

# MAGICAL MOMENTS IN MEDICINE

## Part 3: Roman Medicine

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According to the historian Livy, a plague appeared in Rome (somewhere around 293 BC) causing great turmoil and distress in the land. When all available local remedies proved futile, they had to turn to their neighbours for help. An urgent SOS call was dispatched to Greece, which brought Greek ambassadors in a vessel. The story has it that the Aesculapian snake had also quietly boarded the ship and travelled as a stowaway until they reached Rome, when it escaped and swam to a little island in the middle of the river Tiber<sup>1</sup>. The plague then vanished without a trace and the island where the snake landed became holy ground where a temple was soon erected. Rome had received her first overseas doctor.



**Picture 1.** The stowaway snake stepping out of the ship

'All roads lead to Rome', they say. This may be factual or figurative. But surely, one such road which led to Rome was from Greece. This is evident from the fact that a lot of Greek doctors headed for Rome after the 'plague miracle'. We do not know whether the reason for this exodus was pleasant living and working conditions or better financial rewards. But we do know that they were greeted with hostility by the local medical men. A man called Cato, the Elder, a diehard Roman, totally opposed to Greek doctors and their treatment, prevented his followers from consulting with the immigrants, whom he dubbed as *graeculi delirantes* meaning 'the raving Greeks'. This man ardently believed that cabbage juice was a cure-all remedy which could heal anything from ulcer to cancer and in the process, killed his own wife and son, by his stubborn stupidity! The best treatment he had for a dislocation was a recitation of a medical abracadabra which went like this: "*Huat hana ista pista, sista domina damnaustra luxato*". However, it was only a matter of time before these 'charlatans' were accepted in the fold, but the Romans made

sure that the Greeks changed their approach from an ideological one to a more practical one.

The xerophyte who proved that he could survive and succeed against all odds, even under extreme conditions of torrid antagonism and animosity, was a man called Asclepiades. This dynamic, vibrant and charming young Greek had had sound training in Athens and Alexandria and other premier medical centres. Though he had migrated to Rome only by virtue of his talent for articulate speaking, he soon switched careers seeing better prospects in medicine. He was prudent enough to be moderate in his approach and go *via media* by avoiding Greek theories and at the same time rejecting the extreme treatments prevalent in Rome. He also played on patient psychology and won them over by giving them pleasant smelling, hygienic remedies (to be washed down with wine, which he prescribed in bountiful quantities!). His patients loved him for not making them gulp down bitter concoctions with disgusting aromas. His motto was '*cito, tuto et jucunde*' (which means swift, safe and sweet) and it became a magical manifesto which made him the wealthiest and the most popular physician in Rome. Inevitably, however, he did earn a few irate adversaries along the way. An incident is quoted in literature where Asclepiades 'resurrected' a dead man. Apparently, the man was only in a coma, but nevertheless given up for dead and taken out on his last journey. But before he could be laid to rest, Asclepiades brought the 'cadaver' to life, much to the chagrin and utter exasperation of the heirs, who had just been cheated of their inheritance.

Under some kind of an ancient twinning programme, the Greeks set up medical schools in Rome, but the instruction was predominantly based on Hippocratic teachings. Ultimately, three groups of doctors evolved: the *dogmatists*, whose medicine was theoretical, but who were keen to dissect the cadaver and understand the disease process; the *empiricists* who thought that experience and careful observation alone can reveal potent remedies; and the *methodists* who rejected both theory and experience and proclaimed that a good doctor could be moulded in just about six months, if some simple rules were learnt. The methodists had widespread support and had royal endorsement. They were convinced that the body was composed of atoms and pores and declared that disease was the result of abnormal states of the pores due to excessive tension or relaxation.

In 46 BC, the status of doctors in Rome received a big boost, when the government, under the leadership of Julius Caesar<sup>2</sup>, did its part to nurture the noble profession, by granting citizenship to all foreign doctors. As if



Picture 2. Julius Caesar Not a Caesarean child

in dissent, a famine struck the country in the same year, making Caesar decree that all foreigners be expelled from the land. Greek doctors were, however, exempted. The word Caesar inevitably brings Caesarean section to our minds. Although Caesarean section has been part of human culture and medical science since ancient times, the early history of this procedure remains shrouded in nebulous myths and its accuracy is still dubious. The earliest mention of a child specifically born this way is found in Greek mythology, where Apollo removed Asclepius from the womb of Coronis<sup>3</sup>.



