

NESTORIAN CHRISTIAN CONTRIBUTIONS TO MEDICINE IN THE GOLDEN AGE OF ISLAM UNDER THE ABASSID CALIPHS OF BAGHDAD 786-1258 CE

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Abstract

The period under the Abassid Caliphs in Baghdad, often known as the Golden Age of Islam, saw great advances in science and medicine. This paper explores the often under-appreciated contribution of Nestorian Christians to medicine in this period. Many key translators of Greek medical texts and important court physicians were Nestorian Christians. The Nestorians ran hospitals and schools of medicine that were influential in the great medical advances during this era. The Golden Age of Islamic medicine was able to flourish, in part, because of the openness to cooperation with Christian, Jewish and Zoroastrian scholars and practitioners. This paper focuses on the Nestorian contribution and argues that the Nestorians made significant contributions in four specific areas: the translation of Greek medical texts; the development of the hospital system; original medical research (particularly the anatomy of the eye, pharmacology and the discovery of the placebo effect); and the understanding of the practice of medicine as an ethical calling.

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INTRODUCTION

Islam and the Rise of Modern Medicine

Significant scientific and medical advances were made in the Islamic world, especially in the so-called golden age of Islam under the Abassid Caliphs in Baghdad which spanned more than four centuries (786-1258). While there is much that remains unclear about the contributions of specific individuals and groups to the development of science and medicine during this period, some things are known.

The early Islamic world borrowed heavily from predecessor cultures for scientific, philosophical and medical knowledge. The major source of this inherited knowledge was the Hellenistic culture and literature of the Greeks. But the scholars working in the golden age of Islam did far more than simply preserve and pass along knowledge from Greek and other earlier cultures. The Arabic-speaking scholars were well known for their critical commentaries on the Greek classical texts in which they explained and often expanded upon the knowledge contained in them. The most notable of these are breakthroughs in the understanding of the eye (Ibn al-Haytham) and the pulmonary circulation of blood (Ibn Nafis).

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Additions to the catalogue of medicines, especially many that the Greeks had no knowledge of, and improvements in the practice of medicine, especially the development of hospital systems, are of great significance.

The relationship of Nestorian Christianity to early Islam

Under the Abassids, Nestorian Christians were particularly prominent among minority religious groups, but Jacobite Christians, Jews, orthodox Christians and Zoroastrians were also all significantly represented (1). The policy of early Islam toward Ahl al-Dhimmah (people whose protection is guaranteed by Allah) and Ahl al-Kitab (people of the book) was applied generously to the Nestorian community (as well as others) under the Abbasids, though not always consistently (2). It is not surprising to find Christians, Jews and Zoroastrians among the physicians and philosophers of the early Islamic world. The relationship with the Nestorian Christians, however, was unique. Not only did the churches in the tradition of Nestorius survive under early Islam, but they continued to expand, sending missionaries as far away as India and even into China during the early part of the Tang dynasty (618-907). As late as 1100 they were making significant evangelistic progress among the Tartar tribes of central Asia (3). In the 10th centuries fifteen separate metropolitan sees existed within the Abbasid empire. Alexander von Humbolt recognised the special role played by Nestorians in the development of Arab science and medicine when he wrote in 1847 (4):

It was one of the wondrous arrangements in the system of things that the Christian sect of the Nestorians, which has exerted a very important influence on the geographical extension of knowledge, was of service to the Arabians before the latter found their way to the learned and disputatious Alexandria. The Arabians gained their first acquaintance with Grecian literature through the Syrians ... while the Syrians themselves ... had first received the knowledge of Grecian literature through the anathematized Nestorians. Physicians who had been educated ... at the celebrated medical school founded by the Nestorian Christians at Edessa in Mesopotamia, were, so early as the times of Mohammed, ... befriended by him and by Abu-bekr, in Mecca.

