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Original Research Article

Avicenna (Ibn Sīnā): A par excellence influential Iranian physician and philosopher – scientist, and the prince of physicians

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Abstract

Avicenna, Latin name of Abū 'Alī Sīnā (980-1037), a famous and influential Persian physician and philosopher- Scientist, as a brilliant youth at Bukhārā, mastered nearly all the sciences of his day by the age of 19. While serving as a royal physician to various rulers in Iran, he wrote his many works, mostly in Arabic. The most famous of these were the Canon of Medicine which was one million words long in five volumes and ranked among the famous books in the history of medicine. He wrote also a vasr scientific and philosophical encyclopedia Kitab al- Shifā' (The Book of Healing), a lengthy account of Aristotelian logic, metaphysics, and physiology. His own philosophy was Neo- Platonic mysticism constructed on Aristotelian base, which Avicenna attempted to reconcile with the main doctrines of Islam. Avicenna described anthrax, dementia, epilepsy, headache, and pleurisy. He recognized the contagiousness of tuberculosis, and advised freshening of ununited fractures. Although, Avicenna wrote little regarding dentistry that was new, he stressed the importance of keeping the teeth clean. He recommended for this purpose a number of dentifrices such as burnt hart's horn, salt, meerschaum, and ... His works were widely read in the medieval Near East, and in Latin translations, in the Europe of Middle ages.

Keywords: Canon of Medicine, Medicine, Philosophy, Shifā

INTRODUCTION

The most widely influential Persian contributor to world medicine was Avicenna whose standing both in Islam and Christendom was equal to Galen (129-200) the famous Greek physician and prolific writer (Lyons, Albert S. Medicine: An Illustrated History, M.D., Abradale Press, New York, 1987). Ibn Sīnā, the prince of physicians, whose great work, the Canon of Medicine was widely read, and in Latin translation, formed the foundation of university medical course in the West from 1250 to 1600 (Porter, 1996). Say, he was one of the greatest men that this world has ever seen. It is not court of the caliphs or one of the noble families of Baghdad that produces this prodigy. He is the son of a middle-class countryman in a far-away trans-Caspian province, a tax-collector's son. Here is a man who starting with none of the advantages of life becomes, while still a youth, the adviser and confident of his ruler, who, change his city though he may, yet always becomes the leading citizen within a few months, and whose writings influenced all over the world, although he never travelled outside central Asia. He was hailed by his compatriots as the Second Teacher, the Chief Master; he has been set by Dante in Paradise along with the greatest intellects of the non-Christian world; and William Harvey (1578-1657) brilliant British physician will say 600 years after his death to his friend Aubrey: "Go to the fountain-head and read Aristotle (384-322 B.C.) Greek phi

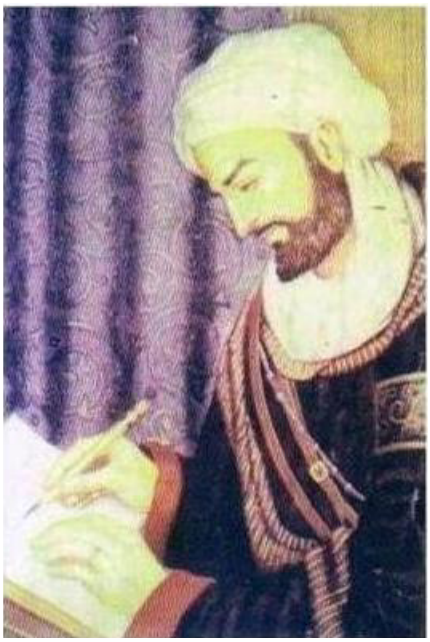

Figure 1. Avicenna (980-1037). One of the Islam's greatest intellects, authored al-Qanun (the Canon), probably the most influential text of all the times.

losopher and scientist, Cicero (Marcus Julius Cicero, 106-43B.C. Roman orator, author, and statesman) and Avicenna." Ḥusayn bin 'Abd Allāh Ḥasan bin 'Alī bin Sīnā was the son of a citizen of Balkh. His mother's name has been preserved; she was one Satāra, the daughter of a householder in Afshana, a village not very far from the modern town of Bukhārā. Avicenna himself was probably born in the village of Kharmesan, also in the province of Balkh, being the elder of two sons. His brother's name was Maḥmūd. His father moved his family to Bukārā in A.D. 985, and Avicenna began his education. From the very first he was instructed in the Qurān. 'Alī's extraordinary memory at once displayed itself. He was one of those remarkable children, who learn to recite the whole Qurān by heart. His next subject was rhetoric. Then he was sent to the geometrician, from whom he also learnt algebra and arithmetic, and under whom he studied astronomy. Within a few years was considered fit to start theology under Ismā'īl and logic under al-Nātilī. At the age of sixteen, on the advice of Abū Sahl 'Isā bin Yaḥyā al-Masīhī a Christian physician of Jurjān, Ibn Sīnā started medicine and took as his tutor Abū Sahl. He besides the glory that is rightly his as the adviser and companion of Avicenna, was himself no mean physician. His knowledge of medicine was acquired chiefly at Baghdad. Later he left the court of the caliph for that of Ma'mūn ibn Muhammad Khwārizmshāh and here he became acquainted with Avicenna. Avicenna in his autobiography writes: "at first I treated patients not for fees, but for my own instruction. During this period of my studies I never passed a whole night in sleep nor passed a whole day in any other occupation but study. Whenever I met with an obscure point, it was my custom to perform the total ablution and then proceed to a mosque where I would pray to God to grant me comprehension and unlock for me the gates of difficulty. I found medicine an easy subject." (Figure 1)