Picture 3. Asclepius being extracted from Coronis by father Apollo.

[From Alessandro Beneditti's *De Re Medica*, Woodcut, Basle, 1549]

Thereafter, innumerable references of the manoeuvre appear in ancient Hindu, Egyptian, Grecian and Roman folklore. Some ancient Chinese etchings even depict the procedure. It is commonly believed to be derived from the surgical birth of Julius Caesar<sup>4</sup>, but this is highly unlikely. The logic behind this reasoning is that in the Roman empire, surgical delivery of the child was performed only when the mother was dead or dying, in a bid to save the child. There is evidence to prove that Mama Aurelia Caesar lived even to hear of her valiant son's assault on Britain in 65 BC. Whatever be the portal of his entry into the world, Caesar was the man who legislated that such unfortunate women should be cut open and hence, probably, the word Caesarean. 'Caesones' was the term given to children born that way and *Caedare* in Latin meant 'to cut'. Caesarean may also have been a corrupted derivative of these two words. In any case, Caesarean operations have been well known procedures for centuries. The introduc-

tion of the term 'Caesarean section' is supposedly attributed to Jacques Guillimeau, who first used the word 'section' in his book on midwifery published in 1598. Ever since, that term has widely been in vogue.



Picture 4. The purported birth of Julius Caesar, one of the earliest illustrations of Caesarean section.

[From Suetonius' *Lives of Twelve Caesars*, 1506 woodcut]

The initial thrust given by Julius Caesar was further enhanced when Emperor Augustus declared tax exemption for all doctors. This gesture was a token of appreciation to Antonius Musa, who cured him of a serious illness. Unselfish as he was, Musa won the concession for the whole fraternity. Vespasian, who reigned from 69 AD to 79 AD, exempted doctors from military service, which was compulsory for all men at that time. All these attractions - combined with the fact that a medical license was not required for practice - caused an explosion in the medical population, which bred both the lilies and the weeds. This, understandably, led to the deterioration in the quality of medical services and medicine started acquiring a sinister reputation. You could imagine the anguish and frustration of the patient whose gravestone epitaph read " *It was the crowd of physicians that killed me.*"

The beautifully coloured rainbow which emerged out of the fog of quackery was a man called Clarissimus (Claudius) Galenus<sup>5</sup>. Uncharitably (but frequently) described as an arrogant and unpleasant man, Galen was nevertheless a key figure who deserves mention in any tale of Rome. His father was Nikon, an educated, benevolent and wealthy architect, who took personal interest in his son's education. His mother, according to Galen himself, was a hot-tempered woman, always arguing with his father; Galen compared her to Socrates' wife Xanthippe. (Was she the one who drove him into philosophy?)

Galen prodigiously produced three books by the time he entered his teens and later went on to excel in mathematics, architecture, astronomy, philosophy and agriculture. Eventually, his interests shifted towards medicine and he spent 11 years studying anatomy and recording his observations. He impressed his audience by performing 'live' dissections on hapless animals, which included pigs, horses and even two elephants. Thankfully, live humans were spared his scalpel. He under-

stood that blood is the nutrient for the tissues and is said to have demonstrated effects of injury to the spinal cord at various levels. He rightly discredited Aristotle's theory that the heart was the centre for mental functions and ascribed it to the brain. Anatomists attribute the discovery of the laryngeal nerves and the great cerebral vein to Galen.

In the colosseum, while heartless spectators and brutal



Picture 5. Imaginary portrait of Galen.  
16<sup>th</sup> century engraving, Bertarelli Collection, Milan

administrators cheered and goaded helpless slave gladiators to fight the fierce, famished lions, (under absolutely no-win conditions) Galen - in a less barbaric act - used the opportunity to study the internal anatomy of the injured through the gruesome wounds. His services were appreciated and he was appointed "physician to the gladiators" at Pergamon. He served four terms in that capacity. Galen, therefore, must be considered the world's first sports medicine physician.

