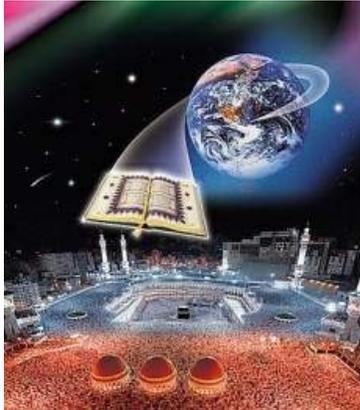


The Correct History: Science



Taken from, "Science In The Name Of God: How Men Of God Originated the Sciences",
by Kasem, Dr. Khaleel, Knowledge House Publishers (July 1, 2003)

General Science

Western historians claim that the experimental method is the very basis of modern science. Furthermore, they state that whoever is its inventor deserves credit for something most profound: the creation of this modern world. As first described by S. H. Pasha the conservative historian Will Durant had clearly shown that the Muslims conducted the world's first detailed scientific experiments. Therefore, by the modern world's own definition Islam deserves the credit for the creation of the modern, civilized existence.

The current information is: Modern science originated in a secular environment. That is why it is important to separate the worldly from the divine. Thus, during the study of the sciences, that is their study in modern classroom; the mention of God should be prohibited and/or avoided.

The correct information is: Modern science originated precisely in the environment of the worship of Almighty God. It was Islam, so indelibly tied to the divine, which invented the modern systematic sciences. In this environment the mention of God was direct and continuous. The fact of worship of God was combined with scientific pursuits. Goldstein notes that all of the key modern sciences, including medicine, physics, astronomy, and chemistry, originated with Islam. In his 17th century book Wallis describes how the Muslims entirely created the science of algebra as well as trigonometry. Briffault notes that regarding higher learning in Europe is utterly indebted to Islamic/ Arabic science. Sarton says that the Muslims thoroughly invented modern medicine. Olster claims that modern pharmacology is directly tied to the Muslims. Thus, incredibly, the sciences, which are today so resolutely retained as secular, were originally developed by believers. The fact is the books of Islam, the very books which initiated the scientific revolution, began with the name of God. Thus, incredibly, it is only because of the Divine Authority that today people benefit from modern science and civilization. The most productive phase in history, that is the creation of the precise sciences, was accomplished by people who thoroughly believed in the power and command of Almighty God.

The current information is: The modern sciences were invented by Western and/ or European scientists. Stimulated by the Renaissance, they used the powers of reason to independently develop the sciences.

The correct information is: Western and / or European scientists adopted their strictly from outside sources. The fact is according to Will Durant, George Sarton, Thomas Goldstein, and Robert Briffault all of the primary modern sciences were invented by scholars of the Islamic Empire. Briffault claims that except for the works of Islam, European science would have failed to develop. Paul Tannery says that European science, specifically mathematics, was merely based upon ignorance. The fact is the books which stimulated the Renaissance were strictly Islamic in origin. Therefore, the exact or modern sciences were independently exclusively developed through Islam. In fact, its works formed the basis for the inspiration of all of Europe's top scientists, including Galileo, Newton, Kelper, Lavoisier, Brahe, and Copernicus. Early investigators, such as Roger Bacon, Pope Syllvester II, and St. Thomas Aquinas, were entirely dependent upon Islamic writers for their efforts. Renan notes that all that Roger Bacon and St. Thomas produced were Islamic in origin. Thus, in contrast to what is popularly taught the modern sciences derive exclusively from Islam. There is no independent European source for such sciences. Incredibly, the entire modern theory for the development of the sciences is in error.

The current information is: Galileo (17th century) was the world's first great experimenter.

The correct information is: The 11th century scholar al-Biruni was the world's first great experimenter. He wrote over 200 books, many of which discuss his precise exceeding that written by Galileo or, for that matter, Galileo and Newton combined.

The current information is: Science owes its origin to post- Renaissance Europe, which allowed for a more liberal civilization. Because of religious zeal, other people, such as the Arabs, were intolerant to learning. In fact, the Arabs were so intolerant of learning that they burned to the ground the famous Alexandrian library, destroying priceless manuscripts.

The correct information is: According to Arthur Selwyn- Brown the claim that the Muslim destroyed Alexandria is a lie. This lie was perpetrated to tarnish the understanding of Islam. In fact, this was done to create the image that Islam is a fanatical religion, which is against books, learning, and civilization. Rather, according to Selwyn-brown the books that were destroyed were burned by Christian and Jewish fanatics, who may have desired to keep them from the Muslims. Furthermore, he states that the Muslims, in fact, "preserved the medical book of antiquity", preventing their inevitable destruction, while raising the status of science throughout Europe. The fact is he, along with dozens of other Western historians, categorically claims that it was the Muslims alone who preserved ancient manuscripts, preventing humankind's knowledge base from being lost forever. This is because the Muslims were taught by their leader, the Prophet Muhammad, that the knowledge of ancient civilizations was invaluable. He taught them to seek, collect, study, and preserve knowledge at any cost. This is precisely what they achieved. This clearly indicates the diabolical nature of this lie. While the Islamic civilization preserved the works of ancient science, it was, in fact, medieval Europeans who destroyed both scientific institutions and books. Thus, the Alexandrian story is precisely the opposite of the truth, a lie told by the very people who, throughout history, repressed the growth of science.

The current information is: modern science originated in Western Europe. Here, the European scientists wrote the first truly scientific books, based upon original Greek manuscripts. These books described the world's first truly scientific experiments. As a result, Europe initiated the creation of the modern high quality civilization that we live in today.

