenzo Pinelli (an acad-

emy) was very instrumental to the call of Galileo Galilei at the University of Padua, and it was there that the initial set of university presentations by Galileo were prepared (7). Siraisi attributes to Alpini many first discoveries and even stresses that "his exposition of simple and compound medicines recognized – and exploited – the valuable knowledge of Eastern medicinal plants possessed by Egyptian practitioners" (14). She further points to the importance of those physicians the Republic of Venice used to send to the Venetian centers of commerce in the Ottoman Empire. Any consul before leaving for his oriental destination was allowed to select a physician, a surgeon and an apothecary and pay for them. This was also the case for Alpini, who in Cairo took care of "Europeans, Copts and occasionally Turkish officials" (14).

CONCLUSIONS

Alpini was a physician–scientist who flourished at the University of Padua at a time when the university was the most important in Europe, although the economy of the Republic of Venice was far from optimal. His *opera prima* disclosed his talents which in the very meritocratic University of Padua were appreciated by the reformers of the university who allowed his genius to develop.

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