CHAPTER - I

MEDICAL SCIENCES
Medicine is the most important branch of learning for the existence and welfare of the living being that include both the human being and animal life. Since all the living beings have to face a large number of diseases, they need their treatment with various remedies. With the development of culture and civilization of mankind, man has been trying to remove his problems that includes the cure of the diseases also. In the beginning they did not have their houses to live, food to eat and clothes to wear. With the passage of time they arranged for themselves the necessary requirements that was not possible in the earlier period after their existence. They had to depend on the caves for the shelter and for his safety from the chilly cold in the winter season, harsh summer and also from the rains. He also had to depend upon the fruits as his food and leaves in place of their clothes.

The scholars are divided into two groups so far the beginning of the field of medicine is concerned. According to first, the existence of the world and medicine are ancient and from the very beginning. They say that it has been the need of the man since his existence. The other group thinks that this branch of learning is accidental and says that because of eating some such roots, fruits, leaves and other things while suffering from some disease he got well. This group was further divided into two sub-groups.
One of them supposes its beginning with the assumptions and experiments. The other says that its beginning was possible because of "Wahi" and "Ilham" which, later became more popular. Most of the Greek scholars including Galen, Plato and Hippocrates recognise this view as more correct. On the other hand two important students of Hippocrates (Buqrat), Felos and Asalis were against this view. They say that the existence and the beginning of this field is not possible without the efforts and experiments of the man. Various major religions and civilization believe that it has been sent from the Sustainer of the world. They give various views according to their own religions. The Jews, in this regard say that Allah had bestowed the knowledge of medicine on Moses (Ar. Hazrat Musa, the prophet of Allah, peace be upon him). The Asa'ibs think that it was spread from Haikals, their worship houses and their religious heads, and kahins received this knowledge from Lord of the Universe. The Zoroastrians say that four books were given by our Lord to Zoroaster, of which one was of medicine. According to Hindus the Ayurvedic system of treatment belongs to the Vaids and the Vaids are the books of the sky. Islam gives quite different view from the views of other religions and


2. Ibid.
civilizations. The Ulamas and Muslim physicians are determined on its existence and beginning on the basis of thinking, efforts, experiments and observations. Nevertheless, some Muslim physicians think and believe on other theories. They include Abu Jabir, a physician of Maghrib and Shaikh Muwaffiq al-Din As'ad bin Ilyas who narrates from 'Abd Allah ibn 'Abbas that Sulayman (peace be upon him) was also expert of the medicines. He used to find out the benefits of the roots, leaves and trees from them and used to write them for the record. On the question, "when the man was firstly involved in diseases"? Dr. Dobais is credited to discover it from the bones that he found in the island of Java. His research is said to be that which gives the report of the earliest period. After that, according to Agha Ashraf, various diseases are found in the stone period. Muslim point of view in this regard is that the first physician and man on earth was Adam, the prophet of Allah (P.B.U.H.). This was followed by Shith (P.B.U.H.), the son of Adam (P.B.U.H.) and another prophet of Allah. However, different traditions are there of different religious groups and civilization who suppose their prophets as the inventor of this science although it could be recognized in a complete science after thousands of years.

3. Ibid., p.5.
4. Ibid.
5. Ibid., p.5.
The word Tibb has been derived from the knowledge of treatment. Different dictionaries give its different meanings that, of course, are much closer to each other. Arabic dictionaries describe the term as "to cure" or to do magic. According to some scholars of the field it is the science that finds out the condition of health and the condition of sickness of the body.6

The science of medicine was categorised during the early Muslim period into various sections. "Ilm al-Adawiya" (The Science of Medicine), "Ilm-e-Kimiya" (The Science of Chemistry), "Ilm-e-Qarabadin". (The Science of Pharmacology), "Ilm al-Jarahat" (The Science of Surgery), "Marahim" (Ointment), "Ilm al-Tashrih wa-Munafe" (The Science of Phisology and Anatomy and (Tibb-e-Jamaliyat) (the Science of beauty) were important fields of Medicine. The field of "Kulliyat" is also supposed to be very important branch of Tibb. It includes Pathalogy, hygiene, Symetology and diagnosis. The field of treatment and care were also divided into various categories. They include "Amrad al-Rijal" (the diseases men), "Qanun-e-Izdwaj" (The law of Married life), "Amrad al-Nisa'" (The diseases of women), and "Amrad-e-Chashm" (the diseases of Eye).

The accidental treatment of various diseases are very important aspect of the development of the medical

6. Ibid., p.8.
Science. In this regard a large number of events are recorded during various periods by a large number of physicians of various nations, races and civilizations. For example it was discovered that the opium and the poison of snake are antidote of each other. This was traced out when a person was given by some people so much amount of opium with which he might die but at the same time he was beaten by a snake and he got well. Similarly the snake itself is the antidote of its poison.

Like the development of other sciences that was made by various civilizations, nations and religious groups, Tibb or the medical science was also contributed in different forms by about all the ancient and medieval societies. Among the ancient civilization are the Babylonian, the Egyptian, the Chinese, the Greek, the Indian, the Iranian and the Roman. The history observes that the Babylonian medicine began before 5000 B.C. In the very beginning they believed that when any god or goddess was angry with somebody he suffered with some disease and the patient, in the response, was laid at some public place and it was asked whether anybody knew his treatment. If anybody suggested some treatment for him it was observed and after its successful results it was written and put in the neck of

the gods. In this way different observations and experiments became the records in the form of manuscripts and the medical science, slowly but soundly developed and passed its journey. Because of these developments various medical institutions and hospitals were established in many cities of Babylonia. The Babylonian medicine exercised some influence on India and China. According to the author, the foundation of Chinese medicine was led on the medicine of Babylonians.

After the downfall of Babylonian civilization the centre of development of this science was shifted to Egypt and later to China and India. In each area the field was contributed by various scholars and the process of development continued. All these three civilizations and especially the Egyptian medicine made its place in the history of medicine.

The period when Egyptians started contributing medicine is traced back with different inscriptions and the books known as Babyras to 6000 B.A. In these books there was one, written by Athosis, the King of Egypt. In this period the field was thought to be the field of exploration and of Magic. Unlike the earlier period when in which the disease was thought to be because of the anger of the gods and goddesses and the

9. Ibid.
10. Ibid., p.31.
people prayed them particularly the god of cure for their safety from the diseases, in the later period this field was developed very much, during which the treatment with roots and leaves was started after observations and experiments. It has also been reported that some of the physicians were much distinguished and experts in some particular fields.

The Chinese think that the medical science was started in China and the first man to introduce medicine was Huang Ti, the king of China in 3687 B.C. In this regard it might be possible. Because of his influence, the king called some physicians to China from Babylonia or imported some medicine or work from there and then presented the medicines before the country. With the development of this science in the fields of plant medicine along with Zoological and Geological medicines, various rules for treatment were made. According to the reports, these people were not familiar with the surgery. The specialization of Chinese physicians is in the field of Aquapuncture.

Like the Egyptians the patients were treated by the Greek Clergymen who supposed Asqalibeus, a pupil of Idris, the prophet of Allah as the Lord of the cure and worshiped him in the temples. They cured the patients by lying them in a special room of some temple. These temples were 200 in number in various parts of Greece. Among them the temple

11. Ibid
12. Ibid., p.32.
that was built on a hill at Athens was most important. In the dream he used to see the god who proposed the treatment from him. After he got quite well he used to mention it on the golden or silver plates that became the record for future. In the later period they cured the patients with the real medicines and the sleeping in the temples and dreams remained only the tradition of the Greek society. After Asqalibeus Pythagorus paid his attention towards the development of this science but was succeeded for some extent. It was more developed during the later period. The compilation of medical works were started from the period of Hippocrates (Buqrat). He not only compiled various earlier works but wrote a number of works on various branches of medicine. The Greeks contributed to the field more than the others. Among the physicians whose contributions are supposed to be the most important were. Aristotle, Dioscorides and Galen. Apart from these there were a large number of physicians who became famous for their writings and contributions. The Greeks, unlike the others, are credited to introduce their own method of treatment, known as "Unani Medicine" and this system is still prevailing in various parts of the world. It is worthy to mention, in this regard that Galan is credited to present this science with his writings in its complete form. He made a large number of observations and experiments in Surgery, medicine and composition of medicines.
The system of treatment of Hindu medicine is called Ayurvaidic (Science of cure). It is supposed by the Hindus that it was revealed on Brahmaji who was the first physician in the Hindu civilization. Hindus, following their predecessors developed it and wrote some valuable works some of which were later translated into Arabic and used by the Muslims while writing their works. Dakshin Indr Maharaj, Charak, the writer of Charak Sanghata, Dhanomantari; Sharat who wrote Sharat Sanghta; Vag Bhat, the writer of a work of the same name; Madhu Acharya, Sarang, Kanka, Sanjahal, Shanaq, Judar, Manka, Asya Karak, Rag Bhat and DevDas were those great scholars of this field who not only led foundation of this science in India but developed its various branches. Muslim physicians not only got acquainted with their works after translating them into Arabic and Persian languages and used them in their writings, but they also took a large number of medicines from Ayurvaidic. The translation of Hindu medical works into Arabic was started in the period of Caliph Harun at Rashid (786-809 AD) when he called some Hindu scholars including Kanka to Baghdad.

Because of the geographical situation, Iran has played an important in the development of this science for

13. Ibid., p.33.
14. Ibid., pp.33-34.
being a closer centre of various civilizations due to which it was more benefitted than others by the developments of medical science of those civilizations. Since its rulers ruled on a vast part, there were many centres of studies of this science including that of Jundishapur. After the invasion of Iran by Alexander (Sikandar) all the works were destroyed. So, one may not consider their advancement in the field. However, the ancient book of Osta shows that they were far advance and much dependent on the roots and leaves which always had favourable climate to be grown. Because of the availability of a large number of plants useful for the purpose of medicine the people of Iran considered no disease that might be left uncured. The Iranian rulers also patronized the physicians both of Iran and of other countries also. These physicians from various countries were invited to Iran by the rulers and honoured and given all types of facilities. Kanzyas, an eminent physician was also attached to the ruler's court and was patronized by the ruler of the time. Following the Iranians, Muslims also established their first centre to promote medical science at Jundishapur and it introduced various important Muslim physicians like Abu Zakaria al-Razi and Abu 'Ali ibn Sina.

15. Ibid., p.34.
17. Ibid
The Roman were also, in the very beginning, the superstitious people and their system of treatment was also based on the magic. But subsequently they imported the Greek medical science to Rome. Among the earliest who spread this science of the Greeks in Roman areas was Arkhaftus. Kalos is said to be the earliest Roman physician who compiled the history of medicine alongwith the principles of treatment. He also critically evaluated the medical works of Hippocrales (Ar. Buqrat) and Alexander. On the diseases of the women, Sarnawees is credited to write an important book. Atinos, Arzijinas, platine (d. 79AD) who prepared a marvelous work of forty-five volumes, Kalu'dus who was the king of Rum and with rubbing his hands treated the patients and Iklapeus who treated the patients after making them senseless were among the celebrated physicians of Rome.

After the advent of Islam, Muslim Society also started contributing the medical science. Since Islam is the religion that encouraged its followers to seek knowledge Muslims, alongwith other fields like that of Quran, Hadith, Mathematics and Astronomy etc., studies the medical science also. There are various verses in Quran and various traditions of Prophet Muhammad (peace be upon him) that show the usage of many fruits, vegetables, stones, honey, birds, fishes, minerals, milk and others as the medicine and the

18. Ibid., p.35
means to cure different desease although they have not mentioned as the medicine directly. They also felt its need when they conquered various other countries. Allah has mentioned the fig and olive in Surah "wa'l-Tin". He owes, the grapes, vegetables, dates and olive in Surah "'Abasa" and Camphor, iron, perks and other stones in different Surahs of Quran. Similarly various things useful for the mankind are mentioned at different places with which Allah shows his love with the mankind.

