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MAX MEYERHOF
THE MAN AND HIS WORKS

CONTRIBUTIONS OF ARABIC AND JEWISH PHYSICIANS TO MEDIEVAL MEDICINE AND OPHTHALMOLOGY

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The man

MAX MEYERHOF (fig. 1) a versatile scholar of the first half of this century, combined the talents of a great ophthalmologist and medical historian. He was born March 21, 1874 in Hildesheim, Germany to an old German-Jewish family whose residence in Hildesheim dated back to 1720. There were scientists, physicians and historians on both sides of the family. On the maternal side were the outstanding gynecologist, Prof. Dr. OTTO SPIEGELBERG of Breslau and Goettingen and his cousin, Prof. WILLIAM SPIEGELBERG, the famous Strassburg Egyptologist. A paternal cousin was Prof. OTTO MEYERHOF, the famous chemist and physiologist who was awarded the *Nobel Prize* for Medicine in 1932 and who, in 1940, came to the United States where he was research professor of physiological chemistry at the *University of Pennsylvania Medical School* before his death in 1951 (cf. PICARD, 1945).

Max Meyerhof studied medicine in Heidelberg, Berlin and Strassburg, receiving his M.D. degree from Strassburg University in 1898. He became interested in ophthalmology and served as assistant to Prof. GUTTMANN in Berlin, to Prof. AUGSTEIN in Bromberg and to Prof. UHTHOFF in Breslau. In 1900 he accom-

panied his cousin OTTO to Egypt and was so fascinated by Cairo that he settled there in 1903 as an ophthalmologist. He participated in the founding of a polyclinic for treatment of the poor. He began bacteriologic and clinical work in the prevalent infectious ocular diseases. Between 1903 and 1914 he served as chief of the *Khedivial Ophthalmic Clinic*. His book *„Ueber die ansteckenden Augenleiden Ägyptens"* (On the contagious eye diseases of Egypt) appeared in 1909 (cf. MEYERHOF, 1909a). Between 1910 and 1912 he gave postgraduate courses.

As early as 1907 MEYERHOF began to study ancient Arabic ophthalmology. He studied Arabic with Prof. LITTMAN and learned many of the Semitic languages so he could obtain access to original manuscripts (cf. MEYERHOF, 1909b). Later he brought to light a number of unknown documents, particularly *„The Medical Work of Maimonides"* who practiced in Cairo 900 years earlier (MEYERHOF, 1929). The Egyptian University published his main work *„Ten Treatises of the Eye, ascribed to Hunain-ibn-Ishaq."* MEYERHOF (1928) made an important contribution to medieval history by editing this Arabic text with a translation of this rare manuscript which is the starting point of Arabic ophthalmology. MEYERHOF translated and published for the first time Maimonides' glossary of drugs (*L'explication des noms de drogues*) in 1940. He published the *Edwin Smith Papyrus*, known as the oldest book on surgery in the world.

In 1914 MEYERHOF returned to Germany to serve as a voluntary medical officer in the German Army and in 1918 settled in Hannover as an ophthalmologist. In 1923 returned to Cairo where he devoted himself to private practice and scientific research.

MEYERHOF received many honors. He was elected a member of the *Academy of the History of Sciences* in Paris and the *Royal Society of Medicine* in London. He received an honorary Ph.D. from Bonn University in 1928. He became vice-president of the *Institut d'Egypte* of Cairo, vice-president of the *Société Royale de la Medicine d'Egypte* of Cairo, a member of the *Society of Friends of Jerusalem University* and an honorary member of the *International College of Surgeons* and of the *Egyptian Ophthalmological Society*. On the occasion of his 70th birthday in 1944, the University of Jerusalem published a bibliography of his collected works, about 300 publications and monographs. These included a few early papers on bacteriology, about 80 on ocular histopathology, tumors of the eye, conjunctival disease – particularly trachoma –, myopia, glaucoma, leprosy, vernal catarrh, and ocular surgery. He also published 17 papers in other medical areas, about 110 on historic subjects (103 on the history of Arabic ophthalmology and medicine and 7 on Islamic subjects) and 66 medical reviews. His research on the Medieval Arab Culture and on Arabic and Jewish contributions to Medieval medicine was made from unpublished original documents, chiefly in Cairo libraries. The material which follows this biographic sketch was mainly gathered from the many papers of MAX MEYERHOF (cf. HORIN, 1944).

