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A Quest for Reviving the Past: Arabic Lines in English Translation and Terminology

Gehan M. Anwar

Department of English, October 6 University

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***Corresponding author:** E. mail: gehan_anwar@yahoo.com

Abstract

By the late 1200s, medieval Europeans began to stir out of their long Dark-Age-sleep to become captivated by the scientific contributions of the Islamic civilization, the vital raw material on which the Western Renaissance built its structure. Arabic, the 'lingua franca' of the Medieval time, was the medium through which versions of Greek scientific and philosophical knowledge were recovered, translated, supplemented and transmitted to the Western World. Medicine was the biggest beneficiary of this knowledge as one of the first sciences that was given interest in writings. Some hundred years later, Latin Europe benefited from these translations. Once the Spanish city of Toledo was conquered by the Arabs, the Greco-Arab manuscripts were translated into Latin, the language of the learned in medieval Europe. As a result, a new method of translation was adopted, and Arabic medical terms found their way into western medicine, pharmacy and chemistry. This paper places emphasis on discussing the gradual emergence of Arabic influence in both language and translation within medieval Europe and Middle English. The Arabic role in the multilingual context and the process of the dissemination of Arab sciences in several centres in Europe are discussed. In addition, it presents a brief overview of how such contribution has left traces in modern and today's medical English and the medical terms commonly derived from Arabic roots. Finally, this study is not to claim that Arabic is superior to other languages, but to focus on the role of the Arabic Language and translation in the Medieval Western medicine.

Key Words: Middle Ages, Arabic, translation, medical terms, Muslim Physicians and translators.

Introduction

A millennium before English was termed as the international language of science in the latter half of the 20th century, the Arabic language had contributed to the language of science and unified scholars across the Muslim world from Samarkand to Cordoba. Unlike Western "scholars" who have shown a prejudiced attitude, Muslim scholars' contributions to Europe and their remarkable scientific achievements are acknowledged by some famous historians. The most prolific science historian, George Sarton (1975) admits in his encyclopedic treasure, *Introduction to the history of science*, that "From the second half of the eighth to the end of the eleventh century, Arabic was the scientific, the progressive language of mankind"(1).

In his bestselling novel *The Walking Drum*, a historical fiction set in the 12th century Europe and Asia, the American author Louis L'Amour (1984), notable for his extensive research, describes the century following the death of the Prophet Mohammed in 632 A.D. In the space of one hundred years, the Arabs had carried the sword of Islam from the Atlantic to the Indian Ocean, holding at one time most of Spain, part of southern France, the isle of Sicily, all of North Africa and Egypt, all of Arabia, the Holy Land, Armenia, Persia, Afghanistan, and almost a third of India. The empire of the Arabs was larger than

that of Alexander the Great or of Rome. Under the flush of greatness for more than five hundred years the Arabs carried the torch of civilization (2). The Arabic rule expansion, together with the commercial and scientific exchanges, led to the origin of the work of translation. The introduction and use of paper into the Middle East greatly facilitated the spread of this important phenomenon. In this Islamic Empire, science, particularly medicine, was deeply linked to the translation phenomenon. Medical translation was one of the oldest domains of translation as the sufferings of the body and soul have always given great interest. According to the medical historians Emilie Savage-Smith and Peter Pormann, in their book *Medieval Islamic Medicine* (2007), this Golden Islamic period "was the highpoint for Islamic medicine; it was a time of defining the limits and goals of medicine, of writing medical text books and specialized works, of establishing hospitals where doctors advanced their medical science" (3).

The Prophetic dictate to "seek knowledge as far as China" made knowledge greatly praised by Muslim researchers who collected and preserved the works of Greek writers, after the demise of the Western Roman Empire in 476 A.D. They had no hesitation in seeking knowledge from anywhere.

Previous to the wider development of the Arabic language the great body of Arabic tradition was handed down by "reciters" and it was in order to preserve this tradition that the cultured ʿAbbasid Caliphs of Baghdad encouraged the use of Arabic script, and also the translation into Arabic of all the Greek, Syrian and Indian writings that could possibly be obtained by conquest, barter, or purchase (4).

The 7th and 8th centuries encouraged the translation and study of scholastic works from a wide range of cultures and Arab traditions within an Islamic framework. "It is owing to the [Andalusian] Umayyad Caliphs that the sciences were preserved from extinction in Europe" (5). The patronage of caliphs and rich men of science and culture was very important in the history of translation and its promotion. That is why, at the beginning of the Umayyad dynasty (661-750), the first caliph, Muʿawiyah Ibn Abi Sufyan decided to move the capital of the dynasty from Kufah to Damascus. In terms of cultural exchange and transmission, the new capital was regarded as a landmark for new discoveries in medical science. Its libraries in Damascus were filled with Greek scientific texts. The caliph 'Abd al-Malik (reigned AD 685-706) decreed that government institutions, schools and courts must conduct their business in Arabic. The need for a wider scientific knowledge led to the translation of theological, philosophical, astronomic, mathematic, agricultural and, above all, medical texts from Greek, Latin, ancient Egyptian, Chinese (6) Syriac (a pre-Islamic language of ancient Syria), Persian and Indian into Arabic.

Notwithstanding the real translations activity of ancient works into Arabic was conducted and reached its climax in the period of the Abbasid dynasty. A privileged and vibrant school for translation was founded in Baghdad, the Abbasid capital and the largest city in the world, namely *Bayt al-Hikmah* "House of Wisdom" during the reign of Caliph Al-Ma'mun (813-833 A.D). Other regular schools of translations were also established. The activity of translators (in Arabic language *terjuman*, from which derives the term *dragoman* ترجمان : an interpreter and guide) was so prospering that a tax on their works was imposed.

During the Abbasid dynasty, almost all the works of prominent ancient Greek and Roman physicians were rendered into the Arabic language, mainly by Syriac Christian scholars (7) who were fluent both in Greek and in Arabic. As scholars perfected Arabic terminology, works like Ptolemy's *Almagest* and Dioscorides' *De Materia Medica*, and the theories of the Greek physicians Hippocrates (8) (460-370 B.C) and Galen (130-200 C.E) were translated, developed and used numerous times by all the doctors and scholars of the Muslim world.

2. The Process of Translation in the Middle Ages:

The main issue in translating a specialized text is that of translation competence. A professional translator draws on all kinds of knowledge of the domain and subject of the text, and is required to master the source and the target text languages. According to Ryonhee Kim (2006), a professional translator exerts great efforts, as exhibited by a variety of strategies and complex cognitive processes, to find the most appropriate translation equivalents (9). Given the fact that most translation work involves more or less specialized texts, it is likely that extra-linguistic knowledge, rather than linguistic competence itself, plays a major role in the success of translation. For example, a professional in the field of science can perform a better scientific translation than a translator who lacks scientific knowledge, the major factor influencing the product (10).

The earliest Arab-Muslim efforts were devoted to translating the medical wisdom of Greek manuscripts. One of the most prominent

translators of the 9th century was Abu Zayd Hunayn ibn Ishaq al-`Ibadi (808-873), later known in the West as Joannitius Onan. Hunayn was a Nestorian physician who had a skilled philological method of reconstruction of original Greek texts and had wide knowledge of Greek. He was also known of his accuracy and productivity of Islamic medicine. He translated the first Galenic work at the age of 17. Through his contributions, Galen became well known in the Islamic world. Hunayn was also the author of numerous original works, mainly on medical, philosophical, geophysical, meteor-ological, zoological, linguistic and religious themes. One of his most important works was *Kitab al Masa'il* (Introduction to the Healing Arts). Perhaps Hunayn became famous in Medieval Europe for his greatest achievements in the field of opthalmology; his studies represented in fact the starting point for Arabic ophtalmology (11).

Hunayn, with the help of his son Ishaq ibn Hunayn and his nephew Hubaysh bin al-Hasan, both skilled in medicine, translated the works of Hippocrates, Dioscorides and Galen's commentary works which were available before and after his death (Meyerhof, 1926, 685-724) into the Syriac and Arabic languages. Their efforts were fully devoted to the preservation and transmission of a great part of the whole body of scientific knowledge to future generations. "An extraordinary case may arise when the original Greek text is lost and only its Arabic translation is available. This is the case of a Commentarium of Galen on the Hippocratic *De aere aquis et locis*: the treatise has recently been found in a manuscript at the National Library, Cairo, and is translated by the translators of the school of Hunayn ibn Ishâq" (12). Hunayn collected as many ancient manuscripts as possible from Syria, Palestine and Egypt, comparing Syriac translations with the original Greek texts to have a valid basic text for his translations. *The Complete dictionary of scientific biography* (2008) also cites Hunayn's description when he faced a lot of difficulties in his dogged search for the medical manuscripts needed for translation, such as that of Galen's *De demonstration*:

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 (13).