Prophet Muhammad (peace be upon him) head also mentioned various things to cure different diseases directly. In this regard his followers are directed by him, according to one tradition, not to go or leave the place where people are effected with some epidemic. The sunnahs of prophet are worthy of mention as far as the hygiene is concerned. The washing of ones hand before having meal, the way of sitting while eating one's meal, to sit during drinking water and others are best examples of hygiene of Prophet Muhammad (peace be upon him), which were proved by science in later days. He also stressed upon the benefits of the honey, saying that it is beneficial for different diseases. A large number of books on the medicine of the prophet (Tibb-e-Nabvi) are written by the scholars. The field of surgery was also developed by preparing ointments for wounds and by the invention of their instruments as it
became necessary because of continuous encounters between the Muslim and non-Muslims during the period of prophet Muhammat (Peace be upon him) and in subsequent periods. Nursing department may also be said to be introduced as many women companions of prophet Muhammad (peace be upon him) worked and served the injured soldiers in the battlefields. Among those nurses, the wife of the prophet, 'A'isha was included together with her own sister, Asma'. They also felt its need when they conquered various other countries and faced different kinds of diseases which they did not know after having settled in these regions. The contribution of Abbasid rulers specially al-Ma'mun is remarkable so far the beginning and the development of medical science in the Muslim World is concerned as he imported the available works from about all earlier centres of learnings and made arrangements for their translations with the establishment of Bait al-Hikmat (House of Wisdom) and invited the Christian, Jew, Syrian, Hindu and other scholars there. With the help of these arrangements and encouragements, Muslims very quickly got acquainted all the existing fields of learning and developed it to the higher extent. Among the early scholars who translated the Greek works into Arabic language were Hunayn ibn Ishaq, Musa bin Khalid, Ishaq ibn Humayn, Thabit ibn Qurra, Masar Joya, Jorjus, Abu Yusuf al-Bitriq and others. The Muslim period of the development can be categorized into three periods viz. the period of translation, the period in which most of the Muslims
followed the Greeks and the period of their own contribution to various branches of medicine. The third and last was the collection of Greek, Persian, Arabian and Indian medical sciences under this new collected medical science. Muslim scholars started researches to find out new diseases and invented their treatments in the new forms with the invention of new medicines.

A large number of Muslim physicians flourished in different areas of the Muslim world. Ibn Abi Usaybiah gives a long list of the physicians who with their writings, researches, observations and experiments, contributed the various branches of medical science. In all important centres including Iraq, Iran, Syria, Egypt, Central Asia, North Africa and Muslim Spain various eminent physicians were borned, flourished, studied the medical science and contributed the field with their works. As Madaris Nizamia played a significant role in educating Muslim Students, there were a large number of great madrasas in various cities of Muslim World prior to the establishment of these madrasas including Granada, Taledo, Seville, Cordova, Baghdad, Nishapur, Aleppo, Hims, Damascus and others. In these madrasas, alongwith other sciences the medical science was also taught in its proper system.

The development of various sciences in Muslim Spain was started in the 2nd half of the 10th century AD when Maslama al-Majriti (d.1007 A.D.) introduced the Rasa'il-e-Ikhwan al-Safa' into Spain and his pupil, al-Karmeni spread them into various parts of the peninsula. Since then till the downfall of Muslim rule in Spain in 1492 A.D. this science gradually developed throughout the country. The scholars who flourished in Spain during Muslim rule there and contributed the field of medicine and got familiarity there as many of them worked under the patronization of the rulers of their periods are given below.

Al-Zahrawi (936-1013)

Abu'l Qasim Khalaf bin 'Abbas al Zahrawi was among the earlier Muslim scholars of Spain who devoted his attention towards theology and the natural sciences and especially towards medicine and pharmacy. He is credited to suggest and introduce some new systems of treatment. Along with these he served as an important educator and psychiatrist. Hitti considers him as the greatest surgeon of the Arabs which indicates that he was the greatest both in the eastern and western Muslim world.\(^{22}\)

Al-Zahrawi was born at Zahra near Cordova in 936 A.D in Arab migrated family to Spain (al-Ansar). Some of his

\(^{22}\) P.K. Hitti, History of the Arabs, p.576.
forefathers is said to have come to Spain with the Muslim army that conquered Spain and settled here seeing the prosperity and other opportunities. It is an unfortunate matter that the biographical information of al-Zahrawi is not available. He, however, passed and most of his time in his native town where he practiced as a physician together with as the pharmacist and surgeon. Although he studied theology and natural science but due to this interest in and attachment with medical science he could not write any work on these fields. Ibn Abi Usaybiah is also unable to give more information about his life and contribution except that he was a great physician and he wrote an important work on the field entitled Al-Tasrif li-man 'ajiz 'an al-ta'lif, (An aid to him who is not equal to the large treatises), a work of great importance.

The surgical part which is written in the last section was translated into Latin by Gerard of Cremona and subsequently its various editions were published at Venice in 1497, at Basel in 1641 and later on in 1778 AD. at Oxford. Though no information about his studies and teachers is available, it is, most probably,

24. Ibn Abi Usaybiah, op.cit., p.52
supposed with various other informations that he received his education of medicine under the guidance of some eminent scholars of Cardova.

As ibn Abi Usaybiah mentioned he wrote a very important, informative and huge work composed of thirty volumes in the form of treatises. This work is said to be an encyclopaedia of medical science that gives a vast account of information of the subject. This work is said to have been completed in about fifty years that contained the experiences and observations of al-Zahrawi of this period. The work was completed in about 1000 A.D., only thirteen years before his death. Its importance and superiority over others is acknowledged from the words of Hitti, "It had its place for centuries as a manual of surgery in Salerno, Montpellier and other early schools of medicine." According to Sami Hamarneh, al-Zahrawi, along-with medicine and surgery, also worked and wrote on midwifery, meteria medica, cookery and dietetics, weights and measures, pharmaceutical and cosmetic preparations, medical chemistry, therapeutics and psychotherapy. He also gives technical terminologies in his Tasrif. Since in his period various sciences were mixed and were interrelated to

each other, he tried to separate various disciplines from medicine in the name of its specialization. Among such discipline were alchemy, theology and philosophy which were being mixed with medical science by various scholars of the field. It is, perhaps, because of the fact that the scholars of that period got acquainted with more than one sciences and used to become expert of these fields at the same time. In this way they might be able to corelate various sciences with each other. He disclosed that time was an important factor so far the healing art is concerned. In this regard he stressed on the reliance on nature keeping the fact in view that "time plays an important role in the treatment and cure of diseases".\footnote{29} Important to note here is that he was not only an expert surgeon but also an introducer of various surgical instruments. As has been mentioned earlier that there was no differenciation of different branches of medicine and surgery, al-Zahrawi, at the same time was the expert surgeon of obstetrics, eye, teeth and other parts of the body.\footnote{30} For the purpose of surgery he is credited to be the first to introduce a large number of instruments for about all parts of the body.\footnote{31} He discussed the lithotomy and became the first to practice it on women.\footnote{32} He recommended to remove the broken patella

\footnote{29}{Ibid}\footnote{30}{Ibid}\footnote{31}{Ibid}\footnote{32}{Ibid}
with the surgical operation. According to the available information he was the first Muslim surgeon who introduced new and more better obstetrical forceps to operate the women. The other new surgical instruments that were first manufactured by al-Zahrawi are the probes, knives, scalpels, hooks of various shapes and designs, scissors, grasping forceps and long handled scrapers for good grip of teeth. Discussing eye and its diseases he described lachrymal fistula. For the purpose of operation of eye in various diseases he used pointed blade, speculums and hooks. He, not only described the lithotomy in its correct meaning but also mentioned about the instruments useful in the operations. For the purpose he introduced scops and lancets. In the words of Sami Hamarneh, "His illustrations of surgical instruments are the earliest known to be intended for the use in teaching and for demonstration of the method of manufacture." He is also a distinguished surgeon who, before all recommended several types of threads and catgusts for suturing the wounds and used plasters and bandages to recover fractures. Al-Zahrawi not only described the hydatid cysts and other diseases but also treated the patients of these diseases with his vast

33. Ibid
34. Ibid
35. Ibid
experience. Al-Zahrawi became much familiar in the west and came to be known as the most celebrated medical scientist for he treated a boy who was suffering from hydrocephally because of congenital defect caused by blocked drainage of cerebral fluid.

Being a good educator and psychiatrist he devoted his writings on these fields. He discussed in his Tasrif the education and behaviour of the children, their etiquette, school curriculum and academic specialization. As a psychiatrist he prepared such drugs that were based on opium and that induced the patient towards happiness and joy. After having the dose it relaxes the soul, dispels the bad thoughts and worries, moderates temperaments and also treated in other ways. As he preferred the medical education but was of the view that before this other sciences such as the study of languages including grammar and poetry, the Islamic sciences, mathematics, astronomy, logic and philosophy be studied. He had the same view as that of Hippocrates that man's life may be divided into four stages: The first stage upto twenty years, youth upto forty years adulthood upto sixty and above this age the man is counted among old aged people. He stressed upon the

36. Ibid
37. Ibid
38. Ibid
39. Ibid
treatment with visiting the patient again and again. Because of this process the doctor might be able to diagnose the patient correctly and prescribe for him a perfect quantity of some particular medicine. In this regard he preferred the strong doctor-patient relationship with beside clinical treatment.  

Since al-Zahravi flourished in Spain he influenced the scholars of the west and exercised such influence that his work was translated into European languages by eminent scholars and translators of the West Gerard of Cremona who is credited to be the greatest translator of the west who translated a large number of mathematical, astronomical, medical and other works from Arabic into Latin, was among these translators. The other Christian western scholars were Rogerious Frugardi, Rolandus Parmensis, Arnald of villanove and others. These translation works were used in various institutions of Europe as the text book and the main work on medical science. It is, therefore, he could not exercise so much influence on Muslim-East. His writings became the landmark for future physicians to guide and encourage them as he also emphasised on the importance on human anatomy and physiology. He, discussing the brain disclosed that it has three functions viz; memory, thought and imagination.

40. Ibid
41. Ibid
Al-Zahrawi, hence, was credited to be the greatest surgeon of the whole Muslim world who, with his writings and researches contributed the field to such an extent that it guided the later physicians and helped them to make efforts for further advancement of the science. Adward G. Brown only mentions him as the greatest surgeon.  

Ibn Juljul (b. 944 and d. 994 A.D.)

Ibn Juljul was an important scientist and renown scholar of pharmacy and medicine, flourished in an early period of the development of science and literature in Muslim Spain. It was the period when the important scientific works of the east including the Rasa'il-e-Ikhwan al-Safa', were being transmitted, translated and introduced into Muslim Spain. It was because of the economical satisfaction and prosperity of the people that resulted the wide spread establishment of schools, colleges, libraries, universities, academies and observatories.


43. Rasa'il-e-Ikhwan al-Safa' were the treatises written by a group of eminent scholars who were probably Isma'ili. They formed a high ranked brotherhood among themselves and kept their names hidden. They are fiftytwo in numbers, written on mathematics, education, science, natural bodies, rational sciences, theology psychology and shari'ah.
Ibn Juljul is credited to be among the earliest Muslim physicians of Spain. His name was Abu Dawud Sulayman ibn Hassan. He was born in Qartaba (Latin: Cordova) in 332/944 that served as a great learning centre in the Muslim period. He was died in 384/994. He studied for a period of ten years, from his age of fifteen to twenty five under a group of Hellenist scholars who gathered around the monk Nicolas. This group was presided over by Hasday ibn Bashrut, a Jewish physician and vizir of Abdul Rahman III (ruled 912-961 AD), the Umayyad Amir and later Caliph of Spain. Although he started receiving knowledge, in the first phase, of grammar and tradition in 343/954 but at the age of fifteen his attention was diverted towards medicine and within the said ten years he became an expert of medicine and pharmacy. He was appointed as his personal physician by Caliph Hishan II (976-1009).

Ibn Juljul was eminent physician and pharmacologist who not only wrote a number of works on medical science but produced students in the field. Ibn al-Baghunish was an important pharmacologist among his students. Among the surviving medical works of ibn Juljul are Tabqat al-Atibba' wa'l-Hukama' (Generations of physicians and wisemen);


45. This book was edited by Fu'ad Sayyid with the title Les generations des medicins et des sages at Cairo in 1955 A.D.
composed in 377/987; Tafsir Asma' al-Adwiya al-Mufrada min Kitab Diyasquridus (Exegesis of the names of the drugs from the book of Dioscorides which he composed during his stay at Cordova as the Caliph's physician in 372/982; Maqala fi Dhikr al-Adwiyah al-Mufrada Lam Yudhkurha Diysquridus, Maqala fi Adwiyat al-Tiryaq and Risalat al-Tabyin fi ma Ghala fihi ba'd al-Mutatabbibin.46 The book of Dioscorides was first translated, according to ibn Abi Usaybiah, in Madina al Sahm47 in the period of Abbasid Caliph Mutawakkil by Istafan bin Basil from Greek into Arabic.48 From this translation ibn Juljul came to know the Arabic name of the drugs used by Dioscorides. As is obvious from the names of the book ibn Juljul, along with the works on medicine wrote on the history of medicine. In his book Tabaqat al-Atibba' wa'l-Hukama' he wrote fifty-seven biographies of physicians. They include according to J. Vernet49 the Eastern Muslim and non-Muslim physicians (Greeks, Muslims, Jews and Christians), African and Spanish physicians, classified


47. The real name of "Madinah al-Salam" is Baghdad. It is known with this name because it was called "the city of Peace".

