REVIEW

MAGICAL MOMENTS IN MEDICINE
Part 2 - Greek Medicine

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As a prelude towards medicine as a science, the Egyptians acquired a veritable knowledge of diseases and were able to document them on papyri using hieroglyphic writing. Egyptian Medicine influentially reigned supreme for hundreds of years, but the decline came when superstitions and supernatural beliefs started to overshadow common sense and rational thinking. The succulent fruit of Egyptian Medicine that had blossomed from the beautiful flower of civilisation eventually rot, but the seeds of scientific medicine had dropped and got buried in the sands of time, where they would lie dormant for the next 2500 years. It was then that they would germinate and come to flower in the Hellenic Islands of Greece, ushering in the next glorious era of Medicine.

A small coterie of dauntless men - the world's first philosophers - initiated the Greek phenomenon. They dared to *think* and find answers to questions like "What is man and what is Nature?" They thus awakened the human conscience and supposedly bestowed a "time-axis" which is that momentous period in history when philosophers from Greece, prophets from the Middle East, Confucius and Lao-tse in China and Buddha in India created the first great religions and philosophies of mankind, which would form an integral part of Medicine.

The Greeks constructed their infrastructure of Medicine based on two corner stones: *careful observation and rational thinking.* These were sane replacements for blind belief and superstitions which had tainted Egyptian medicine. In the process, two major cults of medicine took form in Greece. The Aesculapian cult or temple medicine, was based on religious counsel and exhortation, coupled with psychotherapy. The empirical medicine, on the other hand, was based on rational thought.

It would be rather inappropriate to talk about the Aesculapian cult without mentioning a word about its founder, Aesculapius, himself. Apollo, the Greek god, in a fit of jealous rage supposedly slew his wife, an earth nymph called Coronis. Her son Aesculapius, however was saved - *in utero* - by Chiron (from which the word chirurgeon is derived), the kindhearted and much accomplished centaur, who later taught him the healing art. Aesculapius, in Homeric days, was a mere mortal, though an excellent physician. After innumerable instances of miraculous healing (including resurrection of the dead), he became an immensely favourite national hero. But his earthly popularity was matched with an equally great measure of heavenly displeasure. He incurred the wrath of the gods, who felt that their prerogatives were under threat. Consequently, Zeus, who considered him as a meddlesome chiropractor, struck him with a thunderbolt so that the gods could retain their power over life and death. Aesculapius was elevated to godhood somewhere around the ninth century.

Among the many children of Aesculapius, Telesphoros, Panacea and Hygeia deserve mention since they dedicated themselves to carry on his good work. Panacea, (which has become an English word synonymous with cure-all or a universal remedy) was believed to possess knowledge of all earth's remedies. Telesphoros symbolized hope and was considered responsible for recovery, while Hygeia (hygiene) tended and fed serpents, which were considered givers of health. Community health was her portfolio.

Picture 1: Aesculapius - The 'mortal' immortal father of Greek Medicine.

The Aesculapian temples were centres of faith healing. They were erected on scenic locations with natural springs and other facilities like stadiums, theatres and bathing pools which are not very much unlike our spas and the modern day health farms situated on hill slopes among lush greenery, complete with a gym, swimming pool etc. Scores of miracle-hungry people made a bee-line to these temples, where they were first screened. The hopeless cases were subtly sent away, which made the cure-rate statistics look impressive. Parturient women were also denied admittance, since birth and death were not acceptable in the premises. The filtered fortunates went through a battery of elaborate procedures, including subterranean baths and foodless diets, before being robed in fine, white linen garments and brought before the mammoth statue of Aesculapius[1]. Possibly drugged by a sneaky dose of a narcotic sedative, the patients drifted off to sleep in the evening, firmly believing that the god would be giving them their healing recipes that night in their dreams. In fact, it is said that dreams were the mainstay of the Aesculapian cult. It is also said that masked priests masqueraded before the drowsy patients in the wee hours of the morning, just to make sure that they "saw" Aesculapius in the flesh. Their cures then came over the air, as if from nowhere, presumably broadcast by ventriloquism. This procedure has not been without slips. One masked (but impatient) "Aesculapius" is reported to have forgotten his act and yelled at his patient: *"Thou art healed. Now pay the fee!"* Nevertheless, most of the patients left next morning, often cured, (or at least thinking so) after making offerings of gold or in kind, according to their means.