Galen was also a very successful practitioner. Boethus, consul of emperor Marcus Aurelius solicited Galen's assistance one night on behalf of his ailing wife. The fee charged is said to be 400 gold pieces, an atrocious 15 times the then going rate. He thus created history for the highest consultation fee ever to be charged for a house call. This apart, he also seems to have created history as the only person, who visited another man's wife in the middle of the night and got paid ( handsomely ) for it, too!

Galen exhorted that a good physician should also be a good philosopher. According to him, a physician should master three branches of philosophy: *logic*, the science of how to think; *physics*, the science of nature; and *ethics*, the science of what to do. He was convinced that with such knowledge, he could gain the patients confidence, obedience and admiration. Training in philosophy is, in Galen's view, not merely a pleasant addition to, but an essential part of the training of a doctor. His treatise entitled 'The best Doctor is also a Philosopher'

gives to us a rather surprising ethical reason for the doctor to study philosophy. The profit motive, says Galen, is incompatible with a serious devotion to the art. The doctor must learn to despise money. By these noble and valid declarations, Galen presents himself to us - not only as a physician - but also as a scholar, devoted to the pursuit of science and practice of medicine for the love of mankind.

Galen's works fall into three main categories: medical, philosophical, and philological. His medical writings encompass nearly every aspect of medical theory and practice in his era. In addition to summarizing the state of medicine at the height of the Roman Empire, he reports his own important advances in anatomy, physiology, and therapeutics. But although Galen contributed significantly to medical knowledge (primarily due to his anatomical observations), he is, nevertheless, infamously described by historians as the man who held back medicine for a thousand years. This was because he utilised his knowledge and his gift of the gab to verbally cudgel into submission, anyone who tended to disagree with his theories. Therefore, Galen, the 'Prince of the Physicians' and the 'Medical Pope of the Middle Ages' (I shall not mention his other less flattering nicknames like 'mulehead' and 'windbag') in his intellectual arrogance and eloquence quelled every opposing adversary who dared to question his hypothesis. This dampened progressive and rational thinking thereby slackening the pace of medical progress for about a millennium.

Another man who made a great contribution to Roman medicine was Aulus Cornelius Celsus. He was a Roman of patrician lineage, who lived between 3 AD and 64 AD. Being a prolific writer and a scholar in many disciplines, he wrote extensively on philosophy, agriculture, medicine and warfare and is regarded the greatest Roman medical writer of his time. His *magnum opus* was an eight volume encyclopaedia on Medicine known as *De Re Medicina*. Pathetically, no one knew of its existence for several centuries. When they were ultimately 'rediscovered' in the 15th century, they caused a tremendous impact on scientific thought. Six out of the eight volumes described diseases and discussed therapeutics including drugs, diet and other supportive therapy. The last two-volume books dealt with the diagnosis and treatment of common surgical problems and included operations for goitre, hernia, cataract removal and tonsillectomy (which was - until *glasnost* and *perestroika* - the most difficult operation in the erstwhile USSR, since people never opened their mouths then!). Celsus is also credited with the invention of the splint for fractured limbs, which he prepared from cloth bandages stiffened with starch. He recommended the usage of vinegar as an antiseptic solution for washing wounds. The four cardinal signs of inflammation - *calor*, *rubor*, *dolor* and *tumor* (heat, redness, pain and swelling) were first documented by Celsus. His writings reflect valuable

insights into Roman medical thought, practice and conditions of health that prevailed at his time.