48. Ibn Abi Usaybiah, op.cit., p. 46. (The book was later transmitted to Muslim Spain in the period of Abdul Rahman al-Nasir.

into nine generations. He discusses the biographies of Hermens I, Hermens II, Hermens III, Asclepiades, Apollon, Hippocrates, Dioscorides, Plato, Aristotle, Socrates, Democritus, Ptolemy, Cato, Euclid, Galen, Al-Harith al-Thaqafi, ibn Abi Rumtha, Ibn Abhar, Masarjawayhi, Bakhtishu, Jabril, Yuhanna ibn Masawayhi, Yuhanna ibn al-Bitriq, Hunayn ibn Ishaq, al-Kindi, Thabit ibn Qurra, Qusta ibn Luqa, al-Razi, Thabit ibn Sinan, Ibn Wasif and Nastas ibn Jurayh in the eastern physicians. Ibn Juljul was the first author in the Western Islam to write on the biographies which is more informative than of Ishaq ibn Hunayn (d.910-911 A.D.) of the East. Ibn Juljul wrote two works on the Materia Medica of Dioscorides, a Greek physician of importance. His Tafsir Asma' al-Adwiya al-Mufrada min kitab Diyusquridus is an important book, written in 982 A.D. in which he gives details and exegesis of the drugs mentioned in Materia Medica. He also discusses the diseases and their cure by these drugs. J. Vernet calls it as "a text, quite often copied, on the vicissitudes of the Arabic translation of the famous Greek work [i.e. Materia Medica]." He completed the work Materia Medica by writing Maqala fi Dhikr al-Adwiya al-Mufrada lam Yudhkurha Diyusquridus. As the title of the

50. Ibid
51. Ishaq ibn Hunayn was the son of Hunayn ibn Ishaq flourished at Baghdad and both father and son worked in Bayt al Hikmah an observatory and centre of translation established at Baghdad by the order of the Caliph at Mamun.
52. J. Vernet, op.cit.
work shows his Maqala fi adwiyat al-tiryaq deals with the drugs of theriaca. He also discusses their characteristics and shows how these drugs counter and cure the poison. As has been mentioned earlier his last known work is Risalah al-Tabyin fi ma Ghalata fihi ba'd al-Mutatabbibin. It is important enough in the sense that ibn Juljul commented on the physicians who did not have complete knowledge in the field of medical science. He points out the errors committed by these physicians. He while dealing this corrected the errors. Albertus Magnus mentions another work of ibn Juljul in his book Sententies Antiquorum et de Materia Metallorum, bearing the title De Secretis.

Ibn Juljul's familiarity was of course due to his books which must have been survived for a long period and a number of scholars must have been benefitted by his writings that seems to be through different sources. The unavailability of these books show that the later scholars either could not preserve them or like the other works they were put in any dark room that may come before us subsequently. It is also came to be known that ibn Juljul gave interesting informations about the translations of the works of an Alexandrian physician Ahran ibn A'yan (fl. seventh century) from Syriac into Arabic made by the order Umar bin Abdul Aziz (ruled 717-719 AD) in his period. But what were the important informations in this book could not be known.
Ibn Samjun (fl. in the IIhalf of 10th Century AD)

Abu Bakr Hamid commonly known as ibn Samjun was a physician of considerable importance who was born, flourished and died in Muslim Spain. A short note about the life and work of ibn Samjun is given only in Uyun.

No date of birth or death of ibn Samjun is reported by any scholar. Ibn Abi Usaybi'ah in this regard only says that he was living during the period of Mansur al-Hajib Muhammad bin Abi 'Amir and wrote his work on medicine in this period. His work on medicaments bears the title Kitab al-Adwiyah al-Mufrada. Another book of ibn Samjun is Kitab al-Aqrabadin.

In his book Kitab al-Adwiya al-Mufrada (which J. Vernet writes with the name al-Jami' fi'1-Adwiya al-Mufrada ibn Samjun mentioned the names of the herbs in the alphabetical order that were used in ancient semitic times. He, alongwith this describes the plants and their properties for the usage as medicines and gave quotations of the works of Dioscorides, Galen, Abu Hanifa Dinawari, Paul Aegina, Ahron bin A'yan, ibn Masawayh and others. He, apart from this, gives information of mandrogora and describes its anaesthetic properties. He was died in Cardova in the beginning of the 5th/11th century and before his death, it

53. He was an Umayyad ruler of Spain who succeeded Hisham II on the seat of Caliphate and ruled from 976 to 1002 AD. S.M. Imamuddin says in his "A Political History of Muslim Spain" that he was the last great and powerful caliph of the Umayyads of Spain.
is said that he rewrote the medical work of Dioscorides in Arabic language in the same city. 56

**Abu Marwan ibn Zuhr (d.470/1078 AD)**

Abu Marwan Abd al-Malik bin Muhammad bin Marwan bin Zuhr al-Iyadi was a scholar of Quranic sciences, Fiqh and above all medicine. He was a member of Banu Zuhr family whose ancestors migrated to Spain from Arabia in the 4th/10th century AD. Since he belonged to the Iyad tribe so he and all his ancestors were called Iyadi after the name of the tribe. At first his ancestors settled in Spain al Jafu Shatiba (Jativa), situated in the east of Spain. Because of their eminence in the field of learning they enjoyed high rank in the society and received much concessions and favour of the ruling class. Ibn Khallikan also praises this family mentioning them as 'ulama', Rausa (Ru'asa'), Hukama' and Vizirs. 57 Because of the prosperity and facilities which they availed, the member of this family got chances to work and contribute to different sciences by their writings and researches.

Abu Marwan ibn Zuhr started receiving the knowledge of Islamic Science since his boyhood. Very soon he was

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56. Ibid

wellversed in different fields of Islamic Science especially in Qur'anic Sciences and in fiqh. It is, because of the fact that his father, Muhammad was also a distinguished scholar of these fields. Unfortunately the names of his teachers are not known. Since he was also interested in other fields of knowledge, he, for performing pilgrimage left Spain and went to Qayrawan from where he visited Cairo. There at Cairo he stayed for a long time to study medicine. It seems that perhaps, he left Spain in pretext for visiting the holy places for pilgrimage and that his main purpose was to receive the knowledge of medicine. There are different opinions of different writers regarding his visit to the east. Arnaldez quotes ibn Khallikan saying that he first visited Baghdad and then in his return to Spain stayed at Cairo from where he went to Qayrawan. 58

After his return to the Iberian peninsula he stayed at Daniya (Denia) as he was received with a warm welcome by its ruler, Mujahid who requested him to live in his capital. There he got much familiarity and it is said that his fame spread to all the provinces in the peninsula. 59

Abu Marwan Abdul Malik ibn Zuhr is reported to forbade the hot baths (Hammam). He discussing this says that they [the hot baths] had a poisonous action and that they


59. R. Arnaldez, op.cit.
interfered with the composition of the humours. After a long stay and practice as a physician at Denia he died in about 470/1078. Scholars had different opinion about place of his death. Some like ibn Khallikan and ibn al Abbar say that he was died at Seville.

However, it is quite clear from all reports that he was an important physician of his time who, with his observations gave various new views regarding the safety of health and with his treatments got familiarity in the whole Spain. Though no work of Abu Marwan ibn Zuhr is reported to be written but his eminence in the field is quite obvious from the writings of the important writers like ibn Abi Usaybi'a, ibn Khallikan and ibn al-'Abbar. At the same time it is very unfortunate fact, perhaps due to lack of information, that no detailed reports of his works are available.

Abu'l-'Ala' Zuhr

Abu'l-'Ala' Zuhr bin 'Abd al-Malik bin Muhammad bin Marwan bin Zuhr al-Iyadi was another member of Banu Zuhr family. He is also credited to work both on Islamic Sciences and medicine and got much honour in the society.

Abu'l-'Ala' Zuhr was born in Seville. Though his exact date of birth is not known, he might have been born

60. Ibid
around the mid 11th century A.D. for reports say that his father, Abu Marwan 'Abd al-Malik was died in about 470/1078. Following the tradition of his learned family he, for the sake of knowledge went to Córdoba at his young age. In the great mosque of Córdoba he started his studies under Abu 'Ali al-Ghassani. From this teacher of him Abu'l 'Ala' Zuhr was taught the basics of Islam and Qur'an. Later Abu 'Ali al-Ghassani advised him to study the science of Hadith under Abu Bakr Mufawwaz and also under Abu Ja'far ibn 'Abd al- 'Aziz. He also came into contact with Abu Muhammad 'Abdullah bin Ayyub and heard that category of hadith from him which was transmitted by the muhaddithin in a chain (Al-Hadith al-Musalsal fi'l Akhḍh bi'l-yad). As he was a distinguished scholar of belles letters (Adab), he always remained in contact with the great scholar in the field, al-Hariri, the writer of Maqamat.

Abu'l-'Ala' Zuhr was much interested in medical Science as he received its knowledge since his childhood. First teacher of this great physician was his own father, Abu marwan 'Abdul Malik who taught him medicine. R. Arnaldez quotes ibn al-Abbar who praises him saying that he was far advance and more efficient in this field than those

who preceded him. It is, therefore, because of his vast knowledge and wisdom he showed in the treatment the people of Maghrib who recognised him and his family the most learned scholars of this field. Various stories were told about them and their achievements. Due to his familiarity in the field he was given the patronage by Mu'tamid bin 'Abbad, the last 'Abbadid King of Seville (ruled: 1068-1091) irrespective of the fact that he was a strong supporter of Yusuf bin Tashfin, the Almorabit ruler of North Africa and later, of Muslim Spain in 479/1086. He also worked as the vizir of either the 'Abbadids or the Murabitun and proved himself, according to sources a good administrator. After a long enjoyment of the favour of various rulers and the honour from the common people for his practice in the field, he was died in 525/1030 at Cordova from a 'naghla', an ulcer which according to different scholars a disease the pus of which is ichorous in that part

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64. Ibid
65. C.E. Bosworth, The Islamic Dynasties, Edinburgh University Press, Edinburgh, p.29 and G.Sarton, op.cit
66. Abu'l-'Ala' ibn Zuhr was patronized by the Murabit ruler Yusuf bin Tashfin who ruled North Africa and Spain at the same time in the later 11th century AD. He was also patronized by the 'Abbadid ruler, Mu'tamid bin 'Abbad who ruled at Seville from 1042 to 1068 AD and was much influenced by him due to his knowledge and expertise in medical sciences.
witnesses of those drugs which were mentioned by Hunayn ibn Ishaq which were refuted by ibn Ridwan. Ibn Zuhr also presented the solutions of the doubts through his vast knowledge and experiments in the field which were pointed out by al-Razi of the books of Galen (Ar. Jalinus). He devoted a complete book concerning these doubts and their solutions that entitled *Kitab Hall Shukuk al-Razi 'Ala Kutub Jalinus*. Abu'l-'Ala' Zuhr refuted al-Qanun of ibn Sina at some places and devoted a complete treatise, *Maqala fi'l-Radd 'ala Abi 'Ali ibn Sina*... (Treatise refuting ibn Sina) in his book, *Book of Simple Medicaments*. This book was introduced into Maghrib and Spain in his period when a merchant from Iraq brought it and presented it to Ibn Zuhr. He, discussing this pointed out the faults made by ibn Sina and gave the right version in this regard. While going through the treatise of Ya'qub bin Ishtaq al-Kindi, he thought of its expansion. He, then fulfilled his desire by the expansion of this treatise under the title *Maqala fi'l bastihi li-Risalah ... al-Kindi fi Tarkib al-Adwiya*. The last book which is also of considerable importance is *Kitab al-Nuqat al-Tibbiya* (The book of delicate medical questions). R. Arnaldez quotes G. Colin saying that this indicate the work which he has edited under the title of

69. Ibid
Tadhkira. He further says, "It is a brief treatise written for his son, in which each nuqta is introduced by tadhakkar (remember).