How was translation made and terminology created?

In fact, "Technical terms apparently offered great difficulty to the Western translators; when these were encountered they were transliterated in an Arabic or Hebrew form" (14). However, there were many Greek technical terms which did not have synonyms in the Arabic language. Hunayn was the first translator to introduce a new method of translation. This method represents his great innovation, substituting merely literal transcription (closed copy method), with the (semantic copy method) of creating, for the first time, new Arabic terms in order to obtain the same meaning of the terms used in Greek manuscripts, a method that, according to S. Johna (2002), satisfies the demand of modern philology(15). Due to Hunyan's scientific method of translation, the Arabic medical lexicon was improved and recorded in his important *Risalah* (Message) written to Ali ibn Yahya in 865. Due to a lack of appropriate terms, some specialized terms were borrowed in this process, while other Arabic scientific terms were introduced into the vocabulary of Europe and are still in use. The Greek word *parabola* was initially Arabicized phonetically as *barabula*, then subsequently refined to *qat' za'id*, which literally means "thick section". *Diabetes* was first rendered as *diyabita* then transformed to *da as-sukkar* ("sugar sickness").

Furthermore, Hunayn criticized the method by which Latin translations were produced by previous translators at Toledo, i.e., a word for word translation of the Arabic script (16). These Toledan Latin translations were not accurately translated:

The main body of the Latin translations was indifferently executed owing to the method adopted; the Latin equivalent was placed over the Arabic, and where the translator was at a loss for the correct Latin interpretation, the Arabic was transcribed bodily, with the result that such terms as *alcohol*, *alchemy*, and *zero* have (17).

Hunayn's new method of translation was acknowledged by many scholars, especially after comparing it with that of the earlier translators. The former was superior, especially in translating practical works of medicine, alchemy, and astrology since it was not a literal or word for word translation but a whole text translation, especially in revising a perplexed text. In Rosenthal's (1975) words:

Here the translator 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 [Hunyan's] works. … [Hunyan's] Arabic translations required no corrections at all (18).

This perfection was attained perhaps because Hunayn mastered four languages: Arabic, Syriac, Greek and Persian. His method was widely followed by later translators.

3. Transmission to the West:

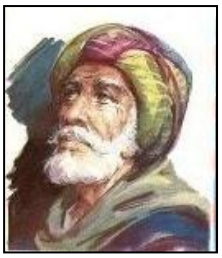
Most of the classical works have been saved by the act of translation. Galen's writings, for example, were unknown in the West until Europeans began to rediscover Greek scientific texts in the 11th and the 13th centuries due to the discovery of Arab repositories of learning in Spain and elsewhere during the Crusades (19). Translation was also the vehicle used for the transfer of Arabic knowledge and science Arabic texts into Latin and then into English. Indeed, Muslim scholars did much more than merely collect and refine the Greek manuscripts, they preserved, divulgated, and refashioned the classical works. They introduced new theories upon which the European Renaissance has occurred. In the same vein, Eugene Myers (1964), in *Arabic thought and the Western world*, says: "the Arab intervention literally saved Greek knowledge from being destroyed, added to that knowledge, and handed it on a silver platter to Western Christendom" (20).

Thus, "It will suffice here to evoke a few glorious names without contemporary equivalents in the West", as Sarton (1975) referred to, such as Al-Kindi (801-873), Al-Razi (865-925), Al-Farabi (870-950), Ibn Sina (980-1037), Al-Ghazali (1058-1111), Ibn Rushd (1126-1198), and etc. The list includes "(a) magnificent array of names which it would not be difficult to extend. If anyone tells you that the Middle Ages were scientifically sterile, just quote these men to him, all of whom flourished within a short period, 750 to 1100 A.D." (21). Here it would be better to refer to some brilliant examples of Muslim Physicians whose achievements revolutionized the way medicine was practised in a time when the world and Europe in particular, had hardly any knowledge or experience of this important science.

No doubt that Galen's doctrine appears to have influenced the Islamic medicine, as explained by Manfred Ullmann (1978), in his *Islamic medicine*:

Galen's original works were circulated in numerous copies, commented on, and made into question and answer form for catechetical purpose. So it is that Galen's teachings determine Arabic medicine in all essential points: from Galen comes the teaching about the humours, the physiology of metabolism, the theories of three digestions and of the movement of the blood. From Galen comes the conception of the four effective grades of medicine, from Galen comes the teleological thinking that seeks to recognize and explain each organ and each natural process in terms of its purpose (22).

However, what is most striking is that Muslim physicians could contradict, unlike Europeans, Galen's seeming infallibleness. As Ehsan Masood (2009) points out in *Science and Islam*, a major Arab-Muslim physician, al-Razi (23)–Rhazes in Latin–(850-925 A.D), for example, disputed Galen's theory of humors, and proved by experiment that bloodletting, or phlebotomy, actually worked as the most common treatment until the 19th C. for patients, including George Washington, and is still used by some cultures today (24). Writing in his book *Doubts about Galen*, al-Razi rejects several claims made by the Greek physician: "It grieves me to oppose and criticise the man, Galen, from whose sea of knowledge I have drawn much indeed … Although this reverence and appreciation will and should not prevent me from doubting, as I did, what is erroneous in his theories." (25).



Al-Razi

By Ismaiel Diab

Al Razi wrote as many as 184 papers and articles on medical subjects, and 237 books on various subjects—including alchemy, anatomy, physiology, and medical ethics—many were lost. He was attributed to be the first to use animal gut for sutures and alcohol for hemostasis (26) as an antiseptic. He was also the first to describe pupillary reflexes and to differentiate between the symptoms of smallpox and measles—two diseases that were once a single disease. In his treatise *Kitab al-Tajarib* (Book of Experience) he probed some 900 cases of various maladies, the discovery of allergic asthma, the discovery of fever as the body's defence mechanism, and the use of opium as a treatment for depression. Al Razi also theorized about the connection of the soul and state of mind to the physical health of the body, suggesting that someone with mental and emotional disturbances would be more vulnerable

to infection and chronic ailments. In addition, he believed that the wrinkles of a pregnant woman could foretell the number of her children.

Needless to say that Al Razi's writings are valuable and influenti al for both Islamic and European students in their training to become physicians. His medical insights in *Al-Hawi fi at-Tibb, at-Tibb ar-Ruhani* (Psychic Therapy) and *at-Tibb al-Mansuri* were translated into Latin several centuries after his death. Sarton (1951), in *The incubation of Western culture in the middle east,* calls the Arab-Islamic impact on Europe, particularly that of al-Razi as a:

miracle of Arabic science, using the word miracle as a symbol of our inability to explain achievements which were almost incredible. There is nothing like it in the whole history of the world…Some historians have tried to belittle those immense achievements by claiming that there was nothing original in them and that the Arabs were nothing but imitators. Such a judgment is all wrong…The achievements of the Arabic-speaking people between the ninth and twelfth centuries are so great as to baffle our understanding (28).

Ibn Sina (29) (980-1037AD), known in the West as Avicenna, the Prince of Medicine, is another example of a Muslim physician whose contributions in the field of medicine set the foundation of the modern medicine, despite the fact that his main interest was the entire range of human knowledge. An old saying says "The one who wants to be a good physician, must be an Avicennist". He wrote as many as 450 papers and books in a dozen of fields; however, his *magnum opus, The Canon of Medicin*e, translated into Latin in the 12th century, remained the standard medical authority not only in the Islamic world where it was used as a major reference until the 19th century, but also in the Western world where it was used for more than 500 years (30) until the discovery of germ theory. It is still being referred to today as an immense encyclopedia of medicine for its compilation of Greco-Islamic medical knowledge and Ibn Sina's own discoveries that were extraordinarily advanced for his time:

Besides bringing together existing knowledge, the Canon contained many of ibn-Sina's own insights. He recognised, for instance, that tuberculosis is contagious; that diseases can spread through soil and water; and that a person's emotions can affect the state of their physical health. He also realised that nerves transmit pain and signals for muscle contraction. The Canon also contained a description of 760 drugs, and so became an important medical manual too (31).