The correct information is: modern science originated in the lands of Islam. Here, tens of thousands of scientific books were produced. Simultaneously, no scientific books were produced in Europe. These Islamic books were filled with detailed scientific experiments. Thus, the first truly scientific books originated in the Islamic empire. The fact is Europe's first scientific manuscripts quoted as their inspiration the scholars and books of Islam. J. D. Wallis's 17th century book on algebra is an excellent example. The first truly scientific work in English on this subject, Wallis gives full credit to the Muslims

for originating this science. Such credit has been completely omitted from the current algebraic textbooks. Yet, the facts are obvious. In the words of Europe's original learned men the true source of modern science was exclusively non-European. The fact is it was Islam which created these sciences and then transferred them to Europe. Thus, the concept that the modern sciences originated exclusively in Europe is utterly false. The fact is Europe had little if anything to do with it. In fact, it played a contrary role. This is because it was mired in the most destructive form of barbarism known, religious bigotry, which led to the brutalization of all who pursued independent learning. Such pressure surely thwarted original discoveries. It is well respected that the degree of intellectual pursuit required for the creation of the sciences can only develop in a free society. Yet Europe was utterly intolerant. Thus, Europeans received the sciences from outside sources. This is confirmed in the words of dozens of western historians, including Briffault, Sarton, Durant, Goldstein, Lindberg, De Vaux, Renan, Humbolt, and Bernal. These scholars offer undeniable proof that the modern sciences are Islamic in origin. What's more, a number of these scholars clearly state that the reason this is misunderstood is due to malicious efforts. In other words, there is apparently a global effort to diminish the role played by Islam in the creation of modern civilization.

Astronomy

Despite detailed and original achievements in this science, in the standard history books the Muslims receive little or no credit. C. Ronan claims that Muslims astronomers produced highly detailed findings which are so accurate that they are similar to today's measurements. He describes how the Muslims made a number of original astronomical discoveries.

Certainly, Islam created the notion that the earth is round. It was disseminated into Europe through the Latin translations of Islamic texts. Thus, Europe's first astronomical texts, as well as its instruments, were Islamic in origin. The following details help edify the enormous Islamic contribution to the development and creation of modern astronomy.

The current information is: During the 17th century the German astronomer, Johannes Kelper, revolutionized astronomy by determining that the sun is the center of the solar system and, more importantly, that the planetary orbits are elliptical instead of circular.

The correct information is: according to the *Dictionary of Scientific Biography* Islamic Spain's az-Zarqali categorically stated that the orbit of Mercury is elliptical instead of circular some 500 years before Kelper. The Arabic term used to describe its orbit is *baydi*, which means oval. Hundreds of Islamic astronomers documented that the sun is the center of the solar system, and, as Welty states, this was common knowledge among Muslim astronomers. It is well known that Kelper, as well as Copernicus, was influenced by az-Zarqali.

The current information is: during the 16th century Nicholas Copernicus, a polish monk, revolutionized astronomy by publishing the heliocentric theory. He was the first to argue that the sun is the center of the solar system and that the earth revolves around it.

The correct information is: in the 14th century at-Tusi and colleagues, working and publishing at the massive, elegant Maragha Observatory in what is now known as Iraq, totally renovated ancient astronomy into modern science. As Welty makes clear the heliocentric theory was a routine knowledge among the Islamic astronomers. Copernicus's theories would have been elementary among Muslim astronomers. He added nothing substantive to their findings.

The current information is: the telescope, which revolutionized astronomy, is entirely a Western production. Thus, credit for the modernization of this science belongs exclusively to the West.

The correct information is: the telescope is only partially a Western discovery. The magnifying lens, which the telescope is based upon, is entirely an Islamic discovery. It was Ibn al- Haytham, as well as Ibn Firnas, who invented it and used it for purposes of magnification. If the movie *Robin Hood* is to be believed, the Muslims of Islamic Spain invented an eyeglass which was the prototype for the telescope. However, no firm documentation has been provided to confirm this. What is certain is that the concept of magnification, as well as the creation of magnifying lenses, is exclusively an Islamic invention. What's more, certainly, since the lens' inventor, al-Haytham, so thoroughly studied and measured the movements of heavenly bodies, conceivably he could have used lenses. Therefore, the claim that astronomy was revolutionized exclusively by European astronomers is erroneous. Instead, both Muslim, as well as European, scientists deserve credit for telescopic discovery. Without the efforts of the early Islamic scholars in precision lens making, the invention of the telescopic may never have occurred. Thus, the Muslims may claim significant credit for the discovery of this most essential astronomical tool.

The current information is: Regarding the motion of planets until the 13th century no improvement was made in the astronomy of the ancients during the Middle Ages. Then, Alphonso the Wise of Castile (Middle Spain) invented the *Alphonsine Tablets*, which were more accurate than Ptolemy's.

The correct information is: As early as the 9th century Muslim astronomers made hundreds of improvements upon Ptolemy's findings. They were the first astronomers to dispute his archaic ideas. In their critique of Ptolemy and other Greeks they synthesized proof that the sun is the center of the solar system and that the orbits of the earth and other planets might be elliptical. They produced hundreds of highly accurate astronomical tables and star charts. Many of their calculations are so precise that they strictly Latinized copies of the works on Islamic astronomy transmitted to Europe via Spain, i.e. the *Toledo Tables*. It is interesting to note that Alphonso was given his surname, i.e. The Wise, because he knew Arabic and studied Islamic books.

Chemistry

Durant and Bernal claim that this science is an Islamic discovery. The following will help determine who its true founders are.

The current information is: Antoine Lavoisier is the father of chemistry. This is because he was the first to perform scientific experiments in a proper chemistry lab.

The correct information is: Al- Jabr and ar-Razi were the true fathers of chemistry. The use of experiments in chemistry was unknown in ancient Greece. What's more, in Middle Ages Europe the science of chemistry was unknown. In contrast, Muslim scientists performed detailed chemical experiments and recorded the results. Durant says that the Muslims operated the first systemic chemistry labs in history. The Bunsen burner, ladles, tongs, hydrochloric, sulphuric, and nitric acids, and the chemistry lab manual are all Islamic inventions. Mathes says al-Jabr's *Chemical Compositions* was Lavoisier's bible. Therefore, Islamic scientists, not Europeans, must be regarded as the original fathers of chemistry.

The current information is: Purified alcohol, made through distillation, was first produced by Arnau de Villanova, a Spanish alchemist, in 1300 AD.

The correct information is: As early as the 10th century numerous Muslim chemists produced medicinal-grade alcohol through distillation. Furthermore, they were the first to manufacture on large scale distillation devices for use in chemistry and industry. They used alcohol as a solvent and antiseptic. Today, it is used for these purposes.

The current information is: In the 17th century Robert Boyle originated the science of chemistry.