Abu'l-'Ala' Zuhr was such a great and experienced physician who got familiarity through his treatment with diagnosing the disease by examining urine and with the help of pulse. He, like the other physicians of his time and also before him did not ask the patients about their problems. Earlier it was the practice of Arab physicians to find out from the patients about their forebearers and ancestors before their treatment. They also used to observe the conditions and atmosphere before the treatment under which those patients lived. Some scholars criticized him for this new method and for abandoning the old system of asking from patients about their diseases. It is said that due to his own researches he had some such extraordinary medicines that were not common among the physicians and these were the wonderfully efficacious medicines. Seeing so many faults he did not rely completely upon the book of Ibn Sina, al-Qanun and used it only for his prescriptions.

71. Ibid
72. Ibid
73. Ibid
He, at the same time, also did not completely refute it as he made refutation only of his book on simple medicaments. He used medicines with full precaution while treating his patients where as he accuses his contemporaries and earlier physicians for not using sufficient precautions that sometime caused harm instead of relief. In this regard he showed the errors of the medical practitioners for restoring their equilibrium of temperament while prescribing medicines based on humour and therapeutics based on the qualities of the remedies. He, in his treatment, while prescribing a dose, removed all the reactions that might occur in future. He, while discussing it, disclosed that the correct strength of medicine should be given that should be in proportion to pathogenic tendency (bi Qadr dhalik al-mayl). His system of treatment was simple as he practiced, and stressed upon using the simple or composite remedy starting with the lowest degree of it (fi awwal al- darajat al-ula). He was of the view that the strength might be increased according to the result of the earlier medicine. He exclaimed those who did not take precautions and push the people towards their deaths. He was in favour

74. Ibid
75. Ibid
76. Ibid
to mix the remedy with those substances which could help the remedy to treat the diseased organ on the one hand, and on the other these substances remove the side-effects that might be possible with the use of the remedy alone. He further stresses that the care should be given while mixing these substances to the original medicine without being hurried in this procedure.

In this way he contributed the medical field by introducing some new methods of treatments and stressing upon the precautions to which, perhaps none or a very few, before him were aware and paid attention. This helped the later physicians to practice in better manner and guided them to a new direction in this field.

Abu Marwan Abd al-Malik bin Abu'l-'Ala' Zuhr
(d. 557/1161 A.D.)

Abu Marwan 'Abd al-Malik bin Abi'l-'Ala' Zuhr was another member of Banu Zuhr family who, following his ancestors worked as a physician in Muslim Spain. As is obvious from his name he was the son of an eminent scholar of medicine, Abul-'Ala' Zuhr who not only got familiarity in Spain but in other parts of Muslim world and in Christian Europe also. In the words of Sarton, "Among the many

77. Ibid
distinguished physicians of Muslim West, he was by far the greatest; he was also the most famous physician of his time, not only among Muslims, but in Christiandom".  

Abu Marwan ibn Zuhr was born in Seville but his date of birth is not known. Arnaldez, quotes G. Colin who, with the help of some indications gives his dates of birth in between 484/1092 and 487/1095. Like other members of his family, alongwith the education in the field of medicine he received knowledge of Arabic literature and jurisprudence and got expertised in these fields. He started his early education in the medical field at an early age under his father, Abu'l-'Ala' Zuhr. So he inharited the knowledge of his father being his son and the pupil as well. No more account is available describing his detailed biography except that he came into contact with different rulers and sometimes received favour, facilities and wealth from them, while at some other occasion he fell into disgrace that led to his imprisonment. Like other scholars he did not visit to the Eastern Muslim countries. He only made journey to North Africa and lived there for sometimes. It was Ibrahim bin Yusuf bin Tashfin, the Almorabit ruler to whom he first of all came closer and later on joined his service and


enjoyed a luxurious life with full favour and facilities needed by him for his study and research. He wrote for this ruler a book entitled Kitab al-Iqtisad fi Islah al-Anfux wal Asjad or according to ibn al-Abbar, quoted by Arnaldez, Kitab al-Iqtida'. As the sources relates, this book was completed in 515/1121. He was so generous physician that in his early youth he got so much familiarity that enabled him to work under the patronage of the Morabit ruler, Ibrahim bin Yusuf bin Tashfin. He wrote a book on medicine at an age, from twenty six to twenty nine years. When Marrakush was captured by 'Ali bin Yusuf bin Tashfin he was put into prison by the new ruler. Its cause is not described by any writer. He also lived under the patronage of Almohad ruler 'Abd al-Mu'min. During his stay at Almohad court he cured the ruler, 'Abd al-Mu'min successfully as he was suffering from some intestinal problem. Despite the ruler was not in favour of the purgative treatment, the physician was successful by making the ruler eat the grapes after mixing them with purgative drugs. Later on he was appointed by 'Abd al-Mu'min as his vizir. As he was the contemporary of ibn Rushd who was himself the physician of high caliber,

81. R. Arnaldez, op.cit
82. Ibid
both the scholars became friends and they studies the subject together. Sometimes they worked on the field so far the experiments and preparation of drugs is concerned. Ibn Abi Usaybi'ah mentions a story regarding the death of Abu Marwan ibn Zuhr saying that he predicted to a friend namely al-Far, that he would die of "Shanaj" because he had eaten a large number of figs. His friend replied that he would not die of this disease because he has not taken too much and that he would die of a "naghla". Both of them proved to be correct as "Shanaj" became the cause of "naghla". Another story of his treatment of a person who had enormous belly and suffering from intestinal trouble, is narrated and became much familiar. The person, according to the story, drank the water that was not clean. He, then broke the pot of water and saw a frog which was there in the pot. He fell ill because of this event.

Many important books are reported to have been written in medical science by Abu Marwan ibn Zuhr. Most important of these is Taysir fi'l - Madawat wa'l - Tadbir (Practical manual of treatments and diets) which was written according to Arnaldez between 1121 and 1162. It is a treatise which is written by the writer on therapeutics (Tibb) and prophylaxis (Rutba) which, according to ibn Rushd,

83. A kind of stomach problem in which one feels severe pain in his intestines.
84. Ibn Abi Usaybiah, op.cit., p.67.
85. R. Arnold op.cit, 978.
is best of all other works written in this field. The book is divided into thirty equal sections having the intention that the Qur'an was divided into thirty sections. Of these thirty sections fifteen are lost while fifteen are survived. Ibn Rushd also praised the Taysir and pointed out its practical applications and simultaneously underlined the type of medicine used by him which, according to him, was less a general science than a very practical art of healing. This book was written by him on the request of this friend and admirer of his knowledge and works. The author, in this book, before all, gives the general introduction and defines the tibb and rutba and distinguishes between the medicine of body and the medicine of the soul. According to him there are three kinds of souls: The rational, in the brain; the animal, in the heart; the natural, in the liver. He also disclosed that the later two are subordinated to the first. He, in the book [Taysir] discusses various organs and reviews their treatment. He, for the purpose starts with the tongue and then took under discussion other organs of the human body. Alongwith these discussions he gives a descriptive account of all the existing ailments.

88. R. Arnaldes, op.cit.
known to him from head to feet, their causes and then their treatments. In continuation to his father he stressed more on practicals and discovered some new diseases. Among the new discovered diseases by Abu Marwan ibn Zuhr were mediastinal tumours (al-Awram Allati Tahduthu fi'l - Ghisha' Alladhi Yaqsim al-Sadr Tulan), Pericardial abscesses (Awram Ghisha' al-Qalb), intestinal erosion, paralysis of pharynx and inflammation of the ear. His excellence in the field of medicine and especially of the surgery may be recognized from the fact that he recommended tracheotomy and artificial feeding via the aesophagus or the rectum. In this regard he stands to be the first to recommend this new surgery.

At the same time he discloses the marsh vapours and its harm for the human being. While discussing the scabies he pointed out and described the agent of this disease who, in this regard also, was among the physicians of the first rank and of the first group. He, being a Muslim stressed upon the fact that the medicine would care the patient if Allah wills otherwise no medicine can treat a patient. He advised his son, Abu Bakr Muhammad bin 'Abd al-Malik, known as al-Hafid to try new remedies to cure the malady he was

89. Ibid
90. Ibid
91. Ibid
92. Ibid
suffering. It is, because of the faith that if Allah wills to cure his illness with the new medicines, He would do so and no medicine had the power to cure without His will and decree. Another important book regarding the foods and their usefulness is Kitab al-Aghdhiya (Book of foods) which was written between 1130 and 1162. In this book he also discusses various diets with condiments and the preparation of the food keeping in view the usefulness and harm for the people. In this book he discusses the water to drink and other drinks and stresses upon the purity of water. This book was composed by the physician for the Muwahhid Caliph, 'Abd al-Mu'min (rule 1130-1163 A.D.). While discussing with the diet he always considered the reason, favourable or harmful for the people. He disclosed various drugs the usefulness of various stones and described a large number of hygienic principles. Another book regarding the rules and formulas was written by him under the title 'Jami'. He wrote a book for his son, Abu Bakr that entitled Kitab al-Zîna (Book of Emballishment). This book is written by him on purgatives. A treatise on the disease of kidneys is also written by him that clearly shows that he was well aware of the kidney problems. It is also at the same time that he in his

93. Ibid
94. G. Sarton, op.cit., p.232
treatise *Maqala fi 'ilal al-Kula* described the treatment and medicines used by him. Abu Marwan ibn Zuhr wrote a letter to a doctor who used to live in Seville describing the diseases of white leprosy and pityriasis and perhaps the remedies to cure them. This letter has also been compiled in the form of a treatise under the little *Risala fi 'illatay at Baras wa'l – Bahaq*. Another book, *Tadhkira* is also included in the list of his books and treatises but there is some doubt in ascribing this work to Abu Marvan ibn Zuhr. Ibn Abi Usaybi'ah had ascribed this work to Abu Marwan while Arnaldez quote's G. Colin that this work was written by Abu'l - 'Ala', father of Abu Marwan. An important work, *Kitab al-Iqtisad fi Islah al-Anfus wa'l – Asjad* is also said to have been written by him which he started according to the reports in 515/1121. This name is not included in the list of ibn Abi Usaybiah as he mentioned only six works. Three of these works, *Taysir, Kitab al-Iqtisad and Kitab al-Aghdhiyah* are survived. Sarton, discussing this book, supplies some of its important informations. According to him this book which was completed in 1122-23 is a summary of therapeutics and hygiene which he composed for the benefit of lay readers. The account shows that it remained

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incomplete in fifteen Iqtisad or chapters and perhaps the writer wanted to compose another volume but some how he could not get chance or left at his own will and remained busy in writing some other works. However, whatever the case he, it is the work of considerable importance which he started with a summary of Psychology and it treats with souls and bodies as is obvious from its title.  

**Ibn Tufayl** (b. in the first decade of twelfth century and d. 1185 AD)

Ibn Tufayl is credited to be among the great scholars of philosophy, medicine and mathematics. His interest in the field of astronomy may be acknowledged from the fact that al-Bitruji's refutation of Ptolemy's theory of epicycles and ecentric circles in the favour of a more Aristotelian system in his book Kitab al-Hai'ah was due to the ideas of ibn Tufayl. This al-Bitruji himself accepted to be a contribution of his teacher, ibn Tufayl. George Sarton acknowledges him alongwith his pupil, ibn Rushd as the leading physician.  

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97. Ibid  
information, more details about his life, studies and works still lies in dark. However, his full name was Abu Bakr Muhammad ibn 'Abd al-Malik ibn Muhammad ibn Muhammad ibn Tufayl whom the westerners call him 'Abubacer'. He was born on an unknown date, in the first decade of 6th/12th century at Guadix in the province of Granada. Haurani mentions him to be born before 1110 AD. 101 He belonged to a famous tribe of Arabia, al-Qais. He started receiving his education at a very young age, firstly in the field of religious science and then other sciences, mentioned above. Ibn Bajjah (d.1138-39 AD), a great scholar of various sciences viz. mathematics, astronomy, philosophy and physics is said to be his teacher under whose able guidance ibn Tufayl studied various sciences, particularly philosophy. No other teacher of ibn Tufayl is still could be known. Ibn Tufayl started his career as a physician at Granada. He, for being expert in the field, in a short period became familiar in the nearby areas. As a result he was asked to join as the secretary to the governor of the province. In 1154 AD he became private secretary to the governor of Ceuta and Tangier who was the son of the first Muwahhid ruler of Spain, 'Abd al-Mumin. His career reached its zenith when he finally hold the posts of Physician, Qazi and Vazir in the court of Muwahhid Caliph of Morocco and Andalusia,

Abu Ya'qub Yusuf (ruled 1163-1184 AD) in 1163 AD that continued till 1182 A.D. Ibn Tufayl, during this period became more nearer and dearer to the Caliph and enjoyed much concessions and facilities. He exercised such power and influence that he recommended Ibn Rushd (Latin: Averroes, d. 1198 A.D.) as his successor after his resignation from the position of court physician in 1182 due to his old age. 102 After his retirement from the post he still enjoyed the favour of the Caliph and later his son Abu Yusuf al-Mansur (ruled 1184-1199 A.D.) after his death in 580/1184. He died in Morocco in 581/1185-86.

