CHAPTER - II

GEOGRAPHICAL SCIENCES
Geography is the science that was much necessary for Muslims to get acquainted with for the spread of their culture and society and also for the pursuance of their political affairs. Like other sciences, as for example mathematics which is necessary for the performance of some important duties of Islam—viz—to perform the prayer, to pay Zakat, to keep the Ramadan fasts and to distribute the wealth and property to the heirs after the death of a person, astronomy is necessary to know the movement of the sun, moon, stars and planets, also for the performance of the obligatory duties of Islam, medicine is the need of the whole living beings, particularly the mankind to save them from diseases and to cure their illness and geography was also necessary for their conquests as it was the order of Islam to convey its message to the people who are ignorant, for their welfare in this world and the success of hereafter. With the development of other sciences like philosophy, medicine, mathematics and astronomy, the science of geography was started developing in the Muslim world. It was just after the establishment of Bait al-Hikmah in 830 A.D. by Ma'mun. These sciences entered into Muslim Society through the translations of the works of Greek, Syriac, Indian scholars from their languages into Arabic. Important to note that it were only Muslims who filled up the gap of intellectual development between the ancient and
the modern periods. They served as the custodian of the sciences of the ancient nations and civilizations, notably, the Greeks, the Romans, the Babylonians, the Chinese, the Egyptians, the Japanese and the Mayas. Though the major developments of these civilizations were in the fields of mathematics, astronomy, medicine and philosophy but some works of some civilization on the geographical science are said to be in extent. Muslims of earlier period used the geographical works of Ptolemy and that of Marinus of Tyre where geography was interpreted as Qat al-'Ard.

So far the relation of Islam with the geographical science is concerned, it is very compact. Qur'an, at various places instigated the believers towards various aspects of geography. The geographical notions contained in the Book of Allah are however very scanty; they imply the idea that the earth has a flat surface on which the mountains are put like the plugs (Sura IXXVII. 6,7). Muslims, after reading these verses of Qur'an tried to seek a confirmation of their own views in the Qur'an. In this way Qur'an is the first source that inspired the followers to seek the knowledge of geography before the impact of any work earlier civilizations. This applies to the doctrine of "the two seas, between which is Barzakh (Sura XXV.55 and XXVII.62). These notions became a kind of geographical and cartographical dogma in the 10th century A.D. At some
occasions the Qur'an tells about the existence of seven seas (XXI.26).

The earlier notions that led to the study and development of geographical science are also through the Jewish and Christian sources. They as for example, "the extension of the earth counted in hundreds of years", "to the encircling ocean" to the paradisiacal origin of some rivers, "to the depth of the seas and the lakes", "to the nature and cohesion of the mountains" and "the mountain system" are more the cosmographical than the geographical. Apart from this the different types of people [race, face and colour] living in the different parts of the earth are also confirmed by Qur'an. For example Yajuj and Majuj are mentioned to exist in the extreme North-East and the derivation of the genealogy of different peoples from the sons of Prophet Nuh (P.B.U.H.). The ancient Arabic poetry is also source of geography for the Muslims in which the geographical condition of Arabia along with the other rich geographical informations were discussed. This knowledge was gained by the Muslims through these poems which the Bedouin people learned by heart. This knowledge was included by the Muslim geographers of subsequent period. They include, according to J.H. Kramers, in the works of al-Bakri (Mu'jam), Zamakhshari (Kitab al-Amkina),
Abu'l - Fath Nasr al-Iskandari (Kitab al-Amkina) and Yaqut al-Hamawi (Mu'jam al-Buldan).

The word "jughrafia" or the science of geography was first used in the Rasa'il of Ikhwan al-Safa' of which the interpretation of the map of the world (Surat al Ard) was given. This word was continuously used until the middle ages. The term "geographical science" ('Ilm Jughrafia was started to be used in much later times. Al-Khwarizmi is among the scholar who wrote geographical works under the title Kitab Surat al-Ard. Earlier, after its beginning in the ninth century A.D., the geographical matters were started discussing and writing in the form of treatises. This trend of writing of this type of literature remained prevalent throughout the zenith period of the Muslims. With the passage of time the science was developed gradually.

The hadith literature, and particularly its branch of the name "futuh" also guides the believers to seek the knowledge of geography as it contains some such informations that could be a part of geographical literature. In this literature the enlogies of different towns and countries alongwith their characteristics are mentioned. The geographical literature was also read alongwith the historical works. There were various great scholars who

gave important geographical information in their historical works. Ya'qubi, al-Balkhi and Masudi are among those prominent historians whose works contained separate geographical sections. Important to note is that the link of geography with history was never entirely broken. It is because of the fact that when some historian described the history of some particular region, he, along with his historical accounts, always described the geographical condition of that region. Such informations include the environment of the region, the kind of land, the impact of that region on the habits and body of the people and others. Similarly, astronomy also remained in close touch of geography. The travellers always sought help in knowing the direction of their targets. The astronomy is also applied while discussing the oceanography and its related fields such as tides and others. Ibrahim al-Fazari described it in his Kitab al-Zij. According to the reports, the Indians and the Iranians wrote geographical notes in their astronomical works like Siddhanta. The tables of longitudes and the latitudes of various areas were given earlier books of astronomers along with their astronomical tables.