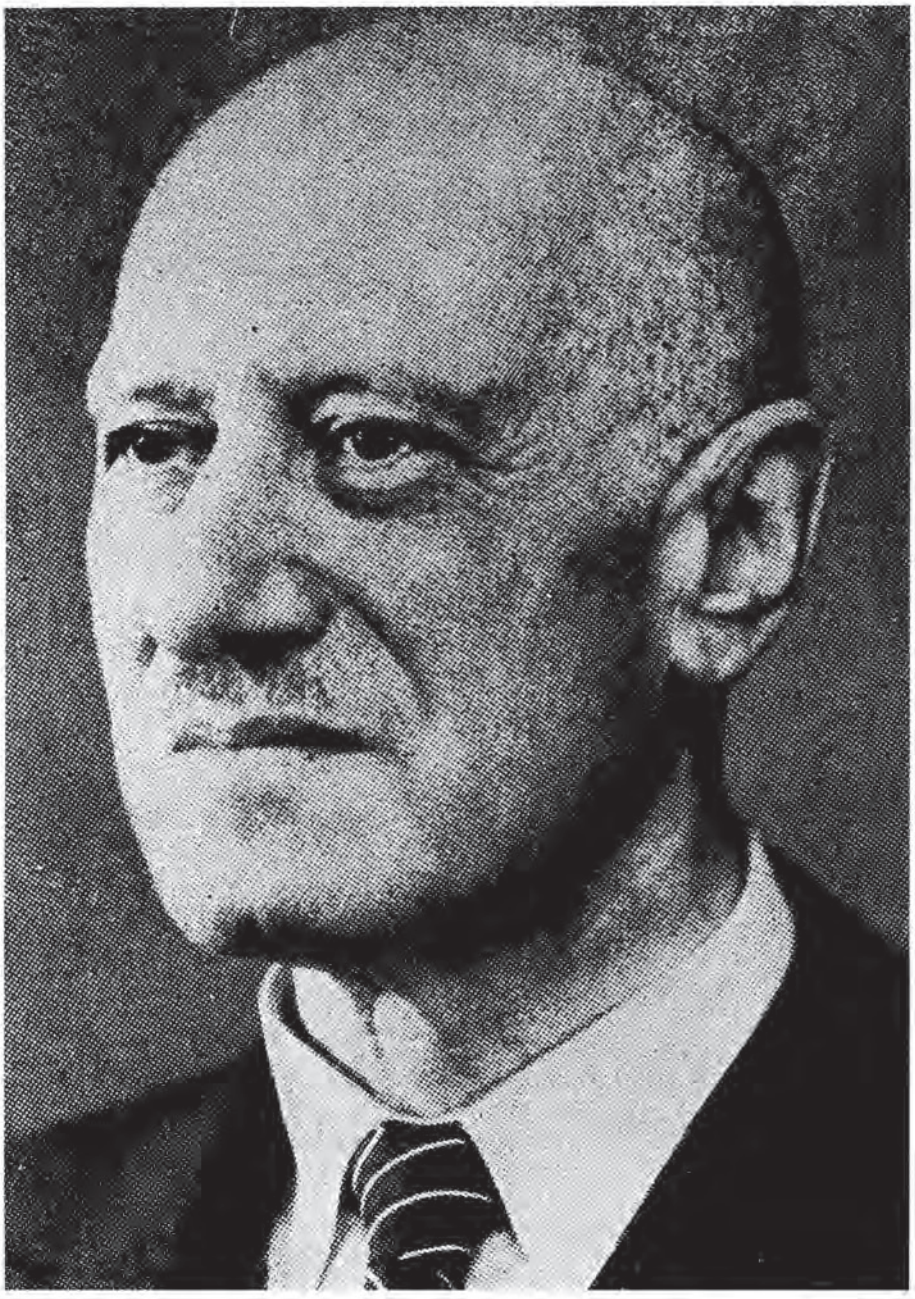

Fig. 1: MAX MEYERHOF (1874 – 1946), ophthalmologist and medical historian

MEYERHOF received several Egyptian and Red Cross decorations. He refused a professorship of medical history at Leipzig University in 1930 and when the Hitler persecutions began he resigned his honorary memberships in the German and Austrian scientific societies.