Because of his eminence many scientists and philosophers either received knowledge or came in contact and made consultation with him. Al-Bitruji (fl. about 600/1200) who was a renown and celebrated astronomer worked in the field of astronomy on the advise of his teacher, ibn Tufayl. He also advised, according to B.H. Siddiqui 'on the express desire of the Caliph to annotate works of Aristotle, a task that had been taken up zealously by ibn Bajjah but had remained unfinished to the time of his death' 103 It seems to be doubtful because E.I. mentions

102. He, because of his interest in different sciences, gathered in his court a number of eminent scholars of philosophy and science that made Spain 'the cradle of the rebirth of Europe', according to R. Broffault in The Making of Humanity, p.188 (Quoted by Bakhtiyar Husain Siddiqi in A History of Muslim Philosophy edited by M.M. Sharif, vol.I, p.526)

him not to be acquainted with ibn Bajjah. Ibn Rushd was also advised by ibn Tufayl to write a commentary on the works of Aristotle. By virtue of his vast knowledge and devotion to learning he produced a number of students in different fields, some of whom are known.

Unfortunately all the works of Ibn Tufayl are not survived. In the field of philosophy his novel Hayy ibn Yaqzan (The Living, son of the Wakeful) is famous throughout the Muslim World and Europe as well. The work was introduced into Europe through its various translations. The other philosophical work of ibn Tufayl is entitled Asrar al-Hikmah al-Mashriqiyah preserved in manuscript form, but Leon Gauthier, quoting the preface of Asrar discloses that it was a part of Hayy ibn Yaqzan and mentions its full name as Risalah Hayy Bin Yaqzan fi Asrar al-Hikmat al-Mashriqiyah. Two works in the field of medicine are said to have been written by him including Rajaz ta‘wil fi ’ilm al-tibb (long poem in Rajaz Meter on Medical Service) which has been discovered in manuscript form at Rabat. No further description regarding these medical works is available but it is quite clear from the details received

105. Ibid. (This version is given by the author with the reference of Abu Bakr Bunduḍ, a pupil of Ibn Tufayl).
through different sources as well as different positions held by Ibn-Tufayl in various courts that he was a great physician of the time. Sarton is also of the view that he wrote two medical works but does not mention their titles. Moreover he contributed the fields of mathematics and astronomy by his original ideas and works though no such work in these fields is survived.

Ibn Tufayl's Hayy ibn Yaqzan due to which he got much familiarity seems to be very natural and realistic in which he shows a boy born or thrown in an uninhabited island who accompanied nothing but his sense. His sense leads him to realize himself, differentiates among various things and realizes his superiority over others by his unrestrained contemplation of the ultimate being. Later on he recognises the God, angels, prophets, the day of judgement and others when he met a devout Muslim and made a conversation with him that had already come into his subconscious by his reasoning and intuition. Through this writing ibn Tufayl proved that Islam is a true religion and according to the nature of the man.

107. George Sarton, _op.cit._, p.305.
Abu Bakr Muhammad bin Abd al-Malik bin Zuhr
(1110-11-1098-99)

Abu Bakr Muhammad bin Abdul Malik bin Zuhr al-Hafid was also an important member and great physician of Banu Zuhr family. He, like his ancestors and other various scholars of the middle ages, was also a master of Islamic Sciences and language and literature.

Abu Bakr bin Zuhr al-Hafid was born in Seville (Ar. Isbiliyah) in 1110-1111. Ibn Abi Usaybi'ah is silent regarding his date of birth and mentions only the place of his birth, the city of Seville. He further says that he flourished there. According to the tradition he studied Qur'an and learnt it by heart. He, then turned towards the traditions of the prophet Muhammad (P.B.U.H.) and alongwith it the Arabic language and literature. Unfortunately the names of his teachers under whom he studied Qur'an and Arabic language, is not known. However, he studied Mudawwana of Sahnum on the doctrine of Malik and Musnad of ibn Abi Shayba under the guidance of 'Abd al-Malik al-Baji. Abu Bakr ibn Zuhr al-Hafid is also credited to be a poet and writer of muwashshihat with which he got much familiarity. So it may rightly be said that he was an outstanding man of allround calibre as he was a good player of

chess. In the field of medicine his teacher was his own-father, Abu Marwan bin Abd al-Malik bin Abi'l-'Ala' Zuhr. Under his able guidance he received higher knowledge in this field and with whose experience and eminence he was much benefited. Because of his qualities and knowledge he like his father and other ancestors, enjoyed the favour and nearness to the rulers of his period. Abu Bakr ibn Zuhr al-Hafid and his father, Abu Marwan worked under the patronage of the rulers of two dynasties: the Multhamid dynasty and the Muwahhid dynasty. Both of the scholars worked and served the last Multhamids and after its downfall came into contact with the Muwahhid rulers after they were asked to go to North Africa and work there under their patronage. There in North Africa he and his father lived and served 'Abdul Mu'min until his father's death during the period of the same ruler. He, after the death of his father served Abdul Mu'min alone, then his successor Abu Ya'qub Yusuf and after the later's death, his son and successor Yaqub Abi Yusuf who was known with the title al-Mansur. He also got opportunity to work under Abu 'Abdullah Muhammad al-Nasir and in his earlier period he was died. It was caliph Ya'qub al-Mansur who appointed him as his personal physician. Later the caliph decided to destroy

110. Ibn Abi Usaybiah, op.cit., p.68.
The books of philosophy and logic because of his hostility towards these fields assuming, majority of the people would go to hell after reading them. He appointed Abu Bakr ibn Zuhr al-Hafid as the incharge of this job, who fulfilled the desire of the Caliph. As the Caliph had much faith in him he allowed him to save those books which were in the possession of Abu Bakr ibn Zuhr. Abu Bakr ibn Zuhr also did not want any body to study these fields except after receiving complete knowledge of Islamic Sciences. In this regard a story is told about two of his pupils. When they intended to study Logic and Philosophy Abu Bakr ibn Zuhr stopped them and at the same time seazed their book of logic that was in their possession. He, then completed their education of medical science and directed them to study Islamic Sciences. After they completed their study of religious sciences they were then returned the book saying, "Now you are equipped to read this book and others like it". This and the stories like this show how Abu Bakr ibn Zuhr was conscious in the study of the works of philosophy and logic as it created severe doubts about the faith and in other related matters. Therefore, it was necessary for the reader of these sciences to study the religious sciences

111. Ibn Abi Usaybiah, op.cit., p.69.
112. Ibid
carefully and he might be able to answer various arising questions while going through the books of these fields.

Abu Bakr Ibn Zuhr al-Hafid was died in 595/1198-99 as he was poisoned by the vizir Abu Zaid Abdul Rahman bin Yujan who had jealousy with Abu Bakr ibn Zuhr at Hafid. The Caliph was so much shocked with his death that he mourned. He was buried in the graveyard known, "Maqabir al-Shuyukh". Ibn Abi Usaybiah gives his year of death as 596/1199-1200. He, before his death got much familiarity not only in the peninsula but also in North Africa and nearby areas with his vast contribution to the field of medicine. He is said to have written a treatise on ophthalmology but its name is not available. Because a number of poems are ascribed to him by various writers he became familiar as a poet along with his familiarity as being a physician. Ibn Abi Usaybiah devoted a number of pages giving the poetry of this great physician. He recognises him as greatest physician saying, "... and there was no one similar to him in his period in the field of medicine."  

115. Ibid., p.68.
Ibn Tumlus (560/1164 - 620/1223)

Yusuf bin Ahmad ibn Tumlus was a Spanish philosopher and physician. He was also known as Abu Ishaq and Abu'l - Hajjaj. Ibn Abi Usaybiah quotes his name, Abu Ishaq bin Tumlus. European scholars call him with the name of Alhagiag bin Thamlus. He, however was not much more familiar as only few scholars wrote about him. Nevertheless he and his works were so much familiar that the scholars of medieval Europe got acquainted with him as a physician and philosopher.

Ibn Tumlus was born in about 560/1164 in the island of Shaqr (Lalin: Alcira) in Valencia in Spain. He started studying the sciences of philosophy and medicine at an early age. Among his teachers were ibn Widah al-Lakhmi who studied under him the medical science. Ibn Rushd is also said to have been among his teachers. It was because of the fact that it was ibn Rushd who introduced him as the physician to the Almohad ruler al-Nasir (1199-1214 A.D.). Ibn Tumlus succeeded ibn Rush as the personal physician of Caliph al-Nasir. He was died after a long service of the said ruler at Alcira in 620/1223. The property that was granted to him by the Caliph was later divided by the Christian conquerers after its conquest.

Only one book of ibn Tumlus on medicine is reported to have been survived. It is the commentary of the medical work of ibn Sina, Urjuza.\textsuperscript{118} No more details about this commentary is unfortunately available. However, his skill is acknowledged with the fact that he wrote the commentary on the medical work of ibn Sina who is supposed to be among the most prominent and eminent scholars of the field in the whole Muslim world. His other works which are translated into different languages are with the titles of these languages. They are: The commentaries on \textit{Analitica protera kai hystere} and on \textit{peri hermeneias}, \textit{De mistione propositionis de inesse et necessariae} and \textit{kitab al-Madkhal lisina'at al-Mantiq} which was later edited with Spanish translation by Asin Palacios at Madrid in 1916 under the title \textit{Introduction al arte de la logica}.\textsuperscript{119}

\textbf{Abu Muhammad Abdullah bin al-Hafid}

\textit{(577/1181-82 - 602/1205-6)}

Abu Muhammad Abdullah bin al-Hafid Abu Bakr Muhammad ibn Zuhr was another member of the Ban Zuhr family. He is also credited to be an important physician like his ancestors who also got much familiarity in the field of medicine.

\textsuperscript{118. Ibid}

\textsuperscript{119. Ibid}
Abu Muhammad 'Abdullah bin al-Hafid was born in 577 A.H./1181-82 A.D. in the city of Seville. He started his studies in the field under the guidance of his father, Abu Bakr Muhammad bin Abdul Malik al-Hafid. Like his ancestors he also got patronization of the ruler of the time, Abu 'Abdullah Muhammad al-Nasir bin al-Mansur Abu Ya'qub who always honoured him and his father and recognized them as the great scholars of that period. Though no more information is available about him and his scholarly activities, ibn Abi Usaybiah praises him saying, "He was a man of good nature, better views, beautiful face, man of intelligence ... with glorious clothes and a great scholar of the field of medicine." He further gives information that he, with his father involved in the researches and in the secrets of medical practice. With being his father he read the book of Abu Hanifa Dinawari on the field of botany that was written under the title Kitab al-Nabat.

Unfortunately no medical work of Abu Muhammad 'Abdullah bin al-Hafid is reported to have been written and simultaneously no work is either survived or traced out by the later scholars. He, however, inspite of this lack of

120. Ibn Abi Usaybiah, op.cit., p.74.
121. Ibid
122. Ibid
information enjoyed the favour and patronage of the ruler that indicates towards his efficiency and intelligence in the field of medicine. This also indicates that Abu Muhammad must have written some important works as per his expertise in the field that he gained through his own experiences and experiments and at the same time through his father's knowledge. Since he was given much regard by the ruler, various important persons of the dynasty became jealous of him. This resulted in poisoning him in 602/1205-6 merely at the age of 25 years at Sala.123 His body was taken to Seville where he was buried besides his ancestors at the gate of victory (Ar.Bab al-Fath). He left behind him two sons about whom we know nothing except that one of them Abu'l- 'Ala-Muhammad was much interested in studying the books of Galen on the field of medicine.

Interesting to note is that in the short age of twenty five years only he not only studied medicine and got expertised in this field he also remained busy in the observations and experiments due to which he came into the service of the ruler al-Nasir bin al-Mansur and became much famous.

Abu'l-Salt Umayyah (1067 - 1134 A.D.)

