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## The Dark Ages of Europe were not the Dark Ages of the World

The Dark Ages, which is the early medieval period of Western European history during 500-1000 C.E. when there, was no Roman (or Holy Roman) emperor in the West. The term's more usual and pejorative sense is of a period of intellectual darkness and barbarity (Dark Ages - Encyclopedia Britannica 2010). The term dark ages is intended to be neutral, but it clearly shows a lack of recognition for the scientific and scholarly work during this period in Middle East and Europe (Spain).

The West knows that the Ancient Greeks, Egyptians and Babylonians contributed to civilization in terms of scholarly work and scientific discoveries. Most of us have heard of Socrates, Aristotle, Ptolemy, Galen and Pythagoras and their contributions to philosophy, astronomy, physics and mathematics. However, very few of us have heard of Muslim scientists, Al-Kindi, Ibn Sina, Al-Razi, Zahravi, Ibn Al-Haytham or Ibn Khaldoun, who made equally great contributions to science, between the 7th and 15th centuries - during the era known as the Dark Age. An in-depth study of the causes of the Dark Age and European renaissance will lead to the inevitable conclusion that Muslim scholars were the Light of the Dark Age.

The two events within one hundred years of each other effectively doomed Europe to ignorance for half a millennium. The first was the closing of Edessa's school of Hippocratic Medicine in 489 AD, located in ancient Mesopotamia by the Byzantine Emperor Zeno. Next was the destruction of Academy of Athens, which was devoted to a mystical and philosophical search for truth that challenged church doctrine. The Emperor

Justinian closed the Academy in 529 AD. Hundreds of scholars fled from Edessa and Academy of Athens seeking refuge in Jundishapur during 5th and 6th century. Jundishapur was a city in Khuzistan founded by a Sassanid Emperor Shapur (241-272 AD). A University with a medical school, and a hospital were established where the Greco-Syriac medicine blossomed. The town was taken by Muslims during the second Caliph Umar reign, in 738 AD. At this time, it already had a well-established Hospital and Medical school.

During the reign of Caliph Harun-ul-Rashid, Baghdad became the center of political power of the caliphate. Numerous hospitals and medical centers were established, and tremendous intellectual activity was recorded. This scholarly process led to the period of Islamic Renaissance. Many physicians and scholars migrated from Jundeshpure and other parts of the world to Baghdad.

The advanced civilization in the middle ages was inspired by Quranic teachings and the sayings of Muhammad (pbuh) that emphasized acquisition of knowledge. At its peak, about one thousand years ago, the Muslim world made a remarkable contribution to science, notably mathematics and medicine. Baghdad and Cordova in Spain built universities where thousands flocked to gain knowledge. Rulers surrounded themselves with scientists, scholars, and artists. The spirit of freedom allowed Jews, Christians, and Muslims to work side by side. (Francis Ghiles, 1983)

The legendary "Baitul Hikma" (House of Wisdom) was built in (763 AD) in Baghdad. It was equivalent to latter Royal Colleges established to promote the advancement of higher learning in England in 15th century. The oldest university of the world is not Oxford (1167), Cambridge (1209) or Harvard (1636). Al-Qarawiyyin University in Fez, Morocco founded in (859) C.E. is considered the oldest continuously operating degree granting university of the world. Al-Azhar

University of Cairo that was built in (970) C.E. and Nizamiya College Baghdad (1067) are also the oldest universities of the world. The Muslim Universities influenced the Monks who came with Crusaders during 10th and 11th century. They influenced the establishment of Salerno and Bologna University Italy (1088), Oxford University England (1167) and Sorbonne University in Paris (1150).

The Western capital of the Muslim world was Cordova Spain. During the 9th-10th century when London was a small town with no street lamps, Cordova-Spain had half a million population living in 113,000 houses, 700 mosques, 300 public baths, 40 hospitals, book shops and 70 libraries with 1/2 million books. "During the end of first millennium students from France and England travelled to Cordova to sit at the feet of Muslim, Christian and Jewish scholars to learn science and medicine (Burke, 1978).

Few notable Muslim scholars who made their observations and original research and added a vast treasure of scientific knowledge in the field of: Philosophy, Astronomy, History, Mathematics, Chemistry, Medical and Social Sciences are mentioned below:

Al-Khwarizmi (770-840) developed calculus of resolution and juxtaposition (Hisab al jabr wal-muqabala). The introduction of algebraic idea was that it allowed mathematics to be applied itself in a way, which had not happened before. His book on algebra was used in European universities until 16th century.

Jabir ibn Hayyan (Geber-715-800) introduced the experimental scientific method for chemistry as well as pure distillation, liquefaction, crystallization, purification and oxidization.

Ibn Isha Al-Kindi (800-873) worked at the House of Wisdom on a variety of subjects including Philosophy, Optics, Medicine, Mathematics, Cryptography and Metallurgy. He produced 107 recipes for perfumes.

