THE EMERGENCE OF THE EXACT SCIENCE IN ISLAM

Bilâl KUŞPINAR

THE GENERAL ATTITUDE OF ISLAM TOWARD SCIENCE

Before we begin to discuss the scientific activities in Islam, it will be useful for us to show what the Islamic attitude towards science is. If we do not know how Islam regards science, then our investigation cannot present us a complete picture of the activities done in past.

In the Qur'an, which is the primary source of Islam, there can easily be some signs containing 'knowledge', 'learning', 'teaching' and so forth; even, it is noteworthy that the first sign revealed from God to the prophet Muhammed, who was born among illiterate people, was an order to read and write, and the praise of the pen which is the only means or keeper of human knowledge. (1)

> Read with the name of thy Lord, who created, created man from a clot. Read, and thy Lord is the most Generous, who taught by the pen, taught man what he knew not. (2)

The Qur'an reminds mankind: '...forget not your portion of the world and do good, as God has been good to thee.' (3) This sign compels man to study and learn in a disciplined manner, for doing good requires learning and practicing. The Qur'an does not only regard science as learning and teaching, but also as a prayer, even the most beautiful and acceptable prayer :

'...And say: My Lordincrease me in knowledge.' (4) Although there are a great number of signs showing 'knowledge' in the Qur'an, here, it is sufficent to give only a few.

Say: Are they equal-those who know and those who know not? (5)

---

1) Muhammad Hamidullah, **Introduction to Islam** (Lahore: 1980). p, 216.
2) **The Qur'an**, 96/1-5.
3) **Ibid.**, 28/77.
4) **Ibid.**, 20/114.
5) **Ibid.**, 39/9.

You have been given of knowledge nothing except a little. (6)
Say: Journey in the land, then behold how was the end of those that were before. (7)

Surely in the creation of the heavens and earth and in the alternation of night and day there are signs for men possessed of minds who remember God, standing and sitting on their sides, and reflect upon the creation of the heavens and the earth. (And say) Our Lord, Thou has not created this for vanity. (8)

The last two signs urge men to go on both exploration and new discoveries. (9) Briefly, it is impossible to find a sign that shows that knowledge is worthless.

The second source of Islamic Religion is the tradition of the Prophet Muhammed. The following sayings of the prophet indicate the importance of seeking knowledge.

To seek knowledge is the duty of every Muslim man and woman. (10)
He who leaveth his home in search of knowledge walketh in the path of God. (11)

'...Go to seek knowledge.' (12)

«Prophet Muhammed's first act in Madinah was the construction of a mosque with a portion reserved for a school - the celebrated suffah - which served during the day as a lecture hall, and during the night as a dormitory for students.» (13)

As it has been defined above, both the Qur'an and traditions have pointed out that knowledge is important and useful.

THE EMERGENCE OF THE EXACT SCIENCES IN ISLAM

Before Islam came to the Arabian Peninsula, the Arabs were living an ordinary life; they had been interested in poetry, oratory, discourses and folk tales not in the preservation of ideas and records in writing. (14)

---

6) **Ibid.**, 17/85.
7) **Ibid.**, 30/42.
8) **Ibid.**, 36/191.
9) Hamidullah, **Introduction to Islam**, p. 217.
10) **Ibn Majah**, Mukaddamah, XVII, Hadith Nu. 224.
11) **Sunan al-Tirmizî, Bab-al-'Ilm**, vol. IV. p. 137, Hadith Nu. 2785.
12) **Sunan al-Darimî**, Mukaddamah, 34.
13) Hamidullah, **Introduction to Islam**, p. 217.
14) **Ibid.**, p.5.

However, the Arabs, like the other nations, possessed some knowledge that they took from the early nations which had lived before. To this knowledge, they added some new knowledge from their observation, experiences, abilities and traditions. (15)

After the rise of Islam, a bright life began to appear in the Arabian Peninsula. Changes were evident from the point of political, economical, cultural and scientific views. Because our subjecmatter is exact science we shall not go into detail, but only in order to have an opinion here an interesting point will be emphasized. The Arabs were burying baby girls alive, for they believed that the girls were lower than boys. Islam came and abolished such habits in order to establish the equality of the sexes. (16)

As for the beginning of the exact sciences, it is not possible to determine when they appeared; however, when looked up to the main references of Islamic history it is possible to acquire that the Muslims tried roughly. Chronologically, the history of Muslims can be subdivided into four such as the time of the Prophet, Caliphate, Umayyads and Abbasids.