MEYERHOF had other interests of an artistic nature and was able to relate Arabic fairy tales in the manner of a professional story teller. Through his personal friendship with the great botanist GEORGE SCHWEINFURTH he developed a love for plants and flowers. He was a connoisseur and collector of oriental rugs and was consulted by museums. He had a wide knowledge of Persian, Arabic and Coptic art. His home was a gathering place for all exiles from Europe and for scholars from everywhere.

He died April 20, 1945 in Cairo.

Arabic and Jewish Contributions to Medieval Medicine and Ophthalmology, based on the works of Max Meyerhof

A division of the Medieval ages into several periods may make it easier to understand the complicated factors in transmission of medieval learning.

The early period

The early period, up to 750 A.D., covers the beginning of the spread of Greek thought. During the 3rd century A.D., Neo-Aramaic (Syriac) replaced Greek in the learned circles of western Asia and was carried by the *Nestorians* (founded in Edessa 428 A.D. and condemned as herectis, they were expelled by intolerant Byzantine emperors and eventually migrated to Persia and later to Western China. They still exist in Kurdistan and the Syriac Church uses Nestorian theology). Later the Nestorian physician-philosopher Hunain ibn Is-Haq was the most famous translator from Greek into Syriac and Arabic. When, in the 7th century A.D. the Arabs overran North Africa and Western Asia they contributed only their music and their rich language. They left the Byzantine and Persian scientific institutions alone.

The Medical School of Alexandria still existed at the time of the first Moslem dominion of Egypt. Umar II was the eighth Umayyad Caliph at Damascus, reigning from 717 × 220. He was a devout Moslem and converted the Principal of the Christian School to Islam. The Caliph transferred the school of Alexandria to Antioch which was at the border of the Byzantine Empire where it was easy to find Greek scientific manuscripts. The Academy of Gondeshapur in southwest Persia (founded by the Sassanian King Shapur II in the 4th century) continued as the scientific center of the new Islamic empire. The Arabs were, of course, accused of burning the great library of Alexandria at the order of the Caliph Umar but the important libraries of Alexandria had already been destroyed before the Arab conquest.

During the Umayyad period (661 – 749) physicians, mostly Christians and Jews with Arabic names, came to Damascus, capital of the Umayyad empire, to participate in the translation. A Persian Jew, Masarjawaith (al-Yahudi, born in Basra, Mesopotamia) translated the Panadects, written by the Christian priest Ahrons, from Syriac to Arabic. This was probably the first comprehensive book on medicine to come into the hands of Moslem physicians. Al-Yahudi wrote a treatise on the eye which no longer exists. His son, Isa, wrote a book on colors.

The Age of Translation

The Age of Translation lasted from about 750 to 900. The Caliphs and Grandees maintained translation schools in which almost the entire scientific literature of the Greeks, purchased by emissaries to the lands under Byzantine control, was translated into Syriac and Arabic. During the Abassid Caliph, Al-Mansur's time (754 – 775) translation of Greek wisdom was again emphasized, notably at Gondeshapur. This resulted from the advice of Jurjis of the Christian family Bukht-Yishu in which there were seven generations of physicians.

The greatest activity in translations occurred during the 9th century. During the time of Caliph al-Ma-mun (813 – 833) it reached its first peak. One of the translators (later director of the „*House of Wisdom*") was the previously mentioned Nestorian, Hunain ibn-Is-Haq (809 – 877). He translated 100 Syriac and 39 Arabic versions of Galen's works, Hypocrates's Aphorisms, the works of Oribasis and Paul of Aegina and the Greek Bible (the Septuagint). He also wrote the first textbook on ophthalmology, *Ten Treatises on the Eye* (MEYERHOF, 1928). Hunain's son, Is-haq, devoted himself to the translation of Aristotle.

By the end of the 9th century the whole scientific literature was available in good Arabic translations. Most of the translation was done by men of science. This material then passed into the hands of Moslem and Jewish men of science.

MEYERHOF (1930) analyzed one of the oldest Arabic treatises on medicine. *The Book of Treasure in the Science of Medicine*, by Abul-Hasan Thabit ibn Qurra ibn Marwan al Harrani (835 – 901) a Sabaean from Harran in Mesopotamia, the chief seat of the Sabaean star worshippers. Thabit left Harran after a religious quarrel with his fellow Sabaeans and became the personal friend and companion of one of the Abbassid Caliphs in Baghdad, the Caliph al-Mu-todid (892 – 902). The book was extant in the middle of the 10th century.