The correct information is: The science of chemistry was strictly originated by Islamic chemists. A variety of Muslim chemists, including ar-Razi, al-Jabr, al-Biruni, and al-Kindi, performed scientific experiments in chemistry some 700 years prior to Boyle. Durant writes that Muslims introduced the experimental method to this science. Humboldt, Bernal, and Dampier regard the Muslims as the founders of chemistry. Mathes says that early European chemists used Islamic texts as their laboratory manuals. The fact is the lab manual, as well as chemistry devices such as the Bunsen burner, hearth, kiln, tongs, acids, and bases, originated in Islam.

The current information is: Gunpowder was developed in the Western world as a result of Roger Bacon's work in 1242. The first usage of gunpowder in weapons occurred when the Chinese fired it from bamboo shoots in an attempt to frighten Mongol conquerors. They produced it by adding sulphur and charcoal to saltpeter.

The correct information is: The Chinese developed saltpeter for use in fireworks, but they knew of no tactical military use for gunpowder, nor did they invent its formula. Research by Reinuad and Fave has clearly shown that gunpowder was formulated initially by Muslim chemists. Furthermore, these historians claim that the Muslims developed the first firearms. Notably, Muslim armies used grenades and other weapons in their defence of Algericus against the Franks during the 14th century. Jean Mathes indicates that Muslim rulers had stockpiles of grenades, rifles, crude cannons, incendiary devices, sulphur bombs, and pistols decades before such devices were used in Europe and provided the pictures to prove it. It is notable that the term "arsenal" is of Arabic origin (from *darvina'ah*). The first mention of cannon was in an Arabic text around 1300 A.D., well before there was any European notion of it. Roger Bacon learned of the formula for gunpowder from Latin translations of Arabic books. He produced nothing original in this regard. Reinuad and Fave categorically note that rather than western scientists it was the Muslims, with their vast chemical expertise, who invented gunpowder.

The current information is: The first mention of the geological formation of valleys was in 1756, when Nicholas Desmarest proposed that they were formed over long periods of time by streams.

The correct information is: During the 11th century Ibn Sina and al-Biruni made precisely this discovery, fully 700 years prior to Desmarest.

The current information is: Kerosene was first produced by the Englishman, Abraham Gesner, in 1853. He distilled it from asphalt.

The correct information is: Muslim chemists produced kerosene on a large scale as a distillate from petroleum products 1,000 years prior to Gesner. Thus, they were the first to use fractional distillation for the refining of petroleum.

Geography, Geology, and Exploration

The Muslims categorically the founders of these sciences. Sprenger has shown that they first truly scientific geographers were Muslims. Garrison claims they originated geology. Sir Percy Sykes claims the Muslims were the first international explorers.

The current information is: The first man to classify the race was the German Johann F. Blumach, who divided mankind into white, yellow, brown, black, and red peoples.

The correct information is: Muslim scholars of the 9th through 14th centuries invented the science of ethnography. A number of Muslim geographers classified the races, writing detailed explanations of their unique cultural habits and physical appearances. They wrote thousands of pages on this subject. In comparison Blumenbach's works were insignificant.

The current information is: In May, 1498, a major feat of navigation was accomplished when Vasco da Gama rounded the Cape of Good Hope and reached Calicut, India.

The correct information is: Vasco da Gama was assisted on the final phase of his trek by a Muslim navigator, who guided him through the difficult passage from the east coast of Africa to his destination in southern India. Without the help of the expert Muslim navigator, along with his precision instruments, maps, and star charts, successful navigation by da Gama would have been unlikely.

The current information is: The science of geography was revived during the 15th through 17th centuries, when the ancient works of Ptolemy were discovered. The Crusades and the Portuguese/Spanish expeditions also contributed to this reawakening. During this period European scholars produced the first scientifically based monographs on geography.

The correct information is: Muslim geographers produced untold volumes of books on the geography of Europe, Africa, Asia, China, and the East Indies during the 8th through 15th centuries. These writings included the world's first geographical encyclopedias, almanacs, and road maps. The masterpieces of the Islamic geographers provide a detailed view of the geography of the ancient world. The works were organized and systematic. The Muslim geographers of the 9th centuries far exceeded the output by Europeans regarding the geography of these regions well into the 19th century. No one, not even modern historians, has ever matched their descriptions. Their accomplishments even inspired the travels of Marco Polo. The Crusades led to the destruction of educational institutions, their scholars, and books. They brought nothing substantive regarding geography to the Western world.

The current information is: Leonardo da Vinci (16th century) fathered the science of geology when he noted that fossils found on mountains indicated a watery origin of the earth.

The correct information is: Al-Biruni (11th century) made precisely this observation and added much to it, including a huge book on geology, hundreds of years before da Vinci was born. Ibn Sina noted this as well. This fact establishes both al-Biruni and Ibn Sina as not merely the fathers but, rather, the founders of geology. It is probable that da Vinci first learned of this concept from Latin translations of Islamic books, which were abundant during his time. He added nothing substantial to their findings.

The current information is: Through their independent genius and thirst for knowledge, as well as technological advancements, the Europeans are solely responsible for the discovery of the Americas.

The correct information is: in 1492 Europeans (i.e. Columbus) discovered the Americas. This was at a time when they studied astronomy, mathematics, geography, and engineering at Islamic schools. The Muslims thoroughly understood navigational astronomy and taught this science at their institutions in Spain. Then, independent European universities were in their infancy. During the 15th century- the time of Columbus- all of the centers of learning in Europe were dependent upon Islamic texts. Any European texts on astronomy, geography, and map-making were regurgitations of Islamic works. In one of his letters, Columbus credits an Islamic text, the writings of the internationally renowned thinker, Ibn Rushd, as his source of inspiration for the discovery of the Americas.

This mention by Columbus of the works of Ibn Rushd is crucial. During Columbus' time books written by European scholars were virtually unknown. The fact is the Europeans were dependent upon Islam as the source for their learning. It is now known that European navigators, such as Columbus, Magellan, and Vasco da Gama, relied upon Islamic instructors and texts for learning in such critical fields as astronomy, mathematics, engineering, and navigation. Through the use of precision-orientated Islamic mathematics Portuguese and Spanish navigators were able to bravely journey through uncharted seas. In the fields of map-making and geography Islamic texts were also their guides. Initially, as is manifested by the contraction of the skills of al-Idrisi by king Roger of Sicily, for decades, perhaps

centuries, European rulers relied upon the Muslims to teach them geography. They also relied upon them to create their maps, globes, and navigational instruments. Yet, in what is a little known and indisputable fact, the inspiration for the discovery of the Americas, that is the confidence for the attempt to do so, is Islamic in origin. This is edified in still-preserved texts in Columbus' own words, who described his dependence upon Islamic devices, texts, and research to complete his voyages. The point is that today it is taught that the inspiration for America's discovery was exclusively European. If Columbus' words are to be believed, this is erroneous.

