Arabian medicine in the Middle Ages[1]

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The history of Arabian medicine can only be studied satisfactorily in conjunction with the general history of Islam, which began to assume political importance in AD 622. In that year, the prophet Mohammed united the warring tribes of Arabia through a common religious and social ideal. This vision enabled the Arabs to conquer half of the known world and to build an empire destined to replace those of Rome and Persia.

In the early Islamic and Umayyad period (661–750), the usual folk medicine, which is found in all primitive societies, abounded. The general belief was that for every malady Allah had appointed an appropriate remedy. There were, however, only three principal methods of treatment: the administration of honey, cupping and cautery. This practice of medicine gained wide popularity and acquired a great significance because it was held to be the teachings of the prophet and was thus coined 'Prophet Medicine'. However, as Ibn-Khaldun (1967) has shown, this is essentially Bedouin medicine and it can have no claim to Divine revelation. It was not until the ninth century, with the hellenization of Islam, that the evolution of a highly sophisticated system of scientific medicine began.

An acrimonious theological dissension in the fifth century was responsible for the preservation of Greek medicine until the fifteenth century. Nestorius, Bishop of Constantinople in 431, was excommunicated by the Council of Ephesus for his denial of the Doctrine of Theotokos (that Mary was the mother of God). The foundation of the Nestorian Church followed his condemnation and subsequent death. The Nestorians established a successful school of medicine and two hospitals in Edessa, Mesopotamia, but in 489 they were expelled and their buildings razed by the Orthodox Emperor, Zeno, under the influence of Cyril, Bishop of Alexandria. They further established their centres at Nisibis, being warmly welcomed by Chosroes, under whom Persia attained the zenith of its power and culture in the sixth century. He founded a university at Jundi Shapur ('beautiful garden'), which combined classical learning with Indian philosophy and medicine.

In 636, with the defeat of the armies of the Eastern Emperor, Heraclitus, by Khalid Ibn-Al-Walid, the 'Sword of God', the scholars at Jundi Shapur feared the destruction of their school. However, the Muslims were immediately influenced by the classical masters and Jundi Shapur, far from being destroyed, became the cradle of the Arabian School of Medicine.

The Arabs, under the Umayyad Caliphate, had been mainly concerned with their military might and the expansion of their empire. The succeeding Abbasid Caliphate was conspicuous for its intellectual activity and generous patronage of learning and the arts and ushered in the golden age of Hellenic culture. Baghdad became the metropolis of Islam, where the influence of Jundi Shapur and its physicians, notably the Bukht Yishu family, were deeply felt (Margotta 1967).

The Byzantine Emperor was amazed to discover that the collecting and purchasing of Greek manuscripts were among the terms of peace dictated by the victorious Saracen leaders. 'It was this people who took from the hands of the unworthy successors of Galen and Hippocrates the flickering torch of Greek medicine. They failed to restore its ancient splendour, but they at least prevented its extinction and they handed it back after five centuries burning more brightly than before' (Withington 1894).

[1]Accepted 16 March 1983

0141–0768/84/010060–06/$01.00/0

The importance of Arabian medicine lies not so much in its originality as in its being a vehicle for the faithful preservation of Greek knowledge. The translation of Greek works into Arabic was mainly through Syriac versions and occurred during two distinct periods. The best known figure of the early period was Sergius of Resh-Ayna (d.536), a physician of Jundi Shapur, who translated the works of Galen. The second epoch came three hundred years later (Ullman 1971*b*, Degen 1972). The most important translator of this era was Hunayn-Ibn-Is'Haq (*c.*808–73), who enriched the scientific terminology with neologisms and introduced analytical-syntactical constructions which enabled Arabic to express complicated and abstract ideas (Ullman 1971*a*, Celentano 1975, Degen 1976). The number of translations during the reign of the second Abbasid Caliph Al-Mamun (*regnabat* 813–33) markedly increased as he founded an academy in Baghdad, the Bayt-Al-Hikma (House of Wisdom), to enhance the working conditions of the translators (Sourdel 1960). In some instances the Greek texts, whilst being lost in their original form, have been maintained as Arabic translations. The most notable instance of this is afforded by the seven books of Galen's anatomy (IX–XV) (Duckworth 1962).