The Nestorians were valued for their scholarship, including expertise in translation, mathematics, geography and other specialised fields. They provided a concrete link to the knowledge of the Greek world. The Abbasid caliphs of Baghdad, who played a critical role in the instigation of the translation movement and the rise of science within Islamic lands, quite possibly learned of the classical tradition and its significance for medicine from Nestorian Christian physicians already widely practicing and teaching in key Persian cities (5). But the Nestorians were perhaps most valued for their numerous physicians and pharmacists, schooled in the knowledge of Greek medicine. Many early caliphs and viziers appointed Nestorians as their personal physicians.

The Nestorians had a strong tradition of establishing houses of healing for the sick, probably something like small hospitals, which continued after the Islamic conquests. We have a fragment of a letter from the Nestorian bishop Timothy I (d. 823) who writes of spending 20,000 zuzé (a quite considerable sum) to build a *bimaristan* ('place of the sick') in Seleucia, south of Baghdad (6). The tradition of building houses for the sick was part of their Christian commitment and helps explain the interest in teaching and practicing medicine among the Nestorians. Another reason for the surprising number of medical experts among the Nestorians was their famous academy in Edessa (and its successors), which also taught medicine along with other areas of knowledge.

The Nestorian hospitals and schools of Medicine at Edessa, Nisibis and Jundishapur

"The school of Edessa," wrote Alexander von Humbolt (4), "awakened the scientific search for *material media* in the mineral and vegetable kingdoms." When this centre of learning

was dispersed under the reign of Emperor Zeno in 489, the Nestorian physicians went east into Persia, establishing the medical institute at Jundishapur (Gondeshapur) in what is today southern Iran, and Nisibis in Armenia (7). The hospital and teaching centre at Jundishapur is especially significant because it is from here, according to tradition, that the Islamic hospital, and perhaps even the Islamic university, sprang (8).²

Eastern Christians had established an important educational centre at Nisibis where medicine was taught, along with other disciplines. When the city was conquered by Persia the teaching centre was moved to Edessa. The Nestorians didn't found the Edessa centre and hospital. These existed before the outbreak of the Nestorian conflict. But when schism arose, it was Nestorians who predominated in Edessa and took over the hospital and teaching centre. When Emperor Zeno moved to restore the Orthodox party to power, the majority of teachers and students from the school relocated, in 457, to Persian controlled Nisibis. Robertson, in his history of medicine, writes:

When the Nestorians arrived at Edessa, its medical school and hospitals were active, and in time the heretics gained possession of the orthodox institutions. Under Nestorian influence Edessa was regarded as a second Athens, or another Alexandria. This exaggeration at least is evidence of the reputation of the school. The Nestorians prospered at Edessa, until Bishop Cyrus whispered in the ear of Emperor Zeno, the lecture-halls were destroyed ... Expelled from Edessa, the Nestorians migrated to Persia and in the medical school of Jundisapur they were destined to become the link between East and West (9, 10).³

From the famed hospital and teaching centre at Jundishapur (7)⁴ the Nestorians expanded, at the invitation of the Abbasid Caliphs, to Baghdad, where further hospitals and schools of medicine were established based upon the original Edessa model (10). The role of the Nestorian teaching hospital in Edessa, and the spread of this knowledge into Persia is significant for the development of Islamic medicine and for the history of medicine generally.

If the Jundishapur hospital and teaching centre existed and operated at the level traditionally ascribed to it, then it would constitute the main inspiration and source of the famed Baghdad hospital system that arose under the Abbasid caliphs. And it is the Baghdad hospital system that became the model for later Islamic hospitals, and eventually for the modern hospital. It has recently been questioned, however, whether the Jundishapur hospital was more myth than reality. This view has been put forward most prominently by Michael Dols and Peregrine Horden (11, 12, 13). They point out that there is no contemporary evidence of such a hospital during this period, and that its first concrete reference is by the 13th century medical historian al-Qifti, who has proven to be not always reliable (6). It is suggested instead that that only a small house for the sick likely existed at Jundishapur and that it was not a teaching and translation centre.