There are a large number of Muslim geographers who flourished in different areas of Muslim world. The complete account of all of them may not to be given but most important of these geographers are discussed below. Ibn Batuta was the most
important traveller of Morocco. He is also supposed to be a Spanish but due to the available accounts, he was born in 1304 A.D. in Morocco and also died in Morocco in 1368-69 A.D. He, throughout his life, travelled and visited in about the whole Muslim world. He also compiled his travel account (Rihla) Al-Khwarizmi who was born in Khwarizm before 800 A.D. and died after 847 was credited to work on mathematics and astronomy apart from geography. He wrote in this field Kitab Surat al-Ard (Book of the form of the Earth). Yaqut al-Hamawi was a distinguished geographer. He was born in Rum, Byzantine Empire which is now Turkey, in 1179 A.D. and died at Aleppo in Syria in 1229 A.D. Among his several works are Mu'jam al-Buldan (Dictionary of the Lands), Kitab Irshad al-Arib ila Ma'rifat al-Adib which is also known as the Mu'jam al-Udaba' (Dictionary of the Learned Men), Kitab al-Mushtarik Wad'an Wa'l-Mukhalif Saq'an and Al-Muqtadab min Kitab Jamharat al-Naseb (on the geneology of the Arabs). Shamsuddin Abu 'Abdullah Muhammad ibn Ahmad al-Maqdisi (b.946 A.D.) belonged to Bayt al-Maqdis who also worked and wrote on geography and Cartography. Apart from his work Kitab Ahsan at-Taqasun, he drew the maps of fourteen regions (Aqalim) which he made after the division of the whole Muslim world. Shihabuddin Ahmad ibn Majid was a reknown navigator of the Muslim world. He flourished at Najd in Saudi Arabic in the fifteen century
A.D. He knew about all the sea routes from Red sea to eastern Africa and from eastern Africa to China. In this branch of geography no navigator equalizes him. Because of this reason he called himself, "The Lion of the sea in Fury." Among his writings Hawiyal al-Ikhtisar fi 'Usul 'Ilm al-Bihar is most important. Another work of ibn Majid is al-Sufaliyyah. Abu Muhammad al-Hasan al-Hamdani was a geographer from Yaman who borned there perhaps in 893 A.D. and died around 951 A.D. Sifat Jazirat al-'Arab is his work on geography and is based only on his own observations. Ibn Hawqal belonged to the Upper Mesopotamian which is now in Turkey and flourished in the second half of the 10th century A.D. His work on geography, Kitab al-Masalik wa'l-Mamalik is supposed to be the atlas of the Muslim world. Al-Mas'udi, being a historian and geographer he visited a large number of towns and cities, both through land and sea routes and compiled various important works on both the sciences. Nuruj al Dhahab wa Ma'adin al-Jawhar, al-Tanbih wa'l-Ishraf and Kitab Akhbar-e-Zaman wa man Abadahu'l-Hadithan are among his most important works on History and geography. Abu Yahya Zakariya bin Muhammad al-Qazwini was a cosmographer and geographer of Qazwin in Persia. He was born there in 1203 and died 1283 A.D. Two works, 'Aja'ib al-Makhlugat wa Ghara'ib al-Mawjudat (Wonders of the Creation and Unique of existence), on cosmography and
Aja'ib al-Buldan (Wounders of the Lands), and Athar al-Bilad wa Akhbar al-'Ibad (Monuments of the Lands and Histories of the people), (both of these are the parts of one work of geography) are attributed to him. Ibn Khurradadhbih was a geographer of Persian origin who was born in 820 A.D. and died in 912 A.D. Among his various books on different fields, his Kitab al-Masgîlik wa'l-Mamalik is on geography that was completed about 846-47 A.D.

Lastly, the name of Abu Rayhan al-Biruni is worthy of mention. He was born in Khwarizm in 1973 A.D. where he studied and flourished and subsequently worked at the court the Samanid ruler, Mansur II. From there he went to Ghazna at the court of Mahmud, the Ghaznavid ruler. He collected geographical informations during his visit in India. Among his works on geography Kitab al-Hind and al-Qanun which he wrote for the Sultan Masud, son of Mahmud, are important.

The geographical literature of the western Muslim World is quite different from that of the east. The easterners, on the one hand used to give the account of the world in which they explained the sphericity of the earth, they distributed the seas and mountains, the different climates, the coordinates of main cities and the peculiarities of each country while on the other hand the western geographers showed their interest in itineraries containing usually the accounts of the important or learned men of those cities and towns where they visited and stayed.
Apart from this their human accounts, they contributed to the informations of plants and animals.

Al-Bakri (b. 1010, d. 1094)

Abu 'Ubayd 'Abdullah ibn Abdul Aziz ibn Muhammad was a celebrated geographer along with a good poet and philologist of Muslim Spain. According to Levi-Provencal he was also a theologian and botanist. His ancestors were originally Arabs by race who later on migrated to Spain after its conquest by the Muslims in 711 A.D. It was a renowned family which was in possession of a vast area of land. Later on during the Caliphate period this family played an important role for the downfall of Umayyad Caliphate of Cordova and declared its independent rule in Huelva (Ar. Walba) and Saltes (Ar. Shaltish) in 403/1012. These cities were situated in the south of Iberian peninsula on the coast of Atlantic ocean.

He was born either at Huelva or at Saltes in 1010 A.D. where his father Izz al-Dawla Abd al-'Aziz al-Bakri was working at some important position. Al-Bakri started receiving education at his native town. But after the anti-Abbadid activities his father was forced by al-Mu'tadid bin 'Abbad to give up his principality to the king of Seville.

After this event it was annexed to Saville in 443/1051. and Al-Bakri, then, alongside his father, had to move to Cardova. At Cardova he continued his studies where he devoted his full time for academic pursuits. In this city he came into contact with a great historian of the time, Abu Marwan ibn Hayyan (d.1075 A.D.) from whom he studied history. His teacher of geography was al-'Udhuri (d.1085 A.D.). The able guidance of al-'Udhuri made al-Bakri such great scholar of geography that he, with his writings and contributions to the field was respected both by the scholars and the rulers. After completing his education he was associated with the court of the banu Sumadih ruler, al-Mu'tasim at Almeria and lived there for a long period. He also visited Seville and lived for a long period there. Al-Bakri, though did not cross the boundaries of Iberian Peninsula but he travelled to a number of important cities of the peninsula and passed his considerable time there. With the intervention of Almorabits and deposition of various pitty rulers he settled at Cardova, then came under the control of Yusuf bin Tashfin where he died in 487/1094. Being a perfect type Musharik and a scholar of different branches of learning al-Bakri wrote many scientific works and gave important geographical informations. In his work,