During the Renaissance, European scholars, with no access to the original Greek sources, turned with increasing enthusiasm to the Arabic presentation of ancient doctrine. They frequently rendered these texts back into Latin, without any attempt at elucidation, and the result in many cases is mistranscription of the Arabic originals. The most notable of these was Constantinus Africanus, who circulated his translation of Arabic originals under his own name; for example, the 'Liber Constantini de Melancholia' is none other than 'Maqalafil-Malankhuliya' of Is'Haq Ibn-'Imran, and the 'Liber de Oblivione' is the 'Risala fin-Nisyan Wa-'Ilaji-Hi' of Ibn-Al-Jazzar. He died at Monte Cassino around 1087, a century before the famous oriental scholar Gerard of Cremone. It was to these two and to Faraj Ibn-Salim that mediaeval Europe was chiefly indebted for its knowledge of Arabic medicine (Sigfrist 1961). A major consequence of these translations was the revival of the school of Salerno, originally founded in the first century but which had subsequently fallen into insignificance, and the stimulation of Western medicine through Arabic works. The Fihrist or Index (or Science), compiled more than a century after the golden age, provides us with a glimpse of the extent of learning at that time and the appalling losses which it afterwards sustained. Only a fraction of the works catalogued remain, even in their most fragmentary form, today.

A point which has caused much debate is whether dissection was ever performed in Islamic society. From surviving ancient works we learn that the celebrated Yuhanna Ibn-Masawayh, being unable to obtain human subjects, carried out practical dissection on apes in a special institute which he erected on the banks of the Tigris, and that a certain species of ape, considered closely to resemble man, was supplied to him by the ruler of Nubia in AD 836 by the command of Caliph Al-Mu'tasim.

In the ninth century, the Arab physician, Ali Ibn-Rabban of Tabaristan, wrote in his 'Firdawsu'l-Hikmat' (Paradise of Wisdom) that 'no one should live in any country which does not have four things: a just government, useful medicaments, flowing water and an educated physician'.

Al-Mubassir, the Arabic biographer, emphasized in the 11th century that the main duty of a monarch was the preservation of health and well-being of his subjects, and that such benevolence must include the provision of drugs and medical assistance to the needy (Rosenthal 1975). Legislation was enacted which made it incumbent on physicians to visit prisons regularly, to travel to outlying areas to treat the sick, and to provide a medical service to the army (Ibn-Abi-Usaybi'a 1882–4).

The health care of the population was thus a major aspect of concern for the Caliph and his ministers, and the initial attempt to regulate the practice of medicine was during the reign of the Abbasid Caliph, Al-Ma'mum, via the institution of the Hisba (Encyclopaedia of Islam 1967). This, essentially, was a religious office enforced by a government officer, the Muhtasib, who replaced the older office of Sabib-al-suq.

The Muhtasib was appointed by a ruler or judge, and was the modern-day equivalent of

the Ombudsman. He protected the citizenry from unethical practices in business and other public transactions. As citizens could also be deceived by the doctor and the pharmacist, they too were under his jurisdiction (Karmi 1979). The tenth century physician, Ishaq Al Isra, reported how the use of enemas was officially forbidden following the death of a patient after its administration (Burns 1977). The Muhtasib was responsible for public health; preventing lepers, those suffering from elephantiasis and other afflicted people from using public baths; and supervising the collection of refuse, making sure that refuse collectors did not handle food while in the streets. The buying of slaves was subject to the Muhtasib's authority and he prevented the sale of sick slaves who were apparently healthy. The transmission of disease in ancient Islam was assumed as a matter of course, although there was no conceptual distinction made between infection and contagion (Ibn-Al-Kalbi 1953, Ibrahim An-Nazzam 1967). This knowledge originated from the Hadith, whose teachings essentially go back to the Prophet Mohammed with such proverbs as 'Fly from the leper as you would fly from the lion'.

The Hisba, therefore, sought to regulate and supervise the dealings between doctor, pharmacist and patient. Ishaq al Ruhawai, a physician of the later ninth century, described in a book concerned with medical ethics how a ruler must guard against charlatans (Levey 1967). The physician was to keep a daily record of his patient's condition and treatment which were subject to audit by the 'learned men of the art of medicine'. Should the physician be found guilty of malpractice, he was prevented from further practice and could even be executed. Al-Rhazes provides vivid descriptions of the guises of charlatans and their tricks (Iskandar 1960): for example, making a circular form of incision in the skull of an epileptic patient and seeming to remove objects which had been put there previously by the operator. This practice must not have been uncommon in Europe as it is vividly depicted in the works of Hieronymous Bosch.