The chapter on eye diseases is of most interest to ophthalmologists and is described by MEYERHOF: After a short discussion on eye anatomy, there is a paragraph on ophthalmia and its treatment according to Galen and Thabit. Then leucoma, pterygium, trachoma and pannus are considered. Peritomy for pannus is mentioned. Ulcerative blepharitis, contusions of the globe, nightblindness and cataract are discussed. Then the treatment of amblyopia, lacrimal fistula, proptosis, exophthalmos, trichiasis, madarosis and phthiriasis are covered.

An important book, the *Risala* (epistle), a discussion of the translation of the many manuscript of Galen, was written by the Nestorian Hunain ibn Is-haq in 855. He lived in Baghdad during the reigns of the Caliphs. The Risala shwos that the translators of Galen's books were all Christians, probably Nestorians. He and his pupils produced 106 Syriac and 108 Arabic versions of the Galen works. The Syriac versions were made for Christians and the Arabic versions for Moslems. The Arabic versions were considered the better translations.

The greatest Jewish physician-oculist of the Middle Ages, Ishaq b. Sulaiman al-Israili (Yizhaq ha-Yisraeli) was born in Egypt in the middle of the 9th century[1]. He kept his court position in Tunisia when the ruling family was overthrown by the Fatimids in 909. He wrote four books on medical subjects which were included in the works that were translated and printed in Venice in 1515. He had one prominent Jewish pupil, Dunash ha-Babli b. Tamim, who succeeded him at the court of Tunisia.

The Golden Age

The Golden Age lasted from about 900 to about 1100. Christians and Sabaeans, mostly Persian, translated and wrote during this period. The most important writer was al-Razi (Rhazes; about 865 – 925), a Persian Moslem. His „*Guide for Physicians*" is extant only in a Hebrew translation.

Avicenna (Abu 'ali al-Husain ibn Sina, 980 – 1037) wrote the *Canon of Medicine*, still in use in the Orient. It is probably the most written-about medical work.

Western Islam also developed as a center of medicine. In Spain during the reigns of the Caliphs Abd al Rahman III and al Hakim II of Cordoba, a Jew, Hasday b. Shaprut (died about 990) was minister, court physician and patron of science[1].

Ophthalmology reached its height about 1000 A.D. Ali ibn Isa, a Christian oculist of Baghdad, and the Moslem Ammar of Mosul, left two treatises which were translated into Latin. They were the best textbooks on eye diseases until the first half of the 18th century.

Some of the old Arabic books on drug remedies are still in use throughout the world of Islam. One of the most popular is *Management of the Drug Store* by the Jew, Kohen al-Attar (14th century).

The period of the Fatimid Caliphs in Egypt and Syria, 969 – 1171, was not only the golden age of Arabic Science, it was also a golden age of Jewish contributions to medicine (MEYERHOF, 1939).

The Fatimids derived their name from Fatima, the daughter of the Prophet Mohammad and wife of the fourth caliph, Ali (murdered in 661). The Fatimids and all

[1] The *b*, stands for *bar* or *ben*, meaning son in Hebrew. This is equivalent to the Arabic *ibn*. Similarly, the Arabic *al* is the definite article, *the*. In Hebrew this is *ha*.

Shiites recognized Ali as the only legitimate Caliph after the Prophet's death because his children continued the line of Mohammad. Missionaries of the sect set out from Syria at the end of the 9th century and conquered the Berber inhabitants of Tunisia. From Tunisia, the rich but disorganized province of Egypt, which had been in the hands of the governors sent by the Caliph of Damascus and later Baghdad since 642, fell to the Fatimid Caliph al-Muizz. Under his successors Palestine and Syria were conquered for the Fatimid Caliph of Cairo until 1070 when the Seljik Turks and later the Crusaders occupied Jerusalem. The decay of the Fatimid rule had begun during the reign of Caliph al-Mustansir (1035 – 1095). In 1171 the 14th Caliph, al-Adid, was deposed by the general Salah ad-Din (Saladin) who became king of Egypt and, through his military victories, secured the throne of Egypt for Syria and his family, the Ayubids. Saladin ruled from 1171 to 1193. He had many physicians in his service, a total of 21 including 8 Moslems, 8 Jews and 4 Christians. Among his Jewish physicians the two most prominent were Musa ibn Maimun (Maimonides) and Ibn Jami (Hibatallah ibn Zayn ibn Hasan ibn Afra'im ibn Jami al-Isra'ili).