This theory, however, is not without its problems. There is scant early confirmation of much from this period and many key events and individuals are recorded first only in the

² If recent studies by George Makdisi and others are correct then the Islamic system of colleges played a larger role in the development of the medieval Western University system than previously thought. The significance of the Nestorian medical and education centre at Jundishapur then also takes on a greater role in the link to the modern hospital and university.

³ The hospital at Jundishapur was not founded by Nestorians. Its foundation is credited to the Sassanid Emperor Anushirwan (531-579), but the Nestorians soon helped to make a name for Juundishapur as a medical centre.

⁴ Jundishapur was an important medical centre, according to Whipple, from 530 until at least the end of the 10th century, and was always under Nestorian supervision, under both the Saaanians and the Abbisids (7).

later histories. Hence the absence of early evidence is hardly surprising and should not be seen as reason on its own for scepticism. Many writings, especially those of the early Bakhtishu physicians, in which we would expect concrete references to this hospital, have been lost. We would expect that a 13th century historian, even one who was not always reliable, would have had access to writings and oral traditions now lost to us. Also, the early Bakhtishu physicians repeatedly returned home to Jundishapur from Baghdad when their services were no longer required. If in Baghdad they were hospital heads, translators and teachers of medicine, there is no reason to assume they were not engaged in similar activities in their home city. Also, the level of medical expertise they attained before coming to Baghdad must be explained in some other way if there was no teaching hospital in Jundishapur.

Whatever the extent of the hospital and teaching centre at Jundishapur actually was, it seems clear that Nestorian Christians played a significant role in the development of the modern hospital system. But caution must be exercised not to overstate the case. Nestorian Christians did not invent the hospital system, nor did it pass through the hands of its Muslim inheritors unimproved. As Robertson reminds us (14): "It is thus apparent that Christianity early promoted the hospital system, but to claim it as a Christian innovation is to forget the asylums of the Egyptians at Heliopolis, the *latreia* of the Greeks, the *valetudinaria* and military hospitals of the Romans, and the numerous and fully equipped hospitals of Buddhist India."

The Baghdad translators: *Hunayn ibn Ishaq, Ishaq ibn Hunayn, and Hubaysh ibn al-Hasam*

One of the earliest and most remarkable of the Nestorian physicians and scholars was Hunayn ibn Ishaq al-Idbadi (known in the West simply as Johannitius). Hunayn came from an Arabic speaking Nestorian family that lived in al-Hirah, south of Baghdad. He was born in 808 and died in Baghdad in 873. His father was a pharmacist from Hira. Like many Nestorian physicians, medicine was something of a family trade. As a young man he travelled to Baghdad to study with the famed Nestorian physician Yuhanna ibn Masawaiyh, who was then head of the Baghdad hospital. After a falling out with his famous teacher, Hunayn travelled abroad seeking Greek medical manuscripts that he might study and translate (15). When he eventually returned to Baghdad he was reconciled with his former teacher and became one of the most prominent of many Nestorian physicians of his day. Tschanz (16) ranks him as the "finest medical and scientific mind of the early Abassid era." He was also for many years the court physician for Caliph al-Mutawakkil.

Hunayn's contribution to Islamic medicine came primarily in two areas. Firstly, he was an expert in Greek language and his translation of Greek philosophical and medical texts, including the works of Galen, played a major role in making this knowledge widely available to Arabic physicians and scholars. In fact, he was one of the most prodigious translators of Greek works during this period, translating a remarkable 116 separate works from Greek into Arabic and Syriac, including many of the works of Plato, Aristotle and the medical texts of Hippocrates, Galen and Discorides. He was the foremost figure in the early years of the translation movement and his influence was such that many consider him one of the founders of Islamic medicine on the basis of the large number of medical texts he and his disciples made available in Arabic and Syriac (17,5). As Tschanz (16) points out, "Hunayn and his associates (particularly his son and nephew) provided the medieval Muslim world, from Spain to Samarkand, with the knowledge of the ancients and this formed the foundation for the Muslim intellectual ferment of the next century."