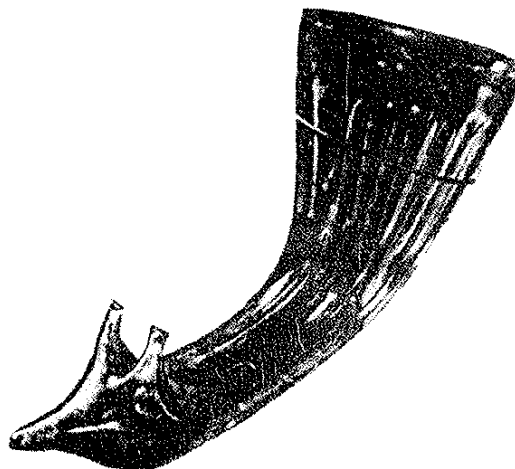
Roman women seem to have concentrated on female diseases, since literature mentions an inscription referring to a 'medica a mammis', which means a female specialist in breast disorders. Midwives helped greatly during childbirth, picking up the art mostly from experience. Deserving special mention is a man called Soranus, of Ephesus. He was a male gynaecologist and a methodist, who was held in high esteem by the emperor as well as his colleagues. He is widely accepted as the Father of Obstetrics and Gynecology. He produced a great book called *Gynaikeia* (Gynaecology), which remained in use for fifteen centuries. The book had 86 chapters. He described the female genital system in detail and advised contraception using ointments on cotton, but disapproved of abortion by mechanical means. This most famous obstetrician of ancient times advised protection of the perineum and emptying of the bladder by means of catheterization before delivery of the infant. He illustrated various abnormal foetal positions in the uterus and explained how to manoeuvre the foetus into favourable position for delivery. Soranus never mentioned the word, hymen, which reflects the life of that time, but did describe folds which brought pain upon the first menstruation or initial sexual intercourse. After Soranus, nothing of importance was added to obstetrics until the work of Ambrose Paré, 1500 years later. Much of the material found in his book is considered pertinent to present day medicine. He was convinced that the uterus<sup>6</sup> was the cause for certain types of mental problems in women. That would be the genealogy for the word 'hysteria' (*hustera* meaning uterus), the condition of which, from then till now, is essentially female domain.



Picture 6. The representation of the uterus (Note the three layers and the implanted embryo) Bronze amulet from Umbria. Dr. M. Grunwald Collection, Zurich

In his time, sexual freedom was common in every rank of Roman society. Brothels were frequented by all classes. Even Messalina, Emperor Claudius' wife, is indicted of infidelity. Under such circumstances, it is understandable that gynecological disease increased. Soranus in his book had notes on some of them, but his famous quote (valid till this day) was "A cure for the common cold is yet to be found."

The Romans were great men for eating and drinking. Tumblers<sup>7</sup> have their etymological origin in ancient Rome, where drinks were served in legless goblets. These receptacles - which had pointed or convex bases - could be put down only on their sides, forcing you to empty your drink. Else they tumbled! They also customarily expanded their appetites before banquets, by pouring water into the external auditory meatus. I doubt whether they understood that they were stimulating the auricular branch of the vagus causing reflex vagal stimulation, but nevertheless they knew the connection!



Picture 7. A Tumbler

Herbal cures were frequently prescribed by doctors and the favourites were said to be 'balsam of Mecca' and 'Indian lycium'. The most sought after, however, was 'theriac'<sup>8</sup>, the health tonic cum universal antidote. It was a formidable concoction first put together by Nero's physician Andromachus. Viper's flesh and opium were among its 64 ingredients. Its popularity could be understood by the fact that French and German pharmacopoeias carried the recipe right till the end of the nineteenth century. Later, in England, its mutated version became the candy known as 'treacle' (Remember the lines of "Pop goes the Weasel"? )



Picture 8. Miniature from an Arabic Manuscript on theriac. Viper meat and opium were the key ingredients

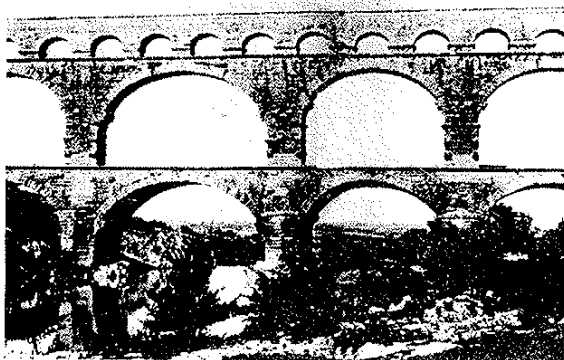
The first Western benchmark in man's understanding of the herb Aloe is found in the works of Pedanius Dioscorides<sup>9</sup> (41 AD - 68 AD). This master of Roman pharmacology was a respected army surgeon in Emperor Nero's time. Posted with the Roman legions at various stations, he travelled extensively within the great empire, incidentally developing his knowledge and skill.