4. Ibid
Mu'jam ma Ista'jam he presents the names of places in Arabia which are usually misspelled in common usage and the poetry of the Jahilliyah and hadith literature. This work contains two important portions. Firstly al-Bakri gave a detailed introduction of geography of the region on which he was working alongwith the habits of about all important tribes. After the introduction he deals with the problems analytically. Another work of al-Bakri, Kitab al-Masalik wa'l-Mamalik deals with the description of land and sea accounts alongwith the historical and social informations of Spain and North Africa. It was because of the fact that mostly scholars of that period worked on different fields at the same time and wrote sometimes separately and sometimes combined. They, not only got acquainted with the various sciences but got mastery over natural, mathematical and Islamic Sciences side by side. This work enjoyed much fame and was used as an authority by the Muslim and Christian scholars for centuries. Its manuscript as reported by J. Vernet is preserved in Paris (BN 5905). According to the same author the portion of al-Masalik dealing with North Africa was published by de Slane in Journal asiatique under the heading "Description del' Afrique septentrionale" in 1858-59 in the form of French

translation. It is published in the translated book form in two volumes. Similarly the portion of the book which deals with slav was translated into Russian by A Kunik and V. Rosen at St. Petersburg in 1878. It has also been published in its Latin and polish versions by T. Kowalski. This work of al-Nakri was completed, according to different sources in 1068 A.D. The main purpose of writing this work was to provide important informations of land and sea routes to the travellers for their facilitation as the title, of this work, Book of the Roads and Kingdom shows. He gives in this part the important information of distances between each town. J. Vernet informs us that a portion of this work is available and most of the part is lost. He, in his al-Masalik describes the nature of coast land, its climate and gives other important informations related to coasts. The book contains the whole coastal description precisely which is neither based nor having the information of the works of same titles written by Eastern geographers. He also describes various aspects of different races. It includes the description of the Slavic and Nordic people in the introduction of this work, which is said to have been published only in fragments. Further, while describing

9. E. Levi-Provencal, *op.cit*
10. J. Vernet, *op.cit*
11. Ibid
12. Ibid
the geography of North Africa and Spain he puts the history of these regions parallel to it. This portion of this book North Africa and Spain was written under the title, Al-Mughrib fi dhikr Ifriqiyya wa'l-Maghrib. He also had the verbal information from the people coming from North Africa to his home at Córdoba or at Seville. Therefore, along with his remarkable accounts about the Sahara routes in this work that seems to be among the earliest information, we find the historical portion of these regions also. Dealing the history of these regions he mentions the origin of Almoravid movement.13 According to J. Vernet "The fragments of the second part was used by Alfonso". Since the original work is out of reach, it has come to know that the main source of this work are the books of his teacher, al-Udhuri and Muhammad ibn Yusuf ibn Warraq who wrote his book about the history of Ifriqiya. Various Muslim and non-Muslim scholars got benefited with this work of al-Bakri and used it in their works both in Arabic and Latin languages as source material. According to Levi-Provical, "... his work, even in its fragmentary form provides a mass of information which would give scope for the drawing up of analytical lists and maps as does the Nuzhat al-Mushtaq of al-Sharif al-Idrisi, that other master piece, of a somewhat later

13. Ibid
date, on the historical geography of the Islamic world in
the middle ages."\textsuperscript{14} He is also said to have used
different sources in Arabic version or others and oral
traditions while describing about different regions. Among
these sources are Etimologiae of St. Isidore, the History of
Orosius.\textsuperscript{15} Apart from this al-Bakri utilized the accounts
of the travels of a Jew geographer of Tortosa and Ibrahim
ibn ya'qub.

Al-Bakri was also interested in the science of
Botany. Though none of his botanical works are still
survived but since many great pharmacologists of Muslim
Spain recognized him as an authority and cited him in their
works, he was supposed to write on this science. Among
these scholars Ibn Baytar and al-Ghafiqi are worthy to be
mentioned. So different authors deduced from this fact
that he wrote A'yan al-Nabat. The title Kitab al Nabat is
recommended by some scholars while Ibn Abi Usaybi'ah gives
the name of this book as Kitab A'yan al-Nabat wa'l-
Shajaryat al-Mandalusia.\textsuperscript{16} As a religious scholar al-Bakri
is reported to write a book on prophetic mission.\textsuperscript{17}

\textsuperscript{14}. E. Levi-Provencal, \textit{op.cit.}, p. 157.
\textsuperscript{15}. J. Vernet, \textit{op.cit.}
\textsuperscript{16}. Ibn Abi Usaybi'ah, 'Uyun al-Anba' fi Tabaqat al-
\textsuperscript{17}. E. Levi-Provencal quotes Ibn Bashkuwal's \textit{Sila} in
Unfortunately the title of this work is not available. He is reported to write four important works on philology. They are al-Tanbih 'ala Awham Abi Ali fi Kitab a-Nawadir which is the criticism of the work of Abu 'Ali al-Qali; Simt al-La'ali fi Sharh al-Amali, a commentary of al-Qali's Amali; Silat al-Mafsul which a commentary on the verses quoted in al-Gharib al Musannaf of Abu Ubayd al-Qasim bin Sallam and a commentary of proverbs used by ibn Sallam entitled Fasl al-Maqal fi Sharh Kitab al-Amthal. Another important work on history and philology is also attributed to him. This work bears the title, al-Mu'talaf wa'l-Mukhtalaf which is devoted to the Arab tribes by this great philologist of Muslim Spain.

Abu Hamid al-Gharnati (1080-1169 A.D.)

Abu 'Abd Allah Muhammad ibn 'Abd al-Rahim bin Sulayman al-Mazini al-Andalusi was a celebrated geographer of Muslim Spain who for writing geographical accounts travelled and visited a large number of important cities both in the East and the West. He was the descendent of the Hispano-Arabic family. He is also known as the traveller and collector of 'aja'ib.

18. Ibid
No more information about his childhood and education is available except that he was born at Granada in 473/1080 A.D. He studied various sciences and especially in his native city and stayed for sometimes at Ucles (ﬁ r. Uqlish). Nevertheless no name of any of his teacher is known. He passed a considerable period of time in travelling the Muslim countries of the East. So his adulterine life may be divided into two parts, the period of travel and that of writing works. He started his journey towards East in 511/1117-18 in which he chose searoutes in place of land. In the same year he reached Alexandria and engaged himself in the study. There at Alexandria he studied this science under a renown-scholar of the period, Abu Bakr al-Turtushi. From there he went to Cairo and after a short stay there he went to Baghdad in 515/1123. Al-Gharnati then decided to travel throughout Persia after four years of stay there in 524/1130. He, then went volga after crossing Caucasus and reached upto Bulgar. Lastly he visited Bashgird which was in those days under the possession of Hungarian tribes and stayed in their dominant areas for three years. After his long journey of these areas and later Central Asian cities including Khwarizm, Bukhara, Marw, Nishapur, Rayy, Isfahan and Basra. He visited Hijaz and performed pilgrimage. It is remarkable to mention that wherever Al-Gharnati reached in his journey, he came into contact with the scholars, and especially
geographers of that place. He, with his meeting with those scholars got benefited and tried to learn more in this field. In 550/1155 he, for six years settled at Baghdad and then went to Mosul. From there he went to Aleppo and later to Damascus. He died there at Damascus in 565/1169-70.