One of the Islam's greatest intellects, authored al-Qanun (the Canon), probably the most influential text of all the times

At the early days of Avicenna's practice, Nūḥ bin Manṣūr Sāmānī, the seventh of a successful line of sāmānids rulers fell ill, and the regular physicians having failed to bring about a cure, Avicenna was called in. He affected a cure to the intense delight of the ruler. He was given a place of honour in the court and was further rewarded by being granted the right of access at any time to the royal library. By this time the library was well stocked with useful and scarce manuscripts, including many Greek volumes. Avicenna writes "I went there, and found a great number of rooms filled with books packed up in trunks. I then read the catalogue of the primitive authors and found therein all that I required. I saw many books, the very titles of which were unknown to most people, and others which I never met with before or since." Avicenna was then just eighteen. The library was destroyed by fire and most of the manuscripts perished. Avicenna according to later writers had a hand in the outbreak, being desirous that his

rivals in the medical world should have no access to the texts which he had studied there. But this is probably mere slander, although a Persian historian, Mas'ūd Aurrāq, states that the story was related of him also by contemporary writers.

Anyhow, after Avicenna finished his education, he entered the court of the king of Khwārizm and never returned to his native land. In A.D. 1001, his father died and he left Bukhārā. Ibn Sīnā in his diary writes: "the necessity forced me to leave my native land," but he does not describe its nature. At that time Abu 'l-Husayn Ahmad bin Muhammad al-Suhaylī, a man of scholarly tastes, was prime minister at Khwārizm. Here Avicenna turned and was treated with the greatest respect. The tyrant Maḥmūd Ghaznavī who in the art of war had been so completely successful, was determined to make his court as brilliant in intellect as it was rich in spoils. The court of Khwārizm, far inferior in power, was yet vastly superior in art and science, for Abu 'l-'Abbās Ma'mūn, the Khwārizmshāh, was himself a philosopher and a friend of scholars. Maḥmūd sent an imperious summons to the Khwārizmshāh, bidding him send to Ghazna certain of his leading scientists and men of learning. Abu 'l-'Abbās heard of this before the arrival of the ambassador. He called his philosophers, astronomers and physicians into his presence and with a pathetic courage explained that he dare not resist Maḥmūd, but that he would shut his eyes to any who might wish to escape before he was officially informed of Maḥmūd's command. For "Maḥmūd hath a strong hand and a large army: he hath annexed Khurāsān and India and covets Iraq, and I cannot refuse to obey his order or execute mandate. What say ye on this matter."

Among the physicians who preferred liberty to the court of the tyrant Maḥmūd Ghaznavī were Avicenna and his old master Abū Sahl 'Isā bin Yahyā al-Masīhī, and the physician Abū 'Alī bin Miskawayh. So the little group of refugees set out for Jurjān. On the way Abū Sahl died, but Avicenna after suffering much from the winds, dust and thirst arrived in Tūs and finally made his way to Nīshābūr. But the hue and cry was raised throughout the land and Avicenna thought it more prudent to push on to Jurjān, where Qābūs ibn Wushmgīr was reigning.

For a while Avicenna remained in hiding living in a caravanserai and earning his daily keep by treating the sick around him. His success led to his downfall, for he was called in to treat a member of the court. Now, among those who had obeyed the Tyrant Maḥmūd's summons was a young man named Abū Nasr 'Arāq a nephew of the Khwārizmshāh . He was summoned because of his fame as a physician, but it seems that his skill as an artist was the greater and more useful gift. For Maḥmūd, finding that Avicenna had eluded him, bade Abū Nasr draw his portrait, and, having forty copies of it painted by lesser artists, had these distributed in all districts together with a proclamation, which ran: "There is a man after this likeness, whom they call Abū 'Alī bin Sīnā. Seek him out and send him to me."

By this portrait Avicenna was recognized. According to Nizāmī, Qābūs sent for Avicenna and loaded him with honours. But Avicenna himself relates that he reached Jūrjan just too late to see Qābūs, who had been deposed and cast into prison a short while before. Avicenna at age of thirty two in 1020 while was still at Jurjān, met Abū 'Ubayd 'Abd al-Wāḥid bin Muhammad al-Jūzjānī, his famous disciple, secretary and friend. Either the death of Qābūs or undesirable publicity caused Avicenna to flee again. This time he turned west and passing through the forests of Māzandrān made his way across the Elburz Mountains and came to Rayy, the capital of 'Irāq-i'Ajam [Iraq of non-Arab]. Here he found himself in that great mountain plain which embraced the great cities of Persia of those days Rayy, Isfahān and Hamadan. All these were under the rule of a member of the Buwayhid family. In Rayy a woman, named Sayyīda, the widow of Fakhr al-dawla, was ruling on behalf of her infant son, Majd al-dawla Daylamī. Avicenna was received with all respectfully.