Picture 9. Dioscorides

He gave the first detailed description of the plant we call Aloe Vera, and attributed to its juices "the power of binding, of inducing sleep." He noted as well that it "loosens the belly, cleansing the stomach." He further added that this "bitter" Aloe (the sap) was a treatment for boils; that it eased haemorrhoids; that it aided in healing bruises; that it was good for the tonsils, the gums, and all general mouth irritations; and that it worked as a medicine for the eyes. Dioscorides further observed that the whole leaf, when pulverized, could stop the bleeding of many wounds. Dioscorides, in AD 64, wrote a five volume *Materia Medica* listing all known medicinal plants and their indications, which would remain the only authoritative text book on pharmacology until the Renaissance. But most of those remedies have now been proved ineffective.

Throughout the time of the Roman empire, much emphasis was placed on public health. Their sanitation methods, sewage disposal and water supply systems exceeded anything that followed in the Western world prior to the 19<sup>th</sup> century. Rome's main sewage system was in operation as early as 6 BC. Aqueducts<sup>10</sup> were later built which brought millions of gallons of fresh



Picture 10. Aqueducts Pont du Gard, Nimes, France, 14AD

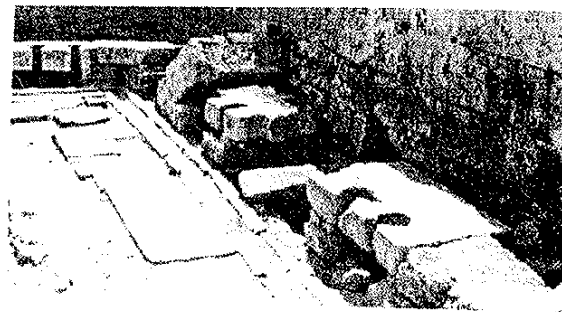
water into Rome by the second century BC. The aqueducts were the true triumph of Roman sanitary engineering. Frontinus, the author of a treatise on Rome's aqueducts, became *curator aquarum* (water commissioner) in 97 AD. He recognized the sanitary aspects of his position stating proudly, "...my office...concerns not only the usefulness of such a system, but also the very health and safety of Rome..."

Public baths and toilets were built throughout the empire, but there was a nominal admission fee. One of the characteristic Imperial Roman building types is the giant bath complex which could house not only bathing facilities but lecture halls, gymnasia, libraries and gardens. Roman bathing establishments usually provided three kinds of baths, i.e., hot, tepid and cold. The room pictured below<sup>11</sup> was a Caldarium in the bath houses of Pompeii known as Forum Thermae where the atmosphere was kept warm by hot air circulating through pipes in the walls and floor.



Picture 11. Bath house in Pompeii (1 BC)

Latrines<sup>12</sup>, well drained or with the provision for a semi-sanitary maintenance, became commonplace both in the houses of the wealthy and in bath complexes where there was a constant supply of running water. In lieu of toilet paper; Romans used a sponge tied to the end of a stick. Users had to pay a small administrative fee and therefore, the Romans can claim credit for originating pay toilets.

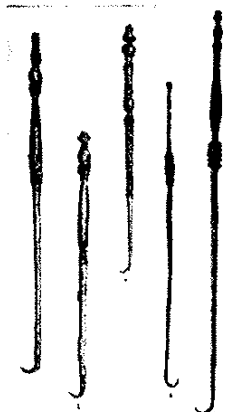


Picture 12. Ruins of a communal latrines in Corinth (4 BC) provided with continuous running water beneath seats for waste disposal