The second phase of his life was started when he started writing his geographical works. In this period while he stayed at Baghdad and at Mosul he prepared two important works entitled *Mu'rib 'an Ba'd Aja'ib al-Maghrib* (Anthology of the Marvels of maghrib) for vizir Yahya bin Habayra and *Tuhfat al-Albab wa Nukhbat al-Aja'ib* (Gift from the Heart and Selection of marvelous things) on the demand of Abu Nafis al-Ardabili, a great well wisher of Abu Hamid al-Gharnati. Apart from other geographical informations these works contain much knowledge about cosmography by which many later cosmographers were benefited. Also these works were cited at a large scale by the Muslim authors of East and the West. Many other important works on geography are also said to have been written by him. Among these works are *Nukhbat al-Adhhan fi 'Aja'ib al-'Ajab* (Selected memories concerning the greatest marvels) and *Aja'ib al-Makhluqat* (Marvels of creatures) both of which

22. J. Vernet, op.cit.
23. E. Levi-Provencal, op.cit
according to J. Vernet, "are the revisions or adaptations of the Mu'rib 'an Ba'd 'Aja'ib al-Maghrib and the Tuhfat al-Albab wa Nukhbat al-Aja'ib. Because of the usefulness and importance, the works of Abu Hamid al-Gharnati were translated into various western languages. Their translations were preserved in important libraries, academies or institutions on the one hand and on the other these translations were used privately and taught the students of the field. The work Mu'rib 'an Ba'd aja'ib al-Maghrib was translated into Spanish that is preserved in the Royal Academy of History of Madrid.

As no work of Abu Hamid al-Gharnati is under reach, we have to depend upon the articles and reports written and given by various writers in various encyclopaedias, dictionaries and books. According to the informations, Mu'rib is an informative work that deals some of the marvels of Andalusia. It also has detailed descriptions of astronomy, astrology and chronology of Andalusia as well. Al-Gharnati, in his travel accounts about Eurasia gives interesting reports prepared on the basis of the observations made by him of physical geography. In his

24. J. Vernet, op.cit., p.29.

25. Its number bears 96a-114b of the MS of the Royal Academy of History of Madrid, Spain.

travel he met a number of ethnic groups and mentioned their society, culture, tradition, customs, language and all related informations. These informations are said to be most important as he was the first to observe them very minutely and presented them in his travel accounts. These descriptions and observations include those used by the yura people of the Arctic of which al-Gharnati made diagram also. Al-Gharnati also described about the land, climate and the people of the Flora and Fauna, situated in the northern Russia which, according to J. Vernet, "... is also of great interest." The Mu'rib was published with a Spanish translation by C.E. Dubler.

The second work of Abu Hamid al-Gharnati entitled Tuhfat al-Albab wa Nukhbat al-Aja'ib is also important work. He gave such interesting informations in his work which no earlier geographer could produce. He categorised this work into different chapters and in each chapter he gave different geographical informations alongwith their inhabitant people and animals of those areas. So far the information regarding the homeland of Abu Hamid al-Gharnati is concerned, it is not given much concisely in his Tuhfa but different informations are given at different

27. Ibid
places. This work of al-Gharnati are chapterised into four distinct parts.29

(a) This part gives various descriptions of the world and its people apart from other geographical accounts. The author described in detail about Sudan, and especially the trade of gold and salt in the country with its complete survey including the information about the land and climatic conditions of sahara desert and the way used by the merchants in crossing the Sahara desert. He also mentioned how the merchants chose their way and guided themselves by the stars to cross this desert. It is interesting to note that until his period the use of compass was not started and it seems to be used by the geographers after him and the works written subsequent to his geographical accounts mentioned the use of this instrument. Apart from other descriptions al-Gharnati described such human beings which are said to be quasi human beings. Such informations, though they are strange, were never given by any earlier scholar. The accounts of these human beings were also repeated, as J. Vernet says, "...in Latin cosmographic manuscripts of the early Middle ages..."30


30. Ibid
In the second chapter al-Gharnati selected to mention about various countries and monuments. Among the monuments included the pyramids of Egypt and the lighthouse at Alexandria. Due to the unavailability of the original material no names of the countries mentioned by him and no other monuments except mentioned above, is known.

In the third portion of his book al-Gharnati mainly stresses upon the seas and their inhabitants. He also gives details of other things found in them along with the kinds of the seas, their depth, their plants, various kinds of stones, all kinds of fishes. Discussing fishes he mentioned about the existence of such fishes which can fly. He also tells in detail about squid and mentions its use with other characteristics. Discussing insects he stresses upon octopus and gives complete information about it. Torpedo, a kind of heavy and strong fish was also first of all discussed by this great geographer. Among other important and major informations of the seas are notes on pumice and the discovery oil wells in the seas. In this chapter Indian paper was also described by al-Gharnati.

31. It is a kind of fish which is used as the food for other fishes.
32. It is a special kind of insect in the seas and oceans having eight legs.
33. This is so quick and fast swimming fish that can easily get control over other fishes and makes them senseless before taking it as its food.
34. It is a kind of stone found in the seas.
The fourth and the last chapter was devoted to the discussion of all the caves and tombs visited by him in his travel. Being a geographer he discussed such things which, directly or indirectly have no contact with his field but to geology. Dealing such things he worked and described fossils.35 At the same time he wrote on the usefulness and utilization of ivory of the elephants found in the forests of Siberia, called mammoth. The last and important thing mentioned by al-Gharanti in this book was the use of asbestos and proved that it could be used in saving from fire when used it in the form of clothes. The Tuhfa was published by G. Ferrand in 1925 from an unknown place.36

It is necessary to mention that at the time when Abu Hamid al-Gharnati flourished (from 1080 to 1169 A.D.) no such sciences were either far advanced or in advancing stage, he stands to be an eminent geographer, ethnographer and perhaps natural scientist who, with his untiring experiments, experiences and researches put light on a number of facts which was perhaps impossible or most difficult for any other scholar. It is because of the fact

35. Stones, animals or trees etc. which are found in the excavation and in which some chemical reaction has occurred by which one can know its period or time of existence.

that he made a long journey inside Iberian peninsula and outside it and devoted all his energies and time in pursuing for his target and then writing it. Both of his works, Mu'rib and Tuhfa influenced the later geographers and cosmographers, not only Arab Muslims but western Christian and Jew scholars also. They worked and wrote important books using the books of al-Gharnati. Among such scholars was al-Qazwini who re-elaborated both of these works.37 Seeing its importance Spanish scholars also translated his work Mu'rib into their language which has been preserved in the Royal Academy of History in Madrid (Ar. Majrit).