In the years between 610 and 632, i.e., the period of Muhammed, Muslims were learning to read the Qur'an and memorize the sayings of Muhammed. They were also trying to learn simple sciences such as mathematics, astronomy and medicine, since they needed them in their prayers and daily life. Muhammad Hamidullah gives an explanation on this point :

> The prophet Muhammad said: «Islam is built on five fundamentals: Belief in God, Service of Worship, Fasting, Pilgrimage of the House of the One God, and the Zakat - tax.» If belief demands the cultivation of the theological sciences, the others require a study of the mundane sciences. For the service of worship, the face is turned towards Mecca, and the service must be celebrated on the occurence of certain determined natural phenomena. This requires knowledge of the elements of geography and the astronomy. Fasting also requires the understanding of natural phenomena, such as the appearance of the dawn, the setting of the sun, etc. The pilgrimage necessitates knowledge of the routes and the means of transport in order to proceed to Mecca. Payment of the Zakat requires know-

15) Muhammad Hamidullah, **Islam Peygamberi**, trans. Salih Tuğ, (İstanbul: 1980), vol. II, p. 843.

16) Hamidullah, **Introduction to Islam**, p. 5.

ledge of Mathematics, which knowledge is also necessary calculations for the distribution of the heritage of the deceased. (17)

Science was fundamental for Muslims, for they wanted to use them in their religious acts. For this reason it would be nonsense to say that there were no scientific activities in the period of early Muslims. Yet, here the point to be emphasized is that their activities only aimed acquiring contentment with God. At the same time they were fighting against the non-muslims: therefore, necessitating the development of their technical instruments which they would use at wars; in this regard they made progress in their handicrafts.

Early Muslims had the knowledge of medicine. For I shall later return to this subject under the heading of Medicine, here, I shall be content with a brief historical event. Once, one of the companions of the Prophet, Arfaja, whose nose had been cut down in the course of the struggle of Kilab; then, was ordered by the Prophet to take a nose made of silver. Later when its smell became disturbing to others, Muhammad wanted him to take a golden nose; thus Arfaja had a golden nose. (18) Presumably surgical procedures were performed in the time of the Prophet.

In the caliphal state (633-661), the main studies accomplished by Muslims were the reading of the Qur'an and Hadith rather than the exact sciences, for them were trying to understand the sources of the religion. And also the Prophet left a new community of Islam with the expanding territory, for this reason, the muslims did not make much progress in the scientific area.

However, the muslims, at the beginning of Umayyad Empire, came into contact with the sciences which were developed in Syria, Persia and Egypt, since they had conquered these territories. If a certain date can be pinpointed when the exact sciences began it must be about 700's. Namely, in the second half of seventh century, the Muslims started to translate the scientific works into the Arabic language, thus opening its window to foreign cultures and sciences. In this period, the first translation was done by Khalid Ibn Yazid, who was the son of the second Umayyad caliph, Yazid, translating from the Greek and Coptic books on alchemy, medicine and astrology. (19) Khalid was himself deeply inter-

17) **Ibid.**, p. 217.

18) Öbd al-Hayy al-Kattanî, **Nizam al-Hukumah al-Madaniyyah al-Taratib al-Idariyyah**, vol. II, pp. 65-6.

19) Ibn al-Nadim, **Kitab al-Fhrist** (Tahran: 1971), p. 303.

ested in medicine and alchemy, and had even studied alchemy under an Alexanderian scholar called Marinos. (20) Khalid did not translated only the book alchemy but also astronomical works and medical treatises. Nevertheless they have been lost, we do not have them. (21)

The Umayyads (661 - 750) were hellenized from the start. They gathered men of science at Damascus and they dealt with the astronomical and alchemical works. Except for Khalid ibn Yazid, they also had a scholar like Ja'far al-Sadıq (d. 765), who was one of the teachers of Jabir ibn Haiyan. Various astrological, alchemical and magical treatises are ascribed to him. (22)