## Picture Gallery of Ancient Surgical Instruments



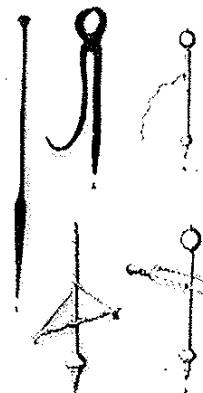
Picture. 1



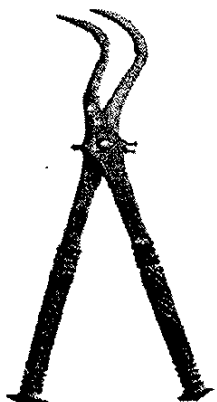
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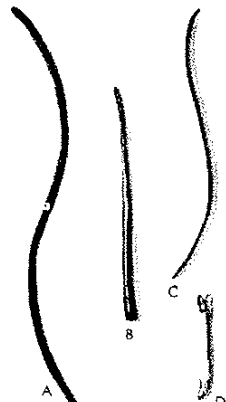
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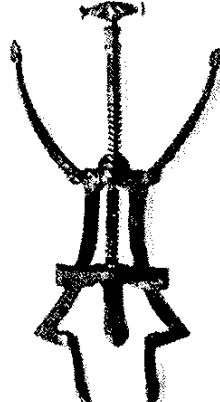
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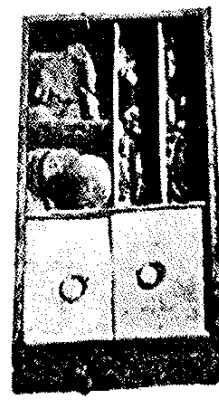
Picture. 5



Picture. 6



Picture. 7



Pictur. 8

**Picture 1.** Scalpels: Greco-Roman scalpels were made of either steel, bronze, or a combination of the two metals (such as a steel blade and a bronze handle). Ancient scalpels are strikingly similar in form and function as their modern counterparts today. The long steel scalpels were the most ordinary type of scalpels used and they seem to be suited to making either deep or long cuts. The "bellied scalpels" was popular with physicians in antiquity since the shape of its handle allowed more delicate and precise cuts to be made (such as incisions between ribs).

**Picture 2.** Hooks: - Hooks were common instruments used extensively by Greek and Roman doctors. These ancient hooks came in two basic varieties: sharp and blunt. Both of these types of hooks are still used by modern surgeons for many of the same purposes for which the ancient doctors first used them. Blunt hooks were primarily used as probes for dissection and for raising blood vessels. Sharp hooks were used to hold and lift small pieces of tissue so that they could be extracted and also to retract the edges of wounds.

**Picture 3.** Uvula Crushing Forceps: With their finely-toothed jaws these forceps were probably designed to facilitate the amputation of the uvula. This procedure, as described by Aetius in the first half of the sixth century, called for the physician to crush the uvula with before cutting it off in order to prevent haemorrhaging.

**Picture 4.** Bone Drills: Greek and Roman physicians used bone drills in order to excise diseased bone tissue from the skull and to remove foreign objects of considerable thickness (such as a weapon) from a bone. Bone drills were generally driven in their rotary motion by means of a thong in various configurations.

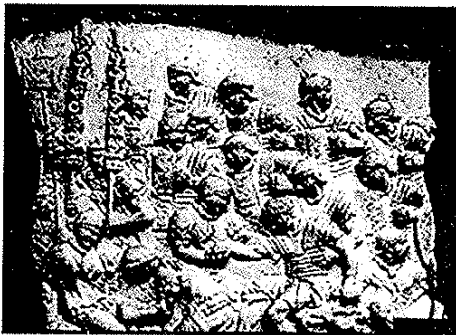
**Picture 5.** Bone Forceps: These forceps were used by ancient doctors to extract the small fragments of bone which could not be digitally removed. They were also frequently used in conjunction with bone drills.

**Picture 6.** Catheters and Bladder Sounds: Physicians in the Roman World employed catheters in order to open up a blocked urinary tract and drain urine. These early catheters were essentially hollow tubes made of steel or bronze and had two basic designs: one with a slight S curve for male patients (figure A) and another straighter one for females (figure B). The same doctors also used similar shaped devices which were solid, as opposed to hollow, in order to probe the bladder in search of calcifications (figures C and D).

**Picture 7.** Vaginal Speculum: The vaginal speculum features among the most complex instruments employed by Greek and Roman physicians. They illustrate the high degree of engineering skill available to the ancient doctors. Most of the vaginal specula consist of screw device which when turned, causes a crossbar to push the blades outwards.

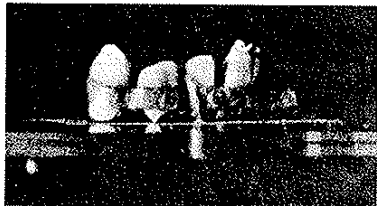
**Picture 8.** Portable Medicine Chests: As the ancestor of the "Doctor's Black Bag," these small chests were the portable medicine and instrument storage units for ancient doctors. Small boxes have been found containing everything from scalpels and probes to ointments and drugs. The metal box, usually made of bronze, had several compartments, some of them having their own separate hinged lids.