It could be argued that Ibn Sina was the first to introduce a variety of treatments for illnesses unknown to Greeks. He was the first scientist to describe in detail the different parts of the eye due to his concern with eye diseases, a big problem in the Arab world due to the environment. Ibn Sina discussed the structure of the body as "a branch of knowledge which deals with the states of health and disease in the human body, with the purpose of employing suitable means for preserving or restoring health" (32). Moreover, he discussed surgery as an independent branch of medicine, elaborated on the science of anatomy, explained the first set of modern methods in the study of pharmacology, described the effects of medications on the body, and documented what is today called "psychotherapy" that the West did not develop until the 19th and 20th centuries with Sigmund Freud and Carl Jung.

The technical medical terminology which Ibn Sina introduced is still used by physicians in the Islamic countries and in the Western world as well. The word 'medicine' itself is originated from the Arabic words '*madet cinna*' مادة سينا (http://ejabat.google.com/). Ibn Sina's works were translated in Islamic Spain by Avendeuth, a Jewish Italian scholar, Gerard of Cremona and Michael Scot. They continued to be translated through the sixteenth century influencing such western philosophers as the Augustinian Gundisalvo, Albertus Magnus, William of Auvergne, Alexander of Hales, Roger Bacon and Duns Scotus. He left an indelible mark on the history of science, medicine and philosophy (33).

Ibn al-Nafis

By Ismaiel Diab

Another eminent Muslim surgeon from the great Arab Andalusian civilization, Abu al-Qasim al-Zahrawi (930-1013 A.D) — known to the west by 'Abulcasis' embraced surgery as a worthy art and emphasized anatomy as a fundamental prerequisite to surgery, in contradiction to the tendency of Arabic and Western medicine to assign both surgery and anatomy to a lower position. He wrote a 30-chapter medical encyclopaedia *Kitab at-Tasrif* (The Book of Concessions) in which he described hemophilia for the first time in medical history, and which was translated into Latin by Gerard of Cremona a century and a half after his death. The book for five centuries was the leading textbook on surgery in Europe and continued to resonate into the 21st

century for its description and illustration of about 200 medical and surgical instruments that are still in use—including scalpels, cauterizing tools, obstetrical forceps, surgical retractor, surgical needle, specula, and the use of catgut for internal suturing, feeding tubes and cupping glasses—many of which were devised by Zahrawi himself. Surgeons worldwide today practise several surgical procedures and dental operations that Zahrawi innovated a millennium ago. He advocated the re-implantation of the fallen tooth and the use of dental prosthesis carved from the bone of the cow. In addition, Zahrawi appears to be the first surgeon in history to use cotton in surgical dressings.

The brilliant Muslim physician, Ibn al-Nafis Dimashqui (34) (1213-1288 A.D) also predated the 17th century English physician William Harvey in the discovery of pulmonary blood circulation (35) in the 13th century. Challenging Galen's ideas about the movement of blood in the heart, he described with illustrations how the blood purified by the lungs moves through the pulmonary transit. However, as a part of his work remained unknown to Europe for a long time, Galen's ideas continued to be followed for the next three hundred years.

Muslim-Christian Interaction

The activities of the medical European translators by the 9th or 10th century included (a) retranslations of the works of Hippocrates and Galen from Arabic into Latin; (b) translations of commentaries of Arab authors on the ancient Greek works; and (c) translations of original observations, books and letters of Arab scientists. Between 1000-1800 AD, Latin was the teaching medium at the great European universities, and it absorbed Greek and Arabic medical terminology by transliteration or overlay with Latin prefixes and suffixes (36). Unlike Latin, however, Arabic gave ordinary Muslims access to scholarly knowledge. “In the early part of the Scholastic Period, the difficulty of the Arabic language was a barrier to the direct transmission of Arabian Medicine to the Latin West” (37). Spain was the cradle of the rebirth of Europe where the knowledge of Arabic was as important a part of education as was Latin before. It served as the key link with the Arabic learning of the Muslim world. The Moors who invaded Spain in 718 A.D. brought with them a treasure trove of medical and scientific knowledge, gleaned from translations made at Baghdad’s *House of Wisdom*.

After Toledo’s fall into Christian hands in 1085 A.D, and after the return of Crusaders from the Middle East in the 12th and 13th centuries, western scholars began a dogged search for Arabic texts. The translators of Muslim Spain who devoted themselves to the pursuit of Arabic learning and “who worked at Toledo after its capture by the Christians, and its raising to the dignity of the capital of the Kingdom of Leon and Castile, completed the translation of Arabic Medicine to the medical system of Europe” (38). The process of the dissemination of Arab sciences assumed a large scale in several centres in southern France. Knowledge of medicine was diffused mostly in Britain through various translations. The Christian Scholars who had studied in the institutions of Muslim Spain translated several important works of Arab writers. Toledo, Salerno, Sicily, and Naples were developing centres of civilization and intellectual activity where the translations of Arabic treasures were made from Arabic into Latin then into other European languages, resulted in a transmission of Arabic learning, or as described by Durant (1950), "The stream whereby the riches of Islamic thought were poured into the Christian West" (39) that provided a firm ground for a real renaissance. Until the Ottoman occupation of Byzance in the 15th c., Arab science and medicine were taught at the universities and medical schools of Europe in the peculiar Arab method of instruction known as scholasticism. Arabic texts have served as standard books and have remained the reference for the whole world till the beginning of the 18th century A.D. Alhazen's *Kitab al-Manazir* (Book on Optics) and al-Khwarizmi's *Book on Indian Calculation* are great books lost in their Arabic editions and translated into Latin.

Among the prominent "scholar-translators" who worked at Toledo were Spaniards, Gascons, Frenchmen, Italians, Englishmen and Germans. Europe is chiefly indebted for its knowledge of Arabic medicine to Constantine the African, Gerard of Cremona, Adelard of Bath, Robert of Chester, Michael Scot, and others. The medical writer and translator Constantine the African (1020-87), an African monk who had acted as secretary to Robert Guiscard, translated several Arabic works including the theoretical part written by Haly Abbas (Ali Ibn Abbas d. 994), *al-Kitab al-Maliki* (The Royal Book). His native language was Arabic from which he drew medical sources. He landed in southern Italy around 1060 from Qayrawan, Tunisia, and transcribed numerous Arabic books, including Hunayn ibn Ishaq's versions of discourses by Galen and Aristotle, and Ibn Ishaq's manual on ophthalmology. Constantine's translations were rapidly adopted by doctors at Salerno's medical school, and

eventually diffused throughout France, England and Germany.

As to this source of transmission, Gerard of Cremona from Italy was the most prolific of Toledan translators and one of the greatest exponents of Arabian learning. He had left Italy chiefly in quest of Ptolemy's *Almagest*, which existed only in Arabic and Syriac. Uncovering an Arabic transcription at Toledo, he stayed there 30 years, making Latin translations of Ptolemy, and translated more than ninety Arabic works including the *Canon* of Ibn Sina, *al-Tasrif* of Al-Zahrawi, *al-Mansuri* of Al-Razi, the *Astronomy* of Ibn al-Haitham, and Al-Khwarizmi's theses of Algebra and others.

Adelard of Bath (c.1080 – c. 1150) was the greatest translator of England who brought a large number of books from Cordova and popularized Arabic learning in France and England. "[T]rained by Arab scientists," he asserts while addressing his nephew, "For I was taught by my Arab masters to be led only by reason, whereas you were taught to follow the halter of the captured image of authority" (40). He translated into Latin the astronomical tables of Majriti (1126 A.D), of Al-Khwarizmi, of Abu Ma'sher Jafar, and many other astronomical and mathematical treatises. "Soon many scholars were in search of Arabic treatises to translate, and 'Arabum Studia' became a legitimate pursuit in twelfth century England" (41). A world-renowned School of Translators was established by Archbishop Raimundus I (1125-1152 A.D.) at Toledo with the stated purpose of uncovering the treasures of ancient science brought to Spain by the Arabs. Raimundus surrounded himself with a core of the best medical, philosophical and legal minds in Europe, including many outstanding Arabs and Jews then living in Spain. Under his guidance there arose a regular translation department in which scholars made translations of valuable Arabic works. The translation process of medical, scientific and philosophical treatises included the Jews who knew both Hebrew and Arabic. The procedures depended first on oral translation from these languages into Spanish Romance, the precursor of what later became Castilian Spanish. The Romance version was then translated into Latin by a Christian, to be disseminated throughout Europe.