Al-Idrisi (1100-1166 A.D.)

Abu Abdullah Muhammad ibn Muhammad ibn Abdullah ibn al-Sharif al-Idrisi was an eminent geographer and cartographer. Though he was neither born nor died anywhere in Spain even though he may be regarded as a Spanish scholar because he lived a considerable period of his life at Cordova and studied there. In this way with the connection of his knowledge and efficiency as a geographer he was Spanish.

Al-Idrisi was born at Ceuta in Morocco in 1100 A.D. in the family of Alvi Idrisids who had been the rulers of Ceuta and its nearby areas from 789 to 985 A.D.38

37. J. Vernet, op.cit
Nasr gives his date of birth in the year 1101 A.D. Ibrahim Ammadi Nadvi gives 1099 A.D. while Hitti and G. Oman have the same opinion as that of S. Maqbool Ahmad. The Idrisi rulers also claimed for the Caliphate. It is, because of the fact that he was the descendent of Idrisids, he received the title al-Idrisi. Since he and his ancestors were the nobles (Ashraf) of Malaga he was, also known as Sharif (The noble). Unfortunately when his ancestors could not maintain control and authority over Malga they migrated to Ceuta where al-Idrisi was born in that very respected family. since Muslim Spain was an important seat of learning and a large number of Christian and Jew scholars from all parts of Europe including the natives of the peninsula, were gathering there at different centres of learning and coming into contact with Muslim Scholars, he also got opportunity to visit at Cordova and received education there. There were thousands of schools and colleges, teachers and students at each centre. Cordova, Seville, Granada, Toledo, Saragossa and many others were the important centres of learning where students received knowledge of various sciences including Medicine, Pharmacology, Surgery, Geography,

Gardening, Astronomy, Astrology, Mathematics, Alchemy, History, Literature along with different branches of Islamic Sciences, Philosophy and Kalam.

The second phase of the life of al-Idrisi was started when he started to travel at the age of about sixteen years. He first made a journey to Asia Minor and visited many important cities as well as important learning centres of Asia Minor. His next travel was towards Europe. In this journey he reached southern coast of France. He, then visited England and then travelled throughout Spain and Morocco. He, himself stated in his book Kitab Rujari, according to G. Oman that he travelled a great deal in Spain and in North Africa. Al-Idrisi preferred to travel through sea in place of land if possible while visiting different areas of the world. He, therefore, became an expert of the sea journeys with having known all the information and knowledge about seas and oceans.

The third phase of al-Idrisi's life was started from 1138 A.D. In that year he received an invitation of king Roger II of Sicily requesting him to visit and stay in Sicily with the king himself. The king argued in favour of

40. S. Maqbool Ahmad, op.cit
41. Ibid
42. G. Oman, op.cit
his invitation. S. Maqbool Ahmad cites the quotation of al-Safadi, as the words of the king saying, "you [Al-Idrisi] belong to the house of the Caliphs. If you live among the Muslims, their king will contrive to kill you, but if you stay with me you will be safe".\(^{43}\) Al-Idrisi was well convinced with the argument of Roger II, the Norman king of the Island and joined him within a short period after receiving the invitation. He, there in Sicily, under the patronage of the king wrote geographical works and received high honour and position in the court of the king at Palermo. The same was continued till the death of the king in 1154 A.D. and even after his death when we worked under William I, the successor of Roger. Al-Idrisi returned to Ceuta in the last years of his life. He was died at Ceuta in 1166 A.D., where the great scholar was buried with much honour.

Al-Idrisi played a vital role in fulfilling the desires of king Roger II in the preparation of the world map.\(^{44}\) He, at the same time wanted to promote various sciences and arts during his period in his kingdom. For the purpose he called the scholars including Christians, Jews and Muslim Scholars of the east and the west. He was not

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\(^{44}\) S.Maqbool Ahmad, op.cit., and Ibrahim 'Ahmad Nadvi, op.cit., p.248.
satisfied with the prevailing works of different sciences and especially geography. Therefore he collected a large number of scientists from anywhere he knew about them if possible on the one hand and on the other he sent his envoys to travel far and wide and collect material and geographical informations. This helped in the creation of a culture and civilization consisting of the culture and civilization of many areas along with many races and religions. On the desire of king Roger II, al-Idrisi, under his patronage, with the collaboration of Christian scholars, constructed an important world map (some of them in colour also) and prepared a comprehensive geography of the world that provided important informations on various regions of the world. Having received first hand information from the envoys, he prepared the circular map in Silver. In this map al-Idrisi showed rivers, gulfs, mountains, towns, ports, seas, inslands and other important places with the depiction of seven climes on it.

No more work except geographical compendium with sectional maps in survived today. This work bears the title Kitab Nuzhat al-Mushtaq fi Ikhtiraq al-Afaq. This work is also supposed to bear the other title Kitab Rujari (The Book of Roger) which was completed in 1154 A.D. 46 This

book contains most elaborate description of the world of medieval times. The sectional maps are said to be the reproductions of the original Silver map. Because of the vast information of the world seventy separate maps were prepared. He, before preparing these maps, divided the inhibited world mainly of the northern hemisphere into seven latitudinal climes, parallel to equator and each clime was further divided longitudinally into ten sections. Lastly, by dividing the whole world into seventy section he prepared seventy maps which when joined all together, the complete picture of the world based on all the informations collected through different means, known according to S. Maqbool Ahmad "... to the Arabs and the Normans may be obtained." This map was quite different as compared to the map prepared by Ptolemy. It is, due to the fact that the map of al-Idrisi was based on the latest informations including ancient and modern that also include the informations given by Ptolemy in his map. This map prepared by Ptolemy, on the other hand was 1000 years older than that of al-Idrisi, based only on the ancient informations available to him. Praising al-Idrisi the author writes that the knowledge of this great geographer of Europe, the mediterranean region and the middle east was more accurate and reliable than that of other parts of the world. 47 This

47. S. Maqbool Ahmad, op.cit
statement seems to be quite right because al-Idrisi, for a long period of 22 years, travelled throughout these areas and what he knew about these areas was the first hand information and more original than that what he got acquainted through other scholars. The work provides more accurate and detailed account with its map in comparison to other works of the period of which maps and their description did not always concur in their details. The reason of such a difference might be the preparation of the two separately. Another reason, according to the author, of this dissimilarity was due to "...the maps were not drawn mathematically, and latitudes and longitudes known to Arab and Greek astronomers and geographers were not used in determining the geographical positions of place names".