Due in large part to his skills as a translator, Hunayn became one of the key figures in the early years of the famous library and translation centre in Baghdad known as Bayt al Hikmah, or 'The House of Wisdom,' a term used under the Sassanids that might simply be translated as 'library.' The House of Wisdom was at the centre of the translation movement of the 9th and 10th centuries. But the House of Wisdom was more than a translation centre. The House of Wisdom was also a library, a bookstore (or more accurately, a series of book-

stores, selling over 1,000 books a day at its peak) and a school (or collection of schools). In many ways, it can lay claim to being the first Islamic university (5, 18).⁵ The Abbasid Caliph al-Mamun, considered the political and financial power behind the establishment of the House of Wisdom, was so impressed with Hunayn that he is reported to have appointed him head of Bayt al Hikmah (The House of Wisdom) in 830 (16). Yet there is some uncertainty about this, however, as others also are attributed this role during the same period. The likely explanation is that Hunayn's appointment was as head of the translation work of Bayt al Hikmah, while others headed other facets of this famous institution. With a reported ninety translators, most of these believed to have been Nestorian Christians (6), at his disposal, and the growing thirst for knowledge from other cultures, especial Greek and Roman, this would have been a very important position in itself and could easily have become confused with being head of the entire centre (19).

It was not only the volume of translation undertaken by Hunayn that causes him to stand out as the greatest translator of the period, but also his methodology. Hunayn (20) sometimes travelled extensively seeking rare manuscripts, reporting in one instance that: "I sought for [the manuscript] earnestly and travelled in search of it in the lands of Mesopotamia, Syria, Palestine and Egypt, until I reached Alexandria, but I was not able to find anything, except about half of it at Damascus." And what he did when he found his manuscripts was also quite remarkable. Hunayn preferred several manuscripts to work with so he could first establish the most likely original text – an approach still used today by translators of ancient texts. He also did not follow the then popular method, used by his fellow Nestorian translator Yuhanna ibn al-Bitriq and others, of rendering the Greek word for word into Arabic. Instead, as the 14th century historian al-Safadi describes his approach (6), "Hunayn ibn Ishaq ... considers a whole sentence, ascertains its full meaning and then expresses it in Arabic with a sentence identical in meaning, without concern for the correspondence of individual words. This method is superior, and hence there is no need to improve the works of Hunayn ibn Ishaq."

But Hunayn was more than a brilliant translator. He was also a practising physician and author of at least twenty-three extant medical texts. In 847 he was appointed as the chief physician of the court by the Caliph al-Mutawakkil, a position he held until his death in 873. He wrote a compendium of medical knowledge that was for many years used in the preparation of medical students for their exams. His main area of original contribution to medicine was in his research into ophthalmology, or the study of the eye. His book, *Ten Treatises on the Eye*, is considered the first systematic textbook on the subject and contained the first known diagram of the eye as well as detailed anatomical descriptions. While comprehensive, Hunayn unfortunately followed Galen in some of his more mystical ideas about the eye, rather than the innovative and more scientific insights of his contemporary, Ibn al-Haytham (21,22).⁶

Hunayn's most famous demonstration of character arose out of something he did (or rather refused to do) rather than out of his numerous writings. In a well-known story it is reported that Caliph al-Mutawakkil offered Hunayn a large sum of money to create a poison that could be used to kill one of his enemies. It was not unusual at the time that a ruler would turn to his physician to obtain the necessary poison. Hunayn's response, however, was unusual. He refused on ethical grounds. Thinking this some sort of negotiation tactic on the part of his physician, the Caliph responded to this refusal by increasing the amount on offer. When

⁵ Gutas, however, cautions against reading too much into the Bayt al-Hikmah and making it into a modern institution (18). He points out that "we have exceedingly little historical information about the bayt al-hikam. This in itself would indicate that it was not something grandiose ..."