Ibn Jami had been a physician at the court of the last Fatimid Caliph of Egypt, who died in 1171, and served many years under Saladin. He won great fame by reviving an apparently dead person whose bier was carried past his office; he observed that the feet were erect and not relaxed as those of a dead body.

Maimonides (Moshe b. Maimon) was born in Cordova, Spain in 1135 (MEYERHOF, 1938). His family left Cordova in 1148 because of religious persecution and eventually settled in Fez, Morocco. Renewed persecution forced the family to seek refuge in Palestine where the Crusaders were fighting the Moslems and the family then migrated to Fustat (Cairo) Egypt in 1166. There he lost his father and younger brother, David, and was confined to his room for a whole year. He probably witnessed the great fire which destroyed Fustat in 1168, set at the approach of the Crusaders. In 1169 he set out to give lectures and medical treatment to earn a living. He won fame as a physician, philosopher and theologian and was recommended to the court of the last Fatimid Caliph al'Adid in 1171. After Saladin's death in 1193, there were quarrels and wars between his successors. When Saladin's eldest son, al-Afdal nur Ad-Din Ali became sultan in 1198 he appointed Maimonides chief physician to his court. Maimonides died in 1204 at the age of 69. Ten of his medical writings, all in Arabic, are known to us. (cf. MEYERHOF, 1929) There are extracts from Galen's works, a commentary on Hippocrates' Aphorisms and Maimonides own Aphorisms. Six other writings were short discourses on hemorrhoids, asthma, sexual intercourse and poisons, written at the request of Sultans, princes or of the great protector of Jewish physicians, the Qadi-al-Fadil. He wrote two treatises on general hygiene during his office as chief physician at the court of the sultan al-Afdal in 1198 and 1200.

Maimonides was one of the few who ventured to contradict Galen, the great representative of Greek medicine (MEYERHOF, 1940). In his 25th Discourse, Mai-

monides discussed and contradicted Galen's use of the white of eggs to wash and cleanse the discharge from the eye and smooth the roughness resulting from trachoma. He also discussed Galen's ideas about the reason the eyebrows and lashes never grow long because he disagreed with his views.

All the Caliphs of Egypt showed a friendly disposition toward Christian and Jewish officials and learned men (though the 6th Caliph al-Hakim, who apparently was mentally deranged, had periods of tyrannical outbreaks). In addition, the relative freedom of non-Moslems from the restraints of orthodox Islam led to an increase in the number of Jewish physicians at the courts of Baghdad, Cairo and Spain. The first caliph al-Muizz brought with him to Egypt a Baghdad Jew, Yaquib ibn Yusuf, who, after conversion to Islam, rose to the rank of Vizier. His successor under the Caliph al-Aziz was a Christian, Isa ibn Nestorius, whose chief deputy was a Jew, Manasseh b. Abraham. During this period two orthodox Moslems were outstanding historians of philosophy, science and medicine. One, Jamal ad-Din ibn al-Qifti (1172 – 1248) wrote a „*History of Learned Men*". He was a protector of scholars and an intimate friend of Maimonides' favorite disciple, Joseph b. Yehuda. The other historian was Ibn Abi Usaybia (1203 – 1270). He was an oculist at the Nasiri Hospital in Cairo and a friend of Maimonides' son, Abraham. He wrote the greatest medical biographic and bibliographic encyclopedia of the Middle Ages. In it the first Jewish physicians were Musa ibn al-Azar (Moses b. Eleazar) and his sons who lived at the court of the Caliph al-Muizz. He may be the same physician who was mentioned, in a Genizah fragment found in the Cairo synagogue, as chief of the three Jewish communities of Cairo (Rabbanite, Qaraite and Samaritan).

A 10th century Jewish physician, described by Ibn al-Qifti, was al-Haqia an-Nafi. The Caliph al-Hakim bestowed a prize of about $ 2500 upon him and appointed him as one of his physicians. Another Jewish physician was Ephraim b. Yepheth (Abu Kathir Afraim al-Hasan ibn Is-haq ibn Ibrahim ibn Yaqub) who wrote at least four discourses.

A Jewish physician who wrote in Hebrew and belonged more to the West than to the East was Shabbatai b. Abraham b. Yael, nicknamed Donnolo. He was born in South Italy in 913 and as a child was captured by Arab pirates who took him to the then Arabic town of Palermo where he later studied medicine. He practiced on the Italian mainland where he wrote an *antidotarium* of 120 drugs.