The temples also had snakes and other tame reptiles which were trained to lick the ulcerated and swollen wounds of the patients. Enterprising businessmen came out with "snake-biscuits" which were bought by the patients and fed to the snakes in return for the favour. Talking about snakes, (and shuddering even at the thought), I must declare that serpents have had a unique place in History as well as in Medicine. Coming out of the ground, which possesses many healing substances, the snake is supposed to have medicinal powers, including endowment of immortality. Perhaps, after all, Eve was not entirely at fault eating the Forbidden Fruit, considering the fabulous faculties fabled of her accosted friend at the Garden of Eden !

***Picture 2**: The original Aesculapian wand, with a single entwined serpent - the true symbol of the medical profession.*

***Picture 3**: Caduceus, the winged wand of Hermes with a pair of serpents. Erroneously considered synonymous with the Aesculapian wand.*

The staff of Aesculapius, around which a huge serpent lies entwined, has become representative of the healing art and is considered the true symbol of the medical profession[2]. However, this has been frequently and erroneously confused with Caduceus, the magical wand used by Hermes to open the doors between the gods and men. This wand is with wings and usually shows a pair of entwined serpents[3].

The empirical medicine, on the other hand was more rational. It considered disease as a dysfunction of the body and used diet, herbs and drugs in treatment. Diagnosis formed an important part. Nomadic physicians called *periodeutai* and military surgeons practiced this form of medicine. They were said to be proficient in the art of *pronoia* (? pronounce) whereby they rattled off detailed descriptions of the illnesses of patients even before their clients themselves could utter a word, thereby impressing many a gathering at the town square.

One man who practised this form of medicine and who would later go down in History as the Father of Medicine was Hippocrates[5]. Little is known of his personal life. He was born on the Greek island of Cos in c. 460 B.C. and died in Larissa c. 377 B.C. His father was a medical practitioner and he apparently grew up in a medical atmosphere. But it is rather amazing to observe that this great man, like Homer, Christ and Socrates, never wrote a word ! In fact, the *Corpus Hippocraticum*, which contains seventy two volumes, was compiled almost a century after his death by Egyptian scholars. The scholars themselves were commissioned by a book-loving Pharoah, Ptolomy Soter (323-285 B.C) who wanted to bring out a complete, authentic edition of Hippocrates' teachings. It is believed that these scholars in their zealous over-enthusiasm, collected every scrap of writing which had a Hippocratic stamp on it and ascribed it to the mentor. Only less than a third of the treatise is definitely credited to Hippocrates. Whether or not he inspired the rest is anybody's guess. But the book definitely gives us an idea of the advanced state of medical knowledge in ancient Greece, Hippocrates' perspective of disease as a natural process which developed in logical steps and most important of them all, the concept of treating the patient as an individual, whose constitution would react to disease in its own way.

According to Plato, Hippocrates had several students attached to him (for a fee, of course) who followed him in his rounds and learnt the art of diagnosis, prognosis and treatment. After this training, they became free to practice medicine which had much competition, with doctors even resorting to unethical behaviour to woo their patients. Hippocrates had some caustic castigatory advice for them.

Hippocrates, however, was human and bound to err. One grave mistake that he made was to surmise that the body consisted of four humors namely blood, phlegm (brain), yellow bile (liver) and black bile (spleen). It is thought that he came to this conclusion, perhaps, after observing the four layers formed by clotting blood. It took a long time for physicians to get disillusioned of this theory.

While Hammurabi legislated medical codes by law, Hippocrates proposed a moral code for doctors. The Hippocratic Oath[6], (which in present times has frequently become a *hypocritic* one !), is considered the laurel wreath and the crowning glory of his work and in essence states that a good physician must first be a good and kind person. But again, controversy exists as to the authorship attributed. Textual analysts believe that it was the family code of conduct of a medical society called the Asclepiads, to which Hippocrates belonged. In those days, knowledge transmission was from father to son, which is supposed to be the reason for one of the clauses, which states that the student must support his teacher. But whatever it was, it is certain that Hippocrates' reputation as a doctor, together with the noble provisos laid down in the oath, made it an exalted charter of therapeutic code and ethics, accepted by the entire medical profession worldwide.