⁶ Al-Hatham (d. 1039) is arguably the greatest of the Islamic scientists of the golden era. He made significant advances not only in optics, but mathematics and physics as well. But perhaps more significantly, he developed a methodology not equalled until the 16th and 17th centuries.

Hunayn persisted in his refusal, he was thrown into prison. After some time, during which the Caliph relented somewhat in his anger, he went to visit Hunayn and asked him why he would not make the poison. Hunayn responded that he could not do as asked on two grounds. First, his Christian religion commanded him to love his enemies; and second, as a physician he had taken an oath to use his skills only to relieve pain and to cure. At this point the Caliph released Hunayn from prison and claimed that he had only been testing him (23,16). This story not only served to extend Hunayn's fame, but it strengthened the view that a physician laboured under a sacred oath to heal and not harm – a concept still important today. It could be seen as the beginning of the revival of the spirit of tradition of the Hippocratic oath, which had become lost in the commercialisation of politisation of medicine at that time.

Hunayn, while the most famous of the Christian scholars and physicians under the Abassids, was far from the only one who worked and thrived in this Muslim context. His most productive and famous disciples were his son, Ishaq ibn Hunayn, and his nephew Hubaysh ibn al-Asam, both also Nestorian Christians. Ishaq, named after his grandfather, was, like his father, a qualified physician and skilled translator. Hunayn's son Ishaq was the author of an important work on the history of physicians that is still valuable today for our understanding of the history of the medical science of the ancient world. He had expertise in astronomy and mathematics as well as medicine, which helped him with his translation of Euclid's *Elements* and Ptolemy's *Almagest*. Ishaq also translated Euclid's *Optics*, Menelaus' *Spherics*, Autolycus' *On the Moving Sphere* and several works by Plato and Aristotle (24). Ishaq died in 910, having contributed significantly to one of the most amazing translation projects in history (19).

Close behind Ishaq in fame as a translator was his cousin Hubaysh ibn al-Hasam. We know that Hubaysh worked closely with his uncle, for Hunayn comments in his account of the works of Galen and their translation: "From the Syriac manuscripts of my translation Hubaysh ibn al-Hasan translated this work for Muhammad ibn Musa. Then, after he had translated the work, he asked me to go through the last eight books critically for him and correct possible mistakes, and I did this for him successfully." (6)

We see emerging a picture of Muslim rulers committed to the advancement of learning, and a willingness and indeed eagerness to learn from other cultures, especially the Greeks. They commissioned many works of translation and paid for many journeys of scholars who went in search of lost and forgotten manuscripts. In the earliest years of the translation movement they turned most often to Nestorian Christian scholars like Hunayn and his disciples, who were fluent in Greek as well as Arabic and Syriac, and who tended to come from strong medical backgrounds. These scholars, in turn, approached their task not simply as a job, nor with any reluctance as if they would be advancing the cause of an alien religion, but with a passion for the advancement of learning, science and medicine that bound them in common cause with their Muslim rulers and Muslim colleagues.

Chaucer's Arabic physician(s): Yuhanna Ibn Sarabiyun and Ibn Sarabi

There is an interesting passage in the prologue to Geoffrey Chaucer's *Canterbury Tales* in which he lists the famous physicians of the classical and Islamic world who had been studied by the learned physician who travelled with the pilgrims on their way to Canterbury. Chaucer (25) writes:

With us ther was a Doctour of Phisyk:
 In al this world ne was ther noon him lik
 To speken of phisik and of surgerye. ...
 Wel knew he the olde Esculapius,
 And Deiscorides and eek Rufus,
 Olde Ipocras (Hippocrates), Hali and Galien (Galen),
 Serapion, Razis and Avicen (Avicenna),
 Averrois, Samaseien, and Constantin,
 Bernard, and Gatesden, and Gilbertin.