These "scholars from Europe were desperate to make all known scientific and technical books available in translation...and they produced Latin translations of not only of Greek works but also of original works by Arab scholars..." (42). This means that their translations from Arabic into Latin were not confined to Greek works but they also included the original works of Arab scholars. In 1143, Robert Chester, along with Hermann, the Dalmatian, completed the first translation of the Holy Quran, and in 1145, he made the first translation of Al-Khwarizmi's algebra. Michael Scot (d. 1236) who was the court astrologer of Frederick II (d.1250) of Sicily translated among other works *Al-Hai'a* (Bitruji's Astronomy), Aristotle's *De Coelo et-Mundo*, Ibn Rushd's commentary, and many Arabic works on zoology. His translations of Ibn Rushd's works greatly influenced the later European philosophers.

Gradually, Arabic ideas about medicine were transferred to Europe via medical schools in places like Salerno and Sicily where the best of both east and west mixed and the people lived peacefully. Campbell (2002) describes the School of Salerno as follows:

During the eleventh and twelfth centuries Salerno upheld the medical traditions of the West, and constituting as it did the direct bridge between Ancient and Modern Medicine, as apart from the more circuitous route through Byzantium, Baghdad, and Cordova. Salerno was able for a time to withstand the growing influence of Arabic teaching which, however, gradually became dominant at this "mother of European Universities (43). Sicily stands next to Spain in providing an ideal Italian centre for the dissemination of Arabic culture. Arabic learning was transmitted to Europe from Spain and Southern Italian centers, especially Sicily. Southern Italy which was ruled by the Norman Kings of Sicily considerably assisted in diffusing the Arab culture not only to Italy, but also to central Europe. It served as an intermediary between the Muslim and Christian cultures. When contacts between the two cultures occurred, Arabic learning reached unprecedented levels described by Hearnshaw (1967) in the following: "The Semitic language of the Saracens left the same impression on the island as did their art and architecture, so that between the tenth and twelfth centuries Sicily is a source of both Greek and Arabic learning for Western Europe" (44).

The Christian rulers, contrary to their counterparts in Spain, were tolerant towards Muslims and patronized Muslim culture. The work started by Raimundus at Toledo was taken up and improved upon by King Alfonso the Wise (1252-1284), who surrounded himself with the best minds of his time. Alfonso established schools at Toledo for the translation of Arabic works. Toledo became the focus of Muslim science, as King Alfonso commissioned the first renditions of Arabic texts into Castilian Spanish

instead of Latin. King Alfonso discarded Romance in favor of Castilian Spanish and supervised most of the translations from Arabic that were crafted during his reign. In addition to writing outstanding treatises on medicine, mathematics, history, law and navigation, King Alfonso created the job of 'editor' and continually exercised it to ensure that his translators used "straight" Spanish, not Romance.

With the rise of Norman power, the Royal Courts of Christian Kings played a vital rule in disseminating the Arabic language and science in Europe. They often included Arab men of learning, doctors, and counselors. Arabic was widely spoken in those courts; "Arabic was not only one of the four official languages but the monarch's native language." (45) The Roman Emperor Roger II (d.1154) and his successor, the great Italian born and Arabic-speaking Emperor Frederick II, are repeatedly referred to as the promoters of Muslim learning and arts in Sicily, Italy and thus Europe. Both were accused of being more Muslim than Christian as they maintained a prosperous communication with Muslim scientists from their court in Palermo, Sicily, and even during his occupation of Jerusalem (46), and financed translations of Arabic works. In addition, an enlightened policy of Arab-Christian cooperation had begun by Roger II. In spite of strong opposition from the orthodox quarters, Frederick II continued to be the greatest patron of Muslim culture in Europe. He established the University of Naples in 1224, chiefly to assimilate Islamic philosophy and science. Under his rule, Salerno became an important college in which a large quantity of Arabic manuscripts were collected and essentially taught. There was always some interchange between the Muslim and Christian worlds during the supremacy of Muslim civilization as well as its decline.

Muslim-Jewish Interaction:

Sicily continued to be a great centre of Muslim civilization, and played a vital part in the awakening of Europe and in bringing many elements of Muslim culture to distant Britain. Charles Haskins points out to the role of Sicily:

Both historically and geographically Sicily was the natural meeting point of Greek, Arabic, and Latin civilisation, and a natural avenue for the transmission of eastern art and learning to the West… The distinctive element in southern learning lay, however, not on the Latin side, but in its immediate contact with Greek and Arabic scholarship, and the chief meeting-point of these various currents of culture was the royal court at Palermo, direct heir to the civilization of Saracen (47) Sicily (48).

Therefore, the Sicilian Jews played a vital role in the dissemination of Arabic learning in Europe. Some of the most noteworthy figures are Farragut of Sirgent, Mese of Palermo and Farag Ben Salem. The first two translated the astronomical and medical works of Arabs into Latin. Farag Ben Salem translated in 1279 the well-known medical work of Al-Razi *Al-Hawi*. Translating Arabic works continued unabated till the middle of the 17th century A.D. Andrea Alphago of Baluno of Italy (1520 A.D.) translated the biographical dictionary of Ibn Kifti as well as some of the important works of Galen, Ibn Sina and Ibn Rushd.

The period of translation was followed by a period when Arabian knowledge and sources were systematized and assimilated, preparing the ground for the creative works which brought about the renaissance and paved the way for the intellectual growth of Europe. Among the foremost systematizers were Albertus Magnus (1193-1290 A.D.), Roger Bacon (1214-94 A.D.), Alexander of Halle (1245 A.D.), Robert Grosseteste (1255 A.D.), St. Thomas Acquinas (1225-75 A.D.), Arnold of Villanova (1255-1320A.D.), and Peter of Abano (1250-1320 A.D.). "The impulse of this intellectual activity", writes Campbell (2002), "was derived in the main from the Arabic writers among whom the most prominent Avicenna, Avezoar, Averroes and Albucasis.… Albertus Magnus and Roger Bacon, who were eminent types of Arabo-Scholastics medical profession of the thirteenth century, derived the basis of their learning from Arabian sources " (49).

William of Normandy (1066-1135) was accompanied by a large number of Jews who were forced to leave Spain and were transferred to England for setting up the first English School of Science at Oxford, in which Arabic sciences were freely propagated and taught. Roger Bacon (1214-94 A.D.) "learned Arabic and Arabic science" by Jewish teachers at the Oxford School. He was known in Europe as the father of the European renaissance and the experimental method. However, in *The making of humanity*, Robert Briffault (1919) clearly admits:

Neither Roger Bacon nor his later namesake has any title to be credited with having introduced the experimental method. Roger Bacon was no more than one of the apostles of Muslim science and method to Christian Europe; and he never wearied of declaring that the knowledge of Arabic and

Arabian science was for his contemporaries the only way to true knowledge (50).

The influence of Ibn al-Haitham (Alhazen) on Roger Bacon is clearly visible in his works. As a reward for his love of Arabic science, Roger Bacon was accused of sorcery and thrown into prison. He died shortly after his release from a 10 years imprisonment.

Convivencia is a Spanish term that means 'co-existence' of Jews, Muslims and Christians in Medieval Spain. The Jewish-Arab cultural *convivencia* culminated in the time of Maimonides (Moses ibn Maimon, 1135-1204) (51) in the mass exodus of Jews who fled persecution by the orthodox Muslim Almohad dynasty (1130-1269) in Cordova. They dispersed to European centers of learning, among them Salerno and Montpellier, to which they brought Arabic science and medicine (52). Although he was a proponent of the ancient Galenic doctrine of the four humors, Maimonides was the most famous Jewish physician in Arabic medicine, culminating in his works of practical therapeutics. He translated the voluminous *Canon* of Avicenna into Hebrew, but his collection of the aphorisms of Hippocrates and Galen was written in Arabic. Translations of the writings of Maimonides into Hebrew and Latin were widely read throughout Christian Europe.