During the 11th century the greatest physician in Egypt was Ali ibn Ridwan, a Moslem from Giza. His most prominent pupil was a Jew, Ephraim ibn az-Zaftan, who was attached to the court of several Fatimid caliphs. His best pupil was a Jewish physician, Saloma b. Rahamun, who wrote a number of medical and metaphysical books which no longer exist. His son, Meborach, was a distinguished physician.

In the second half of the 11th century the Fatimid reign suffered from the conquest of Asia Minor, Syria and Palestine by the Seljuk Turks who conquered Jeru-

salem in 1071. Their oppression of Christian and Jews was one of the causes of the Crusades. When the Crusaders captured Jerusalem in 1099 the Jewish community there was practically wiped out.

The Age of Decline

The Age of Decline of Islamic medicine started from about 1100. When Islamic medicine came to a relative standstill about 1100, Latin translations of Arabic medical writing began to be transmitted to Europe.

During the 12th century, in spite the Crusades and the hostility of the Moslems to unbelievers, many Jewish and Christian physicians continued to occupy high offices. In Persia and Iraq the Christians were predominant in medicine and two of the most prominent Jewish physicians converted to Islam. The Jewish physicians of Egypt fared much better. There is only one record of a Jewish physician in Egypt during the first half of the 12th century. He was Abu Mansur (Samuel b. Hananyah). He was attached to the court of the 11th Fatimid Caliph, al-Hafiz, and was directed by the Caliph to prepare a poisonous drink for his rebellious son. Abu Mansur swore by the Torah that he did not know how to prepare such a drink. In his place a Christian physician obeyed the Caliph's order and was executed. Abu Mansur was appointed chief physician of Egypt. All the other known Jewish physicians in Egypt belong to the time of the last Fatimid Caliph, al-Adid (1160 – 1171). One was Habatallah (equivalent to the Hebrew Nathaniel). Another was Ibn Jumay (Shaykh al-Muwaffiq Shams ar Riyesa abu'l-Ashair Hibatallah ibn Zayn ibn Hasan ibn Efraim Yaquib ibn Ismail ibn Jumay). The latter was considered the greatest Egyptian physician of his time. He was in the service of Saladin, as was Abu'l Bayan (known as Sadia b. al-Mudawar, a Karaite Jew).

One of two Jewish physician-oculists of note was Abu'l-Fadail ibn an Naqid (naqid = chief rabbi) called al-Muhadh dhab. He devoted himself entirely to ophthalmic surgery. He died in 1188. His son, Abu'l-Faraj, became a distinguished oculist but converted to Islam. The other physician-oculist, al-Muwaffaz ibn Shawa was also a talented poet. He was blinded in one eye by a fanatic Moslem mystic who saw the physician riding a horse, a practice forbidden to non-Moslems in eastern countries. He died soon after, in 1184.

Among the Jewish physicians was As'ad ad Din. b. Ya-qub, a native of Mahalla al-Kubra, a town in lower Egypt, who wrote on optics. Another was an Aleppo physician named Sukra. His son, Afif, was also a noted physician.

After Maimonides, the most prominent Jewish physician was Imran b. Sadaqa, born in Damascus in 1165.

In Syria and Palestine during the 12th and 13th centuries, Samaritan physicians played an important role in medicine. The earliest was Ibrahim b. Faraj b. Maruth, another of the court physicians of Saladin. Other prominent physicians were Sada-

qa b. Munajja of Damascus, later of Iraq, and Muhadh-dhib ad-Din b. Abi Sa'id b. Khalif, of the court of Damascus. All were contemporaries of Maimonides. A nephew of Yusuf, Abu'l-Hasan b. Ghazal b. Abi Said was court physician in Baalbakk. He was later converted to Islam and was appointed Vizier to the Sultan of Damascus. The last historically noted Samaritan physician was Muwaffaq ad-Din Ya'qub b. Ganaim of Damascus who died in 1282.

In the second half of the 13th century two Egyptian Jewish physicians were distinguished. The first was Abu Mansur Sulaiman b. Haffaz with the Hebrew name Shlomo ha-Kohen, probably a Karaite; the second was Abu'l Munn b. Abi Nasr. b. Haffaz.