This passage shows what physicians were considered most famous in far off England in the late 14th century. Significantly, one of them, Serapion, was a Nestorian Christian from Syria. This passage shows that the Arab physicians were well respected and read in the medieval Christian West of the 14th century, and that Sariyun (or Serapion) was counted as one of the most prominent of these. So why was Serapion so famous in medieval Europe that he was named by Chaucer alongside of Rhazes and Avicenna in Chaucer's?

A significant advantage that Serapion had in acquiring his fame in the West was that he was actually two separate people! Apart from the more noted 9th century Nestorian physician, there was another Serapion, who also appears to have been a Nestorian Christian (26), who lived in the 12th century and wrote an important medical text that was translated into Latin. In the West, at the time of Chaucer, it was assumed that these were the same person.

Serapion the elder, also known as Yuhanna ibn Sarabiyun, was a Nestorian Christian from Syria who lived in the 9th and 10th centuries. He wrote a number of medical texts in Syriac and translated ancient medical texts into Syriac. Sarabiyun was one of the last and greatest exponents of classical Syriac medical writing and that he was "one of the most influential authors for the development of medical theory and practice in late ninth century Baghdad," and for Arabic medicine in general (27).

Serapion the younger, or Ibn Sarabi, is perhaps even more obscure than the elder Serapion. He wrote in Arabic and lived after the time of Ibn Wafid (d. 1075), whom he cites (28).⁷ His fame largely rests on his book *On Simple Medicines*, which was a compendium of cures and medicines widely used in the Muslim world and later in the Christian West. The most significant and original part of the work is his introduction, in which Ibn Sarabi introduces a system for classifying substances according to their medicinal properties and uses. In this regard he made a significant contribution to the science of pharmacy.

The Servants of Jesus: Three centuries of Bukhtishu physicians in Jundishapur and Baghdad

One of the most impressive dynasties of any era or any profession is that of the Nestorian Bukhtishu family. For ten generations this family served in nearly unbroken succession⁸ as heads of hospitals, personal physicians of caliphs, translators and teachers of medicine in Jundishapur and Baghdad. The Bukhtishu's (29) were of Persian origin, with the family name meaning literally, "Servant of Jesus."⁹

The two most prominent members of the dynasty, in terms of their contribution to medicine in the Muslim world, were Jibrail ibn Bukhtishu I and his great grandson, Ubaidullah ibn Jibrail ibn Bukhtishu. Jibrail ibn Bukhtishu I authored several medical texts and had a significant influence on the development of science in Baghdad. He was a contemporary of the great Arabic speaking Nestorian translator Hunayn ibn Ishaq and commissioned him on several occasions to translate Greek medical works. He served briefly as the private physician of the Caliph in 805, but fell out of favour, which began a long series of banishments and recalls. He died in 870 and was buried in the monastery of St Sergius (29).

⁷ The problem of dating the work of Ibn Sarabi was discussed by Pierre Guigues, "Les Noms Arabes dans Serapion," in *Journal Asiatique* (1905).

⁸ The sole 'black sheep' of the family was Ubaidullah ibn Bukhtishu, who served as chief finance minister to the Caliph. Upon his death his widow sent his son to be trained as a physician and herself married a Nestorian physician, thus re-establishing the line.

⁹ Though there is a suggestion that the name might be derived from an older form of Persian in which case the translation would be "One who is freed by Christ). So Husain Nagamia, "Pioneers of Islamic Medicine series no. 2: The Bukhtishus.", p. 7. In either case, it would have been eminently clear to their Persian speaking colleagues that the Bukhtishus were followers of Yishu.