4. Arabic Medical Terminology in Modern and Today's English

During the last two centuries, medicine has undergone great specialization and differentiation into individual branches that have had to create their own terminologies. Due to economic globalization, easy access through mass media, and medical development, English in the 20th century has started to influence the language systems of other nations. This brings efforts towards an international standardization and unification of national medical terminologies. Today, all the most influential medical journals are written in English, and English has become the language of choice at international conferences. This era of medical English resembles the Medieval era of medical Arabic when a single language was used for international communication.

Although a few medical terms come from the oldest period of English language (Anglo-Saxon), today's medical English uses more and more of its own language material often, partly or wholly, composed of words borrowed from ordinary English, e.g. bypass operation, clearance, base excess, screening and scanning. Doctors from non-English-speaking countries at present have the choice to directly import these English terms and translate them into their own language. However, numerous English medical terms continued to be made up of roots and affixes drawn and developed from medieval Greek or Latin elements and sources forming new scientific terminologies of quickly developing sciences, such as chemistry, biology, and medicine. A great amount of English scientific words are of Latin and Greek origin. Words such as *nucleus*, *vertebrate*, *mammal*, *fungus*, *syringe* and *thorax*, entered into English directly from Latin.

It should also be noted that during the Renaissance, when Greek was no longer widely understood, both Greek and Arabic works were translated into Latin, and the era of medical Latin began. Latin was used principally by academics and clergy, fencing science in as the preserve of educated elite. Classic Latin continued to be the language of the Christian church, and it ruled the world of literature well into the 17th century. Because of the increasing need to communicate with physicians without university training, students and patients, Latin as the language of medicine had practically come to an end by 1800, and was almost entirely replaced by local languages–all of which, however, retained the Græco-Latin terminological core (53). The medical vocabulary expanded but basically did not change. Medical scientists continued to develop new concepts that had to be named, and many new terms have been appearing.

A more indirect form of influence is the use of certain Arabic words which entered the scholastic vocabulary and later came into normal use in other modern languages. The influence of Arabic has been most profound and pervasive not only in those countries dominated by Islam or Islamic power, but also in Spanish, Catalan and Portuguese, due to centuries of being part of the Arab Empire during the Middle Ages. Mohammad Taki Mehdi (1989), in his book *Islam and intolerance*, explains how Arabic words exist in the European language:

In fact, the profound impact of the Arabs and their civilization on Western civilization can be found in the many Arabic words that became part of the everyday language in the West. While it is obvious that the influence of Arabic is much greater on Spanish and Portuguese, both of which contain many thousands of Arabic words, than on any other European language, at least some 4% of the English language came from Arabic (54).

It seems that the Arabic influence on the Spanish language and the influx from North Africa to

Europe have been far too insignificant throughout *history*, particularly after the independence of Algeria, to justify the entrance of Arabic words into the mainstream English, French and other European languages. Indeed, "a high level of specialized lexicon in English justifies the interest in searching for the specialized terminology which illustrates the use of the terms most of the medical community would have been familiar with" (55). For hundreds of years, there was also verbal transmission of the knowledge that increased the terms' exchange in different cultures, as explained by Hajar Albinali (2007):

It is a fact that all human cultures exchange not only knowledge but also terminology through time. Some ancient verbal migration cannot be traced by dictionary writers because they may have happened before the invention of writing or require knowledge of ancient writings. The Arabs took numerous words from other nations and incorporated them in their language over the time. Many nations incorporated Arabic words in their language also (56).

Therefore, the sources of the English terminology are more varied, and the lexical inventory includes adoptions from a number of foreign languages (57) other than Latin and Greek. Assuming the key role of Latin in the formation of English medical language, other etymological sources, such as Arabic, gained importance as a result of translating various classical Greek texts into Arabic. In the importation process, many Arabic-derived terms were borrowed with phonological deformation; some were copied or translated incorrectly by various writers, some of whom did not learn the Arabic language well. This produces a huge Arabic word stock which is still being used.

Arabic terms received specific attention in many writings; dictionary writers admit some terms that have become part of scientific vocabulary, and some studies admit another. However, writers ignore hundreds of terms intentionally or unintentionally, relating them either to old Latin or Greek roots. The main purpose is to convey a nice alternative to help medical students understand the origin of the words they will use or come across everyday in their profession. The Arabic influence on English terminology can be traced in many scientific or mathematical terms that come from Arabic. In etymological lexicons, one finds entries begin with "al" ("algorithm", "alchemy", "algebra", "alcohol" and "alkali"), and other words, like "nitrate," "cypher" and "zenith", which got into English through Latin and French. These words are often productive sources of derivatives, such as "algebraic", "alcoholic", "alcoholism", and "decipher". "Without *al-gebra* there would not be physics, without *al-gorithms* there wouldn't be computers, and without *al-kaline* there wouldn't be chemistry" (58).

In the golden age of Islam, the Arab Caliphs established medical schools, learning centers, hospitals, libraries, banks, pharmacies palaces and mosques. The early Muslim concept of the hospital devoted to the promotion of health and the cure of diseases became the prototype for the development of the modern hospital. The word hospital is Arabic in origin, *Hawzit Al-baittar*, حوزة البيطار—*al-baittar* is a pharmacist who sells medicines and treats people. Later on, *al-Baittar* meant to be the person who treats animals, from which comes 'Baittara البيطرة'. The hospitals were kept clean and well designed "of a cruciform shape and divided into wards in which patients were separated depending on the type of illness they were suffering from. The mentally ill were kept apart from those with physical symptoms and men were housed separately from women" (59). They served as schools of medicine in which medical knowledge was taught, and an impressive method of rules and regulations for standards of practice was developed. In the late eighth century, Harun Al Rashid established the first *bimaristan* in Baghdad along with the first *saydalia or pharmacy*. Al Razi applied his evolving idea of sanitation and infection to find the best location to build a new hospital. He hanged pieces of raw meat in various parts of the city of Baghdad to see comparative rates of decay. Where a piece of meat lasted longest, there he chose to set the hospital as he knew it would be the healthiest location.

Ibn al-Baytar

By Ismaiel Diab

By the year 1000, while Baghdad alone had five public hospitals, there were none in all of Europe. Hospitals were also founded in Cairo, Damascus, Aleppo, North Africa, and Al Andalus—in which free treatment, surgery, outpatient clinics, mental wards, and even nursing homes were provided. Al Mansuri in Cairo, one of the greatest public hospitals, was charged with offering treatment to anyone, rich or poor; when patients were sent home they received a sum of money to ease their return to working society. The influence of contacts through the Crusades is evident in the hospitals which began to make their appearance in Europe, on the patterns of those established by the

Orders of the Holy Land. Europe established its first hospital in Paris 'Les Quinze-vingt' by Louis IX–who was inspired by the Arabs – only after his return from the crusade 1254-1260.

Arab pharmacology, as a new and effective remedy other than the religious or magical remedy of medieval Europe, survived in the West until the early part of the nineteenth century (60). Excellent efforts, unequivalent in Europe, were developed by an admirable group of Arab botanists and pharmacists, such as the Andalusian Arab Ibn al-Baytar (1197–1248), (61) who collected and described plants and added hundreds of medicines to those recorded by the Greeks. Privately owned pharmacies in the world where drugs, herbs, and spices were sold, started to appear throughout the Muslim world (62). They were overseen by government inspectors to ensure that remedies were unexpired, pure, measured and verified; i.e., the quality assurance system in its modern sense was implemented.

Because scholars from the Islamic world made original contributions to medical literature, some Arabic terms found their way into western medicine. Their important role in developing modern pharmacy and chemistry is memorialized in the significant number of current terms derived from Arabic. Landau (1958) regards that European dispensaries relied heavily on recipes prepared by Arab pharmaceutists and took to the West some of the Arabic medical terms such as syrup *sharab* and julep *gulab* (63). In fact, the word "chemistry", according to Webster, comes from the Arabic word alchemy or *al-Keem'ya'*. Alcohol, another word derived from Arabic, was widely used by the medical profession as a cleansing agent.