The book of al-Idrisi is important enough in the sense that it, along with the descriptions of physical geography and its related things, gives detailed accounts of the social, economic and political life of the people of all the regions described in his book, especially of the areas of Europe, Asia and North Africa. He described the society, culture, habits and all related things. Dealing with economical condition of the people of different places he

49. Ibid
50. Ibid
51. Ibid
discussed the sources of income through business and especially from land resources. He, in this regard, discussed the kind of the land and their fertility which was of course the main source of income and the basis of their prosperity or poverty. Alongwith all these detailed accounts he described the political situation of these countries. In this regard he wrote about the nature of different rulers and their relations with their people. This book is so much rich that in the words of the author that it is "... a rich encyclopaedia of the medieval period." He, before writing his geographical work had gone through the early geographical works of the Greeks and Arabs and learned a great deal of knowledge from them. Main scholars from amongst the Greeks and the Arabs are Ptolemy; Abu'l-Qasim Ubaidullah ibn Abd Allah ibn Khurraadamih (820-912 A.D.) who wrote Kitab al-Masalik wa'l Mamalik and Abu 'Abdallah Muhammad ibn Ahmad, the author of the book bearing the same title as that of ibn Khurraadamih. He also studied Kitab Surat al-Ard, an authentic and important work written in the middle ages by Abu'l-Qasim ibn Hawqal (fl. 2nd half of the 10th century A.D.). It is, therefore, be said that to make his work authentic and perfect, al-Idrisi relied on the knowledge of earlier Muslim and Greek geographers and included their information in his book after their critical

52. Ibid
examination, together with his own experience and knowledge. He also discussed the material provided by different scholars of his time. First he categorized the whole material and then arranged it accordingly with the maps. "The work represents the best example of Arab-Norman scientific collaboration in Geography and Cartography of the middle ages" says the author. It was recognised, seeing its remarkable contents by the European, African and Asian scholars and institutions and was included as the textbook in the whole Europe and other regions. This work played a significant role in educating the European students the science of geography and cartography. Later, this work enjoyed much familiarity far and wide both because of its importance and its preparation under the patronage of King Roger II who after its completion ordered for making a large number of copies of it. Kitab Nuzhat al-Mushtaq which was also known as Kitab al-Rugerri was translated into various European languages. Its abridged editions and commentaries were also published from different places of the continent. This first abridgement was published at Rome in 1592 A.D. It was translated into Latin by Joannes Hesranite and Gabriel Sionita which was published at Paris in 1619 A.D. under the title Geographia

53. Ibid
54. Ibid
Nubiensis.\textsuperscript{55} It was later, in the nineteenth century, translated into French by P. Amedee Jaubrat in two volumes with the title \textit{Geographie d'Edrisi'}. Sometimes its different sections, describing the geography of different countries were also edited and sometimes translated by different scholars. Italy is, perhaps the last country where it was completely edited and translated in 1600 under the auspices of Instituto Universitario Orientale di Napoli and Instituto by a polygraph, B. Baldi and its unpublished translation is preserved at the University of Montpellier.\textsuperscript{56} Its commentary was also produced under the auspices of the same institutions.

Al-Idrisi is also said to write another work for the said ruler of Sicily, king Roger II entitled Rawd al-uns wa Nuzhat al-Nafs of which no copy is provided for it is proved by different sources.\textsuperscript{57} Another work of al-Idrisi is also reported by Abu'l-Fida with the title \textit{Kitab al-Sharif al-idrisi fi'l-Mamalik wa'l Masalik}. There exist two abridgement of the book of Roger entitled \textit{Jayn al-Azhar min al-Rawd al-Mi'tar} which was discovered at Cairo in 1893 by Vollers, is the abridged by Shihab al-Din Ahmad al-Maqrizi and \textit{Kitab-e-Jughrafia} or \textit{Kulliyya-e-Surat al-Ard} was discovered by E. Griffin in Tunis.\textsuperscript{58}

\begin{itemize}
\item \textsuperscript{55} Ibid
\item \textsuperscript{56} G. Oman, \textit{op.cit.}, p. 1033
\item \textsuperscript{57} Ibid
\item \textsuperscript{58} Ibid., p.1033.
\end{itemize}
Al-Idrisi is also credited to write on simples and on botany. Kitab al-Jami' al-Ashtat al-Nabat or Kitab al-Adwiya al-Mufrada, discovered in 1928 A.D. by H. Ritter is also said to have been written by him. Authors like Hitti call him, "...the most brilliant geographical author and cartographer of the twelfth century, indeed of all medieval times".

Ibn Sa'id al-maghribe (1213 - 1286 A.D.)

Abu'l Hasan 'Ali bin Musa bin Muhammad bin 'Abd al-Malik bin Sa'id was a famous scholar of geography of Muslim Spain. With being a celebrated geographer he was well-versed in poetry, anthology and history. He was born in Granda in 610/1213. His family was much regarded as they were the descendents of a companion of Prophet Muhammad, 'Ammar bin Yasir and as many generations of this family had been working in various fields of learning including religious and natural sciences and also in the field of literature. This family also got opportunity to rule at

59. Ibid
60. P.K. Hitti, op.cit., p. 568.
Qal'a during the period of the Tawa'if. Shortly after its establishment its ruler was forced to enter the service of the Almohads.