The Muslims established the fact that the earth is a globe. This alone gave European mariners the confidence to pursue distant trips. High quality and precision Islamic devices, including the astrolabe, sextant, and quadrant, made long distance ocean travel predictable and, thus, safe. Star charts, exclusively derived from Arabic, guided the Europeans during the dangerous night seas. Muslim navigators, such as the one used by Vasco da Gama, i.e. Ibn Majid, guided the Europeans ships through difficult passages. Dunlop notes that the Muslims deserve definite share in the discovery of the New World. The fact is they provided the Plethora of devices needed for such a discovery: the astronomical instruments, star charts, global maps, the rudder, the compass, cloth sails (the word cotton itself is derived from the Arabic, *qutn*), the mathematical formulae needed to assess position, and the confidence to pursue it through inspirational texts.

During the 10th century the Muslims traveled to and discovered the Azores, which is one-third the distance to the Americas. What's more, if Ibn Rushd's description is to be believed, Muslim navigators landed in the Caribbean, perhaps Cuba. Certainly, as is demonstrated by their discovery of the Azores, they possessed the expertise for long-range travel. Yet, even if this issue remains unanswered the fact is, as is claimed by Dunlop, the Muslim scientific expertise alone gives credence for their crucial role in the discovery of North America. The fact is, through their civilization in Islamic Spain the Muslims played a role in virtually all aspects of the discovery of the Americas.

Mathematics

There is little if any doubt regarding the origin of this discipline. As organized science it is an Islamic invention.

The current information is: Ancient Greece's Diphantus was the father of algebra.

The correct information is: The premier medieval historian, Howard Turner, claims that it was al-Khwarizmi who originated algebra. Furthermore, according to the *Encyclopedia of the History of Arabic Science* it was only al-Khwarizmi who created modern algebra. Comparatively, in terms of modern algebra Diphantus' contribution was insignificant.

The current information is: The Greeks were the developers of trigonometry.

The correct information is: Among the Greeks trigonometry remained largely a theoretical science. It was the Muslim scholars who developed it to a level of modern perfection, although the weight of the credit must be given to al-Battani and at-Tusi. The words describing the basic functions of this science, sine, cosine, tangent, and cotangent, are all derived from Arabic terms. The fact is the works of the Muslim scholars in this field were so elegant and so utterly sophisticated that it took centuries for the Europeans to comprehend them. Greek texts failed to provide this degree of research. In fact, original contributions by the Greeks in trigonometry were minimal. Furthermore, according to Durant both European and Chinese trigonometry are of Arabic origin. De Vaux states that both plane and spherical trigonometry were "indisputably" discovered by the Muslims.

The current information is: In 1614 John Napier invented logarithmic tables.

The correct information is: Muslim mathematicians invented logarithms and produced logarithmic tables several centuries prior to Napier. As early as the 13th century such tables were common in the Islamic world. The word logarithm itself originates from the name of Islam's most famous mathematician, al-Khwarizmi. His name was translated during the 12th century into algorism from which the word logarithm was later derived.

The current information is: During the 17th century Rene Descartes made the discovery that algebra could be used to solve geometrical problems. As a result, he greatly advanced the science of geometry.

The correct information is: As early as the 9th century mathematicians of the Islamic Empire accomplished precisely this. Thabit bin Qurrah was the first to do so, and he was followed by Abu'l Wafa' whose 10th century book utilized algebra to advance geometry into an exact and simplified science.

The current information is: During the 17th century Isaac Newton developed the binomial theorem, which is crucial for the study of algebra.

The correct information is: Hundreds of Muslim mathematicians utilized and perfected the binomial theorem. During the 10th century or prior, some 600 years before Newton, they initiated its use for the systematic solution of algebraic problems. In his books Umar Khayyam made a thorough study of it, creating the system of mathematics which was later used by Newton. The binomial theorem in use today is strictly a creation of Islamic mathematicians.

The current information is: The first man to utilize algebraic symbols was the French mathematician, Francois Vieta. In 1591 he wrote an algebra book describing equations with letters such as the now familiar x's and y's. Asimov says that this discovery had an impact similar to the progression from Roman numerals to Arabic numbers.

The correct information is: As early as the 9th century A.D. Muslim mathematicians, the inventors of algebra introduced the concept of using letters for unknown variables in equations. Through this system they solved a variety of complex equations, including quadratic and cubic equations. They used symbols to develop and perfect the binomial theorem. Through their use of symbols they converted mathematics from complexities understood by only the elite or privileged to a simple science available to everyone. Turner, in *Science and Medieval Islam*, makes it clear that rather than the Greeks or Europeans it was the Muslims who initiated the use of algebraic symbols. According to him it was Islam's al-Khwarizmi who vastly advanced modern mathematics through the use of symbols such as the now familiar x. The texts published by al-Khwarizmi were used as the basis of European mathematics for over 400 years. Incredibly, that is a period of time nearly twice as long as the existence of the United States. What's more, there was no need for the Europeans to write such texts. Through an excruciating detailed effort Islam had already produced them. The fact is the texts in use today are little changed from the Islamic originals.

The current information is: Until the 16th century the difficult cubic equations (x to third power) remained unsolved, when Niccolo Tartaglia, an Italian mathematician, solved them.

The correct information is: As early as the 10th century cubic equations, as well as numerous equations of even higher degrees, were solved with ease by Muslim mathematicians.

The current information is: Until 1545 the concept that numbers could be less than zero, that is negative numbers, was unknown, when Geronimo Cardano introduced the idea.

The correct information is: At least 400 years prior to Cardano Muslim mathematicians introduced negative numbers for use in a variety of arithmetic functions.

The current information is: The use of decimal fractions in mathematics was first developed by a Dutchman, Simon Stevin, in 1589. He helped advance the mathematical sciences by replacing the cumbersome fractions, for instance, $1/2$, with decimal fractions, for example, 0.5.