The scientific studies continued by translating, making comments and critiques in the period of Abbasid Empire, too. Unlike Umayyads, they brought the men of science to Baghdad. (23) Particularly, after the first caliph Saffah, the scientific activities flourished, for the statesmen of Abbasids remained very tolerant to the other religions. By the orders of the caliphs such as al-Mansur (d. 775), Harun al-Rashid (d. 809), al-Ma'mun (d. 833) were translated the most important and famous works from the languages of Greek, Indian and Persian into Arabic. For instance, in 773, the Hindu scientific works were translated by the order of second Abbasid caliph, al-Mansur. (24) Again, the third caliph Harun al-Rashid ordered the collection of original Greek treatises and the translation of them into Arabic. (25) Such activities came to the time of the fourth caliph al-Ma'mun in 813. «Al-Ma'mun took considerable pains to obtain Greek manuscripts and even sent a mission to the Byzantine Emperor Lenon the Armenian (813 to 820) for that purpose. He ordered the translation of these manuscripts.» (26) Furthermore, al-Ma'mun set up a *'House of Wisdom'* (Bait al-Hıkma), at Baghdad. (27) From 828 to end of the Abbasids, all the translations and scientific investigations were done in this scientific academy, which included a library and a observatory. Here, it will be useful for us, I think, to give a brief quotation from the reference book *'A History Of Muslim Philosophy'* in which the author mentions the importance of this scientific academy as follows :

---

20) Geoge Sarton, **Introduction to the History of Science,** (Washington: 1927), vol. I, p. 495.
21) Corci Zeydan, **Islam Medeniyet Tarihi** (İstanbul: 1976), trans. Zeki Megamiz, vol. III, p. 278.
22) Philip Hitti, **History of Arabs** (New York: 1968), p. 255.
23) Stephen F. Mason, A History of the Sciences (New York: 1962), p. 95.
24) **İbid.**
25) Sarton, vol. I, p. 527.
26) **Ibid.**, p. 558.
27) **Ibid.**

> The scientific activity took its birth in this process the inauguration of translation activity in Baghdad, systematically organized under a Translation Bureau (Bait al-Hikmah), was a tremendous step forward. The Bureau had a library and permanent personnel, and translators were commissioned from far and wide. Manuscripts were even paid for their weight in gold. The main aim was to make available in the Arabic language the wisdom and the science of Greeks and the others. Translations also included works in many sciences by an array of able translators. Among the sciences which received special attention were physics, meteorology, mineorology, botany, astronomy, and geography. The early phase of translations was concerned more with medical and philosophical works, but later an mathematical, astronomical, and geographical subjects received more attention. (28)

Evidently, the studies of exact sciences were started in the beginning of the second half of eight and flourished in ninth century. If asked a question why they had not been studied before, then, those reasons that I could abstract can be put forward. First one is that the early Muslims did not need them; second is the attitude of the statesmen; and last one is that the early Muslims did not have occasion for contact with the sciences.

Now, in order to make a decision on when the exact sciences began in Islam, we have to examine them one-by-one. Yet here I shall examine only a few, since otherwise it is too extensive to elaborate here.

A. MEDICAL SCIENCE

As I said before, the medical science in Islam began with Prophet Muhammad's cermon as to the classifying of knowledge: that of religions and that of bodies. (29) And also his career was the best example of medical activities, since he emphasized cleanliness and moderation in eating and drinking. Even his advice to a Persian physician was a most beautiful instance; replying to the question asked by that physician as saying that 'these people do not eat until they are hungry nor drink until thirsty and then cease eating while a desire for food still remains.' (30) And again the body of such sayings on medical questions was systematized by later Muslim writers, and became known as known as Medicine of the Prophet (Tıbb al-Nabî). (31) There was also the most famous phy-

28) M. M. Sharif, ed. **A History of Muslim Philosophy** (Wies baden: 1966), vol. II, p. 1248.
29) **Ibid.**, p. 1333; And also see, Kashful Khafâ, vol. II. p. 89.
30) **Ibid.**
31) Seyyed Hossein Nasr, **Science and Civilization in Islam** (Cambridge: 1968), p. 192.

sician of that time, al-Harith ibn Kaladah, an Arab Jew who later became muslim, and who had studied medicine at Jundishapur, school of medicine in Persia. (32) Al-Harith was the first scientifically trained man in the Arabian Peninsula and won the honorary tittle of 'the doctor of the Arabians.' (33) After the time of Muhammad, Umayyads began to take foreign doctors for the purpose of healing. As to studies of medicine, there two links between Islamic medicine and the other old schools. The first one is Jundishapur; the other is the Alaxenderian school. Jundishapur was a center of Hippocratic medicine, but Alexanderia was center of Greek medicine. Hellenistic science always appeared during the Umayyad period. (34) In 683, a Jewish physician of Persian origin, Masarjawayh, translated into Arabic a Syriac treatise on medicine originally composed in Greek by a Christian priest in Alexanderia. (35) However, scientific Muslim Medicine flourished in the Abbasid Empire, especially, in the period of second caliph, al-Mansur. By several books of medicine and a few distinguished physicians such as the Bakhtyashu, i.e., George son of Gabrial, who was a first member of Nestorian family of physicians, and a exerted a deep influence upon Muslim medicine in the eight and ninth centuries, the Abbasids brought to Baghdad. (36) Again in the first half of ninth century, the medical studies continued as the following translations:

Yahya ibn Batriq: Hippocrates's book on the signs of death, from the language of Greek or Rumi into Arabic. (37)

Ibn Sahda: Some works of Hippocrates, from Greek into Syriac and Arabic.

Jibril ibn Bakhtyashu took Greek medical manuscripts and patronized the translators and also wrote various medical works. (38) Yuhanna ibn Masawaih who was the teacher of Hunain ibn Ishaq, wrote medical wokrs in Arabic, and transladet various Greek medical writings into Syriac. *Kitab al-Kamil, Kitab al-Hammam, Kitab al-Ishal* were his main works. (39) Al-Kindi, the philosopher of the Arabs, was mainly occupied

32) Hasan Ibrahim Hasan, **Tarikh al-Islam al-Siyasiyya Wa'l-Diniyye wa's-Saqafi wa'l-Ictimai**, vol. I, p. 512.
33) Hitti, p. 254.
34) Nasr, p. 188.
35) Hitti, p. 255.
36) Abdur-Rahman Khan, **A Brief Survey of Muslim Contribution toScience and Culture** (Lahore: 1959), p. 6.
37) Ibn Nadim, p. 354.; Sarton, vol. I, p. 573.
38) Ibn Nadim, p. 354.
39) **Ibid.**

with medicine. (40) Ali al-Tabarî, who was the teacher of Rhazes, wrote a work called *'Firdaus al-Hıkmah'*, i.e., Paradise of Wisdom, concerned chiefly with medicine, but also with philosophy, meteorology, zoology, embrylogy, phychology, astronomy, and it is based on Greek and Hindu medicine. (41)

The most brilliant time of medicine in Islam started to rise through al-Rhazes (865-925). Al-Rhazes studied and worked at Baghdad under one of Hunain's disciples, and wrote over a hundred works, the best known being the *'Comprehensive Book'*, which embraced the whole of the Greek, Indian and Middle East medicine then known. (42) Rhazes also wrote a book on hospitals called *'Shifat al-Bimaristan'* (Healings of the Hospitals). Besides Rhazes, other muslim physicians also wrote several books on hospitals and hospital management. (43)

The Muslims did not only translate and write the medical works but also built some hospitals in different cities. The first hospital was built by Harun al-Rashid in Baghdad in 786. Besides this, some hospitals were built in Damascus, in Jerusalem, in Cairo and in Madinah. (44)

B. ASTRONOMY

The Arabs, before Islam, had been interested in Astronomy in general. Even at the beginning of Islam they had possessed sufficient knowledge to be able to use the position of stars for travel and agriculture. (45) Yet Muslims, scientifically began to use the astronomical works around 750. For instance, the second Abbasid caliph, al-Mansur wanted the specialists of that science to translate the Indian astronomical works such as the *Siddhantas, Charaka* and *Susrata*. (46) Most probably, the translation of these works into Arabic was the first scientific study of astronomy in Islam. Ibrahim al-Fazarî and his son Muhammed al-Fazarî were the first official asronomers. Ibrahim al-Fazarî (d. 777) had been the first to construct astrolabes and Muhammad al-Fazarî had been the first to translate the book *Siddhanta* from the Indian works in 773. (47) The Siddhanta which became known as the *Great Siddhanta*, remained the sole basis of astronomical science until the time of al-Ma'mun in

40) Sarton, vol. I, p. 559.
41) Mason, p. 96.
42) Sarton, vol. I, 574.
43) Sharif, vol. II, p. 1339.
44) **Ibid.**
45) **Ibid.**, p. 1284.
46) Mason, p. 95.
47) Sarton, vol. I. p. 521.