Jibrail's great grandson, Ubaidullah ibn Jibrail ibn Bukhtishu (d. 1058), was the other notable contributor of the Bukhtishu clan to the growing science of medicine within the Islamic world. As one of the last of the Bukhtishu dynasty of physicians, he helped close the epiccontributions of his family in fine style. Having been convinced to move to Mayyafaraqin in Upper Mesopotamia to serve the local caliph, he was not allowed to leave. While many of his ancestors wrote medical texts, his are the only ones to survive. Eleven of his works are extant and include a defence of the office of physician, a treatise on respiratory motion, a treatise on different kinds of milk and an intriguing work on love as a disease. His best known book, however, is the *Tibbiyya* in which he gave extended definitions of fifty different concepts ranging from medical concepts such as sight, pulse, health and disease, symptoms, organs etc, to more philosophical concepts such as nature, substance, spirit and soul and reason.

Like Hunayn ibn Ishaq, the Bakhtishus were not simply nominal or cultural Christians, but appear to have taken their faith quite seriously. We see the depth of this faith, for instance, in the decision of Yuhanna ibn Bukhtishu, at the height of a very prominent career in medicine, to leave his medical practice in 893 in order to serve as bishop of Masul (29).

Other noted Nestorian physicians of the Islamic Golden Age

While we have looked at some of the most famous of Nestorian physicians from the Golden Era of Islamic civilisation, there were many hundreds of unnamed Nestorian physicians working in small hospitals around the Islamic world, especially in Syria and Persia. Some of them were also teachers or translators; most were simple practitioners participating in a rich Nestorian Christian tradition of medicine. A few, however, are still remembered for their achievements and should be at least noted here. These include:

Ibn Uthal. Ibn Uthal was a Nestorian Christian who studied medicine at Jundishapur and provided medical care for the Ummayyad caliphs (7).

Yuhanna ibn al-Bitriq. Al-Bitriq was noted for his use of the literal method of translation and was appointed by Caliph al-Mansur, along with his fellow Nestorian Gibrail ibn Bukhtishu, to translate medical works. This was the first known commission to translate Greek texts by the Abbasids. Al-Bitriq, though his translation methods were soon surpassed, nevertheless stood at the head of one of the most significant translation movements in history.

Yuhanna ibn Masawayh (777-857). He was a Nestorian physician whose father was a pharmacist working for Jabra'il ibn Bukhtisu. He "belonged to the milieu of the Christian Nestorian physicians" of the 8th and 9th centuries and served as personal physician to four successive Abbassid caliphs from al-Manuk to al-Mutawakkil before his death in Sumarra in 857 (30). He authored a small work of medical aphorisms (*Kitab al-Nawadir al Tibbiyah*) which was translated into Latin as *Aphorismi Iohannes Damasceni*. He also wrote on various medical subjects including a manual on medicine which described various diseases, their symptoms, diagnoses and treatments (15). He had a rare opportunity to dissect an ape (human dissection was not allowed) when one was given to the Caliph by a Nubian Prince in 836. Following Galen's example, he published detailed anatomical notes (30). His treatises on eye diseases, fever and leprosy were also considered valuable contribution to the medical knowledge of his time (5).

His most original contribution to medicine, however, was his description of trachomatous pannus, considered to be the very first such medical description (31).¹⁰ Ibn Abi Usaybi listed 42 works of Masawayh, though only 31 remain extant. Despite all this, he is best known not for any of his own achievements, but for being the teacher of the great Hunayn ibn Ishaq.

¹⁰ Cf. Max Meyerhof, "Neues zur Geschichte die Begriffes Pannus," in *Sudhoffes Archiv*, xix (1927):240-252, cited in Savage-Smith "Hellenistic and Byzantine Ophthalmology," in *Dumbarton Oak Papers*, ed. J. Scarborough, 1984, pp.169ff.

Sabur ibn Sahl (d. 869). Sabur authored a pharmacopoeia that was still in use a century later and was considered the most important work of its type until it was supplanted by that of Ibn al-Tilmidh in the 12th century.