The correct information is: Muslim mathematicians were the first to utilize decimals instead of fractions on a large scale. At the beginning of the 15th century al-Kashi's book, *Key to Arithmetic*, became the stimulus for the systematic application of decimals to whole numbers and fractions. Al-Kashi developed the entire theory for the practical use of this computer-age discovery. It is highly probable that Stevin imported the idea to Europe from al-Kashi's work.

Medicine

The current information is: The concept of quarantine was first developed in 1403. In Venice a law was passed preventing strangers from entering the city until a certain waiting period had elapsed. If, by then, no sign of illness could be found, they were allowed to enter.

The correct information is: In the 7th century A.D. the Prophet Muhammad first introduced the concept of quarantine. Here, he wisely warned against entering or leaving a region suffering from plague. Thus, he knew that the plague was readily spread by direct human contact. As early as the 10th century Muslim physicians innovated the use of isolation wards for individuals suffering with communicable diseases. In Europe if his instructions had been heeded, in many regions plague could have been contained and millions of lives would have been saved.

The current information is: During the 17th century the Englishman, William Harvey, revolutionized the science of physiology, being the first individual to establish the circulation of blood.

The correct information is: As early as the 10th century A. D. it was standard knowledge among Islamic surgeons that blood circulates. Ibn Zuhr (10th century) thoroughly and correctly described the function of the heart as a one way pump, the first such description in history. During the 13th century Ibn an-Nafis thoroughly described the flow of blood from the heart into the lungs, i.e. the pulmonary circulation. He and Ibn al-Quff (14th century) documented blood flow from the heart all the way through the capillaries. Harvey was an admitted student of Islamic books. While some of his findings were original, it was the Muslims, not William Harvey, who discovered circulation, 300 years before Harvey was born.

The current information is: In 1545 the scientific use of surgery was advanced by the French surgeon Ambroise Pare. Prior to him surgeon attempted to stop bleeding through the gruesome procedure of searing wounds with boiling oil. Pare stopped the use of hot oils and began ligating arteries. He is considered the "father of rational surgery". Pare was also one of the first Europeans to condemn such grotesque "surgical" procedures as trepanning.

The correct information is: Islamic Spain's illustrious surgeon az-Zahrawi (d.1013) began ligating arteries with fine sutures over 500 years prior to Pare. He perfected the use of *Catgut*, that is suture made from animal intestines. Additionally, he instituted the use of cotton plus wax to plug bleeding wounds. The full details of his works were made available to Europeans through Latin translations. Despite this, barbers and herdsmen remained Europe's primary surgeons for nearly six centuries after az-Zahrawi. Pare himself was a barber, albeit more skilled and conscientious than the average ones.

Az-Zahrawi's legacy included the publication of dozens of books. His most famous work is a 30 volume treatise on medicine and surgery. His books contain sections on preventative medicine, nutrition, cosmetics, drug therapy, surgical technique, anesthesia, pre-and post-operative care, as well as drawings of some 200 surgical devices, many of which he invented. The refined and scholarly as-

Zahrawi must be regarded as the father and founder of rational surgery, not the uneducated- and unpublished-Pare.

The current information is: In 1542, the first *pharmacopoeia* (book of medicines) was published by a German scholar. According to *World Book Encyclopedia* the science of pharmacology originated in the 1900s as a derivation of chemistry due to the analysis of crude plant materials. After isolating the active ingredients from plants, chemists realized their medicinal value.

The correct information is: According to the eminent scholar of Arabic history, Phillip Hitti, the Muslims, not the Greeks or Europeans, wrote the first modern pharmacopoeia. The science of pharmacology was originated by Muslim physicians during the 9th century. They developed it into a highly refined and exact science. Muslim chemists, pharmacists, and physicians produced hundreds of drugs and/or crude herbal extracts one thousands years prior to the supposed birth of pharmacology. During the 14th century Ibn Baytar wrote a monumental pharmacopoeia listing some 1400 different drugs. Hundreds of other pharmacopoeias were published during the Islamic Era. It is likely that German work is derivation of that by Ibn Baytar, which was widely circulated in Europe.

The current information is: The Italian Giovanni Morgagni is regarded as the father of pathology, because he was the first to correctly describe the nature of disease.

The correct information is: Islam's surgeons were the first pathologists. They fully realized the nature of disease and described a variety of diseases in modern detail. Ibn Zuhs correctly described the nature of pleurisy, tuberculosis, and pericarditis. Az-Zahrawi accurately documented the pathology of hydrocephalus (water on the brain) and other congenital diseases. He was the first to accurately describe the cause of this condition. Ibn al-Quff and Ibn an-Nafis gave perfect descriptions of the diseases of circulation. Other Muslim surgeons gave the first accurate descriptions of certain malignances, including cancer of the stomach, bowel, and esophagus. These surgeons were the originators of pathology, not Giovanni Morgagni.

The current information is: During the 17th century Peter Chamberlen of England became the first physician to use forceps during delivery.

The correct information is: During the 10th century A.D. Islamic Spain's az-Zahrawi invented several types of forceps and used them during deliveries with great success. These monumental accomplishments make it clear that az-Zahrawi essentially invented the science of modern obstetrics, *700 years before Chamberlen.*

The current information is: the scientific use of antiseptics in surgery was discovered in 1865 by the British surgeon Joseph Lister.

The correct information is: As early as the 10th century Muslim physicians and surgeons applied purified alcohol to wounds as an antiseptic agent. Surgeon in Islamic Spain utilized special methods for maintaining antiseptics prior to and during surgery. They also originated specific protocols for maintaining hygiene during the post-operative period. Their success rate was so high that dignitaries throughout Europe came to Cordova, Spain, to be treated at what was comparably the "Mayo Clinic" of the Middle Ages. Thus, it was Islamic surgeons, not Joseph Lister, who invented surgical antiseptics.

The current information is: The discovery of the scientific use of drugs in the treatment of specific diseases was made by Paracelsus, a Swiss-born physician, during the 16th century. He is also credited with being the first to use practical experience as a determining factor in the treatment of patients rather than relying exclusively on the works of the ancient.