Abu'l-Salt Umayyah bin 'Abd al-Aziz bin Abi'l-Salt al-Andalusi was a physician along with mathematician, astronomer, cosmographer, logician and physicist. Having born at Denia (Ar. Daniya) in Levante in 465/1067 he studied various sciences as mentioned above and got expertised in them all. He not only became expert in these sciences but also wrote books and contributed to these fields. According to Stern his teacher was Qadi al-Waqqaashi from whom he inherited his encyclopaedic knowledge.\(^{124}\)

No more information for being an eminent physician is available except that he wrote a medical work entitled al-Adwiya al-Mufrada on simples.\(^{125}\) Details of his other works along with his other biographical information are mentioned under Mathematics. He was died at al-Mahdiya on 2nd of Muharram 529/1134 after having passed an honoured and respected life by the Zirid Amirs Yahya bin Tamim and his son 'Ali bin Yahya.\(^{126}\) Unfortunately we are unable to have further knowledge regarding the contents of al-Adwiya al-Mufrada and that what he discussed about the

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125. Ibid
medical science in this work. Sarton gives the titles of his works written on different subjects. They are: Al-Rasa'il al-Misriya about the things and people observed by him in Egypt, Taqwim al-Dhihn (Ractification of understanding), Rasa'il fil A'mal bi'il-Istarlab on astrolabe and Risala fi'il Musiqi, on music.

Ibn Bajja (b. At the end of 11th century, d.1138-39)

Abu Bakr Muhammad ibn Yahya ibn Sa'igh was an important and earlier Spanish-Muslim scholar of astronomy, physics, zoology, botany, medicine and philosophy. Some scholars like ibn Abi Usaybīa and Dunlop are of the opinion that he stands in the rank of foremost philosophers of the Muslim World, like ibn Sīna, al-Farabi and ibn Rushd. Though he worked as a physician but became familiar through his philosophical works. He was well-known in the Latin West as Avempace or Avenpace.

Due to the lack of information the exact date of birth of ibn Bajja is not known. Shlomo Pines states that he was born at Saragossa (Ar: Sarqusta) towards the end of the 11th century A.D. It is also said that his ancestors were Jews but he was Muslim by faith. For the


sake of knowledge he migrated to many important seats of learning. Apart from Saragossa and Fez where he passed his youth he passed major part of his life in Seville (Ar: Ishbiliya) and Granada (Ar: Gharnata). He is also reported to have learned the art of music. After learning this art he studied astronomy and then Physics. He, while working on astronomy rejected the theory of epicycles and initiated the tendency to reject any theory and replace the ptolemaic system. He, in or before 503/1110, during the period of his writings also worked as the physician and vizir of Almoravid prince. He came into contact in the beginning with the Berber governor Abu Bakr bin Ibrahim al-Sahrawi while he was in twenties. Later on he was imprisoned by 'Imad al-Dawla bin Hud who was the ruler of Saragossa before its conquest by the Murabitun and still claimed for his independence, when he led a delegation of the governor to ibn Hud. After he was released he went to Valencia (Ar. Blansiyya). He was again imprisoned by the son of Yusuf bin Tashfin, Ibrahim while he was passing through Shatiba (Jativa) for the west Spain but released by the efforts of the father or the grandfather of ibn Rushd. He then went to Seville where he was appointed as the vizir by Yahya bin Abi Bakr bin Yusuf bin Tashfin. Here he worked as the vizir and physician for twenty years. No medical work is reported to have been written by ibn Bajja. Since he was a leading
medical practitioner of the time and got mastery over the field, it is, therefore, be concluded that he might have written some of the medical work or contributed the field by his experiments and inventions that could not be survived and reached us due to the lack of communication and passage of time as a large number of works of different scholars are reported to have been written but they do not survive now. This view is also strengthened by the fact that he was poisoned by a servant of physician Abu'l Ala' Zuhr who was jealous of his medical skill. As a matter of fact they wanted to be closer to the prince. Ibn Bajja was died in 1138-39 A.D. after passing a long educational journey and contributing different fields of learning by his researches and reasoning.

Ibn Bajja became more familiar because of his philosophical ideas and writings and credited to be the earliest Arabic scholar who worked on Aristotle in Spain. Abu'l-Hasan Ali al-Gharnati, according to Shlomo Pines, informs that Ibn Bajja was the first who established a systematic method for the study of philosophical sciences in the Muslim West which was, of course, prevailing in the Muslim East. After having studied the Corpus Aristotelicum

he followed al Farabi rather than any other philosopher in modeling his philosophical method. Among his philosophical works are: Tadbir al-Mutawahhid (The Regimen of the Solitary, Kitab fi'l-Nafs (Book on the soul), Risalat al-Wida (The Epistle of Farewell), Risalah Ittisal al-'Aql bil-Insan (Treatise on the Union of the Intellect with Man) commentaries and notes on some parts of Corpus Aristotelicum. This work includes Sharah Kitab al-Satna' al-Tabi'i li-Arastutates on physics entitled De Generatione et corruptione and The Meteorologica, The Book of Animals and a Book of Plants. However, his most celebrated work is Tadbir which has been translated into Hebrew and later edited with Spanish translation. 132 He and Abu'l-Hasan Sufyan solved the problems mentioned and derived from the book of Galen entitled Kitab al-Adwiya al-Mufrida, and Kitab al-Tajurbatayn on the medicines of ibn Wafid. 133 He also wrote an abridged version of al-Hawi of al-Razi. At some other place, showing his ability in mathematics he answered the questions from the work of ibn Sayyid al-Muhandis. In the field of astronomy he wrote several treatises on astronomy in which according to Hitti, "he criticized Ptolemy's assumption and thus prepared the way for ibn Tufayl and al-Bitruji". 134

133. Ibn Abi Usaybiah, op.cit., p.64.
Al-Ghafiqi (fl. 6th/12th century)

Muhammad bin Qassum bin Aslam was a famous Spanish-Muslim oculist. He flourished in the 6th/12th century in Cordova. Nothing regarding his biography is available. Nevertheless, it has been reported that he was born in Cordova on an unknown date and practiced as the oculist for a long time in that city. He was, as per the available sources, less familiar than his son Abu Ja'far Ahmad bin Muhammad al-Ghafiqi who was much praised by Ibn Usaybi'ah in his 'Uyun al-Auba' fi Tabaqat al-Atibba'.

Due to lack of information only one work is reported to have been written by Muhammad al-Ghafiqi. This work bears the title Kitab al-Murshid fi'l-Kuhl (The oculists guide) which according to Sarnelli is preserved in Escorial and only one copy of it is available there. This book is supposed to be of considerable importance and most remarkable ophthalmological text of the Islamic West it is said to be the summary of all the knowledge of ophthalmology possessed both by the Muslims of east and the west. This book deals with all sort of treatment of eyes along-with the hygiene and other all related informations. The author divided this book into six sections which are devoted

136. Ibid
137. Ibid
to the different aspects of eye cure. Al-Ghafiqi discussed the hygiene and various medicines in fifth and sixth chapters. According to Sarnelli some scholars consider it as the work containing vast knowledge of ophthalmological science but in the form of compilation. Although it is remarkable to be mentioned that the work contained such material which shows a kind of anticipation of modern conception of the pathology of eye. In this book he has shown the link of the eye with the entire organism.

It is very unfortunate that only one source regarding the information of Muhammad al-Ghafiqi is available that too does not supply the complete information but very precise. However, from the available material it can be concluded that he devoted his full attention towards this particular field of medical science and in his work he provided all necessary information about eye and its treatment.

Ibn Rushd (1126 - 1198)

Abu'l-Walid Muhammad ibn Ahmad ibn Muhammad ibn Rushd was a celebrated scholar of Medicine, astronomy and philosophy, who played a significant role in promoting these fields. The Latinized name which Europeans suggested for

138. Ibid
139. Ibid
140. Ibid
him was Averroes. Like some other scholars of Muslim world ibn Rushd is also credited to be the expert of Islamic sciences, philosophy and medicine and astronomy.

Ibn Rushd was born at Cardova in Spain in 1126 A.D. in a prominent religious family. His grandfather who was also called ibn Rushd was a Qadi and Imam of the great mosque of Cardova. Due to the familiarity of his grandfather he was called the grandson (Ar. Al-Hafid). Following his grandfather, his father also became familiar and was regarded as a great Qadi in Carhome. At his early age Abu'l-Walid ibn Rushd started receiving religious knowledge. Although he studied the science of Hadith to which he devoted time, he completely educated in the field of fiqh (Religious law). He completed his education and got training of fiqh under the able guidance of a great scholar of that period, al-Hafiz 'Abu Muhammad ibn Rizq. Being a Maliki jurist he wrote a famous treatise Kitab al-Mugaddimmat al-Mumahhidat in which according to Arnaldez and Iskandar "... he set forth its principles with a view to facilitating its study." It is, because of being influenced with Imam Malik, he learnt his Mu'atta by heart and got expertise in this fiqh. His another book on

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religion is Kitab al-Tahsil in which he collected the differences of learned people from amongst the companions of the Prophet (P.B.U.H.), their companions and the scholars of their successive generations. Other books on religion of ibn Rushd are: Kitab al-Nihayat al-Mujtahid fi'l-fiqh, Kitab al-Kulliyat. So far as the theology is concerned he was in the beginning Ash'arite but later on he strongly opposed this school and an Ash'arite theologian of his period, al-Ghazali. This doctrine, in fact, represented an equilibrium between the extreme doctrines. Ibn Rushd was well acquainted with the Mu'tazilite school of Kalam which presented more rationalistic view about different theological problems. He was much influenced with the type of reasoning used by the jurists and he found this type of reasoning more solid and pure logical than those used by the Mutakallimun.

143. Ibn Abi Usaybiah, op.cit., p.77.

144. As for example Qadriya school says that the man is all powerful and completely responsible for his deeds, whereas Jabriya school say that he is completely bounded with what has been written for him so he is not responsible and he is like a tool of the machinery of the world controlled by Allah. Ash'arite school has opted the middle way in between these two school.

145. It is a school of Kalam started by Abu'l-Hasan Ali at Ash'ari. This school, presented many doctrines regarding the essence of Allah, createdness of Quran, free will and predestination and others.
After completing the religious education ibn Rushd diverted his attention towards medical science astronomy and philosophy under a renown and celebrated physician of his time 'Ali Abu Ja'far Harun al-Tajali of Seville. Along with the expertised knowledge of this field, his teacher was well versed in the works of Aristotle. Ibn Rushd, together with his study of medicine, received knowledge of Aristotelian philosophy under the able guidance of the same teacher. This proved his intellectual understanding and eminence as he became master of many subjects. He proved to be a successful medical practitioner also as he was in the words of Arnaldez and Iskandar "... familiar with the principles (usul) and various branches (furu') of medical science...." Ibn Rushd was also interested in the fields of natural sciences and physics while he was studying Aristotle's works as these fields occupy a prominent place in the works of the Greek Philosopher. Abu Marwan ibn Jurrayul, another prominent physician of Muslim Spain, is also said to be the teacher of ibn Rushd who trained him in this field and helped to promote the medical skill of ibn Rushd. Ibn al-'Abbar is perhaps the only source who mentioned in his Takmile the name of this great teacher of

147. Ibid
Ibn Rushd. Ibn Abi Usaybi'ah quotes Abu Marwan al-Baji saying that ibn Rushd always remained busy in studying the medical work of Abu Jafar Harun and he made obligatory for him to produce and he deduced many important informations from this work and also confirms his interest in the sciences of ancients.¹⁴⁸

With the efforts of Ibn Tufayl, the teacher of philosophy of ibn Rushd came into contact with Abu Yaqub Yusuf, the Muwahhid prince after he was introduced to the prince. After an important intellectual test in which a question was asked by the prince and ibn Rushd replied and satisfied the prince, he came more nearer to the prince and enjoyed his favour. In his reply he proved a close relationship between the problems of astronomy and of metaphysics. Throughout the reign of Abu Ya'qub Yusuf (1163 - 1184 A.D.) he remained in a close contact of the ruler and his successor, al-Mansur Yaqub ibn Yusuf (1184-1199) and enjoyed high favour and much relaxation by the rulers. Later, after ibn Rushd was succeeded in satisfying the prince, ibn Tufayl was demanded by the prince to write the commentaries of the obscure works of Aristotle. Ibn Tufayl, thinking himself too old and too busy showed his inability and handed down the responsibility

to ibn Rushd. This project was carried out by ibn Rushd. Due to his engagement in this work he could not pursue for his research work and from astronomical observations that were more interesting projects for him that the commentaries. He was appointed as Qadi of Seville in 1169. Inspite of his engagements as Qadi he continued to work for the commentaries and their paraphrase. In 1170 A.D. he completed his paraphrase of the parts of Animals of Aristotle. In 1171 A.D. he went to Cardova to consult his own works which were left in this city when he migrated to Seville and without these works he faced much difficulties in completing his project. To complete his work assigned to him by the ruler he started devoting more time and during this period he continued to hold the post of Qadi of Seville. From 1169 to 1179 A.D., during his travel through the al-Muwahhid Empire he completed many of works. In 1182 he went to Marrakash where he was made as chief physician of the ruler, Abu Yaqub Yusuf in place of his teacher, Ibn Tufayl. Later he was also appointed as the Chief Qadi of Cardova. In 1195 ibn Rushd was much tortured by the ulama for they did not want to tolerate any illegal and anti-Islamic activity, either doctrinal or political in Spain. Since after a long struggle against Christians they regained their influence over the society and the ruling class they first of all wanted to destroy all those works, and especially that of philosophy, which were in contrary
to Islam. In that year he was exiled to Lucena, a place near Cardova. He was then summoned to appear before a high court of Cardovan notables who anathematized his philosophical doctrines. The court issued orders to burn all of his philosophical works. It also forbade the education of philosophy in the order. Though all the orders were, later, cancelled by the king al-Mansur after his return to Marrakash, ibn Rushd could not survive for long period. He was died in Marrakash in 1198 A.D. and buried there near the Tughzut gate. Later his body was removed to Cardova where he was again buried.