In 931 the Abbasid Caliph Al-Muqtadir, following the death of one of his subjects from malpractice, ordered his muhtasib to prevent doctors from practising medicine until they had passed a qualifying examination (Al-Qifti 1903). This was supervised by his court physician, Sinan Ibn-Thabit of Harran, who subsequently examined 860 doctors. Only those in the service of the caliph or of distinguished reputation were exempt. Unfortunately, there is little information of the nature and extent to which examinations took place and if they were confined to large cities only. The eleventh-century physician, Ibn-Ridwan, described two distinct types of doctors: those devoted to the art of medicine; and those practising purely for financial gain, often establishing surgeries by the roadside or travelling door to door in search of patients (Schacht & Meyerhof 1937).

During this period, physicians often held positions of great power, although their lot was often very precarious and their advice taken in conjunction with that of astrologers and geomancers. The Aghlabid Abu-Mudar Ziyadat-Allah III Ibn-Abd-Allah (*regnabat* 903–9) invited a doctor from Baghdad, Is'Haq Ibn-Imran, to be his court physician at Cairouan (Munich 1977). When the relations between the two became strained, the doctor was arrested and imprisoned. After a final confrontation, this unfortunate doctor was bled to death and later crucified.

Ali-Husayn Ibn 'Abdullah Ibn Sina, generally referred to as Avicenna, was one of the foremost physicians of Arabian times – philosopher, physician, poet and man of affairs, in whom Arabian science culminates and is personified (Gohlman 1974). When he cured the Amir Shamsu'D-Dawla of Hamadan of colic, he was appointed his Prime Minister. A mutiny of soldiers against him led to his dismissal and subsequent imprisonment, but the Amir, suffering from a further attack of colic, released him and reinstated him to his former position.

Rashidu'd-din Fadlu'llah, having impressed the Mongol ruler, Ghazan, as court physician, was summoned to be Prime Minister in 1295. During the twenty-two years that he was in office he used his power and influence to construct hospitals, colleges and libraries and was a great patron to the advancement of learning. The extraordinarily careful precautions he took to perpetuate and diffuse the knowledge contained in the incomparable

libraries of the Rab'-i-Rashidi are fully detailed by Quatremert in his 'Histoire des Mongols'. Unfortunately his ultimate vision was never realized as he was executed by envious rivals, and the beautiful suburb on which he had spent so much thought, care and wealth was utterly destroyed.

The Caliph, being the official head of the Islamic state, appointed physicians to hospitals and paid their salaries. Each city had its own physician and ophthalmologist, the latter being an important specialty at this time (Hirschberg 1903). Chief surgeons remain unmentioned, thus reflecting their lower professional status.

Surgery began to gain respectability, however, largely due to Abu-l-Quasim Khalif Ibn-al-Abbas Az Kahrawi, commonly known as Albucasis, who practised in Cordova during the reign of Abd Ar Rahman III (*regnabat* 912–61). A section of his great work, the 'Kitab-al-Tasfif', is confined solely to surgery, which he carefully and in great detail integrates into scientific medicine (Spink & Lewis 1973). This masterpiece was translated into Latin and had great influence on the works of Roger of Parma, Lanfranchi, Guilielmo Salicetti and Fabrizio d'Acquapendente. Most important of all, it is referred to in the 'Chirurgia Magna' of Guy de Chauliac (completed in 1363), and thus still exerted an influence during the eighteenth century.

Abu Bakr Muhammad Ibn Zakariyya of Ray, called 'Rhazes' by the mediaeval Latinists, was probably the greatest and most influential figure of Arabian medicine. He was an excellent clinician, his descriptions of disease ranking with those of Hippocrates (Meyerhof 1935, Goodman 1971, Razi 1955–71). Later, he became superintendent of the great hospital in Baghdad, about the foundation of which he is reported to have been consulted. When he was asked to select the most suitable site for the hospital, he is said to have hung meat up in different quarters of the city and to have chosen the place at which the meat showed least signs of decomposition.