Army medicine traces its roots back to ancient Rome. However, before the Greek influence, the Roman legion did not contain any medical services. In his treatise *In the Surgery*, Hippocrates candidly asserts that "he who desires to practice surgery must go to war." But the Romans had more affinity to war than the Greeks, which made military medicine more relevant to the Romans. Literary sources suggest that treatment was accorded by the military medicos to the wounded, only if they were of the higher ranks, and there is little indication that the common soldiers had access to medical care. Instead, some troops functioned as medical staff as the need arose. It is to the Romans' credit that they recognized the need for such a service, but the solution was not a medical corps whereby trained physicians became part of the army. The Romans clearly distinguished between the treatment of the "sick" and the "wounded". The wounded were cared for, as far as possible, by fellow soldiers on the fields, and the transportable sick were placed in *ualetudinaria* (hospitals) along with the severely wounded. It can be noted that the *medici* (doctors) treating the wounded in a war scene are dressing superficial wounds and their uniforms are identical with that of the soldiers they are aiding<sup>13</sup>.



**Picture 13.** Soldiers aiding their wounded comrades Trajan's column, Rome, dedicated 113 AD

Medical students were educated at public expense and the poor received free medical treatment. Skillful dentists must have also been present, as evidenced by the set of false teeth bound together by a gold wire<sup>14</sup>.



**Picture 14.** Roman Dentistry showing a set of false teeth mounted on gold bridges (Villa Giulia Museum, Rome)

If Egyptian medicine was magical and Greek medicine mythical, Roman medicine was methodical. The methodists, who perceived the idea of the atom, strengthened the science through people like Soranus. Despite an element of his idiosyncrasy, it must still be admitted

that Galen helped to systemise medical knowledge of ancient times, his reasoning always based on observation and experience. He crystallised all the best work of the Greek medical schools which had preceded his own time. It is essentially in the form of Galenism that Greek medicine was transmitted to the Renaissance scholars, through Rome. Galen's massive twenty-two volume work (amounting to roughly one half the bulk of ancient Greek and Roman literature) was surely a cornerstone in the Greco-Roman edifice of medicine. Even that, would not be his entire work collection, since in 191 AD, a fire in the Temple of Peace - where he had deposited many of his manuscripts for safekeeping - destroyed important parts of Galen's work. What remains, however, is enough to establish his reputation as the most prolific, cantankerous, and influential of ancient medical writers. His other works survive only in Arabic or medieval Latin translations.

The decline of Rome was brought about by the interaction of several factors. Epidemics (malaria, plague and small pox) ravaged various parts of the country, while the healers silently observed the pestilence carry its victims away, in total helplessness. As a result of private and public corruption there was general discontent and much of the population was in poverty. This eventually led to political instability and incompetence. When Mt. Vesuvius erupted in 79 AD, the pyroclastic surge of lava destroyed man, animal and vegetation over several miles. In fact, when Vesuvius finally grew silent after 19 hours of activity, the Roman town of Herculaneum was buried under 66 feet of black, rock-hard tephra, while the city of Pompeii had its grave under 20 feet of volcanic ash. Pliny the Elder, naturalist and encyclopaedist, who in his foolhardy curiosity rushed to the spewing volcano to study the phenomenon first-hand, got singed, scorched and submerged in the emission. Such natural disasters, coupled with moral decay and other contributory causes may have resulted in the disintegration of the Roman empire and its medical tradition. The excellent public health and water systems of Rome were among the few precious legacies to posterity and the aqueducts still stand to vouch the fact.

When the Roman empire collapsed in 337 AD, the wealth of knowledge was supposedly lost to Europe. It signalled the imminent advent of a long, dark night called the Dark Ages, when all knowledge (or at least the records of it) disappear from view for a period. The extensive medical information and advancements acquired from the Greeks and refined by the Romans now just goes into a stage of transient hibernation elsewhere, to eventually resurface at a glorious dawn, after being enriched in the Islamic world.

Good night and Roman (tic) dreams. See you at dawn.

(Next Indian, Chinese & Muslim Medicine)

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