An Egyptian Jewish oculist who wrote a book ob eye diseases was Izz ad-Dawla Sa'd b. Mansur. He was converted to Islam in a-about 1280. Another, who probably lived in Syria, was Nu Man b. Abi'r Rida b. Salim b. Ishaq. He was the teacher of the famous, Moslem oculist Salah ad-Din b. Yusuf.

A Jewish physician of Baghdad attained high court rank during the reign of Arghun, the Mongol il-Khan of Persia (1284 – 91). He helped an oculist co-religionist, Khwaja Najib, to royal favor.

During the 14th century, with Mamelukes and Mongols in power, the attacks by Turks, together with the plague and economic problems, and religious persecution led to many religious conversions. Many Jews remained faithful to their religion but their position declined.

During the 15th century Jewish physicians were still prominent but few reached high positions. In Cairo Shmu'el b. Shlomo Ha-Ma'arabi was one. In Yemen, about 1430, Abu Zakaryya b. Sulaiman adh-Dhimari was most conspicuous. During the same period a Jewish physician, al-Afif b. Abi Sa'id as'Sawi was chief physician of Egypt.

Jewish physicians as translators of scientific work were prominent. Besides Hasday ibn Shaprut, mentioned earlier, there was Abu'l-Faraj Gregorius, better known as Bar-hebraeus because he was the son of a Jewish physician who had converted to Christianity. He died in 1286.

With the decline in Arabic medicine and the gradual rise of Latin, translators from Arabic to Latin followed the pattern of the earlier translators from Greek to Arabic. Jews and Christian clergy again played an important role. Only at Salerno did a medical school preserve some Greek medicine.

In 1085, Toledo, the greatest center of Moslem learning in the west, fell before the Spanish Christians. Latin students began to come there. The intermediaries for the learning and later the translation were native Jews and former Moslem subjects. The first to come to Toledo was Adelard of Bath, an English mathemetician and philosopher. A Spanish Jew, converted to Christianity, Petrus Alphonsi, went to England and became physician to Henry I. He brought Moslem sciences there for

the first time. The role played by the polyglot Christian and Sabaean translators ob Baghdad was later played in Toledo by the Jews who spoke Arabic, Hebrew, Spanish and, sometimes, Latin. The converted Jew Avendeath (Ibn Dawud) translated many mathematical, astronomical and astrological works of the Arabs into Latin.

Abraham, a Jew of Tortosa, helped Simon of Genoa to translate Abulasis' *Liber Servitoris* and Serapim the Younger's *De Simplicibus.*

Sicily, which had been under Moslem control for 130 years, fell to the Normal in 1091. The kings, from Roger I to Frederick II, Manfred and Charles I of Anjou, drew men to Palermo regardless of language or religion. Many Jews were included. Their translations dealt mainly with astronomy and mathematics.

The famous Jews Avicebron (Ibn Gabirol c. 1020 – 1050 or 1070) of Malaga, Judah ha-Levi of Toledo, Moses ibn Ezra of Granada, Joseph ibn Saddiq of Cordoba, Samuel ibn Tibbon, Shem Tob ibn Falaquira were influenced by Arabic culture. Most important were Sa'adia b. Joseph al Fayumi (892 – 942), Joseph Albo (1380 – 1444) and, especially, Moses Maimonides (1135 – 1204).

Several monarchs of Castille and Aragon surrounded themselves with learned Moors and Jews. The „Moors" were at first not Arabs but mostly Berbers; later many were of Spanish origin.

By the first half of the 13th century the legacy of Moslem civilization as it had existed in Spain was spread all over the country by Christian conquests and by Jewish intermediaries, bringing large numbers of Moslem craftsmen unter Christian rule.

In 1143 all Christians and Jews who refused to turn Moslem were decreed for expulsion by Abd al-Mu'min. Large numbers of Jews and Christians became Moslems to escape the poll tax exacted from all non-Moslems.

Spanish contains many Arabic words, not all beginning with al.

The greatest contribution of the Spanish Moslems to European thought was the work of the philosophers (in spite of their ultra-orthodox Moslem theology). They rediscovered Greek philosophy (especially Aristotle) by war of Aramaic translations. The Greek learning began at Baghdad, from there it was forwarded by Jewish or Moslem intermediaries to the Moslems in Spain and then Jews conveyed it to wandering scholars from Christian Europe.

In 1120 Petrus Alfonsi, a Spanish Jew who was baptized and whose godfather was Alfonso VII, introduced Indian fables into Spain.