It is to Abū 'Ubayd that the world owes the detailed information that it now has of the life of Avicenna and also of his many works. For Avicenna was careless. His time was much taken up with statecraft and less creditable occupations. Without Abū 'Ubayd's spur much that he wrote would have been left unwritten and without Abū 'Ubayd's industry and prudence much that was written would have been lost. For Avicenna was in the habit of giving away his manuscripts without keeping any copy. Not only did Abū 'Ubayd complete Avicenna's autobiography from the time of their meeting until the day of his death, but he also completed his most important Persian work, the Dānishnāma-i 'Alā' ī, and collected and edited the minor works which his friend had scattered about so liberally during his lifetime. (A Medical History of Persia and the Eastern Caliphate, pp. 188 and 189.). It is said that the young prince took Avicenna as his minister and that this became the cause of an open war between him and the queen mother. When the latter was victorious Avicenna was obliged to flee from Rayy. Whatever may have been the cause, again necessity made him pass on to Qazvīn, less than 1oo miles away; and from there he moved on to Hamadān.

At that time Shams al-dawla, another son of Sayyīda, was ruler of Hamadān. Following the example of his mother, he welcomed Avicenna and soon gave him ministerial rank. But this rule was troubled. A revolt among the underpaid and underfed soldiery broke out and Avicenna's house was attacked and looted. He was forced into retirement, from which, however, he was soon summoned to undertake the treatment of Shams al-dawla who was attacked by severe colic, which baffled his doctors. Again Avicenna triumphed and he was restored to his high office of state. The death of his patron leads to trouble. Taj al- dawla, who succeeded, preferred another to Avicenna and Avicenna was forced to hide in the house

Figure 2. In this edition (Venice, 1522), Avicenna is pictured as a medieval professor dictating to a student the later commentator, Gentile da Foligno (d. 1348).

of a druggist Abū Ghālib. But he could not remain concealed for long. His flight gave rise to suspicions and, search being made, he was found and condemned to imprisonment. He was lodged in the fortress called Farajān, but after four months escaped in disguise and fled to Isfahān, where another member of the Daylami family was reigning. This was 'Alā'al-dawla Ḥasām al-dīn, often known as Ibn Kākūya or son of Kākūya, because his father was the Kākū or uncle of the famous queen Sayyida. Again Avicenna rose triumphant over his misfortunes. He was received with the greatest respect by 'Alā'al-dawla who placed at his disposal a palace with gardens and a guard, such as he merited, as he himself said. He had now no further desire to meddle in politics and was the prince's confidential adviser without assuming the obligations of the viziershit. Thus affairs of state had not robbed him of his scientific tastes nor now did they occupy too much of his time. It was impossible, even for Avicenna, thus to burn the candle at both ends. Weakened by overwork and probably also by over indulgence in the pleasures of the flesh, he was taken with severe abdominal pain. In his desire to be well without delay he administered to himself eight enemas in one day. This set up an ulcerative diarrhoea. But Avicenna declared himself better and resumed his old habits of work and play. He made his condition worse by innumerable draughts of infusion of celery; and a servant, who had deceived him and feared his punishment, nearly poisoned him with opium. It has been suggested that the cause of all this trouble was a cancer of the stomach. Nevertheless, he felt himself well enough to accompany his patron on a journey to Hamadān. On the road he was again struck down with colic, never regained his health, and entered Hamadān only to die a few days later. During the last fortnight of his life he refused all medical treatment. He gave alms to the poor, freed his slaves and read through the entire Qurān once every three days (Ibid, p.192). (Figure 2)

Concerning Avicenna's date of death there are not equal opinions. A number of historians and authors report it: Sha'ban 428H. (1036), in Isfahān; Yāqūt writes his death date 6th Sha'ban 428 H. (1036), but the others have recorded it, on Friday, the first of Ramaḍān. Ibn Khallikān says that at the end of Avicenna's life, 'Alā'aldawla became nervous at him and imprisoned this great physician. At last, he expired during captivity.

In the book called "Ḥujjat al-Ḥaq Abū 'Alī bin Sīnā" (page 593), as narrated from the book Tatemma (page 46), is written. "Sheīkh (i.e. Avicenna) finished his life in the court of 'Alā al-dawla and died in Hamadān on Friday, the first day of Ramadān 428 Ḥigira (1036) due to colic, luxurious life, disregarding his health and taking erroneous medicine." He lived around 58 years. Regarding the burial place of Avicenna, the oldest written informs us such as this: His tomb is in Hamadān and is located in the middle of the new city, beside the road. On the floor of the tomb, there are two stones. One covers the remains of Avicenna and the other one belongs to the grave of Sheīkh Abū Sa'īd who was a druggist son and a mystical poet. He was a contemporary of Avicenna and said to have been acquainted with him. These two once met. Avicenna, speaking of the poet said: "All I know, he sees." But the poet capped the remark by saying: "What I see, he knows." A modern inscription records that the tomb had fallen into disrepair, a fact noted by al-Kashmīrī when he passed through Hamadān in I 741, and that it was restored by Princess Nigar Khanum of the Qājār family in the year H. 1294 (I877). It has since been restored again, thanks to the interest which the late Sir William Osler showed in Avicenna and all connected with him. The exact year of the birth of Avicenna is not known precisely. The author of the Tabaqāt al-aṭibba' gives on the authority of Abū 'Ubayd Jūzjānī 375 as his birth and 428 as his death that is 985 and 1036 respectively. But it is generally agreed that Ibn Khallikān, who makes the date of his birth five years earlier, is the more correct. He agrees in the date of his death, adding that it was on a Friday in the month of Ramaḍān, for Avicenna's first recorded case is said to have been his attendance at the death-bed of Nūḥ bin Manṣūr. This prince reigned from 976 to 997. In al-Qiftī's Ta'rīkh al-ḥukamā' is found an extract of Avicenna's autobiography. He there states that he was seventeen when he was called in to attend upon the