Many of the chemical terms used in English today come from the greatest Medieval Arab chemist Jabir Ibn Hayyan (721-815), whose name was *Latinized* as "*Geber*" in the West. More than 2,000 works are attributed to Jabir whose writings influenced the course of modern European chemistry. *Drug*, *aldehydes*, *alkali*, *antimony*, *alembic*, *realgar*, and *sal-amoniac* are words which he discovered. The Englishman Robert of Chester translated his *Book of the composition of alchemy* (1144) into Latin. Gerard of Cremona also made another translation of his important work *Book of the Seventy*.

The Arabs were the pioneers in the field of ophthalmology, particularly in cataract couching. Ophthalmology was practised in Baghdad where the ophthalmologists showed a high degree of professionalism. It must be remembered that the medical terms as *retina* and *cataract* are of Arabic origin. In both Arabic and English, some anatomic terms have similar meaning and origin. The eye's pupil means a "little girl or boy" in English, and in Arabic *Insan al ain*, i.e., the "human of the eye". The term has similar meaning in both languages as stated in the *Online Etymology Dictionary:*

Pupil, "center of the eye," (in L. form from 1398), from O.Fr. pupille, from L. pupilla, originally "little girl-doll," dim. of pupa "girl, doll" Gk. is said also to have used the same word, kore (lit. "girl"), to mean both "doll" and "pupil of the eye" (64).

Both the Arabs and the Greeks took the term from the old Egyptians who called it "the girl of the eye". Out of medieval Latin translations of Arabic writings, Benvenutus of Jerusalem, an oculist during the *time of* the crusades, had been in contact with Arabic terminology. In his *Treatise on the use of the eyes*, two terms referring to eye diseases appear to come from Arabic: *amesarca* (the Arabic name for *cataract*) and *iherafrumaxyn* "scab in the eye" (65).

In the field of Anatomy**,** there are anatomic terms that Arabic speaking physicians added such as: Saphenous "clear or manifest," from Arabic *al-safin* "hidden", because the vein available for blood draws in only a small part of its course, or "wanderer," because the saphenous vein is a long vein. *Nucha' is* another anatomical term, originally Arabic, and was adopted into Latin from Arabic ʿnukhā' نخاع, "nape of the neck," marrow, spinal cord and changed in French to *nuque*. 'Nuchal' is related to "the back of the neck", from Arabic *Nakhal;* i.e., palm tree, because the anatomical structures of the muscles, arteries and veins arising from the neck vertebra look like the branches of a palm tree. The researcher Hajar Albinali (2007) believes that it is assumed for a long time that the anatomic term 'Aorta' is derived from the name of a desert tree, called 'orta'. She does insist that the term 'Aorta' is Arabic or at least not Greek in origin although it was not made up by an

Jabir Ibn Hayyan
by Ismail Diab

Arab physician and was taken from the Greek. She illustrates that this tree was well known to the Arabs over thousands of years and still is. Its name—orta—sounds like Aorta. All the branches rise from one stick and look like arterial branches. The fruits are red in color like arterial blood, the roots look like arteries. If the root is injured, red liquid comes out of it. It is very likely that the ancient Arabs or other ancient people in this area, who hunted animals hiding under the orta tree, saw the similarities between the tree and the aorta inside the animal's chest that they have killed (66).The Arabs made up another Arabic term for the 'Aorta' which is 'Abhar', a term used for the middle feathers of a bird's wing (67) that pass across the chest to the rear and visible even when the wing is closed. Both aorta and abhar were used in the old Arabic medical literature.

Orta root (Photo courtesy:
Mr. Abdul Rahman Alsirhan, Kuwait).

Orta tree in the desert

List of some Arabic medical terms commonly used in the English language: (68)

Adult: a person who is fully grown or developed. عضل (نضج وبرزت عضلاته)

Alcohol: a purified material, or "quintessence", which was typically arrived at by distillation methods. الكحول

Alembic*:* distillation container. (الإمبيق (أداة كيميائية للتقطير

Alchemy: a pseudoscientific forerunner of chemistry in medieval times. الكيماء

Alizarin: an orange-red dye. العصارة

Alkali: any of various water-soluble compounds capable of turning litmus blue and reacting with an acid to form a salt and water. *alkaline* – مادة قلوية قلوي

Amalgam: an alloy of mercury with another metal used by dentists to fill cavities in teeth, from Arabic المملغم *al-malgham*.

Aniline: oily poisonous liquid amine obtained from nitrobenzene and used to make dyes, plastics and medicines. أَنِيلِّين

Antimony: a metallic element having four allotropic forms; used in alloys and in medicine. أَنتِيمون

Aorta: main artery through which blood is carried from the left ventricle of the heart to branch arteries. الأبهر – الأورطي

Asthma: an illness that causes difficulties in breathing. أزمة الربو

Attar: from Arabic *'ittr* aroma, 'perfume, essence' obtained from flowers.عطر

Benzoin: fragrant aromatic gum resin used especially in treating skin irritation. بنزيون

Bezoar: a small stony concretion which may form in the stomachs of certain animals, especially ruminants, and which was once used as an antidote for various ailments. From French *bezoard*, based on Arabic *bāzahr* 'antidote'بازهر

Borax, borate, boron: an ore of boron consisting of hydrated sodium borate; used as a flux or cleansing agent. From Persian *burah* and Arabic *būraq* بورق

Buccal: relating to the mouth cavity. متعلق بالتجويف الفمي (من الفعل بَقّ)

Caliber: the diameter of a body of circular section, such as a tube, blood vessel, or fibre. From Arabic *qālib* 'mould'. قالب

Camphor: a resin obtained from the camphor tree. From Arabic *kāfūr* كافور

Canon: a general law, rule, principle, or criterion by which something is judged. From the Arabic *kānon* قانون

Caraway (seed): the seeds of a plant of the parsley family, used for flavouring and as a source of oil. From Arabic *al-karāwiyā* كراويا

Cataract: a medical condition in which the lens of the eye becomes progressively opaque, obsecuring sight. إعتام عدسة العين

Channel: a tubular passage or duct for liquid. *Kanah* قناة

Check: 'examine to determine the accuracy of'. Originally used in English in the game of chess, it was introduced to Europe by Arabs, who pronounced the last *h* in الشاه *shāh* hard as Persians do, giving rise to the 12th century French form *eschac* and then *eschec*, which the English is derived from; the initial *e* is dropped in English. The interjection *checkmate* comes from the Arabic and Persian *shah mat*, meaning 'the king is defeated'. (Masood, 2009, p. 13). Moreover, the Arabic word *sakk* صك , from which the modern word cheque has been derived, is considered.

Chronic: (of an illness) continuing for a long time. قروني (مزمن)

Civet: refers to a musky perfume taken from a gland in the animal. From Arabic *zabād*, denoting the perfume. زبد

Colon: *Anatomy:* the main part of the large intestine, which passes from the caecum to the rectum and absorbs water and electrolytes from food which has remained undigested. From Arabic *kolon* (قولون)

Cornea: the transparent layer forming the front of the eye. قرنية

Cotton: soft silky fibers from cotton plants in their raw state. From Arabic *qutun*. القطن

Cough: a sudden noisy expulsion of air from the lungs that clears the air passages. From Arabic *koha* كحة

Crimson: a rich deep red colour inclining to purple. Based on Arabic *qirmizī*, from *qirmiz* (related to kermes). Compare with carmine. قرمزي

Crown: *Dentistry*: the part of a tooth above the gum that is covered with enamel. From Arabic *Koron* قرون that refers to a circular ornamental headdress worn by a monarch as a symbol of authority, usually made of or decorated with precious metals and jewels.

Curcuma: a tropical Asian herbs that yield spices, dyes, and medicinal products. From Arabic *kurkum* 'saffron'. كركم

Cut: an act of cutting or incision. From Arabic *qat'*. قطع

Drub: hit or beat (someone) repeatedly**.** ضرب

Down: in a lower position. أسفل - دون

Edema, oedema: a condition characterized by an excess of watery fluid collecting in the cavities or tissues of the body. تأدم / وذمة

Elastic: cord, tape, or fabric, woven with strips of rubber, which returns to its original length or shape after being stretched. Derived from Arabic *plastic.* شريط مرن

Elixir: a particular type of medicinal solution. From Arabic *al-'iksīr* . الإكسير

Gauze: (medicine) raw silk, thin, loosely woven cloth used for dressings and bandages. From Arabic *Qazz*قز . Perhaps from *Gaza*, the name of a town in Palestine.