Various medical works are said to have been written by ibn Rushd which were, because of their importance, translated into different European languages including Latin Hebrew and others. The major among his works is al-Kulliyat (Generalities). Another work of ibn Rushd is Talkhis (abstract) of Galan's works. Sarton shows the importance of this book which exercised influence on the latin west saying Yet the Kulliyat was a very important book which was soon translated into Latin and into Hebrew and was often printed in the fifteenth and sixteenth centuries. The third work is a commentary of ibn Sina's urjuza fi'l-Tibb (Poem on medicine) entitled 'Sharh Urjuzat

ibn Sina. The fourth work in the form of a treatise of ibn Rushd was on theriac entitled Maqala fi’l - Tiryaq (Treatise on theriac). Kitab al-Hajwan is the book written by him, as is obvious, on the animals. All of the works of ibn Rushd exercised great influence in Asia, Europe and Africa as they were used as text books in the educational institutions. Al-Kulliyat was written by him in between 1153 and 1169 A.D. He discussed in this work, according to Arneldez and Iskandar, the works of Galen very much and sometimes the works of Hippocrates. He, then describes his own experiments and observations. Al-Kulliyat, being a voluminous work, was divided by the author into seven books. Each book bears its own separate title as each book is written on a separate field of medicine. The first book of al-Kulliyat is devoted by ibn Rushd to the anatomy of organs. This book bears the title Tashrih al-A'da'. In this work the author deals with all organs of a man in detail with their structures and function. The second book of this work is written on health that bears the title of the same name, al-Sihhah (The health). In the third book Ibn Rushd described all possible sicknesses he knew through the works of Galen and Hippocrates alongwith his own

152. Arneldez and Iskandar, op.cit., p. 7b.
observations. Ibn Zuhr and ibn Rushd were good friends of each other, who at the same time attended the meetings held under the patronization of the king, Abu Ya'qub Yusuf and got benefitted with the knowledge and experience of each other. It was ibn Zuhr whom ibn Rushd requested to write a book on the Treatment of all diseases from head to toe. Ibn Zuhr fulfilled his desire by writing al-Taisir fil' Mudawat wa'l - Tadbir (An Aid to Therapy and Regimen). The Tay'sir of ibn Zuhr enjoyed much familiarity and acknowledgement as it was recognised by the European scholars and his work was translated into various languages.

Fourth book of al-Kulliyat was on the symptoms of the diseases. It was given the title al-'Alamat by the author. Ibn Rushd tried to findout the symptoms of all the existing disease from head to foot by which after identifying the disease with its help the physician may be able cure that disease. Those all symptoms which could be known to him through different sources were mentioned by him in this book. The fifth book of this series is al-Adwiya wa'l - Aghdhiya (The Drugs and the Foods). On the book of Galen, Kitab al-Adwiya al-Mufrada he wrote an abridged verson under Talkhis Awwal Kitab al-Adwiya al-Mufrada li Jalinus.

As the title of the book shows the author give an account in this book the drugs that may be used in the treatment of

153. Abu Abi Useybi'ah, op.cit., p. 77.
the diseases. Simultaneously he relates the food with the drugs and presents that various types of food may be used as the drugs to cure the patients. The sixth and the seventh book are Hifz al Sihhah (Hygiene) and Shifa' Al-Amrad (Therapy). The last two chapters are important enough so far the precautions for health and its care alongwith its maintenance and system of treatment is concerned.

All the works of ibn Rushd enjoyed much familiarity and publication at a vast level, either in its original forms or its translations. The first Latin translation was made by Bonacosa a Jew Translator in Padna in 1255 A.D. to which he gave the title Colliget. In 1482 the first edition of Colliget was published in Venice. Later on its several editions were also appeared. Apart from this two Hebrew version of al-Kulliyat are also extant. Solomon bin Abrahan another Jew translator was one of their authors while another scholar could not be known though his work is still survived. This unknown scholar, most probably, be some jew by his faith because all Hebrew versions of any work, either scientific, mathematical, astronomical or philosophical, were made by the Jew scholars. It is also,


155. Ibid

156. Ibid
because of the fact that this language has been the religious and political language of the Jew community and no scholar of any other community ever worked in this language. The commentary of the medical work of ibn Sina, Sharh Urjuz al ibn Sina written by ibn Rushd was translated by Moses ibn Tibbon in 1260 into hebrew that was not completed by him and was completed at Beziers (France) in 1261 by Solomon bin Ayyub ben Joseph, a resident of Granada. A Latin translation of this work was made by Armangand in 1280 or 1284 and its edition was printed at Venice in 1484. Maqala fi'l - Tiryaq was translated into Latin by Andria Alpago to which the translator gave name as Tractatus de Theriaca. All these translations and version of various European languages show his devotion towards the medical science and his eminence in this field that they, with their translations of his works and of other eastern and western Muslim scholars educated the whole Europe and these translations summaries and other revised various and editions helped in the renaissance of the Christian Europe. The Kulliyat of ibn Rushd and at Taysir of ibn Zuhr together were used as a medical textbook which, perhaps, according to Arnaldez and Irkanđar "... to serve instead of ibn Sina's al-Qanun". They were used by the scholars in

157. Ibid
158. Ibid
Spain and in other parts of Europe as well. The writers of the article quote the statement of ibn Rushd without any support or refutation that "He who is occupied with the science of anatomy will have more faith in God"¹⁵⁹ that shows the light of his interest that by knowing the science of anatomy one can acknowledge Allah, that it may not be made by anyone except by the supreme power of the universe that we call him Allah. As he occupied the highest position of the country that is the appointment as the court physician to the Caliph Abu Yaqub Yusuf in place of ibn Tufayl in 1182 also shows his eminence in the field. He continued to be as the court physician during the Caliphate of his al-Mansur Yaqub ibn Yusuf until he fell into disgrace.

Ibn Khatib (1313 - 1374 A.D.)

Lisan al-Din ibn al-Khatib was a scholar of Muslim Spain who devoted his life to the study of various branches of knowledge and to the writings. He was an extraordinary intelligent scholar and wrote, as per the reports, about sixty books of which about twenty are available. He worked on history, geography, philosophy and above all medicine. Ibn al-Khatib was born at Granada in 1313 A.D. and died in 1374 A.D. He belonged in a family whose elders

¹⁵⁹. Ibid., p.8.
migrated from Syria and settled in Spain well before. His early life and studies lies in dark but his achievements show that his parents arranged a good environment for his studies. Because of his eminence in medicine he was much regarded by Nasirid ruler, Muhammad bin Yusuf and subsequently he was appointed to the post of vizir. He, seeing him as the able administrator he was awarded the title, "Dhu'l-Riyasatayn" by the Sultan. After a conspiracy made against him at the court of the Sultan he left the court in 1371 A.D. and went into hiding. Later on he was killed in 1374 in the civil war.

Among the most important surviving works of ibn al-Khatib, one is on the medicine and other is his history of Granada. This history is written by him under the title Al-Ihata fi Akhbar-e-Gharnata. Being the physician he discovered that there were two kinds of diseases. The epidemics (as for example, plague, smallpox and collera) and non-epidemics. He proved that some diseases are spread when the people come into contact with the patients affected by that particular disease. Because of the deaths on a large scale he was much worry to know the reasons for the spread of plague. He investigated that there were some sort of germs which effect the people after they came into

161. Ibid., p. 254.
contact with the patient. Notable here is that he stands
to be the first who gave these germs the term "Jarasim". 162
"Germ" is the latinized version of the said term. Along-
with the invention of these germs he invented such drugs
that could cure the disease. 163 Being the true Muslim he
wanted to remove all the superstitious thinkings of the
people in the spread of such diseases. After completing all
of his inventions he wrote a treatise describing the
diseases, their causes, their spread with the spread of
their germs which entre into the body and effect the people
and their treatments. Sarton also mentions him as the
scholar who worked, made inventions and wrote on epidemic
and particularly the plague. 164

Ibn Khatimah (b. 1323/24 and d. after 1369 A.D.)

Abu Ja'far Ahmad bin 'Ali ibn Khatimah al-Ansari was
a Hispano-Muslim physician who worked on plague and treated
its patients.

Ibn Khatimah was born at Almeria in 1323/24. He is
said to be the descendent of one of the companions of the
Prophet (P.B.U.H.). Apart from his poetry and two prose

162. Ibid
163. Ibid., p. 255.
works he wrote a medical work, particularly on plague which affected people of Almeria during 1348-49. Sarton says, "The plague treatise is important because it is one of the earliest accounts of the Black Death .... Ibn Khatimah's treatise is remarkable not only because of its earliness but also because of its goodness." The title of this work of ibn Khatimah is Tahsil al-Gharad al-Qasid fi Tafsil al-Marad al-Wafid. The whole treatise is composed of ten questions discussed by him regarding the epidemic of plague (Ar. Ta'un) alongwith all related material. The question discussed and described together with their answers are as follows: 1. Generalities about the plague, including a discussion of its Arabic names 2. All causes including general and special for the spread of plague 3. Why some people fall victims to the plague, while others escape it inspite of equal proximity. Why did the plague reach Almeria faster than the other parts of Andalus? 4. Contagion is discussed alongwith the explanation of the idea of contagion. This is said to be a novelty in medieval literature. Sarton quotes the experiment of ibn Khatima saying, "The result of my long experience is that if a person comes into contact with a patient, he is immediately

166. Ibid
attacked by the disease with the same symptoms. If the first patient expectorated blood, the second will do so .... If the first developed bubboes, they will appear on the others in the same places. If the first had an ulcer, the second will get the same; and the second patient likewise transmits the diseases". 5. Prophylaxy 6. Therapeutics. The remaining questions, from 7th to 10th are theological. For the purpose of investigation and making observations he travelled to different cities to find out the geographical conditions of these cities and the impact of the disease on those cities. He presented good account of information which he truly collected and which were reasonable and very clear. 167

The whole work written by him was of course as a result of the epidemic spread in Almeria in 1348-49 and he thought his duty to do research on plague and to prepare a work that might save the people from such deadly disease and to guide the scholars to be flourished in subsequent periods. Ibn al-Khatib is the only scholar who mentioned him in his al-Ihata fi Akbar-e-Gharnata, is reported by Sarton.168

Muhammad al-Shafra

(f1. I. Quarter of fourteenthCentury A.D.)

Abu 'Abd Allah Muhammad bin Ali al-Qirbilyani al-Shafra was a Spanish-Muslim surgeon of considerable reputation. Sarton is the only source of information about the biography and intellectual development of al-Shafra.

Muhammad al-Shafra was born at Crevillente in the province of Alicante on an unknown day. He, however, was flourished at his native place in the first quarter of 14th century A.D. 169 He was known as al-Qirbilyani because of his native place of the same name and Shafra is a kind of knife with which he or his ancestors used to dig and cut the roots. From this fact it may easily be understood that he did not belong to any reputed family. He is said to be a great researcher and observer for he himself used to the forests and climb on the mountains to collect the roots and herbs in which he became a great master. On these fields of his personal interest he wrote various books. 170 Unfortunately these books could not be survived. Since very few material on his life and works is available, it is impossible to produce a detailed information on the life of al-Shafra. However, it was Cadiz where al-Shafra went from

170. Ibid
his native place in 1314 and lived unto 1322 A.D. At this new place, during his stay, he always busy in academic pursuits. He also created a beautiful garden and arranged it perfectly for Nasiri Sultan, Nasir Abu'l Jayyush who, after his deposition at Granada moved to Cadiz where he died in 1322 A.D. and later on treated the ruler al-Jayyush when he suffered from plague. For his academic pursuits he travelled many important centres of learning inside the country and outside across the strait of Jibralter such as Granada, Algeciras, Valencia and Ceuta.