No information about his childhood is available except that he studied the traditional science. For the sake of geographical knowledge he visited different cities of Spain and North Africa in the west on the one hand while he seems to be in Egypt, Arabia, Syria, Iraq and as far as Iran on the other hand. At the age of twenty nine, in 639/1242 he, alongwith his father, Musa, went to perform pilgrimage but unfortunately his father was died during their journey at Alexandria in 640/1242. When he reached Cairo he was warmly received by the scholars of the city. It was because of a work of geography completed by him and its information reached Cairo before him. This book, *Kitab al-Mughrib fi Hula'l-Maghrib* had an interesting story of its writing. Pellat gives its detail as it was begun by Abu Muhammad 'Abd Allah al-Hijari on the advice of 'Abdul Malik bin Sa'id. But at that stage it was started to be written

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62. This was the period which started about the downfall of Umayyad Caliphate of Cordova in 1031 A.D. and continued till the establishment of Almorabit dynasty there in 1091. During this period various petty principalities were established in different parts of Muslim Spain including the Jahwarites of Cordova, Banu Hammad of Malaga and Algecises; Banu Ziri of Granada; Slav dynasty of Almeria, Murcia and Denia. Banu Hud of Saragossa, Banu Dhu al-Nun of Toledo and Banu Abbad of Seville.

63. Ch. Pellat, *op.cit*
under the title, Kitab al-Mushib fi Ghara'ib al-Maghrib which subsequently changed to the above mentioned title.\textsuperscript{64} The author then adds the information that its compilation on the basis of collection of data was continued and during this period its title was changed. The other scholars who contributed to this book are Ahmad (d. 1163 A.D.) and Muhammad (1125-1195 A.D.), the two sons of Abdul Malik bin Sa'id, then Muhammad's son Musa and finally his son, Abu'l-Hasan 'Ali bin Musa, commonly known as Ibn Sa'id al-Maghribi.\textsuperscript{65} This was completed by ibn Sa'id al-Maghribi one year after his arrival at Cairo in 1243 A.D. Its different sections on different countries were edited by many scholars of later period. He left Cairo in 1249 A.D. for pilgrimage and later on went Iraq and Syria to receive the geographical knowledge. On his stay in Iraq and Syria he tried to complete a book, Kitab al-Mushriq fi Hula'\'l Mashriq which was undertaken by his father which still, inspite of his efforts could not be completed.\textsuperscript{66} However he succeeded to complete several volumes of it. During his stay in the east he wrote another book under the title, al-Nafha al-Misriyya fi'l Rihla al-Makkiyya and performed another pilgrimage also.

\textsuperscript{64} Ibid
\textsuperscript{65} Ibid
\textsuperscript{66} Ibid
The next phase of his life was started with the arrival in Tunis in 1254 A.D. where he entered into the service of the Hafsid ruler of Tunis, Amir al-Muntansir. But because of his engagement and activities, the ruler became hostile with him. Later on the crisis was over and he again succeeded in having favour of the ruler. He lived in Tunis till 1267 A.D. when he decided to perform again the pilgrimage. With the intention he made another journey to the East. In this journey he visited various important areas relating to the geographical knowledge. Among them various areas of Iran are worthy to be mentioned. It is reported that he returned in about 1276 A.D. to Tunis where he died in 1286 A.D.

For being a good poet, historian and geographer he got much familiarity in Spain and North Africa. Due to the downfall of Muslim rule, most of the works of ibn Sa'id, like other scholars were either destroyed or lost while other works either in unpublished form or published, completely or partly, with different translations. His Mukhtasar Jughrafiya was edited by J. Vernet in 1958 and later edited with French translation by G. Potiron. Similarly his other writings were also used by later

67. Ibid
68. Ibid
69. Ibid
scholars of geography and got benefited with them. Among these books are those in which he mentioned about various scholars of his time, his own family, his journey to Mecca and those on geography. Some more works of ibn Sa'id were also printed and became famous both in the Muslim east and west, and Christian west. Rayat al-Mubarrizin wa Ghayat al-Mumayyazin which was partially edited with Spanish translation by E. Garcia Gomez in 1942 at Madrid and later translated into English by A.J. Arberry at Cambridge in 1953, Jami'al-Murqisat wa'l-Mutribat that was first edited at Cairo in 1286 and subsequently translated by A. Mahdad at Algiers in 1949, al-Ghusun al-Yania fi Mahasin Shu'ara' al-Mi'a al-Sabi'a which was edited in 1955 at Cairo by Ibrahim Ibyari and Ikhtisar al-Qidh al-Mu'all'a fi'l-Ta'rikh al-Muhalla which was edited at Cairo in 1959 by Ibyari are those works printed and translated. Husayn Nasr, discussing him says that he came to the east on the invitation of Hulagu and that he wrote an important book on geography entitled Bast al-Ard fi Tuliha wa'l - 'Ard. Nothing more regarding this work is available.

70. Ibid
71. Ibid
It is, however, worthy of mention, seeing the edition work and translations, that ibn Sa'id was an eminent and efficient scholar of geography along with other fields who with his observations and writings got a place in the history of Muslim geography. It is, of course, very unfortunate that very few scholars of modern times are aware of him and his works.

Al-Hasan al-Gharnati Known as Leo the African
(1485 - after 1554)

Al-Hasan ibn Muhammad al-Wazzan al-Zayyati al-Gharnati, most commonly known as Leo the African was an eminent geographer of Muslim Spain. He is such a scholar who restricted his writings on the subject within the boundaries of Africa. 73

Al-Hasan al-Gharnati was a person in the history of Muslim intellectuals who was known both by the Muslim and Christian names. He was born in 1485 A.D. at Granada in Spain. After the downfall of Muslim rule there in Spain in 1492 A.D. his family migrated to Fez in North Africa where he lived and devoted himself to the study of geographical works. No information about his origin is available. At the same time no knowledge about his family background is