Isa ibn Yahya (late 9th century). After Ishaq ibn Hunayn and Hubaysh ibn al-Hasan, ibn Yahya was the most prominent of Nestorian physicians and translators who studied and undertook translation work under Hunayn ibn Ishaq (18).

Gusta ibn Luqa (d. Circa 912) worked in Baghdad as a physician before moving to Armenia. He wrote an intriguing treatise on the use of amulets and charms and was one of the first to describe the placebo effect. He argued that while amulets were found to possess no properties that aided in healing, patients who wore them did often appear to make better progress. He attributed this to the belief that the patients held that the amulets aided their healing and on this basis admitted their use (6).

Ibn Butlan (d. 1066) lived in Baghdad and is known for a famous dispute he had with a Muslim physician over a minor academic question (6). He is also known for authoring the *Almanac of Health*, which is said to have been the most popular book on diet and healthy lifestyle of the time (6).

SUMMARY AND CONCLUSIONS

Why were so many leading physicians Nestorian? A handful of leading physicians who were Nestorian Christians could be explained as what would be expected in a culture in which there was also a healthy smattering of Jewish and Zoroastrian physicians. Yet the numbers of Nestorian physicians and their prominence across Arabic, Farsi and Syriac speaking communities requires some explanation. It would seem that at least four factors came together to explain the extent of the contribution of Nestorians to the development of 'Islamic' medicine. First, they had a strong tradition of providing for the care of the sick and of building small hospitals for this purpose that predated the Islamic conquests. This was an expression of their Christian faith and meant that there would have been a significant need within their communities for those with medical skills. Second, the Nestorians seem to have operated at Edessa what we might today call a teaching hospital. This centre of medical learning would have helped to elevate the medical profession to a higher academic plane and when it was forced to close under the reign of Zeno, its traditions were taken into Persia. Third, Nestorians were integrated into Hellenistic culture and the educated among them read and wrote Greek well, even if this was not their native tongue. When the translation movement emerged this widespread familiarity with Greek learning and Greek language put them in an advantageous position to work as translators. Finally, it seems that a number of prominent Nestorian families in Jundishapur and Baghdad specialised in medicine as a family business already at the time of the Islamic conquests. Under the Abbasids their skills as physicians brought them continued favour and prominence and they appear to have worked hard to maintain their status as skill physicians (18).¹¹

What was their role in Islamic medicine and science during the period? It is difficult to say with precision what the overall contribution of the Nestorians was to medicine and science in the golden era of Islam. They did not produce the translation movement, but they certainly helped to facilitate and speed its progress. It would be a rash overstatement to claim that they founded Islamic medicine, as has been claimed by Le Coz (6). But certainly the tradition of Islamic medicine would have been less rich without them. Their major areas of contribution might be categorised as follows:

(1) Contribution to the translation movement, especially the translation of medical texts.

¹¹ The most prominent of these families included the Bukhtishus, the Masawayhs, the Tayfuris and the Serapions.

- (2) Their role in the development of the Islamic hospital (6).
- (3) Original medical research. Most notable are contributions to the anatomy of the eye, pharmacology, description of trachomatous pannus, description of the placebo effect, and development of a system of categorisation of medicines according to their effect.
- (4) The practice of medicine as an ethical calling. The Nestorians neither invented this idea, nor were they only ones to follow Hippocrates in this, but accounts of their commitment to the oath of a physician helped to strengthen this tradition in early Islamic medicine.

The genius of the Islamic golden era was not so much the development of a distinctively Islamic approach to medicine and science so much as a remarkably liberal openness to the inherited knowledge of other cultures and the willingness to employ and promote experts in these fields irrespective of their religious faith. This was especially true under the Abbasid caliphs of Baghdad. Within this rich tradition of making use of non-Muslim scholars, the Nestorian community stands out as perhaps the most prominent example of scholarship by a non-Muslim minority – especially in the field of medicine – within the golden age of Islam.

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