813. (48) Second astronomer that introduced Indian astronomy into Islam was a cohtemporary of al-Fazarî, Ya'qub ibn Tarıq who studied under an Indian scholar in about 760 and became a specialist in his subject, (49) and also wrote memoirs on the sphere; on the division of the kardaja; on the tables derived from the Siddhanta. (50) With these studies the sicience of astronomy in Islam, systematically flourished and continued with the studies of famous astronomers such as al-Naubakht (d. 777), al-Fadl ibn Naubakht (d. 816) and Mashallah (d. 820). However, they were only concerned with the Indian astronomy. (51) In 786, the muslim astronomers also began to be interested in Greek astronomy, for the third caliph Harun al-Rashid ordered the collection of original Greek treatises. The point to be emphasized here is that the muslims distinguished themselves in astronomy after they had had both Greek and Indian manuscripts. (52) In the early part of the ninth century, namely after al-Ma'mun set up Bait al-Hikmah, i.e., House of Wisdom (a scientific academy), the most brillaiant period of Muslim astronomy commenced theoretically, and continued practically in the observatories constructed in various cities. Here, I would like to finish this subject-matter by giving a small list of the famous observatories: (53)

The Solar Observatory built by al-Ma'mun in Iraq, in 829.
The Ispahan observatory built by abu Hanifah al-Dinawarî.
The Khwarizm observatory built by al-Birunî.
The Baghdad Observatory of Thabit ibn Qurrah.
The observatory erected by Ibn Sina.
The famous astronomers :

Al-Marwarrudhî was one of those who took part in the solar observations made at Damascus in 832 - 33. (54)

The three sons of Musa ibn Shakir made regular observations in Baghdad between 850 - 70.

Al-Farghanî was one of the most distinguished astronomers in the service of al-Ma'mun. His famous work *'Kitab Fi Harakat al-Samawiyyah wa Jawami' Ilm al-Nucum'* (the Book on Celestial Motions and the Complete Science of the Stars).

48) Nasr, p. 169.
49) **Ibid.**
50) Sarton, vol. I, p. 530.
51) Ibid., p. 531.
52) Mason, p. 96.
53) Sharif, p. 1285.
54) Sarton, vol. I, p. 566.

The others :

Al-Mahanî, al-Nairizî, Thabit ibn Qurrah, al-Battanî, Abd al-Rahman al-Sufî, Ibn al-'Alam, Abu al-Wafa, al-Khujandî... (56)

C. MATHEMATICS

Above all, at the beginning of the exact sciences in Islam, it is impossible to separate mathematics from astronomy, since almost every mathematician was an astronomer or astrologer, or both. For this reason, it is better for us to consider the names mentioned under the heading of astronomy as mathematicians.

Muslims started work scientifically on arithmatic in the second half of the eight century. 'Their first task in this field was to systematize the use of the Hindu numerals which are now permanently associated with their names.' (57) The first mathematican was Muhammad ibn Musa al-Khwarizmî (d. 850), in whose writings the Greek and Indian traditions of mathematics became united. His main work on mathematics was the book of summary in the process of calculations for compulsion and equation. (58) Khwarazm's arithmatic (lost in Arabic) made known to the Arabs and Europeans the Hindu system of numeration. His algebra, *Hisab al-Jabr Wal - Muqabala* is also important, 'for it contains analytical solutions of linear and quadiatic equations.' (59) Because Khwarizmî himself formulated and solved the algebratic equations of the first and second degree and discovered his elegant geometrical method of finding the solution of such equations, he may be called one of the founders of analysis or algebra as distinct from geometry. (60)

Thus, the mathematical studies began to become active through Khwarizmi; and followed with the studies of al-Kindi and Mahanî who continued the development of algebra and later became perticularly famous for his study of Archimedes' problem. (61)

As a result, in Islam all exact sciences almost began to apear at the beginning of the eighth century. I shall be content with these sciences that I discussed above, for a broader study of them will be out of the scope of this paper.

---

55) **Ibid.**, p. 567.
56) Sharif, p. 1288-9.
57) **Ibid.**, p. 1379.
58) Nasr, pp. 148-9.
59) Sarton, p. 563.
60) Sharif, p. 1280.
61) Nasr, p. 149.

İSLÂMDA MÜSBET İLİMLERİN DOĞUŞU

İslâm'da yapılan ilmî faaliyetlere geçmeden önce, İslâm'ın ilme karşı tutumunu ortaya koymak yerinde olacaktır. Kur'an-ı Kerim'e müracaat edildiğinde, 'bilgi', 'öğrenme' ve 'öğretmeye' dair ayetlere rastlamak mümkündür. 'Allah'ın adıyla oku', 'Allahım benim ilmimi artır!', 'Deki: Bilenlerle bilmeyenler bir olur mu?' ayetleri bunlardan birkaçıdır. Keza dinin ikinci kaynağı Hz. Muhammed (s.a.v.)'in hadisleri de 'İlim öğrenmenin her müslümanın görevi' olduğunu bildirmiş, hatta, 'İlim için yerini yurdunu terkedip gideni de Allah yolunda yürüyen bir kimse olarak kabul etmiştir.