The correct information is: Ar-Razi, Ibn Sina, al-Kindi, Ibn Rushd, az-Zahrawi, Ibn Zuhr, Ibn Baytar, Ibn al-Jazzar, Ibn Juljul, Ibn al-Quff, Ibn an-Nafis, al-Biruni, Ibn Sahl, and hundreds of other Muslim physicians mastered the science of drug therapy for the treatment of specific symptoms and diseases. The word “drug” is derived from Arabic. Their use of practical experience and careful observation was extensive.

Muslim physicians, as well as their Jewish and Christian associates, were the first to criticize ancient medical theories and practices. Ar-Razi devoted an entire book as a critique of Galen’s anatomy. The works of Paracelsus are insignificant compared to the vast volumes of medical writings and original findings accomplished by the medical giants of Islam. He added nothing significant to their findings.

The current information is: The first sound approach to the treatment of disease was made in the 1500s by a German. Johann Weger.

The correct information is: Harvard’s George Sarton says that modern medicine is entirely an Islamic development and that the Muslim physicians of the 9th through 12th centuries were precise, scientific, rational, and sound in their approach. According to Olser the descriptions of disease by Islamic physicians are essentially modern. Johann Weger was among thousands of European physicians during the 15th through 17th centuries that were taught the medicine of ar-Razi and Ibn Sina, whose texts, which described hundreds of diseases in detail, were authoritative throughout Europe. He contributed nothing original to their findings.

The current information is: Paul Ehrlich (19th century) is the originator of *drug chemotherapy* that is the use of specific drugs to kill microbes.

The correct information is: Muslim physicians used a variety of specific substances to destroy microbes. They applied sulphur topically specifically to kill the scabies mite. They used antiseptics to sterilize the hands prior to and after surgery. Furthermore, they were the first to apply purified alcohol during surgery for preventing infections. They also applied herbal extracts and essential oils on post-operative wounds. In this regard they were well ahead of their time. The fact is such a therapy proves them superior to the surgeons of today, whose patients would benefit greatly from such treatments. Essential oils are proven germicides. Their regular use would greatly reduce post-operative infections. Clearly, the Muslims innovated specific drug chemotherapy *over 1000 years prior to Ehrlich*.

The current information is: Medicinal treatment for the insane was modernized by Philippe Pinel, when in 1793 he operated France’s first insane asylum.

The correct information is: As early as the 11th century Islamic hospitals maintained special wards for the insane. They treated them kindly and presumed their diseases were real at a time when the insane were routinely burned alive in Europe as witches and sorcerers. A curative approach was taken for mental illness, and for the first time in history the mentally ill were treated with supportive care, drugs, and psychotherapy. Every major Islamic city maintained an insane asylum, where patients were treated at no charge. In fact, the Islamic system for the treatment of the insane was superior to the current model, as it was more humane and was highly effective as well.

The current information is: During the 16th century Paracelsus invented the use of opium extracts for anesthesia.

The correct information is: During the 9th through 10th centuries Muslim physicians introduced the anesthetic value opium derivatives. Opium was originally used as a anesthetic agent by the Greeks. Islamic pharmacologists developed new innovative techniques to refine and administer it, including mastering its use as a narcotic during surgery. Paracelsus was a student of Ibn Sina’s works from which

it is virtually assured that he derived this idea. This is clearly indicated by the fact that he regarded Ibn Sina his “Arabic (scientific) father.”

The current information is: During the early 17th century William Harvey discovered that blood circulates. He was the first to correctly describe the function of the heart, arteries, and veins. Rome’s Galen had presented erroneous ideas regarding the circulatory system, and Harvey was the first to determine that blood is pumped throughout the body via the action of the heart and the venous valves. Therefore, he is regarded as the *founder of human physiology*.

The correct information is: In the 10th century Islam’s ar-Razi wrote an in-depth treatise on the venous system, accurately describing the function of the veins and their valves. Ibn an-Nafis and Ibn al-Quff (13th century) provided complete documentation that the blood circulates and correctly described the physiology of the heart and the function of its valves 300 years before Harvey. William Harvey was a graduate of Italy’s famous Padua University when the majority of its curriculum was based upon Ibn Sina’s and ar-Razi’s textbooks. Because of his strikingly accurate treatise on the mechanism of circulation, Ibn Nafis, not William Harvey, must be regarded as the true founder of human physiology.

The current information is: In 1845 the first surgery performed under inhalation anesthesia was conducted by C.W. Long, and American.

The correct information is: Six hundred years prior to Long Islamic Spain’s az-Zahrawi and Ibn Zuhr, among other Muslim surgeons, performed hundreds of surgeries under inhalation anesthesia. They administered narcotic-soaked sponges, which were placed over the face. Thus, they were indisputably the inventors of inhalation anesthesia. It was not until the 20th century that American anesthetics matched their skill.

The current information is: Modern anesthesia was invented in the 19th century by Humphrey Davy and Horace Wells.

The correct information is: Modern anesthesia was discovered, mastered, and perfected by Muslim anesthetics 900 years before the advent of Davy and Wells. They utilized oral, as well as inhalant, anesthetics. Furthermore, they developed special procedures for the management and protection of anesthetized patients during the post-operative period. Thus, the Muslims invented modern anesthesia as we know it today and were the world’s first true anesthetists.

Physics

Western historians provide evidence that modern physics is exclusively an Islamic development. Humboldt claims that the Muslims alone developed this science. Sarton states that one of its major divisions, optics, arises from Islam. Modern textbooks teach precisely the opposite, i.e. that only the Europeans and ancient Greeks were contributors. The following will help clarify this issue so that the true founders of this science can be established.

The current information is: During the 17th century after an accident of fate Isaac Newton invented the First Law of Gravity. An apple fell on his head while he was sitting under an apple tree. This led him to conclude that all objects are attracted to the earth’s center.

The correct information is: The first law of gravity was invented in totality by Islamic physicists, notably al-Biruni, Ibn Sina, ar-Razi, Ibn Bajjah, and Qutb ad-Din, 600 years prior to Newton. The apple story has recently been debunked as a fable.

The current information is: During the 17th century Isaac Newton made a major breakthrough in physics by discovering that white light consists of various rays of coloured light,

The correct information is: This discovery was made in its entirety by al-Haytham (11th century) and Kamal ad-Deen (14th century). The fact is al-Haytham was the first to bend light through glass, thereby discovering the various colours of the light spectrum 700 years before Newton.