Alfonso V, king of Castille and Leon from 1252 – 1284, led the wave of Moslem learning in Christian Spain. He was the patron of his Jewish assistants, who translated Arabic source material for him.

The Crusades period lasted from 1096 to 1291, although Cyprus continued as a crusader stronghold until 1488 and Rhodes until 1523. In 1668 Candia, the last Venetian base in the Levant, fell.

Averroe's system of study was extremely popular among Jews and had penetrated Christian thought so deeply that it became a menace to Church doctrine.

In the 13th century, during the reign of Charles of Anjou (1266 – 1285), the great Jewish translator Farragut of Girgenti translated Rhazes' *Continens.* Another Jew, Moses of Palermo, was trained as a Latin translator at the order of King Charles.

Like the medieval translators who brought ancient works to their contemporaries, MAX MEYERHOF has made many of the medieval medical, ophthalmological and metaphysical works available to the modern world. We are indebted to this versatile ophthalmologist and historian whose interest in the past has enriched the present.

Summary

Max Meyerhof (1874 – 1946) combined the talents of a great ophthalmologist and medical historian. He studied particularly Arabic and Jewish contributions to medieval Medicine and Ophthalmology.

References:

ANON.: Max Meyerhof: Obiturary. Brit. J. Ophthal. 30, 498 – 499 (1946)

HORIN, U. B.: The works of Max Meyerhof: A bibliography. Hebrew University School of Oriental Studies: Jerusalem (1944)

MEYERHOF, M.: L'oevre médicale de Maimonide. Archeion 11, 136 – 155 (1929)

MEYERHOF, M.: Ueber die ansteckenden Augenleiden Aegyptens, ihre Geschichte, Verbreitung und Bekämpfung. Vortrag gehalten zum Besten der Deutschen Schule in Kairo. Kairo (1909a)

MEYERHOF, M.: Einige neuere Funde von Handschriften arabischer Augenärzte. Cbl. prakt. Augenheilk. 33, 321 – 326 (1909b)

MEYERHOF, M.: Hunain ibn Is-hâq's „Book of the Ten Treatises of the Eye". Cairo (1928)

MEYERHOF, M.: The „Book of Treasure", an early Arabic Treatise on Medicine. Isis 14, 55 – 76 (1930)

MEYERHOF, M.: Science and Medicine. In ARNOLD, T. & GUILLAUME, A.: The Legacy of Islam. p. 311 – 355. Clarendon Press: Oxford (1931)

MEYERHOF, M.: Medieval Jewish Physicians in the Near East, from Arabic Sources. Isis 28, 432 – 460 (1938)

MEYERHOF, M.: Jewish Physicians under the reign of the Fatimid Caliphs in Egypt (969 – 1171 C.E.). Medical Leaves (Chicago) 2, 131 – 139 (1939)

MEYERHOF, M.: Maimonides criticizes Galen. Medical Leaves (Chicago) 3, 141 – 146 (1940)

PICARD, H.: Dr. Max Meyerhof, FICS: A tribute. J. Int. Coll. Surg. 8, 470 – 472 (1945)

SUGAR, H. S. – Max Meyerhof, l'homme e son oeuvre: Sur les contributions arabes et juives à la médecine et à l'ophtalmologie mediévales.

Resumé

Max Meyerhof (1874 – 1946) était non seulement un grand ophtalmologiste, mais aussi un grand historien de la médecine. Il étudia particulièrement les contributions arabes et juives à la médecine et à l'ophtalmologie médiévales.

SUGAR, H. S. – Max Meyerhof, el hombre y sus obras: Sobre las contribuciones árabes y judias a la medicina y oftalmologia medieval.

Resumen

Max Meyerhof (1874 – 1946) no solamente era un gran oftalmólogo sino también un gran historiador de la medicina. Estudiando particularmente las contribuciones árabes y judias a la medicina y a la oftalmologia medieval.

SUGAR, H. S. – Max Meyerhof, der Mann und sein Werk: Über die Beiträge arabischer und jüdischer Ärzte zur mittelalterlichen Medizin und Ophthalmologie.

Zusammenfassung

Max Meyerhof (1874 – 1946) war nicht nur ein großer Ophthalmologe, sondern auch ein bedeutender Medizinhistoriker. Er erforschte ganz besonders die arabischen und jüdischen Beiträge zur mittelalterlichen Medizin und Ophthalmologie.

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