Ghoul: someone who robs bodies from graves and sells them for anatomical dissection. غُول

Glucoma: a disease in which pressure inside the eye causes gradual loss of vision. الغلوق، أم الغلوق

Gypsum: a soft white or colorless mineral consisting of hydrated calcium sulphate used to make cements and plasters (especially plaster of Paris). جِبْس

Hakim: a Muslim physician or 'wise man. From Arabic *Hakīm* حكيم

Hashish: purified resinous extract of the hemp leaves; used as a hallucinogen. From Arabic *Hashish*. حشيش

Hospital: The word hospital is Arabic in origin, *Hawzit Al-baittar*, حوزة البيطار **—** *al-baittar* is a pharmacist who sells medicines and treats people. Later on, *al-Baittar* meant to be the person who treats animals, from which comes 'Baittara البيطرة'.

Hypo: under, below normal. هبط

Julep: a sweet flavoured drink made from a sugar syrup, sometimes containing alcohol or medication. Via Arabic from Persian *gulāb* "rose water" or mint julep. جلاب

Kohl: a black cosmetic powder used by women to darken the edges of their eyelids as eye make-up especially in Eastern countries. From Arabic *kuhl.* كحل

Lime: white substance obtained by burning limestone, used for making cement, etc. Rounded

citrus fruit like a lemon but greener, smaller, and more acid. ليمون حامض – جير

Lute: a liquid clay or cement used to seal a joint, coat a crucible, or protect a graft. From Arabic *al-ʻūd.* العود

Mascara: a cosmetic for darkening and thickening the eyelashes. From Arabic *maskhara* مسخرة "buffoon, jester". Literally 'mask' is used in theatrical entertainment. مسكرة

Mask: a protective covering worn over the face made of fibre or gauze and fitting over the nose and mouth to protect against air pollutants, or made of sterile gauze and worn to prevent infection of the wearer or (in surgery) of the patient. Influenced by Arabic *maskhara* 'buffoon'. قناع

Massage: the rubbing and kneading of muscles and joints of the body with the hands, especially to relieve tension or reduce pain, usually for medicinal or relaxation purposes. The practice of massage was common in the Middle East for centuries before it became common in the West in the mid 19th century. Perhaps from Arabic *massa* مَسَّ, to touch.

Mattress: the soft part of a bed that you lie on. مرتبة From Arabic *matrah* مطرح 'carpet or cushion', from *taraha* 'to throw.'

Mummy: a body for an animal or a human being embalmed for burial, especially in ancient Egypt. مومياء *mūmiyā*

Musk: a a strong-smelling reddish-brown substance which is secreted by the male musk deer for scent-marking and is an important ingredient in perfumery. From the Arabic word *misk.* مسك

Natron: a mineral salt found in dried lake beds, consisting of hydrated sodium carbonate. *natrūn* النَّطرون

Nucha: *Anatomy:* relating to the nape of the neck. From Arabic *nukha'* 'spinal marrow'. نخاع

Numb: to lose sensation. نَمِلَ

Ora Serrata: the part of the eye that marks the junction between the retina and the ciliary body. عروة مسررة

Pancreas: a large gland located behind the stomach secreting insulin. بنكرياس

Realgar: a soft reddish mineral consisting of arsenic sulphide, formerly used as a pigment and in fireworks. From Arabic *rahj al-ġār* 'arsenic', literally 'dust of the cave.' رَهج الغار

Retina: a layer at the back of the eyeball that contains cells sensitive to light, which trigger nerve impulses that pass via the optic nerve to the brain, where a visual image is formed. ردينة (شبكية)

Saphenous: relating to or denoting either of the two large superficial veins of the lower limb of man. Saphenous "clear or manifest," from Arabic *al-sāfīn.* الصَّافِنُ. The saphenous veins were among the more commonly used veins in medieval bloodletting. The word is first seen in Ibn Sina's *The Canon of Medicine*.

Sash: wrap of muslin (gauze). From Arabic *shāsh* شاش

Save: keep safe or rescue from ruin, destruction, or harm. From Arabic *sa'f* سعف أو أسعف

Senile: a person showing the weaknesses or diseases of old age. سني (شيخوخي)

Shake: tremble. From Arabic *Sakka* إرتجف (صك أو اصطك)

Shrub: a drink made of sweetened fruit juice and spirits, typically rum or brandy. From Arabic *shurb*, *sharāb*, from *shariba* 'to drink'; compare with sherbet and syrup.

Sirup / Syrup: a thick sweet sticky liquid. From Arabic *Sharab* شراب 'beverage'; compare with sherbet and shrub.

Soda, **Sodium**: carbonated water drunk alone or mixed with alcoholic drinks or fruit juice; sodium carbonate, especially as a natural mineral or as an industrial chemical. It is most often said to be from Arabic سوادة *suwwāda*, سويد *suwayd*, or سويدة *suwayda*, 'saltwort' a plant growing in salty environments whose ashes yielded sodium carbonate. صودا

Sphenoid, sphenoid bone: a compound bone which forms the base of the cranium, behind the eye and below the front part of the brain. إسفيني، العظم الإسفيني (الوتدي)

Symptoms: indications of a certain disease. سمات (أعراض) المرض

Talc: a fine grained mineral having a soft soapy feel and consisting of hydrated magnesium silicate; used in a variety of products including talcum powder. *Talq* or *talc*. طلق – بودرة تلك

Waist: the narrowing of the body between the ribs and hips. وسط الجسم (الخصر)

Zero: no quantity or number; nought; the figure 0; from Arabic *ṣifr* 'cipher'. صفر

Conclusion:

In conclusion, it is important to point out that this paper has discussed the Arabic impact on the west in the Islamic civilization. A significant presence of languages other than Latin or Greek in medical English included the Arabic language consolidated as the language of the philosophic, medical and, generally, of the scientific thought. After seven centuries of Arabic dominance on scientific discourse, it began to be eclipsed in the 15th century by the Turks as Ottoman rule expanded. Over time, a multitude of medical terms derived from Arabic origin were imported, expanding the English language vocabulary beyond medicine.

Later on, the translations into Latin introduced the Muslim science into the European culture and education, especially into Italy and France. Translations in the Arab world were done by scientists or specialists, most of them were in fact physicians who developed and refined the medical ancient writings and also extended their analytical approach. Thanks to the works of Arab translators, a great part of the existing whole body of scientific knowledge was preserved, analyzed, enriched, transferred and finally bequeathed to the future generations. Arab Scientists were often very prolific in their writings because many of them were supported by the royalty or patronage. They were often commissioned to do research or translate for the king and much of their work was sponsored.

This paper's aim was not to relive the past glory of Arab achievements in our imagination, but to revive it with an eye to figure out how to retrieve it in an effort to motivate the readers to excel not only in medicine, but in all branches of science.