prince. This would therefore fix 980 as the date of his birth. A wit of the day wrote the following epitaph upon him: "I saw Ibn Sīnā contending with men, but he died in prison (or, of constipation) the most ignoble death; what he attained by the Shifā' (or, by Healing) did not secure his health, nor did he escape death by his Nijāt (or, Deliverance)." In this verse there are three ingenious word-plays, for ḥabs means both "imprisonment" and "constipation", while two of his most famous works are entitled Shifa' ("Healing") and Nijāt ("Deliverance") (Medicine: An Illustrated History, p.310).

Avicenna's scientific, moral, and religious status

"He was a boy prodigy and is said to have mastered the Korān by the age of ten (Encyclopedia International. Grolier, vol.2, New York, 1975, p.278)" and "nearly all the sciences of his day by the age of 19[6]." It was he, we are told, and who explained logic to his master al-Nātilī. He had no teacher in the natural sciences or in medicine, in fact, famous physicians were working under his direction when he was only sixteen. He did, however, find difficulty in understanding Aristotle's Metaphysics, which he grasped only with the help of al-Fārābī's commentary. Having consulted him on medical matters, the princes had recourse to him also in matters of politics. He was a minister several times, his advice being always listened to; but he became an object of envy, sometimes persecuted by his enemies and sometimes coveted by princes opposing those to whom he wished to remain loyal. He took flight and was obliged to hide on several occasions, earning his living by medical consultations. He was imprisoned, escaped, lived for fourteen years in relative peace at the court of Isfahān and died at Hamadān[7]. According to Malvin E.Ring: "One of the greatest of the Islamic physicians was Abū 'Alī al-Ḥusayn bin Sīnā (980-1037) (This brilliant and very learned person's actual birth date is not clear. Ibn Abī Usaybī'a on the basis of Abū 'ubayd Jūzjānī (Avicena's famous pupil), has stated 375 H. (985) for Avicenna's birth date and 428 H. (1036) as his death date.(Ṭabaqāt al-aṭibbā', vol. 2,p.9), whom we call Avicenna. The scope of his attainments is almost unbelievable. Probably the greatest intellectual of Islam, he mastered the Qurān at ten. Soon after, he had absorbed the science of logic and read Euclid and Ptolemy and, indeed, almost all the literature was available to him. By the age of sixteen he had completed the study of medicine, for, as he said in his biography, "medicine is not a difficult science, and naturally I excelled in it in a very short time." At twenty-one he had composed an encyclopedia of all the sciences except mathematics. His literary output was enormous, and it is said that he wrote fifty pages each evening. Of all his works, the most famous is his al-Qanun (The Canon) probably the best known medical text of all the time, it earned for him the title prince of doctors (Medicine: An Illustrated History, p.310)."

Greek scientist "Aristotle's ideas intrigued him; he also studied the commentators such as al-Fārābī. The Nestorians at Baghdad were Avicenna's principal teachers, and the entire gamut of human knowledge was within his purview: grammar, poetry, geometry, astronomy, anatomy, physiology, materia medica, surgery. When only twenty-one, he wrote a scientific encyclopedia (Encyclopedia International, vol.2, p.278)." Considering that, Abū 'Ali essentially was a restless person, he left Bukhārā to Gorgānaj, and to Khurasān, and then he went to Gurgān, Rayy, Ḥamadān, and Isfahān. Avicenna while served as a royal physician to various kings, princes, and governors, when he travelled widely in the eastern Islamic lands, wrote nearly 270 different books and treatises, and mostly was in Arabic. "The most famous of these works were the Canon (the Norm), a medical compendium, and the Shifa' (the Cure), a lengthy account of Aristotelian logic, metaphysics, and psychology. Avicenna's own psychology was Neo- Platonic mysticism constructed on an Aristotelian base, which he out attempted to reconcile with the main doctrines of Islam (Lee, 2000)."

"Avicenna described diabetes mellitus, contraception, anthrax, epilepsy, dementia, headache, pleurisy, advised freshening of un-united fractures, and recognized the contagiousness of tuberculosis (Dentistry: An Illustrated History, p.70)." Regarding "dental treatment, however, Avicenna wrote little that was new. He stressed the importance of keeping the teeth clean, and recommended for this purpose a number of dentifrices such as meerschaum, burnt hart's born, salt, and burnt and powdered snail shells. He discussed teething, suggesting that fats and oils, as well as the brain of a hare or the milk of a bitch, might be smeared on the gums in difficult cases.

Avicenna examined in detail the causes of toothache, and in his text we again find mention of the tooth worm, for which he prescribed fumigation: Take four grains each of henbane and leek seeds and two and one – half onion knead these with goat fat until smooth, and from this paste make pills with a weight of one dirham; burn one pill in a funnel under a covering of the patient's head.