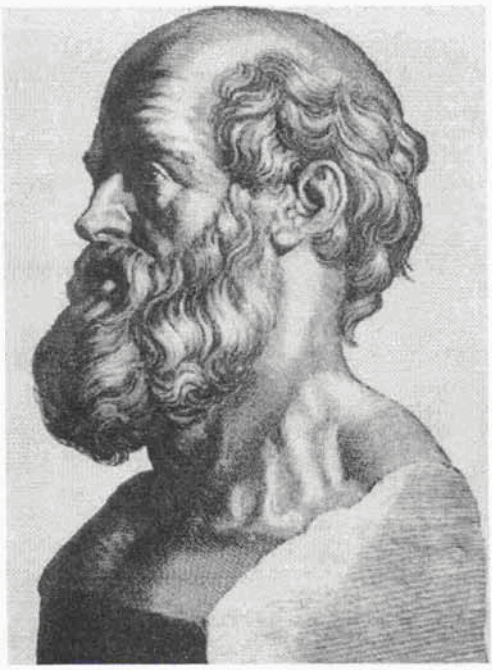
Most of us know Aristotle as a philosopher, but Hippocrates apart, he was the man to make a powerful impact on medicine. He served to organise the facts learnt by the Greeks into a system with a logical infrastructure, prompting Charles Darwin to call him the "world's greatest natural scientist". But unfortunately, many of his speculations and conclusions were inaccurate. He decided - without even dissecting the human body - that the heart was the body's nerve centre and the brain was a bloodless mass of earth and water, whose sole purpose was to regulate the heart. Observing maggots in dunghills and moulds formed on hardening dew, he concocted the theory of "spontaneous generation" whereby creatures were spontaneously brought forth. The fact that King Alexander the Great of Macedonia was his student made things worse, since these inaccurate theories were propagated across the globe through the influence of his world-conquering pupil and perpetuated right till the 19th century when Pasteur called his bluff.

There were several others who also made significant contributions towards medicine but are less known. Heraclitus of Ephesus, who lived in the 3rd century B.C. is considered to be the first true anatomist. He discovered the prostate and named the duodenum (from duo - deka - dactylos or 12 fingers which is the length of the duodenum). He is also acclaimed to have made the distinction between blood vessels and nerves and sensory from motor nerves. After carrying out the first methodical investigation of the brain, he is said to have declared that dreams were a retreat into a personal world and not a journey into supernatural spheres. Alcmaeon of Croton, a student of Pythagoras, laid down the foundations for veterinary medicine by performing animal dissections and was the first to make a distinction of arteries and veins from blood vessels. Parmenides of Elea declared that heat loss was the cause of death. Diogenes of Apollonia pursued a career in comparative anatomy. The pump had just been invented and Erasistratus was quick to surmise that the heart was a modified pump. He is credited with the discovery of the tricuspid valve.

The world's first immunologist was a product of Greece. Mithridates Eupator[4], the paranoid King of Pontus, who lived in ceaseless fear of death from his adversaries, tested poisonous substances on criminals and then downed some of it himself, in ever increasing quantities. He, therefore, became immune against them and unwittingly paved the way for the science of immunology.

Picture 4: *Mithridates Eupator, King of Pontus (132-63 B.C), possibly the world's first immunologist.*

Medical proficience brought a lot of prosperity to ancient Greece. Cyrene island exported bales of *silphos*, which was a spice as well as a medicine. Theriaca, was a exalted drug named after a snake-bite epic written by Nicander, a popular Greek doctor. This wonder drug, according to its manufacturers, was an universal antidote for just about anything. It is said that when Claude Bernard, the famous 19th century physiologist, was a drugstore apprentice, the pharmacist let him into a little secret about Theriac. Thereafter, dumping all the leftovers and unsalable drugs into a big jar and mixing them up thoroughly to create the wonder drug was no sweat



Picture 5: Hippocrates, the Greek physician. (460 B.C. to 377 B.C.)