The surgical book that made Muhammad al-Shafra familiar throughout the Muslim and Christian West and Africa as well was composed by him for his son. He composed this work entitled Kitab al-Iqtisa' wa'l- Ibram fi 'Ilaj al-Jarahat wa'l Awram (Book of Deepening and consolidation on the Treatment of Wounds and Inflammations or Tumors) in which he collected a number of his observations and experiences. He, sometimes repeated his advice of prudence and even of obstention in critical cases. He, for this task and to fulfil his anxious desire to increase the prestige of his profession, always sought help of humbler practicians, barbers, bloodletters and

171. Ibid
172. Ibid., pp. 895-896.
173. Ibid., p. 896.
cuppers. He divided his *Kitab al-Iqtisa* into three parts. The first part deals with the inflammations and tumors along with their symptoms and their treatments. In the second part he discussed the wounds, extraction of arrows and the reduction of fractures and luxations. The third part of this book is devoted by him to the drugs used in surgery, either in simple or in composite form. This work in which the surgical and pathological portions are discussed, he explained his personal experiences and many interesting cases cured or witnessed by himself. It was a remarkable achievement of that time when the field of surgery was not so developed that he disclosed 36 kinds of inflammations, some of them are still difficult to identify without pathological devices. Earlier, another surgeon, Abu'l Qasim recognised 30 kinds of inflammations and Tumors. Following Abu'l Qasim Muhammad described that the cause of delay in healing of wounds or tumors may be because of the local climate. It is, because of the fact that the wounds may heal better at some places while there may be delayed at some others because of their difference of climates.


175. *Ibid*
Physicians (Brief Information of Others)

There were a large number of physicians in Muslim Spain about whom we could hardly get very brief references and notes. Ibn Sa'id Andalusi and ibn Abi Usaybi'ah give a very short list of such physicians, born, flourished and worked in Spain during Muslim rule there.

Among such doctors Hamdun bin Aban was who flourished at Córdova and received complete education in this field. He lived during the reign of Umayyad Amir Muhammad I (852-886 A.D.) and with his practice as physician he became a wealthy man. No work of medicine of ibn Aban is known. He lived a royal life and always ate best available food and wore best available cloth, namely Katan. Al-Harrani was a famous physician during the period of Muhammad I who migrated from Harran and settled at Cordova. He got much familiarity in the city of Cordova for his knowledge in the field. Like ibn Aban, no work of al-Harrani is said to have been written. Sa'id bin 'Abd al-Rahman bin Muhammad was the freed slave of Abdul Rahman I and a renowned poet, astronomer and physician. He must have flourished in the second half of eighth century A.D. He wrote his medical work in verses (Arjuza). The text of this


work, according to ibn Sa'id al-Andalusi, "... is composed of a large part that shows his ability in the field and his command on the treatment process of ancient physicians." 178 He wrote *Kitab al-Adrabaqhayn Ta'aliq wa Mujarrabat fi'l Tibb* and *al-Arjuza fi'l - Tibb* on medical science. 179 His verses show that instead of any man he made the medical works of Hippocrates and Galen his friends. Ahmad bin Hafsun was a logician, philosopher and physician who worked in the court of al-Hakam Mustansirbillah and remained as the physician of the ruler. In the life of the ruler he enjoyed all facilities but after his death he was expelled from the court by the new ruler. 180 He, after leaving the Umayyad Court at Cordova went into seclusion. Muhammad bin Tamlih was a man of literature, poet alongwith medicine. He was the personal physician of 'Abdul Rahman al-Nasir and al-Hakam, the two successive Amirs of Umayyad Spain. Being a responsible person and close to al-Hakam he was appointed in 358 A.H. the supervisor of the extension work of great mosque of Cordova. On a wall of this building the name and detail of Muhammad al-Tamlih is mentioned. 181 Only one book on medicine is ascribed to him entitled *Kitab fi'l Tibb*.

Abu'l-Walid bin Husayn, commonly known as ibn al-Kitani was an eminent scholar and physician, flourished and served 'Abd al-Rahman al-Nasir and al-Hakam as physician. He was liked by the people and because of his treatment they became cured with this treatment. Abu 'Abd al-Malik Thaqafi was the scholar of mathematics and medicine. He, like his other contemporaries served both the above mentioned rulers, al-Nasir and al-Mustansir. He worked and wrote on the book of Euclid. In the last years of his age he suffered with eye disease and later on died due to illness. 'Abd al-Rahman bin Ishaq bin Haytham was a physician of Muslim Spain, flourished during the period of Mansur al-Hajib at Cordova. Many works on Medicine are attributed to him. Among them are: Kitab al-Kamal wa'l Tamam fi'l-Adwiya al-Mushila wa'l-Muqi'ah, Kitab al-Iqtisar wa'l-Ijad fi Khata' bin al-Jazzar fi'l-I'timad, Kitab al-Iktifa' bi'l-Dawa' min Khawas al-Ashya and Kitab al-Sama'im. He dedicated and wrote his Kitab al-Iktifa' for the ruler Mansur al-Hajib. Another, ibn al-Kitani was the nephew of the above mentioned Abu'l-Walid al-Kitani and started practicing as the physician at the young age. He studied under his uncle and

182. Ibn Abi Usaybi'ah, op.cit., p.45 and Qadi ibn Sa'id Andalusi, op.cit., p. 135.

183. Ibn Abi Usaybi'ah, op.cit., p. 46.
his contemporaries including Maslama al-Majriti, al-Jibilli, al-Ja'i, ibn Yunus, ibn Hafsun, Muhammad bin Ibrahim and others, and served Hajib al-Mansur and his successor al-Muzaffar (d. 1008 A.D.). During the disturbance period he went from Cardova to Seragossa. He got mastery over logic, Astronomy and philosophy apart from medical science. Qadi ibn Sa'id quotes ibn Wafid saying that he was an intellectgent scholar and able to deduce the exact results. Ibn al-Kitani was died at the age of 80 years in 420/1031-32.

Ibn Baghunish was from amongst the scholars who was born in 369/958 and flourished at the time of Qadi ibn Sa'id and met them. Praising him the author of Tabqat al-U mam says that he was a religious, pious, genius, well behaved and familiar person. He was a native of Toledo but for the sake of knowledge he visited and lived Cardova. There in Cardova he studied mathematics under al-Majriti (d.1007 A.D.) and medicine under ibn Juljul, ibn 'Abdun al-Jibilli, ibn al-Shana'ah and others. After he completed his studies he returned from there to Toledo. He lived for a long period of 75 years till 444/1055-56 and during the whole period he passed an honourable life that include his close relation with the governor of Toledo, ibn Dhu'l-Nun.

184. Qadi ibn Sa'id, op.cit., p. 137 and Ibn Abi Usaybi'ah, op.cit., p.45.
185. Qadi ibn Sa'id, op.cit., p. 137.
For a period he left all worldly pursuits and started passing a secluded life. He, however, again started compilation of medical works of Galen and pointed out the errors and corrected them.\textsuperscript{186} It is notable here that he never practiced as the physician. Abu 'Abd Allah Muhammad bin 'Abd Allah bin Hamid Alja'i, commonly known as ibn al-Nabbash was an expert of medical science and a successful medical practitioner. Apart from this he studied logic and physics. He was also contemporary of Qadi ibn Sa'id according to him himself and lived in Murcia.\textsuperscript{187} Another scholar of medicine ibn al-Dhahabi was the contemporary of ibn Sa'id and the later attended the funeral of the said scholar in 456/1067-68.\textsuperscript{188} Al-Ramili, a native of Marya was a medical practitioner and author of a book on the field. Because he was a good physician, he was loved by the people. The book, \textit{Kitab al-Bustan fi'l - Tibb} is attributed to him. Abu Ja'far bin Khamis, of Toledo systematically read the medical book of Galen. Ibn 'Asakir also read the book of Galen and got benefited with it. He was the pupil of ibn Baghunish with whom he studied medical science. Ibn al-Khayyat, however was a mathematician and astronomer but because of his interest and studies in medicine he also became familiar as physician. He served, being the physician.

\textsuperscript{186} Qadi ibn Sa'id Andalusi, \textit{op.cit.}, p.138, Ibn Ahi Usaybi'ah, \textit{op.cit.}, p.48.

\textsuperscript{187} Qadi ibn Sa'id Andalusi, \textit{op.cit.}, p.140.

\textsuperscript{188} Ibid
and medical practioner, Sulayman bin Hakam, a noble of Spain and later al-Ma'mun, the ruler. He died at Toledo in 447/1058-59 at the age of 80 years. Yusuf bin Muhammad was a researcher in the field of medicine. He got much familiarity for his expertised knowledge but in the later stage of his life he always drank wine and because of this in this period no body could be benefited with his knowledge. Ibn Umm al-Banin was a native of Cardova and served as a physician of Amir al-Nasir Umar bin Ahmad bin Khal'dun, a noble of Seville who was a scholar of mathematics, astronomy, philosophy and medicine. He studied under al-Majriti. At the time of his death in his native city in 449/1060-61 he left behind him many students. Among them are Abu Muslim bin Khal'dun and ibn al-Saffar. 'Imran bin Abi 'Amr flourished during the period of 'Abd al-Rahman I and served him as a physician. He wrote the work entitled Kanash. Muhammad bin Fatah Tumlun was the client of Imran bin Abu 'Amr and like others he also got familiarity as a physician in Muslim Spain. Abu'l Hasan 'Ali bin Sulayman al-Zahrawi was, apart from physician a great mathematician and astronomer. He studied mathematics and astronomy under the great scholar, al-Majriti. Kitab fi'l Mu'amlat 'ala Tariq al-Burhan which became famous with the title Kitab al-Arkan is among his important works. Ibn Samina was a

189. Ibid
mathematician, astronomer and physician. He made a journey towards east for the sake of knowledge and spent sometime there. He died in 315/928.

Abu Ja'far Yusuf ibn Ahmad ibn Hasda'i was a Spanish-Muslim physician. Some of his ancestors became Muslim leaving Judaism. He, at sometime left Spain and went to Egypt where he joined the service of 10th Fatimid Caliph, al-Amir bi Ahkamillah (1101-1130 A.D.). In Spain he lived with ibn Bajja and studied and worked with him. With it he became the scientific correspondent of ibn Bajja. There in Egypt he came into close contact with vizir al-Ma'mun. A number of medical works are attributed to him. It was al-Ma'mun for him he wrote Kitab al-Iman li Buqrat (commentary on Hippocrates) which is also known as al-Sharh al-Ma'muni. Sharh Fusul is the commentary on the first book of Hippocrates is another landmark book. In his Fawa'id he gave useful remarks which he took from the commentary of 'Ali bin Ridwan on Galen's treatise to Glaucos. He also wrote a commentary on the first book of Galen's Ars Parva under the title Qawl 'ala Awwal Sana'ah al-Saghira. Apart from the medical works he, being a logician, wrote a summary Kitab al-Ijmal fi'l - Mantiq.


192. Ibid
Abu 'Abd Allah Muhammad ibn Muhammad ibn Ja'far who was called by the westerners as Abelbanus was an Andalusian poet and physician who wrote his medical treatise on plague. He flourished at Almeria where he worked as a magistrate. Later on he became the governor of Marchena (Ar. Marshanah), an unknown place in Muslim Spain. Apart from his poems on theology and rhetoric his treatise on plague exercised much influence. It is because of his treatise, Islah al-Niyyah that make him more familiar than because of the post held by him of magistrate, which is credited to be one of the earliest work on plague. Muhammad bin Ali bin Abdullah al-Laqmi al Sharuqi was born in Segura (Ar. Sharuqa) in Muslim Spain who also worked as the physician at his home town. He also got familiarity through his work on plague entitled Tuhfat al-Mutawassil fi San'at al-Tibb. Al Ghafiqi was the son of the above mentioned Muhammad bin Qassum bin Aslam and more learned scholar than his father. He collected herbs in Spain and Africa and mentioned them in his work based on simples. He gave the names of the simples in Arabic, Latin and Berber. Besides, there were a large number of other physicians who worked and wrote on the various branches of this science but their accounts could not reach to us. They may come into light by the discoveries of other hidden works.

194. *Ibid*