The use for a file to reduce the height of an elongated tooth and of arsenic for fistulas and "foul ulcers" of the gums are among the many subjects by Avicenna (Medicine: An Illustrated History, p.310)."

This great physician and scientist-philosopher whose standing in both Islam and Christendom was equal to that of Galen (Chocrane)… "believed that surgeons were less important than physicians, and his influence lasted for almost ten centuries (Encyclopedia of Islam, vol.3, pp.941 and 942)." Avicenna in his lifetime and after his demise was respected by all classes of people. The scholars and scientists honoured him because of his profound knowledge in medicine, philosophy and his governmental positions. Avicenna's true scientific position revealed itself after his demise. Physicians, philosophers and scientists all over the world do honour to him. His works are considered among the best sources in the world. Erudites

boasted of reading of Avicenna's works. Not only Islamic world honoured Avicenna, the West and the philosophical and scientific circles respected him as well. His "Canon of Medicine" printed in Latin language 16 times in the 15th century and 20 times in the 16th century. This work was the textbook of Montpellier and Louvain universities until 1650. In Europe Avicenna is celebrated to Aristotle of Islam and called the second Hippocrates. Abū 'Ubayd who was Avicenna's pupil for 25 years introduces Avicenna such as this: "Sheīkh [Avicenna] was handsome and graceful, such a man that, when he lived in Bukhārā ravished everybody's heart. People when met him stared at his size and stature. He was a strong, sturdy, delicate, and a pleasure seeking man. In all, his qualities were beyond description."

Some historians and writers report us that Avicenna was so rough that the armies revolted against him and tried to kill him, but he hid himself and was saved. A number of historians like Abu 'l-Hassan Beyhaqī inform us regarding Avicenna's scurrilous language, dishonour, heedlessness, and harshness to the scholars and scientists of before and his time. Avicenna attacked Rhazes and called this Iranian famous man of knowledge idle talker. For instance Avicenna says: "What is Rhazes' business with theology, it is better for him to engage in his own job which is searching at urine and excrement." Regarding his religion, according to historians he believed in Ismā'īlism.

Avicenna's works

If his works are to be understood, they should not be thought of as those of a philosopher who lived in his books. He was occupied all day by affairs of state, and he laboured by night on his great works, which were written with astonishing rapidity. He was never safe, and was frequently compelled to move; he would write on horseback, and sometimes in prison, his only resource for reference being his memory. It has been found surprising that he differs from Aristotle in his works: but he quoted him without re-reading him, and, above all, his independence of mind inclined him to present his own personally worked out thought, rather than to repeat the works of another. Besides, his personal training was different. He was a man who lived in touch with the concrete, constantly faced with difficulties, and a great physician who dealt with specific cases. The secret of his evolution, however, will remain concealed from us as long as we do not possess such important works as the Kitāb al-insāf, the "Book of Impartial Judgment", which investigated 28,000 questions, and his "Eastern Philosophy", of which we have only a fragment. The corpus of Ibn Sīnā's works that has come down to us is considerable, but incomplete. To the many questions that were put to him he replied hastily, without always taking care to keep his texts. Al-Jūzjānī has preserved several of these; others have been transmitted with different titles, others lost. The manuscript of the Insāf disappeared at the sack of Isfahān, in his own lifetime. The fundamental bibliography is that which al-Juzjānī included in his biography, but it is not exhaustive. G.C. Anawati lists a total of 276 works, including texts noted as doubtful and some apocryphal words in his bibliography of 1950. Mahdavī, in 1954, lists l3l authentic, and 110 doubtful works. Ibn Sīnā was known primarily as a philosopher and a physician, but he contributed also to the advancement of all the sciences that were accessible in his day: natural history, physics, chemistry, astronomy, mathematics, and music. Economics and politics benefited from his experience as a statesman. Moral and religious questions (not necessarily pertaining to mysticism), Qurānic exegesis, statements on Sūfi doctrine and behaviour produced minor writings. He wrote poetry for instructional purposes, for he versified epitomes of logic and medicine, but he had also the abilities of a true poet. Clothing his philosophical doctrine in images, both in verse (as in his poem on the soul) and in prose, in symbolic narratives whose meaning has given rise to controversy (Dentistry: An Illustrated History, p.70.). The important medical works of Avicenna are:

Canon

The Canon of Medicine (al-Qānūn fi 'l-ṭibb) or Law of Medicine is an enormous and influential medical encyclopedia which ranked among the most famous books in the history of medicine. Probably, it is the most influential medical text of all the time. "One of the most significant sections of the Canon deals with the treatment of fractures of the jaw. Avicenna emphasized that it was important to determine if a fracture had been correctly reduced. This could best be done, he said, by observing whether the teeth were brought into proper occlusion after the reduction. This accomplished, he devised putting a supportive dressing around the jaw, head, and neck and a light splint along the teeth. Then, if necessary gold wire might be used to reinforce the stability of the bandage. This rational and sound procedure was notably advanced for the eleventh century; not very different from the treatment recommended today it formed the basis for treatment by the surgeons of the later Middle Ages (Western Medicine: An Illustrated History, p.45.). (Figure 3)