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Notes

1. In the vocabulary of this paper, the researcher has practically included some medical terms found in the dictionaries available in the well known internet resources and sites, notes and readings; and not restricted to the English language.
2. George Sarton. *Introduction to the History of Science*, Vol. I, New York: R. E.Krieger, 1975, p.17.
3. Louis L'Amour. (1984). *The Walking Drum*, Batam Books, NY, NY, pp. 171-172.
4. Emilie Savage-Smith and Peter Pormann. (2007). *Medieval Islamic Medicine*, Edinburgh: Edinburgh University Press, pp. pp. xiv, 223.
5. Donald Campbell. (2002). *Trübner's Oriental Series: Arabian Medicine and its Influence on the Middle Ages*. Vol. I, London: Kegan Paul, Trench, Trubner and Co., (Reprint of the Lontdon, 1926 edition), p. 38.
6. Ibid., p.42.
7. J.K Borchardt. (2002). Arabic pharmacy during the Age of caliphs. *Drug News And Perspectives*. July. 15(6): 383-388.
8. Since the Greek science was limited principally to the eastern Mediterranean in the fifth century, Syria was far advanced in medicine after Greek language became the medium of instruction there.
9. Hippocrates, called the father of medicine and the pioneer for writing the first known independent manuals on medicine, was highly recognized by Muslims that his 52 classical books, *Hippocratic Corpus*, were translated into Arabic. He was the first who turned away from the traditional treatment of the sick by means of drugs and surgery to the preventive treatment of health.
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15. Donald Campbell. (2002). *Trübner's Oriental Serie*, p. 141
16. S. Johna (2002). *Hunayn ibn-Ishaq: A Forgotten Legend. The American Surgeon*, 68(5), 497-499.
17. Donald Campbell. (2002). *Trübner's Oriental Serie*, p. 139.
18. Ibid, p. xii
19. Franze Rosenthal. (1975). *The Classical Heritage in Islam*, London: Routledge, pp.17-18.
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21. Eugene Myers A. (1964). *Arabic Thought and the Western World*, New York: Frederick Ungar Publishing Company, p. 67.
22. George Sarton. *Introduction to the History of Science*, Vol. I, New York: R. E.Krieger, 1975, p. 17.
23. Ullmann, Manfred. (1978). *Islamic Medicine*, Edinburgh: Edinburgh University Press, pp.10 – 11.
24. Muhammad Abu Bakr Zakariya Al-Razi, born in Persia, (850- 925), started his professional life as an alchemist, but eventually turned to medicine at the age of 30, perhaps to find cures for the injuries he suffered during alchemical experiments, especially eye ailments. Al Razi was trained in Baghdad and worked as a teacher in the hospitals there. He earned the title of "Arab Galen" and "most brilliant genius of the Middle Ages" for achievements in medicine, but also called the founder of philosophy of nature in Islam. Al Razi was extremely generous and always willing to treat and help the poor and to seek to identify cheaper alternative treatments for those who could not afford expensive drugs. Despite the large fees and honors he received, his generosity to the less fortunate left him poor and blind.
25. Ehsan Masood. (2009). *Science and Islam: A History*. London: Icon Books, p.100.
26. Qtd. in Ehsan Masood. (2009). *Science and Islam,* p.100.
27. M.Siddiqui. (1959). *Studies in Arabic and Persian Medical Literature*, Calcutta: Calcutta University, p. XX.
28. George Sarton. (1951). *The incubation of Western culture in the middle east.* Library of Congress Lecture, p. 27, 29, 35.
29. Abu Ali Al Hussain Ibn Abdullah Ibn Sina, born in Persia, He was a boy prodigy who was reputed to have memorized the *Qur'an* and much Arabic poetry by the age of ten. He had become a physician by the age of 16. At the age of 17, Ibn Sina succeeded in curing the King of Bukhara of an illness which all other doctors had said was incurable. As a reward, Ibn Sina was given access to the King's library. (Ehsan Masood, *Science and Islam*, p.103). In this library, he read many books by ancient authors, such as Aristotle whose *Metaphysics* intrigued him that he claimed to have read it 40 times. His principal teachers were the Nestorians at Baghdad. He became a teacher and a doctor in Cordoba in Muslim Spain.
30. John R. Hayes. (ed.). (1992). *The Genius of Arab Civilization: Source of Renaissance*, 3rd ed., New York: New York University Press, p.226.
31. Ehsan Masood. (2009). *Science and Islam: A History*, 2009, p. 105.
32. Sami K. Hamarneh. (1992). The life sciences, in John R. Hayes. (ed.). (1992). *The Genius of Arab Civilization*, p. 196-197.
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34. Born in Damascus, in 1236 Ibn an-Nafis moved to Egypt and worked in Al-Mansuriya Hospital where he became the sultan's personal physician. He composed very important books, such as *Al-Shamil fi al-Tibb* (The Comprehensive Book on the Art of Medicine), a book on ophthalmology, *Mujaz al-Qanun* (The Summary of Law), and a number of commentaries on Hippocrates, Ibn Sina and Hunayn Ibn Ishaq.
35. Sami Hamarneh K. (1992). The life sciences, in John R. Hayes (ed.), *The genius of Arab civilization*, pp.180-82.
36. Leon McMorrow. (1998). *Breaking the Gereco-Roman mold in medical writing*, pp 13-28.
37. Donald Campbell. (2002). *Trübner's Oriental Serie*, p. 136.
38. Ibid, p. 118.
39. Will Durant. (1950). *The Story of Civilization: The Age of Faith*, Vol.4. New York: Simon & Schuster, p. 91.

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42. Jean Gimpel. (1976). *The Medieval machine: The industrial revolution of the middle ages,* New York: Holt, Rinehart and Winston, pp. 175,178.
43. Donald Campbell. (2002). *Trübner's Oriental Serie*, p. 125.
44. F.J.C. Hearnshaw. (1967). *Medieval contributions to modern civilization: A series of lectures delivered at King's College, University of London*. London: Dawsons of Pall Mall. (first printed in 1921 by G. G. Harrap & Company, Ltd.: London), p.121.
45. Maria Rosa Menocal. (1985). Pride and prejudice in Medieval studies: European and Oriental. *Hispanic Review* 53:61–78.
46. The direct contact of the Christian crusaders with the Muslims in Palestine also contributed to the spread of advanced Arab knowledge generally in the west of Europe. They were "undoubtedly influenced by [their] medical and philosophical doctrines" (Campbell, 2002, p.109).
47. The term 'Saracen' was used to describe a Muslem in the era of the Crusades.
48. Charles. H. Haskins. (1915). *The Normans in European History*, New York: Houghton Mifflin Company. Retrieved from http://books.google.com.eg/books?id=1TYNAAAAIAAJ&q, pp.235,238.
49. Donald Campbell. (2002). *Trübner's Oriental Serie*, p. 143.
50. Briffault, Robert. (1919). *The making of humanity*, London: G. Allen & Unwin ltd, pp. 200-201. Retrieved September 23, 2011, from http://www.archive.org/details/makingofhumanity00brifrich,
51. Born in Cordova, Maimonides fled in 1160 with other Jews to Fez in Morocco and later migrated to Palestine. He finally went to Cairo, where he entered medicine as a career for financial needs, and where he acquired a reputation so high that he eventually became a physician to the sultan Salah Addin.
52. Albert S. Lyons. (n.d.). *Medicine under Islam: Arabic medicine*. Retrieved December 12, 2010, from http://www.healthguidance.org/entry/6344/1/Medicine-under-Islam-Arabic-Medicine.html.
53. Leon McMorrow. (1998). *Breaking the Gereco-Roman mold in medical writing*, pp 13-28.
54. Qtd. in Sindi, n.d., http://radioislam.org.
55. Maria J. E. Ramos. (2008). A study of medical terms in benvenutus grassus. *Miscelánea: a journal of English and American studies*, 37, pp. 39-45. Retrieved May 3, 2012, from: http://www.miscelaneajournal.net/images/stories/articulos/vol37/39.pdf .
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58. Hussaini Abdul Karim. (n.d.). English words of Arabic origin. *Mind Our English*. Retrieved July 20, 2011, from http://thestar.com.my/english/story.asp?file=/2010/10/15/lifefocus/7002907&sec=lifefocus.
59. Ehsan Masood. (2009). *Science and Islam: A History*, 2009, p. 88.
60. Rom Landau. (1958). *Arab contribution to civilization*, San Francisco: The American Academy of Asian Studies, p. 49.
61. He authored the most elaborate Arabic encyclopedia, *The Compendium of Simple Drugs and Food*, in which he listed 1,400 drugs derived from different plants, herbs, animals, or minerals from the different parts of the Muslim world.
62. Sami Hamarneh K. (1992). "The life sciences," in John R. Hayes (ed.), *The genius of Arab civilization*, pp.180-82., p. 213
63. Rom Landau. (1958). *Arab contribution to civilization*, p.44.1 http://www.etymonline.com
64. Maria J. E. Ramos. (2008). A study of medical terms, p. 46.
65. Hajar Albinali. (2007). The origin of aorta Arabic versus Greek. *Heart Views*, 8(3), pp. 114-66.Retrieved July 15, 2011,from http://www.hmc.org.qa/heartviews/vol8no3/History_med1.htm. Another meaning for 'abhar' is "in the middle".
67. Some of the mentioned meanings or definitions are taken from the following sources: http://www.almaany.com/home, and http://oxforddictionaries.com/. As well as from: *The Oxford dictionary*, *The In-dictionary*.
68. Refaat Kashmiri. (2006). *Arabic roots of medical terms* الجذور العربية في المصطلحات الطبية.