The Hippocratic Oath

I swear by Apollo the Physician, by Asclepius, by Hygenia, by Heal-all and by all the gods and goddesses, making them witnesses, that I will carry out, according to my ability and judgment, this oath and this indenture. To regard my teacher in this art as equal to my parents; to make him partner in my livelihood and when he is in need of money to share mine with him; to consider his offspring equal to my brothers; to teach them this art, if they require to learn it, without fee or indenture; and to impart precept, oral instruction and all the other learning to my sons, to the sons of my teacher and to pupils who have signed the indenture and sworn obedience to the Physician's Law, but to none other. I will never use it to injure or wrong them. I will not give poison to anyone though asked to do so, nor will I suggest such a plan. Similarly, I will not give a pessary to a woman to cause abortion. But in purity and in holiness, I will guard my life and my art. I will not use the knife on sufferers from stone, but I will give place to such as are craftsmen therein. Into whatsoever houses I enter, I will do so to help the sick, keeping myself free from all intentional wrong-doing and harm, especially from fornication with woman or man, bond or free. Whosoever in the course of practice I see or hear (or even outside the practice in social intercourse) that ought never to be published abroad, I will not divulge, but consider such things to be holy secrets. Now if I keep this oath and break it not, may I enjoy honour, in my life and art, among all men for all time; but if I transgress and forswear myself, may the opposite befall me.

Picture 6: The Hipprocratic Oath, whose authorship is doubtful, but allegedly ascribed to Hippocrates.

and the farmers were supposed to have gladly gobbled up the potpourri, often getting irate when their stocks ran out.

The Greeks recognised the need of the social responsibilities of the doctor and created the post of a city medical officer for public health and advice during epidemics. Some of the towns established public *"jatreia"* which was something like the modern polyclinic. In some places, a health tax was levied to maintain government dispensaries. Medical officers were frequently also assemblymen with political responsibilities and the records state that they discharged their dual duties quite satisfactorily.

Ancient Greece also housed the earliest scientific schools. Archimedes, Euclid, Herophilus of Chalcedon, Father of Anatomy and Erasistratus were all teachers in the Museum (meaning home of the muses) founded in Alexandria in 331 B.C. The place was reputed to have had one of the best libraries in the world, with a collection of well over half a million volumes, but unfortunately was burnt down in an ethnic uprising in 295 A.D. The world's first clinical school and university, were also established here and had laboratories and a cafeteria. Organised anatomical dissections were first practised here which brought in a new concept that the seat of disease was the organs of the body and not the humors as postulated by Hippocrates.

Greek medicine remains, till today, one of the most significant landmarks of western civilisation and the ancient Greeks will always have a noteworthy spot in the annals of Medicine. They assimilated the medical knowledge of the Egyptians, Babylonians and all the neighbouring countries but were sensible enough to rationally analyse the information, discarding elements like magic. Although mythological beliefs were part of the system, their approach was sensible, naturalistic and had some scientific basis. The eventual outcome was objective observation of the patient, revised concepts of diseases and the evolution of a *humane* human physician who understood not only the disease but also the patient as an individual on a mortal scale and his own commitment and mission on earth on a moral scale.

In our epic odyssey on the historical road of medicine, we have just about reached the half-way mark, even in this, the second episode. That is because Hippocrates is separated from Imhotep of Egypt by a time span of over two thousand years, which is roughly the same duration separating Hippocrates and Pasteur. The next half of the journey would be unraveling the events of the past two millenia and so keep those seat belts on and your eyes peeled, while ruminating on these Hippocratic aphorisms:

" Life is short, the art long, the occasion fleeting, experience fallacious and judgment difficult. "

" You must not only do the proper thing, but do it at the right time. "

" Whoever is to acquire a competent knowledge of medicine ought to have the following advantages : a natural disposition; instruction; a favourable position for study; early tuition; love of labour; leisure. First of all a natural talent is required, for when Nature opposes, everything else is in vain; but when Nature leads the way to what is most excellent, instruction in the art takes place, which the student must appropriate to himself by reflection, early becoming a pupil in a place well adapted for instruction. He must also bring to the task a love of labour and perseverance, so that the instruction, taking root, may bring forth proper and abundant fruits... Physicians are many in title, but very few in reality..."

Next : Roman Medicine