available. Al-Hasan al-Gharnati made four long journeys to know about the geographical condition of those areas about which he was more interested. He started travelling in 1507 A.D. In his first journey which he started from Fez he visited many important places in North Africa, Arabia and Turkey. He collected all possible informations through direct observations of geographical condition of the area from Fez to Constantinople that was the seat of government of Ottoman Turks. This was ended in 1508 A.D. when he came back to his hometown. In the subsequent year 'i.e. in 1509 A.D.) al-Hasan al-Gharnati, keeping the same purpose in his mind decided to travel towards Timbuktu. This journey was lasted in 1510 A.D. In the third journey al-Gharnati again went to Timbuktu and later to Egypt via Lake Chad from there. This journey was comparatively longer that was started in 1512 A.D. and ended in 1514 A.D. His last and final journey was his official tour as an ambassador from Morocco to the Ottoman court. In 1515 A.D he went to Constantinople to the court of the Ottoman ruler Salim I who ruled over Ottoman empire from 1512 to 1520 A.D. Although this was his political journey, he paid his attention towards his field and made direct observations to get acquainted about the geographical condition of various nearby areas. From Constantinople he travelled towards Egypt and collected the necessary information of his field. His next visit after Egypt was of Arabia and then
he travelled towards Tripoli. Here, at Tripoli an interesting story of his life was started. In pursuasion for the collection of related material to his field he was made captive by the Italian Pirates. They made him slave and presented him as the slave before Pope Leo X. Seeing his ability and efficiency Pope Leo forced him to convert to Christianity. Al-Hasan al-Gharnati, seeing unfavourable condition for him became a Catholic Christian. It is very interesting that he did not reject the advise of the Pope and the Pope chose for him his own name. Since then he was called as Leo the African. It is interesting to mention here that he never left Islam but continued to be on his own faith and kept it in his heart. It is because of the fact that when he got chance to leave Italy, he left it and returned to Tunis. In Tunis he announced to reconvert to Islam. In fact if al-Hasan al-Gharnati did not show his acceptance of Christianity he might have been killed by the order of the Pope and his dream to prepare a significant work of geography fill up with interesting and informative accounts would have been uncompleted.

While in his stay in Italy he, using all his sources, depending on his personal experience as well on the writings of other geographers, started writing his

74. Ibid
geographical treatise entitled *Della Descrittione Dell' Africa et Delle Cose Notabili Che Quivi Sono* in Italian language, perhaps because of the pressure on him to prepare in this language as in the words of Thomas F. Glick "... doubtless it was based on Arabic notes or drafts".

The work *Della Descrittione* was a bulky work which the author divided into nine books according to its topics. The topics covered different areas. This book is important enough because it added a good deal of new knowledge to the existing works of geography, written in the middle ages. The first book deals with the generalities of the continent of Africa and its people. He describes in this book all common things about Africa with the races of the people, their prevailing system and all its related material. From book second to book sixth were restricted by the author to only the areas of North Africa. Since he personally visited about all the areas of North Africa and observed the land, the rivers, the mountains, the deserts, the oasises along-with the culture and civilization of the people, he devoted these five chapters to North Africa. In book VII he covers the upper Niger areas along-with the whole area of south upto the borders of Sahara. The geography of Egypt and its socio-political conditions was described by the author.

75. Ibid
in his next book. In the ninth book al-Hasan discussed particularly the rivers, animals, minerals and plants of Africa which according to the author, is "... of most interest to the historian of science because of fresh data presented by Leo (al-Hasan al-Gharnati) and his discussions of the limitations of Pliny's knowledge of Africa". Unfortunately no source giving the detailed information of the area mentioned by him could be traced. It is, therefore, not being mentioned what he discussed and described about different places and its people, basing on his observations or consulting through different Arabic sources. However, it is such an important work which was consulted by the later cartographers and the writers of portolanos. There were many who edited and published the original text. The important geographers who consulted this work are Ramusio in 1554, Luchini in 1559 and ortelius in 1570 in their maps of Africa. W. Barentszoon prepared portolano in 1596 by going through and getting benefitted from the Descrittione of al-Hasan al-Gharnati. This work exercised great influence and widely used by the scholars in Europe for centuries. Similarly those works which were

77. Ibid
78. G.B. Ramusio was first to publish the original work and edited it under Navigationi e viaggi, from Vanice in 1550.
based on this work also exercised great influence in the whole Europe and in Islamic world and were used as a text book for the students of geography. Various translations into different languages were also made by different scholars.

There were some other geographers who flourished in Muslim Spain and devoted them completely to study and writings of geographical literature. They gave in their works rich informations of various cities and towns of both the east and the west.

Among such scholars of geography flourished in Muslim Spain was al-Mazini. He was born at Granada and died in Damascus in 1169 A.D. He was the contemporary of al-Idrisi born before him and died three years after him. He is said to be an important Cosmographer of his time. He travelled to various regions and mentioned their accounts. Among the farther areas he travelled are the Hungary, volga and even Damascus where he died and was buried. During his visit to volga he saw there the trade of fossil bones which he mentioned with detailed description. The title of his book is not mentioned in any of the sources available on al-Mazini and because of this fact we are unable to have other information regarding his travels and reports.

Al-kinani Abu'l Husayn Muhammad bin Ahmad bin Jubayr was born in 1145 A.D. in Valencia and flourished there. He also travelled to various important cities and wrote, according to Sarton, "... a very valuable account of his journey to the east in 1183-1185 A.D., one of the best works of its kind in Arabic literature." Although Ibn Baytar was a herbalist and physician, he gave his travel accounts which he made extensively in Spain, North Africa and the eastern countries as far as Mosul. In this he gave a large number of geographical accounts. Abu'l - Abbas al-Nabati also discusses about his journeys in this work Kitab al-Rihla that was written basically on botany.

Abu'l-Baqâ' Khalid ibn 'Isa was another Spanish-Muslim traveller. He was born at Qunturiya near Granada. He also passed a considerable period of his life in the journeys which he made both inside and outside the country. In 1335 A.D. he left his native place to perform pilgrimage. In the way to Mecca he passed through North Africa, Tunis, Alexandria Cairo, Jerusalem and Madina. In his journey to Mecca he used both the land and sea routes. During his return journey he went to Tripolis but leaving this went to Alexandria from where he went to Tunis. In Tunis he stayed for two years. In May 1340 A.D. he reached

80. Ibid., and Ch. Pettat has also described his Rihla (the travel account) "one of the best of its kind and served as model to many other pilgrims ", E.I., vol.III, p.755.
his native place where he was appointed as the Qadi. He passed rest of his life at Qanturiya.

Like other scholars of Muslim Spain he also composed his travel accounts under the title *Taj al Mafriq fi Tahliyat 'Ulama al - Mashriq* (crown of the vortex on the description of the learned men of the east). He describes the detailed accounts of those men whom he met or heard of in various places. He, in this work also considered much material from other sources. There must be some more geographers and travel writers whose accounts and information could not be reached to our period.