This comprehensive book of medicine has been compiled in three sections: First section was written in Jurjān (403 H./1012); Second section was written in Rayy (405 H./1014); and the rest was written in Hamadān (between 405 and 414 H./1014 and 1023). According to Juzjānī, Avicenna taught Canon to his students. Canon of Medicine is composed of five books:

1. The first book concerned with general medical principles (A Medical History of Persian and the Eastern Caliphate, p.196.), is about the human body, sickness, health and general treatment and therapeutics. It, con

Figure 3. This manuscript page is the beginning of Book IV, which deals with signs and symptoms, diagnostic signs, prognostics, minor surgery wounds, fractures and bites, and also discusses on poisons.

sidered by the ancients to be the most distinguished part of Canon. Recently, it has been translated into English by Dr. O. C. Gruner (London, 1930) with the exception , unfortunately , of the anatomical section, and has been commented on by him and by Dr. Soubiran (Paris , 1935)

2. The second book with simple drugs, each described and listed under the initial letter. It is notable that Avicenna does not arrange them in the Persian alphabetical order, but in the order of the letters of the Abjad system. This was an arrangement of the letters in the order of their numerical values. A was the equivalent of 1, B of 2, J of 3, D of 4, and so on through the alphabet. This section of the Canon, compared with other pharmacopoeias of the early Arab school, is marked neither by its completeness nor by its originality (Western Medicine: An Illustrated History, p.45.).

3. The Third book with diseases occurring in particular parts of the body, deals with special pathology, studied by organs, or rather by systems.

4. The fourth book deals with signs, symptoms, diagnostic signs, prognostics, minor surgery, tumours, wounds, fractures and bites, and discusses on poisons.

5. The final book contains a formulary of recipes for compound remedies. “The Canon was widely read by Europeans in the Latin translation of Gerard of Cremona made in the twelfth century. So great was the interest in

this massive medical textbook that late in the fifteenth century, Girolamo Ramusio attempted to improve upon Greard of Cremona's Latin translation by comparing it with an Arabic manuscript, and in 1527 a new Latin version was published that had been made by Andrea Alpago (d.1522) who had resided in Damascus for thirty years as a physician in the service of the Venetian republic and had used his fluency in Arabic not to translate it but also to append an Arabic-Latin glossary of terms. The Cannon's enormous size, in addition to its very title meaning "codes of law", reinforced its authoritative nature. Between 1500 and 1674 some sixty editions of parts or entire of the Canon were published in Europe, mostly intended for use in university medical training (Parker, Steve. Eyewitness Science Medicine, in association with the Science Museum, London, p.21). The Canon of Medicine was one million words long and after translated into Latin, it became a major work in European medical school, rivalling Galen (Encyclopedia of Islam, vol.3, p.942). Several treatises take up in isolation a number of the data in the canon and deal with particular points. Some are very well-known: their smaller size assured them of a wide circulation. Among the most widely diffused are treatises on the pulse, the medical pharmacopoeia, advice for the conservation of health and the study of diarrhoea; in addition, monographs on various remedies, chicory, oxymel, balsam and bleeding. The virtues of wine are not neglected (Ibid, pp.943 and 944).

Commentaries written on Canon

After Avicenna, Islamic medicine spread gradually, and scientific centres in eastern Islamic lands, including Iran, became active. Taking into consideration that in the seventh and eighth centuries most medical works were in Arabic, an inclination concerning writing the medical books and treatises in Persian language was observed. In the meantime, writing commentaries on authentic medical works increased and many reliable commentaries were written on Avicenna's Canon. Here the writers of commentaries "Sharḥ" and marginal notes "Ḥāshia"on Canon are introduced:

1. Abū 'ubayd 'Abd Allāh al-Juzjānī Avicenna's disciple, secretary, and friend.
2. 'Ali ibn Ridwān (d.460H/1067).
3. Fahkr al-dīn Rāzī (543 or 544 H/ 1148 or 1149).
4. "Commentary of Ibn al-Nafīs" which is called Mūjiz al-Ghānūn (a short and abridged Canon) by Ibn al-Nafīs (d. 687 H./1288), the famous Egyptian physician.
5. Ibrāhīm bin Muḥammad salāmī al-miṣrī (seventh century/13th century). (Commentary)
6. Najm al-dīn Abu 'l-'Abbās Aḥmad. (Ibn al-'Ātafa).
7. Muḥammad bin Āmulī (d. 753 H./1352).
8. Sa'd al-dīn Muḥammad Fārsi.
9. Fakhr al-dīn Muḥammad Khujandī.
10. Jamāl al-dīn Ḥillī.
11. Rafi'a al-dīn Gīlī.
12. Ya'qūb bin Sāvī (al-Sāmirī, seventh century H./13th century).
13. Abu'l-Faraj Ya'qūb bin Ishāq known as Ibn al-Quff.
14. Hibat Allāh Yahūdī Miṣrī.
15. Muhammad bin Aqsarā'ī (8th century H./ 14century).
17. Ḥakim 'Alī Jīlānī (tenth century H./ 16th and 17th century).
18. Sa'd al-dīn Kāzarūnī (d. 745 H./1344).
19. Abd Allāh al-faḍā'il Muḥammad bin Nāmvar Khunjī (d. 646 H./1248).
20. 'Alī bin Abd Allāh, known as Zayn al-'Arab al-Miṣrī (770 H./ 1368).
21. 'Aziz al-dīn Rāzī.
22. Quṭb al-dīn Ibrāhīm Miṣrī.
23. Maṣih al-mulk(Ḥakīm Shafā'ī khān bin Ḥakim Abd al-Shāfi khān).
24. Hibat Allāh Jamānī.
25. Quṭb al-dīn Shīrāzī (d. 710 or 719 H./1310 or 1319). His commentary is called al-Toḥfat al-sa'dīya.
26. Afḍal al-dīn Jūveynī.
27. Rabi'al-dīn Abd al-Azīz Chilabī.
28. A commentary on fevers by Isḥāq khān bin Ismā 'īl khan Dehlavī (12th centnry H./18th and 19th century). It is called Ghāyat almafhūm fī tadbir al-maḥmūm.
29. Maḥmūd bin 'Umar Chaghmīnī (d. 745 H./ 1344). He has written a summary of Canon which is called Qānūncha (little canon).
30. Annotations on Canon by Ḍīyā' al-dīn bin Bahā' al-dīn al-Shujā'ī.