The current information is: The concept of the finite nature of matter was originally introduced during the 18th century by Antoine Lavoisier. He discovered that although matter may change its form or shape, its mass always remains the same. Thus, for instance, if water is heated to steam, if salt is dissolved in water, or if a piece of wood is burned to ashes, the total mass remains unchanged.

The correct information is: The principles of this discovery were elaborated in detail centuries before Lavoisier by Islamic Persia's great scholar, al-Biruni, who died about 1050 A.D. Lavoisier was a disciple of the Muslim chemists and physicists. He quoted their books frequently.

The current information is: In the 17th century while only a teenager Galileo invented the pendulum. He noticed a chandelier or lamp swaying as it was being blown by the wind. As a result, in a stroke of genius he rushed home and invented the pendulum.

The correct information is: The pendulum was discovered during the 10th century by the Egyptian scholar Ibn Yunus al-Masri, who was the first to study and document its oscillatory motion. Its value for use in clocks was introduced by Muslim physicists during the 15th century. Galileo learned of it from Latin translations of Islamic texts, which were available to him at the Papal libraries. The swaying chandelier story has recently been disproved as a fable.

The current information is: Isaac Newton's 17th century study of lenses, light, and prisms forms the foundations of the *modern science of optics*.

The correct information is: In the 11th century al-Haytham determined virtually everything that Newton advanced regarding optics centuries prior and regarded by numerous authorities as the "founder of optics". There is little doubt that Newton was influenced by him.

Al-Haytham was the most quoted physicist of the Middle Ages. His works were utilized and quoted by a greater number of European scholars during the 16th and 17th centuries than those of Newton and Galileo combined. Incredibly, fully 600 years after they were written al-Haytham's books continued to exert a direct influence upon the progression of European science, since Newton and Galileo, as well as Kepler, were heavily influenced by them.

The current information is: The science of physics was revolutionized when Willebrod Snell discovered that light rays bend, or refract, when they enter a new medium. In other words, when light penetrates water, glass, or any other substance, it is bent. According to his law upon entering a new medium light is bent from its original path to a path of a lesser angle. This appears where the part in the water is apparently distorted. This allowed scientists to determine mathematically the bending of light waves when they enter a new medium. Thus, because of Snell the movement of light waves was understood scientifically.

The correct information is: It was the 10th through 11th century Islamic scholars Ibn Sahl and al-Haytham that revolutionized the science of physics, since they were the first to investigate the properties of light. According to the Encyclopedia of Arabic Science it was Ibn Sahl who, in fact, discovered the so-called Snell's Law. Roshdi Rasheed claims that during the 10th century Ibn Sahl performed the original scientific experiments on refraction and "effectively conceived" of this law. Therefore, the discover of how light is altered when it strikes another medium, for instance, the often-studied example of refraction, when light from the air enters water, is exclusively Ibn Sahl's. Ibn al-Haytham expanded upon the latter's work, thoroughly laying the groundwork for the modern study of

light. The fact is Ibn Sahl, as well as al-Haytham, published a number of original works on the physics of light. It is likely that Snell learned of the laws of the bending of light through reading of al-Haytham's and Ibn Sahl's books. He made no original discoveries in his regard. Thus, the term Snell's Law must be changed to Ibn Sahl's Law.

The current information is: The science of physics is a relatively modern discovery. It may be attributed to the European geniuses, Newton and Galileo, who are "generally regarded" as the fathers of this science.

The correct information is: The science of physics arose from earlier roots. As early as the 10th century through the efforts of Islamic scholars it was both invented and modernized. Muslim physicists were the first to conduct exact scientific experiments. These experiments were far more detailed and precise than the experiments of Newton and Galileo. Islamic physicists, such as al-Haytham, Ibn Sahl, Kamal ad-Deen, and al-Biruni, wrote hundreds of books on physics, conducting thousands of detailed scientific studies. These physicists used the scientific method throughout, rather, they invented it. Thus, rather than the Europeans the true fathers of this science were the Muslims. Galileo and Newton added new findings, but they were not its originators. The fact is their interest was largely motivated by the reading of Islamic texts. Therefore, instead of being the fathers, they were the pupils.

The current information is: Isaac Newton was one of the most influential scientists of all time. This is because he made enormous breakthroughs in the physics of light and optics. It is also because he discovered the laws of gravity and motion. His discoveries, which are published in his books, *The Principia and Optiks*, are unparalleled and form the basis for physics until Einstein's times. Therefore, Newton is responsible for much of the modern science as it is known today.

The correct information is: While the works of Newton were of value, his books are burdened with dogma and erroneous ideas, many of which impeded the advancement of science for centuries. For instance, Newton stated that vision is the result of the creation of unknown or abstract particles, which he describes as corpuscles. The corpuscles were apparently emitted from some unknown source. For centuries this theory confused investigators, preventing them from discerning the correct cause. Yet, Newton firmly established this theory, even though he provided no evidence to support it. This is despite the fact that 600 years prior it was al-Haytham who correctly described the theory of vision and did so through exact experiments. Al-Haytham proved the Greeks, as the source of all vision. What al-Haytham theorized was completely original. He came to his conclusions as a result of independent research. His conclusion was that solar rays are responsible for vision and that these rays penetrate the eyes through the lens. He created in the brain. Thus, in contrast to the ancients, who assumed that the eyes emit substances responsible for vision, al-Haytham proved that the eyes merely act as receivers. Thus, regarding the theory of vision, al-Haytham disseminated the truth, while Newton, like the Greeks, established much misinformation. The fact is al-Haytham corrected much of the misinformation. What's more he wrote over 60 books on the exact sciences, all of which contain original discoveries in a number of fields. Therefore, al-Haytham must be given at a minimum equal status with Newton, that of "one of the most influential scientists of all time."

Technology, Civilisation, and Engineering

The current information is: The compass was invented by the Chinese, who may have been the first to use it for navigational purposes sometime between 1000 and 1100 A.D. The earliest reference to its use in navigation was by the Englishman, Alexander Neckam (1157-1217).