Abbas ibn Firnas (810-887) made the

first successful attempt to fly using huge wing like a cloak in Cordoba Spain.

Al-Battani (858-929) contributed knowledge of Astronomy and trigonometry.

Al-Razi (Rhazes 864-930) made significant contribution in the knowledge of Medicine, Ophthalmology, Small pox and Chemistry. His books were used as text books of Medicine in European universities until 1500 C.E.

Al-Zahrawi (Albucasis 936-1013) He was the first physician who introduced surgery as a separate specialty. He is called Father of Surgery. He wrote 30 volumes medical encyclopedia Kitab al-Tasrif which remained a standard textbook in Muslim and European universities for 500 yrs.

Abul Hasan Al-Masudi (896-956) He was a traveler, historian and has made a major contribution in the knowledge of geography. He described oilfield in Baku, Azerbaijan, generate commercial activities and industry.

Ibn Al-Haitham (Alhazen 965-1040) considered as Father of Optics was the first scientist who drew the conclusion by observation and experiments. He proved that human sees objects by light reflecting of them and entering the eye, dismissing Euclid and Ptolemy's theories that light was emitted by eye itself.

Al-Mawardi (972-1058) wrote extensively on political science, sociology and jurisprudence.

Abu-Raihan Al Biruni (973-1048) Astronomer and Mathematician who determined the accurate earth circumference (600 years before Galileo). He discovered the Milky Way galaxy to be a collection of numerous nebulous stars.

Ali Hussain Ibn-Sina (Avicenna 981-1037) the most famous physician who wrote an Encyclopedia of Medicine in 10th century consist of 30 volumes-Al-Qanoon fil Tibb (Canon of Medicine). His work was taught in European universities until 16th century. He spelled out the procedures of testing the effectiveness of a new drug. He also authored 200 books on various subjects- Philosophy, Mathematics and Astronomy.

Omar Khayyam (1044-1123)

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## MUSLIM DEMOCRATIC CAUCUS OF TEXAS



Mathematician, Astronomer and Poet: He laid the foundation for the development of analytic geometry and non-Euclidean geometry.

Ibn- Zuhr (1100-1161) surgeon: He invented the surgical procedure of tracheotomy. He contradicted the erroneous theory of humorism supported by Hippocrates, Galen and Avicenna.

Ibn Al Nafis (1213-1288): He published 43 volumes of the medical encyclopedia. He discovered the pulmonary and coronary circulation about 400 years before William Harvey, who explained circulatory system without reference to Ibn al-Nafis.

Muhammad Al-Idrisi (1100-1166): Hewas one of the first geographers who drew the world map and the first known globe. He worked for King Roger II of Sicily who commemorated his world map on a circle of silver weighing about 400 pounds. He wrote one of the greatest books of descriptive geography known

as Book of Rogers.

Jalal ud Din Rumi (1207-1273): One of the best-known Persian passion poets who lived in Turkey. He is famous for poignant poetry on the theme of spiritual enlightenment and passion.

Ibn Khaldoon (1332-1406): His study of the nature of society and social changes was described in a new science called "Ilm al- Umran" (science of culture and civilization). He gave a sophisticated analysis of how human societies evolved from nomadism to urban centers and why these urban centers decades and finally succumbed to less-developed invaders. His work was regarded as undoubtedly, the greatest work of its kind that has ever been created by any mind in any time or place.

According to Robert Briffault in his book, *The Making of Humanity* "What we call science arose as a result of new methods of experiment, observation, and measurement, which were intro-

duced into Europe by the Arabs. Science is the most momentous contribution of Arab civilization to the modern world".

"If there is much understanding in the West about the nature of Islam, there is also much ignorance about the debt our own culture and civilization owe to the Islamic world. The medieval Islamic world ... was a world where scholars and men of learning flourished. But because we have tended to see Islam as the enemy of the West, as an Alien culture, society, and system of belief, we have tended to ignore or erase its great relevance to our own history... Islam is part of our past and our present, in all fields of human Endeavour. It has helped to create modern Europe" (H.R.H Prince Charles at Oxford University, 1993)

I would like to conclude with a quote from Carly Fiorina, Former Chair and C.E.O. of Hewlett Packard, who described the Muslim contribution to

world civilization on September 26, 2001.

"It was driven more than anything by invention. Its architects designed buildings that defied gravity. Its mathematicians created the algebra and algorithms that would enable the building of computers and the creation of encryption. Its doctors examined the human body and found new cures for disease. Its astronomers looked into the heavens, named the stars, and paved the way for space travel and exploration. Perhaps we can learn that it was the Muslim leadership that harnessed the full capabilities of a very diverse population that included Jewish, Christian and Islamic traditions".

From 7th till 15th century the Muslims scientists and scholars enlightened the world of DARK AGES with their scientific and philosophical ideas which became the foundations for the European renaissance in 16th century.