Besides the above – mentioned authors, some other physicians and scholars have written annotations on Avicenna's Canon. Some others have made abstracts of this comprehensive encyclopedia.

Al-Nabḍ

This treatise is in Persian and discusses regarding pulses and vessels. This work definitely belongs to Avicenna. Manuscripts of this treatise are available in the libraries of Iran and abroad. Al-Nabḍ consists of nine chapters (faṣl).

Al-Urjūza fi 'l-ṭibb

Physicians were offered a mnemonic in the form of a poem which established the essentials of Avicenna's theory and practice: principles, observations, advice on therapeutics and dietetics, simple surgical techniques. Urdjūza fi 'l-ṭibb is Ibn Sīnā's famous medical work in poem which was translated into Latin several times from the 13th to 17th century, under the title Cantica Avicennae. Al-Urjūza fi'l-ṭibb was printed by 'Abd al-Majīd in Calcutta, in 1829, and was also printed in Lacanhu with Averroës' commentary, in 1261H. (1845). Its Latin translation with a

commentary of Averroës was printed by Armegandus Blasii de Motepesulano, under the tittle “Cantica Avicenne cum comento Averrois translata exarabico in Latinus” in Venice (Italy), in 1485.

Also, the Latin translation of this Urjūza was printed by Jean Hervagiyus in Basel (Switzerland) in 1556 and by Andrea Alpagus Bellunensis as well. It was printed by Apud Juntas in 1562 and 1609 and by Jean Fuché (poem) in Nimes (France), in 1630; and in 1649 was printed by Antonius Deusingius. Al-Urjuza fi’l-ṭibb under the title “Cantica Avicennae” or “Poéme de la Médecine” with an Arabic collectin was printed by Henri Jahier, professor of medical school of Algeria and ‘Abd al-qādir Nūr al-dīn professor of Lycée Franco Musulman of University of Algeria.

Al- Adwīya al-qalbīa

This book is regarding cordial drugs and consists of 19 chapters. It was translated by Arnaldo de Villa Noua under the title “Princips Avicennae Corde ejusque Facultatibus Libbellus”. Al-Adwīya al-qalbīa has the following titles as well: “De Medicinis Cordialibus” or “Medicamenta Cordialis”.

The above mentioned medical work was also translated into Turkish in 1937. The same book was translated into Urdu language by Shifa’ al-mulk Ḥakim ‘Abd al-laṭif in 1956 in Calcutta under the title of “Kitāb advīa al-qalbīa” composed by Avicenna in 123 pages (size: 14×22cm).

Avicennae philosophi praeclarissimi, Libellus de removendis nocumentis, quae accidunt in regimine Sanitatis

Avicenna has composed this work which is in Arabic, for Abu ’l-Ḥassān Aḥmad bin Muḥammad al-Sahlī, the vizier patron of science ‘Ali Ma’ mūn Khawarizmshāh, between 392 and 403H.(1001 and 1014).

This work contains seven articles: On various errors; on bathing; on weather; on foods; on water and beverages; on movements; and on vomiting. It was printed in Būlāq in Cairo, in 1305 (1887). On its annotation Rhazes’ book “The advantages of foods and removing the disadvantages”, is written. The Persian translation of this book is available in the libraries in England. Also, this work was translated in to Persian by Sheikh Ḥusayn al-Jābir al-anṣārī under the title Mūjiz ‘Aẓīm al-nāfi’ in 1310 and printed in Delhi. The Latin translation of this book under the above-mentioned title was done by Andrea Alpago in Venice, in 1547.

Tractus ejusden… de Syrupo acetoso (al – Sakanjibīn)

This treatise is in Arabic and is concerning on the advantages of oxymel. Andrea Alpago translated it into Latin in 1543 together with the translation of “Avicennae philosophi praeclarissimi, libellus de removendis nocumentis, quae accidunt in regimine Sanitatis” under the title “Tractus ejusden… de Syrupo acetose”, ans was printed in Venice.