The correct information is: Muslim geographers and navigators learned of the magnetic needle, possibly from the Chinese. However, they were the first to use magnetic needles in navigation. They invented the compass and taught westerners, as well as Orientals, how to use it. When exploring unknown territories, European navigators relied upon Muslim pilots and their instruments. Gustave Le

Bon claims that the magnetic needle and compass were entirely invented by the Muslims and that the Chinese had little to do with it. Neckham, as well as the Chinese, probably learned of it from Muslim traders. It is noteworthy that the Chinese improved their navigational expertise after they began interacting with the Muslims during the 8th century. The fact is the Chinese describes the *Arabic* use of this device.

The current information is: The first mention of man in flight was by Roger Bacon, who drew a flying apparatus. Leonardo da Vinci also conceived of airborne transport and drew several prototypes.

The correct information is: In the 800s A.D. Ibn Firnas of Islamic Spain invented, constructed, and tested a type of flying machine. Roger Bacon learned of flying machines from Arabic references. The latter's invention antedates the drawings of Bacon by 700 years and da Vinci by some 500 years.

The current information is: The use of rudders for ships was developed in the Middle Ages by European ship builders. Prior to their invention ships were steered by an individual, who held a broad oar into the water at the back of the boat.

The correct information is: Between the 11th and 12th centuries Muslim ship builders developed rudders. It is likely that the Crusades brought this technology to the West. Europeans began building rudders about 1240 A.D.

The current information is: In 1291 in Venice glass mirrors were first produced.

The correct information is: As early as the 11th century glass mirrors were in use in Islamic Spain. During the 9th through 10th centuries the Venetians learned of the art of fine glass production from Syrian artisans, where, since ancient times, much of glass making originated.

The current information is: The 13th century English scholar Roger Bacon first mentioned glass lenses for improving vision. At nearly the same time eyeglasses could be found in use both in China and Europe.

The correct information is: During the 10th century Ibn Firnas of Islamic Spain invented eyeglasses, and they were manufactured and sold throughout Spain for over two centuries. Europeans, as well as the Chinese, learned about them from Muslim traders. Any mention of eyeglass by Roger Bacon was simply a regurgitation of the work of the 11th century scholar al-Haytham, whose research Bacon frequently referred to. During the 11th century eyeglasses were in use in Islamic Spain, fully 200 years prior to their use in Europe. Thus, the invention of glass lenses by the Muslim is indisputable.

The current information is: During the 15th century moveable type and the printing press were invented in the West by Johannes Gutenberg of Germany.

The correct information is: In 1454 Gutenberg developed the most sophisticated printing press of the Middle Ages. His ingenious device made large scale book production possible. However, Durant suggests that the idea of printing with wooden blocks first originated in Cairo during the 11th - 12th centuries. Moreover, moveable brass type was in use in Islamic Spain over 100 years prior to Gutenberg, and that is where the West's first printing devices were made.

The current information is: Until the 14th century the only type of clock available was the water clock. In 1335 a large mechanical clock was erected in Milan, Italy. This was possibly the first weight-driven clock.

The correct information is: In the 10th through 12th centuries a variety of mechanical clocks, both large and small, were produced by Spanish Muslim engineers. The knowledge of their production was

transmitted to Europe through Latin translations of Islamic books on mechanics. These clocks were weight-driven. Designs and illustrations of epicyclical and segmental gears were provided. One such clock included a mercury escapement. The latter type was directly copied by Europeans during the 15th century. In addition, according to Durant during the 9th century Ibn Firnas of Islamic Spain invented astronomical clock, which kept accurate time. The Muslims also constructed a variety of highly accurate astronomical clocks for use in their observatories. During the 11th century after the Europeans conquered Islamic Toledo, they learned about the concept of time, which, prior, was unknown to them. However, in Toledo they found working clocks. They were utterly fascinated by them, and so they disassembled them, probably in order to determine how they worked. However, after reassembling them they failed to work. The fact is in 11th century Europe the idea of time was unknown. Therefore, the concept of time, upon which this modern world relies, is strictly an Islamic innovation.

The current information is: Modern fashion, entertainment, and sophistication are entirely creations of modern Europe and America, wherein the refinements of life were invented.

The correct information is: Islamic Spain produced the world's first fashion designers, who invented three piece suits, cotton clothing, fine silk, shirts with collars, the monogrammed handkerchief, embossed leather, the table napkin, and even trousers. Durant gives examples of medieval European rulers emulating Islamic sophistication by wearing robes embroidered with Arabic calligraphy. Chefs in Islamic Spain created the five course meal and published the world's first books on fine dining and manners. The concept of the gentlemen arises from Islamic Spain.

The Muslims even invented ice cream. They were the first to invent lingerie and hairstyling. Europe learned of these and other social refinements via the translation of Islamic works as well as through direct interactions. Here is a fascinating example. According to Henderson during the 11th century when the illiterate medieval Europeans first captured an Islamic city intact, that is Toledo, Spain, they were so overwhelmed by its sophistication and technology that "they could not believe what they saw".

Conclusion

Any objective observer will notice that science stagnated under the Christian Church in Europe. It was impossible to implement Christianity upon society because it is not a detailed and comprehensive societal way of life like Islam. However, science bloomed under Islam, and the Muslim world enjoyed its golden period when Europe was steeped in the Dark Ages. Islam, is the complete code of life from the Creator that obligates human progress based upon thought, by which man is distinguished far above the level of animals.

Very little is revealed in the West about the glorious history of Islam. If the educational systems of the West began to disclose information about the scientific and technological revolutions of the Muslims and about how Islam looked after the affairs of humanity, the long standing dogma that Capitalism has perpetuated among its people that religion has no applicability in the worldly life would be subjected to doubt as people would turn to Islam with a fresh new perspective.

People from different nations and cultures were moulded by Islam into a society in which the life, honor, and property of every citizen, Muslim and non-Muslim, was secure. Further more, Islam broke the shackles of ignorance that had engulfed humanity and provided a Religion - The word religion has been used in the West to denote man's system in which Muslims and non-Muslims excelled, among other relationship with his Creator. It manifests itself in the rituals, practices and norms things, in science and technology, that deal with spiritual aspect of man, and not the temporal affairs. However, Islam is not simply a religion, although it has rules for rituals and worships, but it is a comprehensive way of life with a system for politics, economics, social relations, foreign and military affairs and so on. Islam is an ideology.