Accounts of the hospital buildings themselves are found in the narratives of travellers like Ibn-Batuta (fourteenth century), and the descriptions of topographers such as Al-Maqrizi (fifteenth century) give details of the history, situation and structure of certain Islamic hospitals. The oldest of these was founded in 873 by Ahmad Ibn-Tulun: the most important was founded by the Mamluk Sultan Qala-Un Al-Malik Al-Mansur in 1284 and was called the 'great hospital of Al-Mansur'. Its construction is reported to have been in fulfilment of a vow which the Sultan had made some years earlier upon being cured of an attack of colic at Damascus. However, it was also considered to be a deliberate attempt to gain the affection of the general populace by the ruler (Al-Magrizi 1853), who was hated along with non-Arabs who had usurped positions of power. Once the state reached its territorial limits under the Abassid Dynasty (750–1258), the inadequacies of the central government and the cultural tensions between Arabs and non-Arabs became evident. There began a slow process of disintegration as small caliphates and local dynasties sprang up in various parts of the Islamic world. However, the founding of this hospital was important in that it was freely available to the whole population, regardless of social standing, with separate wards for males and females. Indeed, the wards were also segregated according to the type of illness: one for fevers, one for dysentery, one for ophthalmic diseases and one for surgical cases. In addition, there were separate cubicles for psychiatric illnesses. The hospital also contained lecture theatres, kitchens and a pharmacy and dispensary. The separation of the medical and pharmaceutical professions began about AD 700, and public pharmacies were in evidence in Baghdad from the ninth century. Arabic pharmacology received its strongest impulse through the 'Materia Medica' of Dioscorides, written AD 77, of which not only the five original books but also the apocryphal books VI and VII on poisonous plants and animals were translated. The most widely circulated version was by Istafan Ibn-Basil, which was later revised by Hunayn Ibn-Is'haq, and even today it is preserved in numerous manuscripts, often very beautifully illustrated (Major 1954).

The myth of the Arabian armies' invincible might was shattered by their defeat by Charles Martel and his Frankish knights at Poitiers in 732. Usamah described the crusaders as 'animals, possessing the virtues of courage and fighting, but nothing else'. When the

crusaders, under Godfroi of Bouillon, Grand Master of the Templar Knights, captured Jerusalem in 1099, they discovered a Christian hospital that received the sick and wounded. The monks were led by Brother Gerard and were 'the Poor Brothers of the Hospital of John'. However, their second master, Raymon du Puy, introduced a military influence into their order, stating that the sick required protection as well as healing. This was the origin of the Knights of St John.

There is good reason to believe that the Christians were impressed and further influenced by the hospitals they overran. Pope Innocent III founded the hospital Santo Spirito in Rome in 1204, and a network of hospitals subsequently spread across Europe which appear to have been modelled on the famous Islamic hospitals of Cairo and Damascus.

The memoirs of the Saracen Amir, Usama Ibn Munqidh, tell that during a temporary lull in the fighting between 1140 and 1143, at the request of the Frankish warden of the Castle of Munaytira in the Lebanon, he sent his physician, Thabit, to treat the sick and wounded (Major 1954). Ten days later Thabit returned and was heartily congratulated on the speed with which he had cured his patients. Thabit, however, relates the story of how he had cured a leg abscess by using a poultice. Whereupon a Frankish physician appeared and stated that 'this man knows nothing about treating them; which would'st thou prefer, living with one leg or dying with two?' When the patient expressed his preference for the former alternative, the Frankish doctor demanded a strong knight with a sharp axe, and bade him chop off the leg at one blow. This he failed to do and the marrow flowed freely and the patient died. Thabit remarked, 'I returned home having learned of their medicine what I knew not before'. This story illustrates the vast difference in culture and learning which existed.

The Arabian culture began to fade, largely due to lack of military prowess, and when the Mongols destroyed Baghdad in 1258, the empire lay in ruins. The Islamic culture which survived the extinction of the caliphate, the nominal unity of the Arabic empire, was but a shadow of what had preceded it.

The establishment of the Hisba was a valiant attempt by the state to govern medical practice. However, the information available is too meagre to allow judgment of its effectiveness in practice, and further research is required into the old literary and scientific material in Arabic still remaining from that age (Fenton 1980).

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