Risāla fi’l - ‘ishq

“The Risāla fi ’l-‘ishq, “The Epistle on Love”, however, is primarily a metaphysical explanation of the tendency of every being towards its good, and a physical explanation of the motion of the stars; they imitate in their fashion, which is material, the unceasing action of the pure Act. The spheres, in fact, thus imitate the unceasing desire of the celestial Souls which correspond to each one of them. The rational soul of man tends towards its good with a conscious motion of apprehension of, and love for, the active Intellect, and, through it, for the necessary Being, which is pure Good. In the highest states, however, it can tend directly towards the latter (Ibid, p.942).”

‘Abd Allāh al-Faqīh al-Ma‘ṣūmī. This treatise includes seven chapters. Al-‘ishq was printed in Leiden (Nederlands), in 1894 by Mehren (A.F.V.), and also in Cairo. This treatise was translated into Persian language by Amr bin Sahlān Savujī. Ḍiyā’ al-dīn Durī translated this treatise into Persian in 1318 H. (1900). Also, Mehren summarized it in French language.

Al-Shifā’

Medicine is the subject of separate works of Avicenna but natural history and mathematics are thought of as parts of philosophy. Thus, his principal treatise on these sciences is included in the Kitāb al-Shifā’, (Book of Healing [of the Soul]”), in the same procedure as that on metaphysies, while the Canon of Medicine is a separate work (A Medical History of Persia and the Eastern Caliphate, pp. 189 and 190). According to Dr. Syrill Elgood: “It was now that Abū ‘Ubayd asked the Shkh to write a general commentary on Aristotle. Avicenna refused to take up so large a task, but consented to set out on paper a refutation of certain points in Aristotle’s teaching. It was thus that the work now known as al-Shifā’, or ‘The Healing’, was commenced. This work is to be regarded as a treatise on philosophy and not on medicine. Persian writers class it along with Ptolemy’s Almagest as a work devoted to a branch of astronomy. The sections on the medical properties of stones and other chemical chapters are included only because those subjects were in his day considered an integral part of philosophy. Ibn Abī Uṣaybi‘a states that this book was written in 20 days while Avicenna was living at Hamadān. But Nizāmī says that it was written with great deliberation page by page while he was at Isfahān. The work as a whole lies outside the limits of a chapter

Title page of Canon, printed in Rome, in 1593.

Title page of Canon, Latin translation, printed in Venice, in 1507.

First page of Canon, printed in Tehran, in 1295 A.H. (1878 A.D.).

Title page of Canon (vol.v) in Russian language in 1960.

Figure 4. Kitāb al-Nijāt (The Book of Salvation [From Error]), which is not an independent redaction, as was thought until 1937.

Figure 5. Avicenna's resting- place in Hamadān (2015).

that deals only with Avicenna the physician. Shifā' is a book on logic, theology, and natural sciences. It is one of the important Islamic philosophical books and in philosophy has the dignity that Canon possesses in medicine. Like Canon on Shifā' many commentaries has been written. The most important commentary belongs to Ṣadr al-dīn Shīrāzī. Shifā' is in Arabic and consists of five articles (maqāla) (Encyclopedia of Islam, vol.3, p.942). (Figure 4)

Kitāb al-Ishārāt wa 'l-tanbīhāt (Book of Directives and Remarks), is complete (translated into French and English), as is Dānishnāma-i 'Alā'ī.

Dānishnāma-i ‘Alā’ī. (The book of knowledge for ‘Alā’), a resumé of his doctrine written at the request of the prince ‘Alā’ al-dawla. Abū ‘Ubayd Jūzjānī Avicenna’s disciple and secretary, not only completed his autobiography, but also completed this work.

Kitāb al– Insāf (Book of impartial judgement between the Easterners and the Westerners), which has been published by A.Badawīt.

Mantiq al-mashriqiyyīn (Logic of the Easterners), which is the logic of his eastern philosophy (Encyclopedia of Islam, vol.3, p.942). (Figure 5)

CONCLUSION AND IMPACT

Avicenna a scholar of the highest attainments was probably the most influential Islamic physician. His works are considered among the best medical and philosophical sources in the world, and erudities boasted of reading them. Not only Islamic World honoured Ibn Sīnā, the West and the philosophical and scientific circles also respected him. His Canon of Medicine printed in Latin language 16 times during the 15th century and 20 times in the 16 century. Canon of Medicine wast the textbook of Montpellier (in France) and Louvain (in Belgium) universities until the middle of the 17th century. So great was the interest in the Canon of Medicine that late in the 15th century, an Italian attempted to improve it upon its Latin translation by comparing Avicenna’s enormous and influential medical work with an Arabic manuscript. Between 1500 and 1647 some sixty edition of parts or entire of the Canon of Medicine were published in Europe, mostly intended for the use of university medical training. After translation into Latin, it became a major work in the European medical schools, rivalling Galen. It formed the basis for treatment by the physicians and surgeons, and dentists of the later centuries.

His Kitab al- Shifā', a langthy account of aristotelian logic, methaphysics, and psychology has the impact and dignity that Canon of Medicine possesses in medicine. Europe, mostly intended for use of university medical training. Canon after translation into Latin, became a major work in European medical schools, rivalling Galen.

Avicenna’s Kitāb al- Shifā’ which is a book on logic, theology, and natural sciences is one of the important Islamic Philosophical books and in philosophy in has dignity that canon possesses in medicine.

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