Bu doğrultuda İslâm'da yapılan ilmî faaliyetlere yaklaştığımızda şu tabloyla karşı karşıya geliriz. İslâm'dan önceki Arabistan'ın cahiliyye toplumu alelâde bir hayat yaşıyor; müsbet ilimlerden ziyade masallar, şiir ve hitabet sanatıyla meşgul oluyordu. İslâm geldikten sonra parlak bir hayatın politik, kültürel, ekonomik ve ilmî sahalarda başladığını görmekteyiz. Şüphesiz, müsbet ilimlerin doğuşunu kesin bir tarihle tesbit etmek kolay değildir. Fakat kronolojik olarak İslâm tarihi; Asr-ı Saadet, Halifeler, Emeviler ve Abbasiler şeklinde dört devreye ayrılırsa; Asr-ı saadet devri, Müslümanların Kur'an ve Hadisle daha fazla meşgul olup, dinî meseleleri ana kaynaklarından özümleyerek öğrenmeye çalıştıkları bir dönemdi. Aynı şekilde dört büyük Halife dönemi de Kur'an ve Hadise yönelik olup, daha ziyade bunların tedviniyle uğraşıldığı bir dönemdi. Bu dönemlerde müsbet ilimlerden ihtiyaç duyulan Matematik, Astronomi ve Tıbb'a dair konularla ilgilenilmekteydi. Çünkü İbadat ve Muamelat'ta bu ilimler gerekliydi. Burada vurgulanacak ilmî çalışma, şüphesiz Hz. Muhammed (s.a.v.)'in Tıbb'a dair tavsiyeleri ve birtakım uygulamaları, bize hem teorik hem de pratik yönden ilk Müslümanların tıpta ileri olduklarını gösterir. Daha da ötesi, sonraki müslümanlar Tıbb'a dair hadisleri toplayarak Tıbb-ı Nebevî şeklinde bir çalışmaya yönelmişlerdir. Emeviler dönemi ise müsbet ilimlerin yeni yeni başladığı dönem olarak kabul edilebilir. İlk defa ikinci Emevî halifesinin oğlu Halid b. Yezid tarafından Yunan'ca (Greek) ve Hindu'cadan yapılan astronomi gibi ilimlere ait tercemelerle müsbet ilimlerle uğraşılmağa başlandı. Kesin bir tarih verilirse yaklaşık Milâdî 700'ler, yani VII. yüzyılın ikinci yarısı verilebilir. Emeviler (661 - 750) devrinde Ca'fer es-Sadık gibi âlimler olmasına rağmen yapılan çalışmalar ferdî ve dağınık çalışmalardı. Ancak Abbasiler devrinde, ikinci Abbasi Halifesiyle birlikte ilmî çalışmaların daha canlı bir şekilde yapıldığını görüyoruz. Hatta dördüncü Abbasi Halifesinin Beyt'ül-Hikme gibi ilmî bir akademiyi inşa etitrmesinden sonra İslâm dünyası, sistemli, hem teorik hem de pratik bir şekilde doyurucu ilmî çalışmalara tanık ol-

muştur. Bu Hikmet Evi'ne, Terceme Bürosu, Telifler Binası gibi isimler verebiliriz. Çünkü sayısız eserler burada devletçe terceme ettirildiği gibi, yetişen âlimler de kendi kalemlerinden, Tıp, Astronomi, Simya, Kimya, Aritmetik (Cebir, Kimya), Meteoroloji, Coğrafya ve Fizik sahasında eserler verdikleri bir akademiydi. Neden daha önce böyle sistemli bir çalışma yapılmadığı gibi bir soruya verebileceğimiz cevap; a) Devrin Müslümanlarının ihtiyacı olmaması, b) Devlet adamlarının tutumu, c) Müsbet ilimlerle uğraşan bir komşu devletle henüz temasa geçilmemesi, şeklinde olacaktır. Fakat Abbasilerden sonra İslâm âlemi dünyaya ışık tutacak ilmî faaliyetlerde bulunmuş, hemen her sahada ilmî eserler yazılmıştır.